DOCUMENT RESUME

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ABSTRACT

The Michigan Vocational Education Service, in September 1972, implemented a Performance Objectives Development Project to generate objectives for all vocational/technical education programs in the State. It was necessary that each school district adopt a set of minimum performance objectives for each program to retain the district's priority for program funding. The document provides an overview, guidelines for writing performance objectives, instructions for writing a performance objectives adoption report, a sample adoption report, an action index, blank forms for use in writing and submitting objectives, and the USOE Code Extracts for the writing of performance objectives. The document lists all the recommended minimum vocational technical performance objectives for the areas of: agriculture, distributive education, health, consumer and homemaking, occupational home economics, office, technical, trade and industrial, and employability skills. In each of these areas the occupational designation and a USOE code number are followed by the performance objectives stated in terms of topics, conditions, performance and criteria. (PB)

ED105246

PERFORMANCE OBJECTIVES DEVELOPMENT PROJECT

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Ingham Intermediate School District
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Project Number: 3185-7099C

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CE 003 511

PERFORMANCE OBJECTIVES DEVELOPMENT PROJECT

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PARTICIPANTS

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DATE: September 1, 1974

TO: Superintendents and Community College Presidents

FROM: Addison S. Hobbs, Director

SUBJECT: Adoption of Performance Objectives for Vocational/Technical Programs

In September, 1972, the Vocational/Technical Education Service implemented a Performance Objecti es Development Project to generate objectives for all vocational/technical education programs in Michigan. This action is consistent with the Michigan State Plan for Vocational Education and the Program Standards of Quality. These performance objectives have been approved by the Michigan State Board of Education and are ready for your review and consideration for adoption.

The developmental procedure utilized writing teams of classroom teachers to produce these performance objectives. In addition, these performance objectives were reviewed by representatives from business and industry. The Department of Education Performance Objectives Model was utilized by these writing teams to ensure uniformity in style and elements of content. The procedures for adoption of performance objectives are enclosed. The completed printout should be forwarded to the Michigan Department of Education no later than November 15, 1974. Carefully review responses on the Instruction Sheet.

As required in the Program Standards of Quality, to retain your school district's priority for program funding, it is necessary that your agency adopt a set of minimum performance objectives for each program.

If you encounter any problems with the adoption procedure, assistance can be obtained by contacting the Michigan Department of Education, Vocational/Technical Education Service, Dr. Mary Brown, telephone 517+373-3365 in Lansing.

Enclosures

A C K N O W L E D G M E N T S

The success of any project is due to the efforts of those individuals who contribute untiringly to its completion. We wish to acknowledge the many valuable contributions made by hundreds of dedicated professional educators for the development and review of the Vocational-Technical Education Performance Objectives contained in this document.

A listing of writing team participants is included in this document. We wish to extend our sincere thanks to these writing and review team members for the efforts they put forth to make these materials practical for use by vocational educators.

We also wish to acknowledge the contributions made by review teams composed of individuals from business and industry who provided valuable input for improving the performance objectives. Special thanks also go to the staff of the Vocational-Technical Education Service, Michigan Department of Education for providing overall coordination, guidance, inservice and field work for the project.

Throughout the project, the Michigan Advisory Council for Vocational Education has provided excellent advice and support. We extend a grateful thanks to the Executive Secretary, Arthur Shack, and all members of the Council for their interest and assistance.

We are deeply indebted to the following field consultants who worked countless hours with writing and review teams for the project:

William F. Brown, Swan Valley School District
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Michigan Department of Education
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Paul Ebeling, Macomb Community College
Gerald Faye, Oakland Community College
Jack Humbert, Wayne State University
Cheryl Rabideau, Vocational-Technical Education Service,
Michigan Department of Education
Harvey Ribbens, Kent Intermediate School District
Patricia Seraydarian, Oakland Community College

Finally, this acknowledgment would be incomplete without especially commending the Project Consultant, Dr. Daniel Brown, Professor of Education, University of Michigan, Ann Arbor, who has provided exceptional professional leadership, encouragement, support and countless hours of work in all facets of the project since its inception in May of 1972.

By: Philip T. Bailey
Project Coordinator

PERFORMANCE OBJECTIVES DEVELOPMENT PROJECT

Overview

A performance objective is a description of what a learner should be able to do when he has learned a skill or acquired certain understandings. The performance objectives presented here contain all six elements of the State Department of Education recommended performance objectives model (who, when, performance, object of performance, measurement methodology, and criteria). [1]

The guidelines[2] used by writers of these objectives are attached. In addition, several characteristics of these objectives must be understood to be adequately utilized:

1. Minimum: these objectives represent the considered opinion of the writers, after completion of a structured review and expert input, as to the minimum skills and understandings necessary to gain job entry.

2. Recommended: these objectives are those which the particular writing team recommends to the Vocational-Technical Education Service and, in turn, the Vocational-Technical Education Service to the local educational agencies for their consideration as reasonable minimum learner objectives.

3. Terminal: these objectives describe only those significant performances which are to be mastered by the end of the training program. It is likely that each of these terminal objectives contains several intermediate or facilitating objectives which are assumed to be necessary to achieve the terminal objective.

4. Program: these objectives are presented by program rather than course, because it is the prerogative of the local educational agency to group content into courses, etc., as it sees fit.

5. Grading/Passing: the decision as to what grade a student will earn for achieving some, all, or in excess of the minimum recommended program performance objectives is a local educational agency decision. Some districts choose to include factors other than the achievement of objectives as the basis for assigning grades. It is not the intent here to suggest that this practice must change as a result of adopting performance objectives. It is also recognized that many factors may affect the decision as to whether credit for a course should be assigned to a particular student who may achieve 'ess than the minimum objectives of the program.

---

[1] Michigan Department of Education, "Developing Performance Objectives," booklet, undated.

[2] The abbreviated guidelines used by the members of the performance objectives writing teams are extracted from and consistent with: Bailey, Philip; Bland, David and Brown, Dan; "Guidelines for the Performance Objectives Development Project," Michigan Department of Education and Career Development Service, September, 1972.

Format

1. Each set of objectives is identified by a U.S. Office of Education Occupational Designation and Code Number. This practice is consistent with the system used to approve and fund vocational/technical programs in Michigan.

2. Each set of objectives begins with the standard statement, "Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced test (ORT's), unless otherwise indicated:". In order to avoid unnecessary duplication, this statement is presented as a constant, but it is to be interpreted as a part of each subsequent objective.

3. In addition to the performance objectives recommended for each program, each set of objectives for a vocational or technical program is to be understood to include the performance objectives for "Employability Skills" (except for non-wage earning Home Economics) and the "Statement on Cooperative Education Technique" (if applicable). Although these are presented separately, they are to be considered common to all vocational and technical programs if applicable. Both items are included in the adoption process as an integral part of each set of objectives, when appropriate, and are adopted if the set is adopted.

4. Four columns of information are used to present the content of each objective:

    a. Topic: a general category of subject matter into which the performance objectives have been grouped.

    b. Conditions: a description of the relevant materials and/or problems that will affect the learner's performance.

    c. Performance: an observable, measurable description of what the learner will do.

    d. Criteria: a description of the quantitative and qualitative standards against which the learner's performance is to be measured.

PERFORMANCE OBJECTIVES DEVELOPMENT PROJECT

Guidelines for Writing Performance Objectives

To Writing Team Members:

1. Each performance objective has to be usable by each member of the writing committee; that is, language must be general enough to apply to each and specific enough to be usable by each.

2. Use generic terms whenever possible -- avoid manufacturer's names, specific textbook references, etc., to the extent possible.

3. Use employability (when appropriate) as the focal point for writing your recommended minimum acceptable performance objectives.

4. Concentrate on cognitive and psychomotor performance objectives. Performance Objectives for "attitude development" and "employment getting" will be dealt with separately in another phase of the project.

5. Performance Objectives Content:

   A. Condition/Problem Statement:

      (1) Use "rule of reason" when expressing materials and equipment.

      (2) Be as precise as possible in problem statement.

      (3) If a set of conditions becomes repetitious, use as a lead-in. No need to repeat a constant set of conditions in each performance objective.

      (4) Attempt to identify the problem rather than one of its subsets.

      (5) Combine problem statements which require similar performances and/or those which are simply separate segments of a larger problem.

   B. Performance: Use observable, measurable verb.

   C. Criteria: (so well that)

      (1) ACCORDING TO: Cite external references, give actual criteria, or indicate that an external set of criteria must be specified locally and suggest inclusions when possible.

      (2) ACCURACY: Cite appropriate percentages, number of successful completions in number of attempts, relative gains, plus or minus, etc.

(3) TIME CONSTRAINTS:

(a) Cite time if time is an identifiable factor.

(b) Specify "within an appropriate, specified period of time" for complex task in which time is definitely a factor in performance with a high degree of time variability which will have to be determined and specified locally.

(c) No statement of time assumes that time is an insignificant factor and can be assumed to mean "within a reasonable period of time."

(4) Do not use such terms as:

(a) "in the opinion of the instructor" - based upon what?

(b) "score 70% on a test" - 70% of what?

(c) "to the satisfaction of the teacher" - but how will the student know that he has successfully completed this task when the teacher isn't around to be satisfied?

MICHIGAN DEPARTMENT OF EDUCATION

Vocational-Technical Education Service

Instructions for

PERFORMANCE OBJECTIVES ADOPTION REPORT

OVERVIEW

Prior to commencing the procedures necessary to complete this report, you should assemble and/or take note of the following materials:

1. An official printout listing all of the approved programs for your district (provided to you as an original and two carbon copies by the Vocational-Technical Education Service).

2. Your records which indicate a complete inventory of programs approved by the Vocational-Technical Education Service. Approval numbers are more significant than program titles inasmuch as there may be some wording differences between your designations and the official U.S.O.E. program designations.

3. All of the materials included in the Performance Objectives binder provided to you which follow the tab labeled "Adoption." Before beginning the process, you should familiarize yourself with these materials which include:

   a. General Instructions

   b. Sample completed "Performance Objectives Adoption Report" (Attachment A)

   c. An Action Index with specific instructions for each program code (Attachment B)

   d. Blank performance objectives writing forms (for use if needed to write and submit locally developed objectives) (Attachment C1, C2, C3)

   e. Extracts from VOCATIONAL EDUCATION AND OCCUPATIONS, Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402 July 1969 Catalog No. FS 5.280:80061 (Attachment D)

MICHIGAN DEPARTMENT OF EDUCATION

Vocational-Technical Education Service

Instructions for

PERFORMANCE OBJECTIVES ADOPTION REPORT

Introduction

You have been provided with a printout which lists all approved programs for your district and which provides a format listing several possible responses for your use in making and recording a decision regarding the adoption of minimum program performance objectives. Please check the appropriate column indicating your decision for each program listed (see completed sample, Attachment A) and return the original and one copy of the printout by November 15, 1974 to:

Dr. Mary Brown, P.O. Project
Michigan Department of Education
Vocational-Technical Education Service
Box 928
Lansing, Michigan 48904

You will find an "Action Index" (Attachment B) attached to these instructions which provides specific instructions which will assist you in dealing with each separate code. Use of this "Action Index" and the General Instructions below should permit you to make and record your adoption decisions with reasonable efficiency.

General Instructions

Column 1 - Corrected Code Requested

Column 1 should be used in either of the following cases:

1. You are instructed to do so in the "Action Index."
2. You are requesting a more appropriate U.S.O.E. Code designation (subject to review and approval by the Vocational-Technical Educational Service).

After entering a corrected code request in Column 1, continue on with the adoption process by indicating your performance objectives adoption decision in the appropriate column (Columns 2 thru 5).[1]

---

[1]Note: Changes in program codes which come about through this process will have no effect on this school year's program identification for reporting, funding, etc. Requested code corrections will become effective, if approved, for the 1975-76 school year.

Column 2 - Adopt Recommended PO's

Checking Column 2 indicates that your agency adopts the minimum program performance objectives as recommended for that specific program. By checking this column you are indicating that these performance objectives are now being implemented or will be implemented no later than the 1975-76 school year.

In addition to the performance objectives recommended for each program, each set of objectives for a vocational or technical program is to be understood to include the performance objectives for "Employability Skills" (except for non-wage earning Home Economics) and the "Statement on Cooperative Education Technique" (if applicable). Although these are presented separately, they are to be considered common to all vocational and technical programs if applicable. Both items are included in the adoption process as an integral part of each set of objectives, when appropriate, and are adopted if the set is adopted.

This adoption decision indicates that, in the opinion of your staff and advisory committee, the performance objectives as presented adequately represent the minimum job skills and understandings required for successful employment in an occupation related to the vocational or technical program identified on the print-out. In the case of non-wage earning Home Economics, these performance objectives should represent the minimum skills and understandings a learner should possess upon successful completion of the program.

Column 3 - Write and Submit PO's by 4/1/75

Checking Column 3 indicates that your agency finds the recommended performance objectives to be partially or totally inappropriate for the program as it is being taught. By developing and submitting your own performance objectives for a particular code rather than accepting the recommended minimum program performance objectives, you are indicating that it is the opinion of your staff and advisory committee that students achieving your performance objectives will be as qualified to enter into employment or into the non-wage earning area of Home Economics as a student who successfully achieves the recommended minimum program performance objectives.

In addition to performance objectives which you write for the skills and understandings necessary for completion of the program, you must include a set of objectives for the "Employability Skills" and a statement on the "Cooperative Education Technique" (if applicable) when you submit your objectives to this office. These items, subject to the same review by the Vocational-Technical Education Service as the basic set, may be either those presented in this document or those developed by your agency.

This option commits your agency to develop its own set of performance objectives which may or may not include some or all of the recommended objectives, with the involvement of your staff and advisory committee subject to the following guidelines:

A. The performance objectives developed locally will be submitted to the Vocational-Technical Education Service no later than April 1, 1975 but not prior to March 1, 1975. A reporting form will be forwarded to you which should accompany your objectives when they are submitted.

B. All performance objectives being developed and submitted by a local agency, whether they are for a single program or several programs, should be submitted at one time and should be accompanied by the reporting form identified in item A, above.

C. The columnar format used to present the recommended minimum program performance objectives MUST be used when you submit your locally developed performance objectives. Blank forms which may be used as a master for producing your own forms are attached to this document (Attachments C1, C2, C3).

D. If you are writing objectives for a code for which a set of recommended minimum program performance objectives has been written, your performance objectives must be accompanied by a brief narrative which highlights the significant differences between the objectives which you have developed and those which were recommended as well as an indication of the rationale for the differences.

E. Performance objectives written and submitted consistent with A thru D above will be subject to review for program content and performance objectives writing adequacy by the Vocational-Technical Education Service.

Column 4 - No Such Program at This Site

Checking Column 4 indicates that there is an error in the records of the Vocational-Technical Education Service, and that no such program is in operation at this site or will be operated in the 1975-76 school year.

Column 5 - Remove Program from Approved List

By checking this option (Column 5), you are indicating that you elect to remove this program from the approved listing making it ineligible for State added cost and Federal funding. Choosing this option would not preclude your agency from running the program independently without State added cost and Federal funding.

Programs Missing from the Printout

If after completing the Performance Objectives Adoption Report you find that a program(s) which you believe to be approved by the Department of Education is missing from the list, please add the program(s) to the end of the printout in the space provided and proceed with the adoption procedure. Any programs so listed will be verified by the Vocational-Technical Education Service.

The printout should then be signed by the Superintendent/President or his designate in the appropriate space before returning to the Vocational-Technical Education Service.

For assistance in completing the Performance Objectives Adoption Report or other problems related to this process, please telephone or write:

Dr. Mary Brown, P.O. Project
Michigan Department of Education
Vocational-Technical Education Service
P.O. Box 928
Lansing, Michigan 48904

517-373-3365 (Lansing)

[redacted] BROWN, P.O. PROJE[redacted]
MI[redacted]AN DEPARTMENT OF EDUCATION
VOCATIONAL TECHNICAL EDUCATION SERVICE
BOX 928
LANSING, MICHIGAN 48904

SUPERINTE[redacted]
PRESIDENT [redacted] Jones

TITLE Voc. Director

P[redacted]

YOUR TOWN HIGH SCHOOL APPROVED PROGRAMS O E PROGRAM CODE AND PROGRAM NAME		CORRECTED CODE REQUESTED (1)	ADOPT RECOMMENDED PO'S (2)	WRITE AND SUBMIT PO'S BY 4/1/75 (3)	NO SUCH PROGRAM AT THIS SITE (4)	REMOVE PROGRAM FROM APPROVED LIST (5)
YOUR TOWN HIGH SCHOOL						
01.0700	FORESTRY	( )	(X)	( )	( )	( )
07.9900	HEALTH OCC & COOP REL	(07.0203)	(X)	( )	( )	( )
09.0201	CHILD CARE AND GUIDANCE	( )	( )	(X)	( )	( )
10.9999		( )	(NA)	( )	(X)	( )
14.0700	STENO AND SECRETARIAL	(14.0703)	(X)	( )	( )	( )
17.0302	AUTO MECHANICS	( )	(X)	( )	( )	( )
17.1000	BUILDING TRADES	(17.1099)	( )	(X)	( )	( )
17.1300	DRAFTING OCCUPATIONS	( )	( )	( )	( )	(X)

Explanations for Sample Entries above:

01.0700 The recommended minimum program performance objectives published under this code number are adopted.

07.9900 Following directions in the Action Index, this code is changed to one of several options and the performance objectives published for the new code (07.0203 in this case) are adopted.

09.0201 This school has chosen to write and submit their own objectives for this code.

10.9999 Column 4 has been checked indicating that, for one reason or another, this record is wrong and there is no program with this code at this site.

14.0700 Following directions in the Action Index, this code has been changed as directed and the performance objectives as published for the new code have been adopted.

17.0302 The recommended minimum program performance objectives published under this code number are adopted.

17.1000 Following directions in the Action Index, this code has been changed to indicate a Construction and Maintenance program ON-SITE and the school has chosen to write and submit their own objectives rather than adopt those published for 17.1000.

17.1300 This school has chosen to remove this program from the approved list and eligibility for funding.

SAMPLE: Performance Objectives Adoption Report

...TECHNICAL EDUCA...
...ERFORMANCE OBJECTIVES ADOPTION REPORT

IF YOUR RECORDS INDICATE THAT YOU HAVE APPROVED PROGRAMS WHICH ARE NOT INCLUDED IN THE PRECEEDING LISTING, LIST THE O E PROGRAM CODE AND PROGRAM NAME FOR EACH BELOW. EACH PROGRAM SO LISTED IS SUBJECT TO VERIFICATION BY THE VOCATIONAL TECHNICAL EDUCATION SERVICE.

YOUR TOWN HIGH SCHOOL APPRDVED PROGRAMS O E PROGRAM CODE AND PROGRAM NAME	CONT.	CORRECTED CODE REQUESTED	ADOPT RECOMMENDED POI'S (2)	WRITE AND SUBMIT POI'S BY 4/1/75 (3)	RE'OVE PROGRAM FRO' APPROVED LIST (5)
YOUR TOWN HIGH SCHOOL	CONT.				
(14.0300) (CLERK TYPIST)		(14.0901)	(X)	( )	( )
(17.0600) (BUS. MACH. MAINT.)		( )	( )	(X)	( )
(17.0701) (INTERIOR DEC.)		( )	( )	( )	(X)
(17.1005) (PAINTING AND DEC.)		( )	(X)	( )	( )

Explanations for Sample Entries above:

Note: All of these programs--in this illustration--were omitted from the printout, but the school has evidence to support a claim that the programs were omitted in error and are, in fact, approved programs.

14.0300 Following directions in the Action Index, this code number has been changed as directed and the performance objectives as published have been adopted.

17.0600 This school has chosen to write and submit their own objectives for this code.

17.0701 This school has chosen to remove this program from the approved list and eligibility for funding.

17.1005 The recommended minimum program performance objectives published under this code number are adopted.

SAMPLE: Performance Objectives Adoption Report

ACTION INDEX

This index will assist you as you proceed with the adoption procedure. These specific instructions, along with the general instructions and other attachments, should make your adoption activities considerably more efficient.

For each of your programs, look up the U.S.O.E. Code Number and follow the specific directions as given. If directions for a particular code for secondary schools are different than those for post-secondary institutions, two sets of directions are included for that code. If the directions are the same, no distinction is noted.

U.S.O.E. Code No.	Descriptor/Instructions
01.0000	AGRICULTURE Secondary: No performance objectives; no such program; review the U.S.O.E. code descriptors for 01.0101, 01.0102, 01.0104, and 01.0303; enter corrected code in Column 1; proceed with adoption process. Post-Secondary: No performance objectives; no such program; review all related U.S.O.E. code descriptors; enter corrected code in Column 1; proceed with adoption process.
01.0100	AGRICULTURAL PRODUCTION Secondary: No performance objectives; no such program; review the U.S.O.E. code descriptors for 01.0101, 01.0102, 01.0104, and 01.0303; enter corrected code in Column 1; proceed with adoption process. Post-Secondary: ** Performance Objectives NOT AVAILABLE (NA)
01.0101	ANIMAL SCIENCE * Performance Objectives AVAILABLE
01.0102	PLANT SCIENCE Secondary: * Performance Objectives AVAILABLE Post-Secondary: Change code to 16.0204 in Column 1; review 01.0102 performance objectives; write and submit own objectives.
01.0104	FARM BUSINESS MANAGEMENT * Performance Objectives AVAILABLE
01.0105	NO SUCH PROGRAM No performance objectives; review the U.S.O.E. code descriptors for 01.0101, 01.0102, 01.0104, and 01.0303; enter corrected code in Column 1; proceed with adoption process.

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

ommended minimum program performance objectives NOT available (NA); no recommended minimum program performance ectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and cription; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

01.0199 AGRICULTURAL PRODUCTION, OTHER
No performance objectives; no such program; review the U.S.O.E. code descriptors for 01.0101, 01.0102, 01.0104, and 01.0303; enter corrected code in Column 1; proceed with adoption process.

01.0200 AGRICULTURAL SUPPLIES
* Performance Objectives AVAILABLE

01.0300 AGRICULTURE MECHANICS
* Performance Objectives AVAILABLE

01.0301 AGRICULTURAL POWER AND MACHINERY
* Performance Objectives AVAILABLE

01.0302 AGRICULTURAL STRUCTURES AND CONVENIENCES
** Performance Objectives NOT AVAILABLE (NA)

01.0303 SOIL MANAGEMENT
* Performance Objectives AVAILABLE

01.0305 AGRICULTURAL MECHANICS SKILLS
No performance objectives; change program code by entering 01.0300 in Column 1 and/or write and submit own objectives; proceed with adoption process.

01.0306 AGRICULTURAL CONSTRUCTION AND MAINTENANCE
** Performance Objectives NOT AVAILABLE (NA)

01.0400 AGRICULTURAL PRODUCTS
* Performance Objectives AVAILABLE

01.0500 ORNAMENTAL HORTICULTURE
* Performance Objectives AVAILABLE

01.0502 FLORICULTURE
* Performance Objectives AVAILABLE

01.0503 GREENHOUSE OPERATION AND MANAGEMENT
** Performance Objectives NOT AVAILABLE (NA)

01.0504 LANDSCAPING
** Performance Objectives NOT AVAILABLE (NA)

01.0600 AGRICULTURAL RESOURCES
* Performance Objectives AVAILABLE

01.0602 RECREATION
** Performance Objectives NOT AVAILABLE (NA)

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

mmended min.mum program performance objectives NOT available (NA); no recommended minimum program performance ctives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and ription; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

01.0602990 SKI AREA MANAGEMENT
Change code to 01.0602 in Column 1; review 04.1100, 09.0203, and 16.0504 performance objectives; write and submit own objectives.

01.0700 FORESTRY
Secondary: * Performance Objectives AVAILABLE
Post Secondary: Change code to 16.0604 in Column 1; review 01.0700 performance objectives; write and submit own objectives.

01.3000 NO PERFORMANCE OBJECTIVES
Review U.S.O.E. code descriptors; enter corrected code in Column 1; proceed with adoption process.

01.9900 AGRICULTURE, OTHER
No performance objectives; review U.S.O.E. code descriptors; enter corrected code in Column 1; proceed with adoption process.

03.2300 GENERAL BUSINESS
No performance objectives; change program code to appropriate 04. or 14. designation in Column 1; proceed with adoption process.

03.2605 GENERAL BUSINESS
No performance objectives; change program code to appropriate 04. or 14. designation in Column 1; proceed with adoption process.

04.0000 DISTRIBUTIVE EDUCATION
Change code to more appropriate and specific 04. code designation; enter change in Column 1; write and submit own objectives.

04.0000290 SERVICE STATION MANAGEMENT
Change to 04.1600 in Column 1; write and submit own objectives.

04.0000330 GENERAL BUSINESS
Change code to 04.000030 if General Business Management; or review other 04. designations and identify more appropriate code; enter change in Column 1; write and submit own objectives.

04.0032 RETAILING STORE MANAGEMENT
** Performance Objectives NOT AVAILABLE (NA)

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commended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance tives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and iption; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

04.0100 ADVERTISING SERVICES
Secondary: * Performance Objectives AVAILABLE
Post-Secondary: Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; review 04.0100 objectives which are secondary school oriented; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

04.0115 MARKETING
No such program; no performance objectives; change code to 04.000010-11-12 or 13 as appropriate; write and submit own objectives.

04.0117 RETAILING
Change code to 04.000015; enter change in Column 1; write and submit own objectives.

04.0200 FASHION CURRICULUM
** Performance Objectives NOT AVAILABLE (NA)

04.0300 AUTOMOTIVE
** Performance Objectives NOT AVAILABLE (NA)

04.0400 FINANCE AND CREDIT
** Performance Objectives NOT AVAILABLE (NA)

04.0600 FOOD DISTRIBUTION
Secondary: ** Performance Objectives NOT AVAILABLE (NA)
Post-Secondary: Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; review 16.0504 performance objectives; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

04.0700 FOOD SERVICES
No performance objectives; change program code to 09.0203 (Column 1); if not appropriate to change designation, write and submit own performance objectives.

04.0800 GENERAL MERCHANDISE
Secondary: * Performance Objectives AVAILABLE
Post-Secondary: Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; review 04.0800 objectives which are secondary school oriented; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1), proceed with adoption process (Columns 3 - 5).

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

04.1100 HOTEL AND LODGING
* Performance Objectives AVAILABLE

04.1300 CERTIFIED LIFE UNDERWRITERS
** Performance Objectives NOT AVAILABLE (NA)

04.1500 PERSONAL SERVICES
** Performance Objectives NOT AVAILABLE (NA)

04.1700 REAL ESTATE
** Performance Objectives NOT AVAILABLE (NA)

04.1800 RECREATION AND TOURISM
** Performance Objectives NOT AVAILABLE (NA)

04.1900 TRANSPORTATION
** Performance Objectives NOT AVAILABLE (NA)

04.2000 RETAIL TRADE, OTHER
No performance objectives; no such program; verify program code and descriptor; enter corrected code in Column 1; proceed with adoption process.

04.9900 DISTRIBUTIVE EDUCATION, OTHER
No performance objectives; no such program; verify program code and descriptor; enter corrected code in Column 1; proceed with adoption process.

04.9901 MARKETING
No such program; no performance objectives; change code to 04.000010-11-12 or-13 as appropriate; write and submit own objectives.

04.9902 MANAGEMENT
Change code to 04.000030, 04.0032, or 04.0000330; enter code in Column 1; write and submit own objectives.

04.9908 TAX ASSESSORS
Change code to 14.0198; enter code in Column 1; write and submit own objectives.

17.0101 DENTAL ASSISTANT
Secondary: * Performance Objectives AVAILABLE
Post-Secondary: Change code to 16.0398 in Column 1; review performance objectives under that code; proceed with adoption process.

07.0102 DENTAL HYGIENIST
* Performance Objectives AVAILABLE

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ecommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

07.0103 DENTAL LAB TECHNICIAN
Secondary: No such secondary program; review U.S.O.E. code descriptor; enter corrected code in Column 1; proceed with adoption process.
Post-Secondary: * Performance Objectives AVAILABLE

07.0130100 ASSOCIATE DEGREE, NURSING
Change code to 07.0301 in Column 1; review performance objectives under that code; proceed with adoption process.

07.0200 MEDICAL LAB TECHNICIAN
* Performance Objectives AVAILABLE

07.0202 HISTOLOGY
** Performance Objectives NOT AVAILABLE (NA)

07.0203 MEDICAL LABORATORY ASSISTANT
* Performance Objectives AVAILABLE

07.0300 NURSING
No performance objectives; no such program; change code to 07.0301 or 07.0302 as appropriate; review performance objectives under that code; proceed with adoption process.

07.0301 NURSING, ASSOCIATE DEGREE
* Performance Objectives AVAILABLE

07.0302 PRACTICAL NURSING
* Performance Objectives AVAILABLE

07.0303 NURSING AIDE
* Performance Objectives AVAILABLE
or
If your program is providing training for occupations beyond Nursing Aide, change program code to 07.9802 in Column 1; write and submit own objectives which may or may not include all or part of the objectives for the following codes: 07.0303, 07.0101, 07.0203, and 07.0094.

07.0401 OCCUPATIONAL THERAPY
** Performance Objectives NOT AVAILABLE (NA)

07.0402 PHYSICAL THERAPY
** Performance Objectives NOT AVAILABLE (NA)

07.0500 RADIOLOGIC
Change code to 07.0501 in Column 1; review performance objectives under that code; proceed with adoption process.

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns ? - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

07.0501 X-RAY TECHNICIAN
* Performance Objectives AVAILABLE

07.0700 ENVIRONMENTAL HEALTH
** Performance Objectives NOT AVAILABLE (NA)

07.0701 ENVIRONMENTAL HEALTH ASSISTANT
** Performance Objectives NOT AVAILABLE (NA)

07.0801 MENTAL HEALTH TECHNICIAN
** Performance Objectives NOT AVAILABLE (NA)

07.0900 MISC. HEALTH OCCUPATIONS EDUCATION
No performance objectives; no such program; review the Action Index instructions and code descriptors for 07.9802, 07.0303, 07.0101, 07.0203, and 07.0904; and/or enter more specific 07. code designation in Column 1; proceed with adoption process.

07.0903 INHALATION THERAPY
* Performance Objectives AVAILABLE

07.0904 MEDICAL ASSISTANT (OFFICE)
Secondary: * Performance Objectives AVAILABLE
Post-Secondary: Change code to 16.0397 in Column 1; review performance objectives for 07.0904 which are secondary school oriented; write and submit own objectives.

07.0907 MEDICAL EMERGENCY TECHNICIAN
* Performance Objectives AVAILABLE

07.0908 FOOD SERVICE SUPERVISOR
** Performance Objectives NOT AVAILABLE (NA)

07.9801 WARD CLERK/WARD SECRETARY
** Performance Objectives NOT AVAILABLE (NA)

07.9900 HEALTH OCCUPATIONS EDUCATION, OTHER
No performance objectives; no such program; review the Action Index instructions and code descriptors for 07.9802, 07.0303, 07.0101, 07.0203, and 07.0904; and/or enter more specific 07. code designation in Column 1; proceed with adoption process.

08.0210 INDUSTRIAL SAFETY MANAGEMENT
No performance objectives; change program code to 16.0602 (Column 1); write and submit own objectives.

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

commended minimum program performance objectives NOT available (NA); no recommended minimum program performance jectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and scription; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

08.0404 RECREATION AND CAMP SUPERVISION
No performance objectives; change program code to 01.0602 (Column 1); write and submit own objectives.

09.0100 HOMEMAKING
No performance objectives; no such program; review 09.0101 objectives and other non-wage earning Home Economics codes; correct program code in Column 1; proceed with adoption process.

09.0101 COMPREHENSIVE HOMEMAKING
* Performance Objectives AVAILABLE

09.0102 CHILD DEVELOPMENT
* Performance Objectives AVAILABLE

09.0103 CLOTHING AND TEXTILES
* Performance Objectives AVAILABLE

09.0104 CONSUMER EDUCATION
* Performance Objectives AVAILABLE

09.0105 FAMILY HEALTH
* Performance Objectives AVAILABLE

09.0106 FAMILY RELATIONS
* Performance Objectives AVAILABLE

09.0107 FOODS AND NUTRITION
* Performance Objectives AVAILABLE

09.0108 HOME MANAGEMENT
* Performance Objectives AVAILABLE

09.0109 HOUSING AND HOME FURNISHINGS
* Performance Objectives AVAILABLE

09.0199 HOMEMAKING, OTHER
Advanced Comprehensive
Change code to 09.0198 in Column 1; review objectives under that code number, proceed with adoption process.
Education for Employment
Change code to 09.0197; review Employability Skills performance objectives; proceed with adoption process.

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

09.0200 OCCUPATIONAL PREPARATION
No performance objectives; no such program; examine codes for wage earning Home Economics codes; enter corrected code in Column 1; proceed with adoption process.

09.0201 CHILD CARE AND GUIDANCE
* Performance Objectives AVAILABLE

09.0202 CLOTHING MANAGEMENT
* Performance Objectives AVAILABLE

09.0203 FOOD MANAGEMENT
* Performance Objectives AVAILABLE

09.0204 HOME FURNISHINGS
** Performance Objectives AVAILABLE

09.0205 INSTITUTION, HOME MANAGEMENT
* Performance Objectives AVAILABLE

09.0299 OCCUPATIONAL PREPARATION, OTHER
No performance objectives; no such program; verify program code and descriptor; enter corrected code in Column 1; proceed with adoption process.

14.0000 OFFICE OCCUPATIONS
No performance objectives; no such program; verify program code and descriptor; enter corrected code in Column 1; proceed with adoption process.

14.0100 ACCOUNTING AND COMPUTING
Secondary: No performance objectives; change program code to 14.0102 or other appropriate designation; enter corrected code in Column 1; proceed with adoption process.
Post-Secondary: No performance objectives; change program code to 14.0101 or other appropriate designation; enter corrected code in Column 1; proceed with adoption process.

14.0101 ACCOUNTANTS
** Performance Objectives NOT AVAILABLE (NA)

14.0102 BOOKKEEPERS
* Performance Objectives AVAILABLE

14.0105 TELLERS
** Performance Objectives NOT AVAILABLE (NA)

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

14.0200 DATA PROCESSING, BUSINESS
Secondary: No performance objectives; change program code to 14.0201 or 14.0202; if program is a mix of both codes, change code to 14.0298; if correct program code is 14.0203, use 16.0401 objectives; proceed with adoption process.
Post-Secondary: No performance objectives; change program code to 14.0201, 14.0202, or 16.0401; review objectives under those codes; proceed with adoption process.

14.0300 GENERAL OFFICE CLERICAL
No performance objectives; change program code to 14.0901; if training non-typing oriented clerks, change code to 14.0303; review objectives under either code; proceed with adoption process.

14.0302 FILE CLERKS
** Performance Objectives NOT AVAILABLE (NA)

14.0303 GENERAL OFFICE CLERKS
* Performance Objectives AVAILABLE

14.0399 FILING, OFFICE MACHINES, AND GENERAL OFFICE CLERICAL OCCUPATIONS, OTHER
No performance objectives; no such program; change code to appropriate number, review objectives for 14.0303 and 14.0901; proceed with adoption process.

14.0406 RECEPTIONISTS AND INFORMATION CLERKS
** Performance Objectives NOT AVAILABLE

14.0499 JOURNALISM
* Performance Objectives AVAILABLE

14.0600 PERSONNEL TRAINING
No performance objectives; no such program; review U.S.O.E. code book; change code to appropriate number; proceed with adoption process.

14.0601 EDUCATIONAL ASSISTANTS AND TRAINING SPECIALISTS
** Performance Objectives NOT AVAILABLE (NA)

14.0602 INTERVIEWERS AND TEST TECHNICIANS
** Performance Objectives NOT AVAILABLE (NA)

14.0603 PERSONNEL ASSISTANTS
**Performance Objectives NOT AVAILABLE (NA)

14.0699 PERSONNEL, TRAINING, AND RELATED OCCUPATIONS, OTHER
** Performance Objectives NOT AVAILABLE (NA)

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

14.0700 STENO AND SECRETARIAL OCCUPATIONS

Secondary: No performance objectives; change program code to 14.0703; if training Legal Secretaries, change program code to 14.0798; if training Medical Secretaries, change code to 14.0797; enter corrected code in Column 1; proceed with adoption process.

Post-Secondary: No performance objectives; no such program; consider performance objectives and/or code descriptors for 14.0701, 14.0702, 14.0797, 14.0798 and 14.0703; if training Legal Secretaries, change program code to 14.0798; if training Medical Secretaries, change code to to 14.0797; enter corrected code in Column 1; proceed with adoption process.

14.0701 EXECUTIVE SECRETARY

Recommended minimum program performance objectives NOT Available (NA): no recommended minimum progr. performance objectives are available for review; review 14.0703, 14.0797 and 14.0798 performance objectives; write and submit own; verify U.S.O.E. program code number; descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

14.0701010 MEDICAL/DENTAL SECRETARY ASSISTANT

Recommended minimum program performance objectives NOT Available (NA); no recommended minimum program performance objectives are available for review; review 14.0797 and 16.0398 performance objectives; write and submit own; verify U.S.O.E. program code number; descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Column 3 - 5).

14.0701990 INTERNATIONAL SECRETARY

No performance objectives; consider performance objectives and/or code descriptors for 14.0703, 14.0797, 14.0798, and 14.0702; enter corrected code in Column 1; proceed with adoption process.

14.0702 SECRETARIES

Recommended minimum program performance objectives NOT Available (NA); no recommended minimum program performance objectives are available for review; review 14.0703 performance objectives; write and submit own; verify U.S.O.E. program code number; descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process.

14.0702990 TECH REPORT TYPEWRITING

** Performance Objectives NOT AVAILABLE (NA)

14.0703 STENOGRAPHERS

* Performance Objectives AVAILABLE

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

14.0703990 MEDICAL STENOGRAPHER
No performance objectives; no such program; consider performance objectives and code descriptors for 14.0703 and 14.0797; enter corrected code in Column 1; proceed with adoption process.

14.0797 MEDICAL SECRETARIES
* Performance Objectives AVAILABLE

14.0798 LEGAL SECRETARIES
* Performance Objectives AVAILABLE

14.0799 STENOGRAPHIC, SECRETARIAL, AND RELATED OCCUPATIONS, OTHER
No performance objectives; no such program; consider performance objectives and/or code descriptors for 14.0701, 14.0702; 14.0797, 14.0798, and 14.0703; enter corrected code in Column 1; proceed with adoption process.

14.0800 SUPERVISORY AND ADMINISTRATION
No performance objectives; no such program; verify program code and descriptor; enter corrected code in Column 1; proceed with adoption process.

14.0801 ADMINISTRATIVE ASSISTANTS
** Performance Objectives NOT AVAILABLE (NA)
Change to 14.0898 if Para-legal

14.0803 CLERICAL AND OFFICE SUPERVISORS
** Performance Objectives NOT AVAILABLE (NA)

14.0805 OFFICE MANAGERS AND CHIEF CLERKS
** Performance Objectives NOT AVAILABLE (NA)

14.0899 SUPERVISORY AND ADMINISTRATIVE MANAGEMENT OCCUPATIONS, OTHER
** Performance Objectives NOT AVAILABLE (NA)

14.0900 TYPING AND RELATED OCCUPATIONS
No performance objectives; no such program; review objectives and code descriptors for 14.0303 and 14.0901; enter corrected code in Column 1; proceed with adoption process.

14.0901 CLERK-TYPIST
* Performance Objectives AVAILABLE

14.0902 TYPISTS
No performance objectives; no such program; consider performance objectives and code descriptor for 14.0901; enter corrected code in Column 1; proceed with adoption process.

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

14.1400 NO SUCH PROGRAM
No performance objectives; verify program code and descriptor; enter corrected code in Column 1; proceed with adoption process.

14.9700 CLERICAL LABORATORY
Indicates block program for the preparation of both 14.0303 and 14.0901; review and adopt or write objectives for both codes; proceed with adoption process.

14.9800 STENO/CLERICAL LABORATORY
Indicates block program for the preparation of both 14.0901 and 14.0703; review and adopt or write objectives for both codes; proceed with adoption process.

14.9900 OFFICE OCCUPATIONS, OTHER
No performance objectives; no such program; verify program code and descriptor; enter corrected code in Column 1; proceed with adoption process.

14.9900 INTEGRATED OFFICE LABORATORY
Change program code to either 14.9700 or 14.9800; see Action Index above for explanation of these code numbers; review code descriptors and performance objectives; proceed with adoption process.

16.0102 AGRICULTURAL TECHNOLOGY
Refer to agricultural codes; verify program code number and descriptor; write and submit own objectives; review and consider performance objectives written under 01. Agricultural; proceed with adoption process.

16.0102020 AGRICULTURAL MACHINERY AND EQUIPMENT TECHNOLOGY
Refer to agricultural codes; verify program code number and descriptor; write and submit own objectives; review and consider performance objectives written under 01. Agricultural; proceed with adoption process.

16.0103 ARCHITECTURAL TECHNOLOGY - BUILDING CONSTRUCTION
* Performance Objectives AVAILABLE

16.0104 AUTOMOTIVE TECHNOLOGY
* Performance Objectives AVAILABLE

16.0105 CHEMICAL TECHNOLOGY
** Performance Objectives NOT AVAILABLE (NA)

16.0106 CIVIL TECHNOLOGY
** Performance Objectives NOT AVAILABLE (NA)

* [illegible] minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and [illegible] recommended code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

** [illegible] minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are [illegible] review; write and submit own; verify U.S.O.E. program code number, descriptor, and descriptor, register corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

16.0106990 CIVIL TECHNOLOGY, OTHER
** Performance Objectives NOT AVAILABLE (NA)

16.0107 ELECTRICAL TECHNOLOGY
** Performance Objectives NOT AVAILABLE (NA)
(See also all 17. Electrical performance objectives.)

16.0107080 NO PROGRAM TITLE
** Performance Objectives NOT AVAILABLE (NA)
(See also all 17. Electrical performance objectives.)

16.0108 ELECTRONIC TECHNOLOGY
** Performance Objectives NOT AVAILABLE (NA)
(See also all 17. Electrical performance objectives.)

16.0109 ELECTRO-MECHANICAL TECHNOLOGY
** Performance Objectives NOT AVAILABLE (NA)

16.0110 ENVIRONMENTAL CONTROL TECHNOLOGY
* Performance Objectives AVAILABLE

16.0110990 ENVIRONMENTAL CONTROL TECHNOLOGY, OTHER
Write and submit own objectives; review and consider 16.0110 performance objectives; proceed with adoption process.

16.0111 INDUSTRIAL TECHNOLOGY
** Performance Objectives NOT AVAILABLE (NA)

16.0112 INSTRUMENTATION TECHNOLOGY
** Performance Objectives NOT AVAILABLE (NA)

16.0113 MECHANICAL TECHNOLOGY
** Performance Objectives NOT AVAILABLE (NA)

16.011302 MACHINE AND TOOL DESIGN
* Performance Objectives AVAILABLE

16.0113030 PRODUCTION
** Performance Objectives NOT AVAILABLE (NA)

16.0113990 MECHANICAL TECHNOLOGY, OTHER
** Performance Objectives NOT AVAILABLE (NA)

16.0114 METALLURGICAL TECHNOLOGY
** Performance Objectives NOT AVAILABLE (NA)

16.0199 OTHER ENGINEERING AND RELATED TECHNOLOGY
** Performance Objectives NOT AVAILABLE (NA)

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

16.0200 AGRICULTURAL RELATED TECHNOLOGY
Verify program code number and descriptor; write and submit own objectives; review and consider performance objectives written under 01. Agricultural; proceed with adoption process.

16.0203 FOOD PROCESSING TECHNOLOGY
** Performance Objectives NOT AVAILABLE (NA)

16.0397 MEDICAL ASSISTANT (OFFICE)
** Performance Objectives NOT AVAILABLE (NA)

16.0398 DENTAL ASSISTANT
* Performance Objectives AVAILABLE

16.0399 HEALTH RELATED TECHNOLOGY, OTHER
** Performance Objectives NOT AVAILABLE (NA)

16.0400 OFFICE RELATED TECHNOLOGY
Write and submit own performance objectives; review and consider performance objectives for all 14. Office Occupations codes; proceed with adoption process.

16.0401 COMPUTER PROGRAMMER
* Performance Objectives AVAILABLE

16.0499 OFFICE RELATED TECHNOLOGY, OTHER
Write and submit own performance objectives; review and consider performance objectives for all 14. Office Occupations codes; proceed with adoption process.

16.0500 HOME ECONOMICS RELATED TECHNOLOGY
Write and submit own performance objectives; review program code number and descriptor; proceed with adoption process.

16.0501 CHILD CARE CENTER ASSISTANT
Write and submit own performance objectives; review and consider objectives for 09.0201; proceed with adoption process.

16.0503 TEACHER'S ASSISTANT AT THE PREPRIMARY LEVEL
** Performance Objectives NOT AVAILABLE (NA)

16.0504 FOOD SERVICE SUPERVISOR
* Performance Objectives AVAILABLE

16.0505 INTERIOR DECORATOR ASSISTANT
** Performance Objectives NOT AVAILABLE (NA)

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

16.0601 COMMERCIAL PILOT
** Performance Objectives NOT AVAILABLE (NA)

16.0602 FIRE AND SAFETY TECHNOLOGY
** Performance Objectives NOT AVAILABLE (NA)

16.0603 FORESTRY TECHNOLOGY
Write and submit own performance objectives; review and consider performance objectives for 01.0700; proceed with adoption process.

16.0604 OCEANOGRAPHIC TECHNOLOGY (PHYSICAL, BIOLOGICAL, AND FISHERIES)
** Performance Objectives NOT AVAILABLE (NA)

16.0605 POLICE SCIENCE TECHNOLOGY
** Performance Objectives NOT AVAILABLE (NA)

16.0699 OTHER MISCELLANEOUS TECHNOLOGY EDUCATION
Write and submit own performance objectives; review program code number and descriptor; proceed with adoption process.

17.0000 TRADE AND INDUSTRIAL OCCUPATIONS
No performance objectives; no such program; verify program code and descriptor; enter corrected code in Column 1; proceed with adoption process.

17.0100 AIR CONDITIONING
Secondary: * Performance Objectives AVAILABLE
Post-Secondary: Consider performance objectives for 17.0100 and 16.0110; change code if appropriate in Column 1; proceed with adoption process.

17.0101 COOLING
No performance objectives available; consider performance objectives for 16.0110, 17.0100, and 17.0102; change code if appropriate in Column 1; proceed with adoption process.

17.0102 HEATING
* Performance Objectives AVAILABLE

17.0199 AIR CONDITIONING, OTHER
No performance objectives available; consider performance objectives for 16.0110, 17.0100, and 17.0102; change code if appropriate in Column 1; proceed with adoption process.

17.0200 APPLIANCE REPAIR
* Performance Objectives AVAILABLE

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

17.0300 AUTOMOTIVE SERVICES
Secondary: Change code to 17.0302; enter corrected code in Column 1; review performance objectives for 17.0302; proceed with adoption process.
Post-Secondary: No performance objectives available; consider performance objectives for 17.0302; change code number and descriptor, if appropriate, in Column 1 or write and submit own performance objectives; proceed with adoption process.

17.0301 BODY AND FENDER
* Performance Objectives AVAILABLE

17.0301990 NO PROGRAM TITLE
No performance objectives available; consider performance objectives for 17.0301; change code number and descriptor, if appropriate, in Column 1 or write and submit own performance objectives; proceed with adoption process.

17.0302 MECHANICS, AUTO
* Performance Objectives AVAILABLE

17.0301990 NO PROGRAM TITLE
No performance objectives available; consider performance objectives for 17.0302; change code number and descriptor, if appropriate, in Column 1 or write and submit own performance objectives; proceed with adoption process.

17.0303 SPECIALIZATION, AUTO
Secondary: ** Performance Objectives NOT AVAILABLE (NA)
Post-Secondary: No performance objectives available; consider performance objectives for 17.0302; change code number and descriptor, if appropriate, in Column 1 or write and submit own performance objectives; proceed with adoption process.

17.0303010 NO PROGRAM TITLE
No performance objectives available; consider performance objectives for 17.0302; change code number and descriptor, if appropriate, in Column 1 or write and submit own performance objectives; proceed with adoption process.

17.0303020 NO PROGRAM TITLE
No performance objectives available; consider performance objectives for 17.0302; change code number and descriptor, if appropriate in Column 1 or write and submit own performance objectives; proceed with adoption process.

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

17.0399 AUTOMOTIVE, OTHER
Secondary: No performance objectives; no such program; verify program code and descriptor; enter corrected code in Column 1; proceed with adoption process.
Post-Secondary: No performance objectives available; consider performance objectives for 17.0302; change code number and descriptor, if appropriate, in Column 1 or write and submit own performance objectives; proceed with adoption process.

17.0400 AVIATION OCCUPATIONS
** Performance Objectives NOT AVAILABLE (NA)

17.0401 AIRCRAFT MAINTENANCE
** Performance Objectives NOT AVAILABLE (NA)

17.0401010 AIRFRAME
** Performance Objectives NOT AVAILABLE (NA)

17.0401020 POWER PLANT
** Performance Objectives NOT AVAILABLE (NA)

17.0402 AIRCRAFT OPERATIONS
** Performance Objectives NOT AVAILABLE (NA)

17.0500 BLUEPRINT READING
No performance objectives; no such program; verify program code and descriptor; enter corrected code in Column 1; proceed with adoption process.

17.0600 BUSINESS MACHINE MAINTENANCE
** Performance Objectives AVAILABLE

17.0602 VENDING MACHINE REPAIR
Change code to 17.0698; enter corrected code in Column 1; proceed with adoption process.

17.0698 VENDING MACHINE REPAIR
** Performance Objectives AVAILABLE

17.0700 COMMERCIAL ART OCCUPATIONS
Secondary: * Performance Objectives AVAILABLE
Post-Secondary: ** Performance Objectives NOT AVAILABLE (NA)

17.0701 INTERIOR DECORATING
** Performance Objectives NOT AVAILABLE (NA)

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

17.0703 PRODUCT DESIGN
** Performance Objectives NOT AVAILABLE (NA)

17.0799 COMMERCIAL ART OCCUPATIONS, OTHER
** Performance Objectives NOT AVAILABLE (NA)

17.0900 COMMERCIAL PHOTOGRAPHY
* Performance Objectives AVAILABLE

17.1000 CONSTRUCTION AND MAINTENANCE
Secondary: A. If In-School; Code number remains the same; performance objectives AVAILABLE
B. If On-Site: Change code number to 17.1098; enter corrected code in Column 1; consider same performance objectives as 17.1000; proceed with adoption process.
Post-Secondary: * Performance Objectives AVAILABLE

17.1001 CARPENTRY
* Performance Objectives AVAILABLE

17.1002 ELECTRICITY
** Performance Objectives NOT AVAILABLE (NA)

17.1003010 MAINTENANCE, HEAVY EQUIPMENT
No performance objectives available; consider performance objectives for 17.1200; correct code, if appropriate, and/or write and submit own; proceed with adoption process.

17.1004 MASONRY
* Performance Objectives AVAILABLE

17.1005 PAINTING AND DECORATING
* Performance Objectives AVAILABLE

17.1007 PLUMBING AND PIPEFITTING
Secondary: ** Performance Objectives NOT AVAILABLE (NA)
Post-Secondary: No performance objectives available; if hydraulic and pneumatic, change code to 17.9800 in Column 1; write and submit own objectives; proceed with adoption process.

17.1009 GLAZING
** Performance Objectives NOT AVAILABLE (NA)

17.1098 CONSTRUCTION AND MAINTENANCE, ON-SITE
* Performance Objectives AVAILABLE (See 17.1000)

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

commended minimum program performance objectives NOT available (NA); no recommended minimum program performance jectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and scription; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

17.1099 CONSTRUCTION AND MAINTENANCE, OTHER
Secondary: No performance objectives; no such program; verify program code and descriptor; enter corrected code in Column 1; proceed with adoption process.
Post-Secondary: ** Performance Objectives NOT AVAILABLE (NA)

17.1100 CUSTODIAL SERVICES
* Performance Objectives AVAILABLE

17.1200 DIESEL MECHANIC
* Performance Objectives AVAILABLE

17.1300 DRAFTING OCCUPATIONS
Secondary: * Performance Objectives AVAILABLE
Post-Secondary: Recommended minimum program performance objectives are available for review; verify program code number and descriptor; consider also performance objectives for 16.011302; request corrected code, if necessary (Column 1); proceed with adoption process.

17.1301 ARCHITECTURAL DRAFTING
Change code to 17.1398; enter corrected code in Column 1; consider performance objectives for 17.1398; proceed with adoption process.

17.1398 ARCHITECTURAL DRAFTING
* Performance Objectives AVAILABLE

17.1399 NO PROGRAM TITLE
No performance objectives available; write and submit own; consider performance objectives for 17.1300, 17.1398, and 16.011302; change code, if appropriate; enter corrected code in Column 1; proceed with adoption process.

17.1400 ELECTRICAL OCCUPATIONS
* Performance Objectives AVAILABLE

17.1401 INDUSTRIAL ELECTRICIAN
* Performance Objectives AVAILABLE

17.1499 ELECTRICAL OCCUPATIONS
No performance objectives available; change code to 17.9800 if hydraulic and pneumatic; enter corrected code in Column 1; write and submit own; proceed with adoption process.

17.1500 ELECTRONICS OCCUPATIONS
* Performance Objectives AVAILABLE

17.1501 COMMUNICATIONS
** Performance Objectives NOT AVAILABLE (NA)

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

17.1502 INDUSTRIAL ELECTRONICS
* Performance Objectives AVAILABLE

17.1503 RADIO AND TELEVISION
* Performance Objectives AVAILABLE

17.1598 RADIO AND TELEVISION BROADCASTING
* Performance Objectives AVAILABLE

17.1599 ELECTRONIC OCCUPATIONS, OTHER
Secondary: If radio and television broadcasting, change code to 17.1598; enter corrected code in Column 1; consider performance objectives for 17.1598; proceed with adoption. If not 17.1598, no such program.
Post-Secondary: ** Performance Objectives NOT AVAILABLE (NA)

17.1700 FOREMANSHIP-SUPERVISION
** Performance Objectives NOT AVAILABLE (NA)

17.1900 GRAPHIC ARTS OCCUPATIONS
* Performance Objectives AVAILABLE

17.1902 PRINTING PRESS OCCUPATIONS
Change to 17.1900, if appropriate; enter corrected code in Column 1; consider performance objectives for 17.1900; proceed with adoption process.

17.1903 LITHOGRAPHY, PHOTOGRAPHY, AND PLATEMAKING
* Performance Objectives AVAILABLE

17.1917 NO PROGRAM TITLE
** Performance Objectives NOT AVAILABLE

17.2200 MARITIME OCCUPATIONS
** Performance Objectives NOT AVAILABLE

17.2300 METALWORKING OCCUPATIONS
Secondary: Change code to 17.2302, enter correct code in Column 1; consider performance objectives for 17.2302; proceed with adoption process.
Post-Secondary: Recommended minimum program performance objectives NOT available (NA): no recommended minimum program performance objectives are available for review; consider performance objectives for 17.2302; verify program code number and descriptor; request corrected code, if necessary (Column 1); proceed with adoption process.

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** Recommended minimum program performance objectives NOT available (NA); no recommended minimum program performance objectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

17.2301 FOUNDRY
** Performance Objectives NOT AVAILABLE (NA)

17.2302 MACHINE SHOP
* Performance Objectives AVAILABLE

17.2303 MACHINE TOOL OPERATIONS
Secondary: Change code to 17.2302; enter corrected code in Column 1; consider performance objectives for 17.2302; proceed with adoption process.
Post-Secondary: No performance objectives available; consider performance objectives for 17.2302; change code, as appropriate, in Column 1, or write and submit own; proceed with adoption process.

17.2304 METAL TRADES
Change code to 17.2302; enter corrected code in Column 1; consider performance objectives for 17.2302; proceed with adoption process.

17.2305 SHEET METAL
* Performance Objectives AVAILABLE

17.2306 WELDING AND CUTTING
* Performance Objectives AVAILABLE

17.2306030 COMBINATION WELDING
No performance objectives available; consider performance objectives for 17.2306; proceed with adoption process.

17.2307 TOOL AND DIE MAKING
** Performance Objectives NOT AVAILABLE (NA)

17.2400 METALLURGY OCCUPATIONS
** Performance Objectives NOT AVAILABLE (NA)

17.2499 NO PROGRAM TITLE
** Performance Objectives NOT AVAILABLE (NA)

17.2600 PERSONAL SERVICES
** Performance Objectives NOT AVAILABLE (NA)

17.2602 C[illegible]TOLOGY
* Performance Objectives AVAILABLE

17.2700 PLASTICS OCCUPATIONS
** Performance Objectives NOT AVAILABLE (NA)

17.2800 PUBLIC SERVICE OCCUPATIONS
** Performance Objectives NOT AVAILABLE (NA)

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

[illegible]ommended minimum program performance objectives NOT available (NA); no recommended minimum program performance [illegible]ectives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and [illegible]cription; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

17.2801 FIREMAN TRAINING
** Performance Objectives NOT AVAILABLE (NA)

17.2802 LAW ENFORCEMENT
** Performance Objectives NOT AVAILABLE (NA)

17.2802990 NO PROGRAM TITLE
** Performance Objectives NOT AVAILABLE (NA)

17.2899 PUBLIC SERVICE, OTHER
** Performance Objectives NOT AVAILABLE (NA)

17.2900 QUANTITY FOOD OCCUPATIONS
Secondary: Change code to 09.0203; enter corrected code in Column 1; consider performance objectives for 09.0203; proceed with adoption process.
Post-Secondary: ** Performance Objectives NOT AVAILABLE (NA)

17.2902 COOK/CHEF
** Performance Objectives NOT AVAILABLE (NA)

17.2904 WAITER/WAITRESS
* Performance Objectives AVAILABLE

17.3000 REFRIGERATION
* Performance Objectives AVAILABLE

17.3010 NO SUCH PROGRAM
No performance objectives; verify program code and descriptor; enter corrected code in Column 1; proceed with adoption process.

17.3100 SMALL ENGINE REPAIR
* Performance Objectives AVAILABLE

17.3300 TEXTILE PRODUCTION
Change code to 09.0202; enter corrected code in Column 1; consider performance objectives for 09.0202; proceed with adoption process.

17.3402 SHOE REPAIR
* Performance Objectives AVAILABLE

17.3500 UPHOLSTERING
* Performance Objectives AVAILABLE

17.3600 WOODWORKING
* Performance Objectives AVAILABLE

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

mmended minimum program performance objectives NOT available (NA); no recommended minimum program performance ctives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and ription; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 3 - 5).

17.3601 MILLWORK-CABINET MAKING
** Performance Objectives NOT AVAILABLE (NA)

17.3699 WOODWORKING, OTHER
No performance objectives; no such program; verify program code and descriptor; enter corrected code in Column 1, proceed with adoption process.

17.9800 HYDRAULIC AND PNEUMATIC
** Performance Objectives NOT AVAILABLE (NA)

17.9900 TRADE AND INDUSTRIAL OCCUPATIONS, OTHER
No performance objectives; no such program; verify program code and descriptor; enter corrected code in Column 1; proceed with adoption process.

17.9999 NO SUCH PROGRAM
No performance objectives; verify program code and descriptor; enter corrected code in Column 1; proceed with adoption process.

* Recommended minimum program performance objectives are available for review; verify U.S.O.E. program code number, descriptor, and description; request corrected code, if necessary (Column 1); proceed with adoption process (Columns 2 - 5).

** mended minimum program performance objectives NOT available (NA); no recommended minimum program performance tives are available for review; write and submit own; verify U.S.O.E. program code number, descriptor, and iption; request corrected code, if necessary (Colum 1); proceed with adoption process (Columns 3 - 5).

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation:

U.S.O.E. Code Number:

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation:

U.S.O.E. Code Number:

Remarks:

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria

J.S.O.E. Code Number:

Page of

Topic	Conditions	Performance	Criteria

Attachment C3

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U.S.O.E. CODE EXTRACTS

These extracts from VOCATIONAL EDUCATION AND OCCUPATIONS are presented for your convenience. If you require a code number, descriptor, and/or description other than those provided, you will need to acquire a copy of the total document.

01.0100 AGRICULTURAL PRODUCTION
Subject matter and learning activities which are concerned with the principles and processes involved in the planning related to and the economic use of facilities, land, water, machinery, chemicals, finance, and labor in the production of plant and animal products. Activities include classroom instruction and laboratory experiences in and out of school, including farms, ranches, and other agriculturally related establishments.

01.0101 ANIMAL SCIENCE
Planned learning experiences which are concerned with the study and operations dealing with theories, principles, and practices involved in producing (breeding, feeding, care, and housing) animals and animal products for economic and other uses. (Included as 16.0201 ANIMAL SCIENCE and as 16.0202 DAIRY TECHNOLOGY under TECHNICAL EDUCATION.)

01.0102 PLANT SCIENCE
Planned learning experiences which are concerned with the study and operations dealing with principles and practices involved in the culture and production of agricultural plants. (Included as 16.0204 PLANT SCIENCE under TECHNICAL EDUCATION)

01.0104 FARM BUSINESS MANAGEMENT
Planned learning activities which are concerned with farm resource analysis, accounting, production, financing, resource acquisition purchasing, farm inputs, performance records, contracts, farm marketing and maintenance. The results of these learning activities are applied to formulating decisions involved in managing a farm or ranch operation

01.0200 AGRICULTURAL SUPPLIES/SERVICES
Subject matter and learning experiences concerned with preparing students for occupations involved in providing consumable supplies used in the production phase of agriculture, including processing, marketing, consulting and other services.

01.0300 AGRICULTURAL MECHANICS
A combination of subject matter and activities designed to develop abilities necessary for assisting with and/or performing the common and important operations or processes concerned with

the selection, operation, maintenance, and use of agricultural power, agricultural machinery and equipment, structures and utilities, soil and water management, and agricultural mechanics shop, including kindred sales and services.

01.0301 AGRICULTURAL POWER AND MACHINERY
A combination of subject matter and experiences designed to develop in pupils the abilities to (1) recognize and identify the fundamental principles of selection, operation, service maintenance, repair, and safety in agricultural power--engines, electricity, and hydraulics and (2) plan, install, service, assemble, adjust, operate, and repair farm machinery. (See also 16.010202 AGRICULTURAL MACHINERY AND EQUIPMENT under TECHNICAL EDUCATION.)

01.0302 AGRICULTURAL STRUCTURES AND CONVENIENCES
Learning activities designed to assist pupils in developing the ability to plan, select materials for, and construct and maintain agricultural structures and conveniences. (See also 16.010203 AGRICULTURAL STRUCTURES AND CONVENIENCES under TECHNICAL EDUCATION.)

01.0303 SOIL MANAGEMENT
A combination of subject matter and practical experiences designed to develop knowledge and skills concerned with surveying and classifying soils; determing cropping systems and fertilizer; conditioning; and cultural practices that will result in efficient agricultural production.

01.0306 AGRICULTURAL CONSTRUCTION AND MAINTENANCE
A combination of subject matter and experiences designed to develop skills and abilities necessary in the planning, layout, fabrication, and maintenance of farm and other agricultural equipment, especially small, custom-built devices.

01.0400 AGRICULTURAL PRODUCTS (PROCESSING, INSPECTION AND MARKETING)
A combination of subject matter and learning experiences designed to teach information, processes, scientific principles, and management decisions concerned with agricultural competencies in the food and non-food technology occupations. The groups of food products include (1) meat, fish, poultry, and eggs; (2) dairy products; (3) fruits and vegetables; (4) cereal grains; and (5) other foods and beverages. The non-food products include cotton, tobacco, and wool. Instruction may be provided in any or all groups of these products.

01.0500 ORNAMENTAL HORTICULTURE (PRODUCTION, PROCESSING, MARKETING, AND SERVICES)
Organized subject matter and practical experiences concerned with the culture of plants used principally for ornamental or esthetic purposes. Instruction emphasized knowledge and understanding important to establishing, maintaining, and managing ornamental horticulture enterprises.

01.0502 FLORICULTURE
Organized subject matter and practical experiences which are

concerned with principles and practices involved in field or greenhouse production of flowers and the arrangement of such flowers for ornamental purposes.

01.0503 GREENHOUSE OPERATION AND MANAGEMENT
Organized subject matter and practical experiences which are concerned with the principles and practices involved in producing plants under glass and in other artificial environments.

01.0504 LANDSCAPING
Organized subject matter and practical experiences which are concerned with the principles and practices involved in locating, planting, and maintaining turf, plants, shrubs, or devices for the beautification of home grounds and other areas of human habitation and recreation.

01.0600 AGRICULTURAL RESOURCES (CONSERVATION, UTILIZATION, AND SERVICES)
A combination of subject matter and planned learning experiences concerned with the principles and processes involved in the conservation and/or improvement of natural resources such as air, forests, soil, water, fish, plants, and wildlife for economic and recreational purposes. Instruction also emphasizes such factors as the establishment, management, and operation of forest lands for recreational purposes.

01.0602 RECREATION
The study of recreation as one of the multiple uses of land, including emphasis of the principles of conservation. Included in instruction are examples of recreation activities which can be established, maintained and managed, such as fishing, picnicking, hunting, camping, and native study.

01.0700 FORESTRY (PRODUCTION, PROCESSING, MANAGEMENT, MARKETING, AND SERVICES)
A combination of subject matter and experiences concerned with the multiple use of forest lands and resources, including their management and protection.

04.0100 ADVERTISING SERVICES
Organized subject matter and learning experiences related to planning, development, placement, and evaluation tasks performed by distributive employees and management personnel in demand creation and sales promotion activities utilizing displays, merchandising aids, and mass media in such enterprises as advertising agencies, display houses, retail and wholesale establishments, and production industries.

04.0200 APPAREL AND ACCESSORIES
Organized subject matter and learning experiences related to the variety of sales, fashion coordination, and sales-supporting tasks performed by distributive employees and management personnel in retail and wholesale establishments primarily

engaged in selling clothing of all kinds, including related articles for personal wear and adornment.

04.0300 AUTOMOTIVE
Organized subject matter and learning experiences related to the variety of sales and sales-supporting tasks performed by distributive employees and management personnel in retail, wholesale, and service establishments engaged in selling, renting, storing or caring of cars and trucks, and in selling automotive parts, accessories and equipment.

04.0400 FINANCE AND CREDIT
Organized subject matter and learning experiences related to the tasks performed by distributive employees and management personnel in institutions engaged in deposit banking and related services, extending credit in the form of loans, services allied with the exchange of securities and commodities, or consumer credit and collections.

04.0600 FOOD DISTRIBUTION
Organized subject matter and learning experiences related to a variety of sales and sales-supporting tasks performed by distributive employees and management personnel in establishments primarily engaged in selling food for home preparation and consumption, or selling a general or commodity line of food products at wholesale.

04.0700 FOOD SERVICES
Organized subject matter and learning experiences related to the sales and sales-supporting tasks performed by distributive employees and management personnel in establishments serving prepared foods and drinks for consumption on their own premises or at a place designated by the customer.

04.0800 GENERAL MERCHANDISE
Organized subject matter and learning experiences related to a variety of sales and sales-supporting tasks performed by distributive employees and management personnel engaged primarily in selling various types of merchandise at retail in department stores, junior department stores, variety stores, general merchandise stores, discount stores, and catalog houses.

04.1100 HOTEL AND LODGING
Organized subject matter and learning experiences related to the tasks performed by distributive employees and management personnel in establishments which provide lodging, lodging and meals, convention facilities, and other services on a year-round or seasonal basis to the general public or to an organization's membership.

04.1300 INSURANCE
Organized subject matter and learning experiences related to the tasks performed by sales and management personnel for insurance carriers of all types, or by agents representing carriers and brokers dealing in the sale or placement of insurance contracts with carriers.

04.1500 PERSONAL SERVICES
Organized subject matter and learning experiences related to the tasks performed by sales and management personnel in establishments primarily engaged in providing services. Generally, these services are concerned with personal improvement and the care of a person or his apparel. Included in this category are laundries and dry cleaning establishments, shoe repair shops, funeral homes, photographic studios, and dance or art studios.

04.1700 REAL ESTATE
Organized subject matter and learning experiences related to tasks performed by persons who act for themselves or as agents for others in real estate brokerages or other firms engaged in buying, selling, appraising, renting, managing, and leasing of real property.

04.1800 RECREATION AND TOURISM
Organized subject matter and learning experiences related to the variety of sales, counseling, and sales-supporting tasks performed by distributive employees and management personnel in establishments primarily engaged in providing amusement, recreation, entertainment, recreational supplies and equipment, or travel services. This instructional program is also designed for employees and management personnel engaged in other travel serving businesses who assume responsibilities for stimulating the local economy through tourism.

04.1900 TRANSPORTATION
Organized subject matter and learning experiences related to the physical movement of people, personal effects and products, and the sales, storing, and sales-supporting tasks performed by distributive employees and managment personnel in enterprises engaged in passenger and freight transportation, public warehousing, and services incidental to transportation.

07.0101 DENTAL ASSISTANT
A combination of subject matter and experiences designed to prepare a person to assist the dentist at the chairside in the dental operatory, to perform reception and clerical functions, and to carry out selected dental laboratory work.

07.0102 DENTAL HYGIENIST (ASSOCIATE DEGREE)
A combination of subject matter and experiences designed to

prepare a person to provide services to patients, such as performing complete oral prophylaxis, applying medication, and providing dental health education services, both for chairside patients and in community health programs, under the supervision of the dentist. (Included, as 16.0301 DENTAL HYGIENE, ASSOCIATE DEGREE, under TECHNICAL EDUCATION.)

07.0103 DENTAL LAB TECHNICIAN
A combination of subject matter and experiences designed to prepare a person to execute the work in producting restorative appliances required for the oral health of the patient as authorized by the dentist.

07.0200 MEDICAL LAB TECHNICIAN
Planned subject matter and laboratory experiences concerned with bacteriological, biological, and chemical tests to provide data for use in diagnosis and treatment of diseases--using microscopes, micrometers, and other instruments. Persons prepared in this area usually work under the supervision of medical technologists, clinical pathologists, or physicians.

07.0201 CYTOLOGY TECHNICIAN
A combination of subject matter and experiences designed to prepare a person to strain and screen smeared slides for determination of abnormlities of exfoliated cells that may assist is the diagnosis of cancer. This work is performed under the supervision of a physician.

07.0202 HISTOLOGY
A combination of subject matter and experiences designed to enable a person to prepare, section, and stain tissues for microscopic study, usually by a pathologist or other clinical scientist.

07.0203 MEDICAL LABORATORY ASSISTANT
A combination of subject matter and experience designed to prepare a person to work under the supervision of medical technologists, clinical pathologists, or physicians to perform routine clinical laboratory procedures.

07.0300 NURSING
A combination of subject matter and clinical experiences designed to prepare a person to provide nursing care to patients in hospitals, sanitariums, clinics, or other institutions by administering medications and treatments, assisting the physician during treatment and examination of patients, or performing related auxiliary services.

07.0301 NURSING, ASSOCIATE DEGREE
A combination of general and nursing education and clinical experiences designed to prepare a person for general-duty

nursing under the nurse supervisor or physician, or with other members of the health team. (Included as 16.0305 NURSING (ASSOCIATE DEGREE) under TECHNICAL EDUCATION)

07.0302 PRACTICAL NURSING
A combination of subject matter and supervised clinical experiences designed to prepare a person to give direct nursing care under the supervision of a nurse or physician.

07.0303 NURSING AIDE
A combination of subject matter and experiences designed to prepare a person to perform simple tasks involved in the personal care of individuals receiving nursing services. These tasks are performed under the supervision of a nurse.

07.0305 SURGICAL TECHNICIAN (OPERATING ROOM TECHNICIAN)
A combination of subject matter and experiences designed to prepare a person to serve as a general technical assistant on the surgical team in the operating suite.

07.0401 OCCUPATIONAL THERAPY
A combination of subject matter and experiences designed to prepare a person to assist the occupational therapist in implementing the plan of therapy for a patient as prescribed by a physician.

07.0402 PHYSICAL THERAPY
A combination of subject matter and experiences designed to prepare a person to assist the physical therapist in implementing the plan of therapy for a patient as prescribed by a physician.

07.0500 RADIOLOGIC
A combination of subject matter and experiences designed to prepare a person to apply roetgen rays and radioactive substances to patients for diagnostic and therapeutic purposes. Instruction may include the study of anatomy, physiology, radiation physics, radiographic techniques, chemistry of processing and darkroom technique, radiation protection, and equipment maintenance.

07.0501 X-RAY TECHNICIAN
A combination of subject matter and experiences designed to prepare a person for the safe use of X-ray equipment in clinical settings under the supervision of a radiologist or other physician. (Included as 16.0304 RADIOLOGIC TECHNOLOGY, X-RAY, under TECHNICAL EDUCATION).

07.0700 ENVIRONMENTAL HEALTH
A combination of subject matter and experiences designed to prepare a person, working under the supervision of a specialist, to recognize and evaluate environmental hazards such as radiation, fungi, air pollution, waste and sewage, noise, vibration, and

poor lighting, and to prescribe methods of eliminating or controlling them.

07.0701 ENVIRONMENTAL HEALTH ASSISTANT
A combination of subject matter and experiences designed to prepare a person to assist sanitary engineers, scientists, physicians, and veterinarians to gather data on, inspect, and evaluate facilities and industries concerned by the public, such as water supply, the food industry (processing, distribution, and service), and sewage disposal facilities and plants.

07.0801 MENTAL HEALTH TECHNICIAN
A combination of subject matter and experiences designed to prepare a person to assist nursing and medical personnel in rehabilitating mentally ill patients through recreational and occupational activities, training in new patterns of living, physical care of patients, and giving prescribed medication.

07.0903 INHALATION THERAPY
Preparation includes a combination of subject matter and experiences designed to prepare a person to perform procedures and operation and maintain equipment used in supporting respiratory functions, including the administration of oxygen and other sustaining gases, as directed by a physician.

07.0904 MEDICAL ASSISTANT (OFFICE)
A combination of subject matter and experiences designed to prepare a person to perform functions and follow procedures concerned with diagnosis and treatment of patients in a physician's office. Instruction includes physical examinations, laboratory tests, x-rays, measurements, and medications.

07.0907 MEDICAL EMERGENCY TECHNICIAN
A combination of subject matter and experiences designed to prepare technicians to become members of the health team responsible to professional members qualified to: a) respond to medical emergency calls; b) evaluate the nature of the emergency; c) take appropriate prompt action to reduce the medical hazards to the receiving station; e) serve as technical assistant to the emergency room staff of general hospitals.

07.0908 FOOD SERVICE SUPERVISOR
A combination of subject matter and experiences designed to prepare a person to understand the nature of nutritional diseases and importance of controlled diets in the treatment of patients with such diseases in a hospital or other health institutions under the supervision of the dietitian. Instruction includes inspection of special diet trays and evaluation of patient's response to diets.

07.9801 WARD CLERK/WARD SECRETARY
Performs general clerical duties by preparing and maintaining hospital records. Records and copies patient information. Plots temperature, pulse rate, and other data. Routes charts. Keeps records of absences and hours worked by unit personnel.

09.0101 COMPREHENSIVE HOMEMAKING
Instruction which derives content from a combination of the various areas of homemaking (as described by the items listed below) and emphasizes basic principles and interrelationships among these areas.

09.0102 CHILD DEVELOPMENT
The study of children--their physical, mental, emotional, and social growth and development--and their care and guidance. In practice, content draws on aspects of the social and biological sciences.

09.0103 CLOTHING AND TEXTILES
The study of clothing and textiles, including the significance of these to the individual and family, and the nature, acquisition, and uses of textiles and clothing products. Planned experiences in the selection construction, maintenance, and alteration of clothing and other textile products are usually provided.

09.0104 CONSUMER EDUCATION
Emphasis in home economics is on consumer education as it relates to management of a home and to the welfare of family members.

09.0105 FAMILY HEALTH
The study of related aspects of health in family living with special emphasis on nutrition, emotional health, the relationship of the health of individual to the well-being of the family, and prevention of illness, and the management and elementary skills in caring for the ill and convalescent in the home.

09.0106 FAMILY RELATIONS
The study of the nature, functions, and significance of human relationships in the family. The subject matter includes concepts and principles related to various family living conditions, the establishment and maintenance of relationships, and the preparation for marriage and family life. These designated aspects of family relationships emphasize the universality of families, the uniqueness of individuals and families, the development and socialization of the individual, and meeting the variety of needs and interests of family members.

09.0107 FOODS AND NUTRITION
The study of food and its role in personal and family living, including the basic principles of health, food management, and economics. In practice, emphasis is frequently placed on meal management as a means of understanding the significance and nature of food, its care, and its preparation for individuals and families.

09.0108 HOME MANAGEMENT
The study of the complexities and processes involved in formulating goals, making decisions, and effectively using and controlling human and other resources for establishing and maintaining a home and family. The subject matter provides for a variety of home management considerations, such as the societal and economic influences of individual and family management, values, goals and standards, family economics, and the organization of activities in the home.

09.0109 HOUSING AND HOME FURNISHINGS
The study designed to develop judgment needed for creating a favorable environment for family living. Attention is given to a complex of housing and home furnishing considerations, including the influence of housing on people; types and costs of housing; interior design; the care maintenance, and improvement of homes and furnishings; and the relation of resources to family needs.

09.0198 ADVANCED COMPREHENSIVE
Instruction in this course is designed for the advanced student who needs the accelerated comprehensive course. The scope of the study will include four to five units and serve as a framework of knowledge for identifying problems and developing practices for the in-depth problem solving techniques to accommodate particular student needs.

09.0201 CHILD CARE AND GUIDANCE
Preparation for various kinds of employment related to child care centers and young children, e.g., assisting directors of child day care centers or nursery schools, assisting with activities on playgrounds and in recreation centers, and caring for children in homes and in such public places as stores, playgrounds, recreation centers, and transportation terminals. Included as 16.0501 CHILD CARE CENTER ASSISTANT, 16.0502 HOSPITAL CHILDREN'S DIVISION ASSISTANT and 16.0503 TEACHER'S ASSISTANT AT THE PREPRIMARY LEVEL under TECHNICAL EDUCATION

09.0202 CLOTHING MANAGEMENT
Preparation for employment concerned with clothing and textiles, e.g., fitting and altering readymade garments, custom tailoring and dressmaking, laundry-drycleaning work, demonstration work, and technical work in business and industry.

09.0203 FOOD MANAGEMENT
Preparation for various kinds of employment related to institutional and commercial food services. Employment may include workers and supervisors.

09.0204 HOME FURNISHINGS
Preparation for various kinds of employment related to home furnishings and/or equipment. It includes assisting purchasers in the selection of suitable home furnishings and/or equipment,

assisting interior decorators, and custom-making of curtains, draperies, slip covers, and similar items. (Included as 16.0505 INTERIOR DECORATOR ASSISTANT and 16.0506 HOME EQUIPMENT DEMONSTRATOR under TECHNICAL EDUCATION.)

09.0205 INSTITUTION, HOME MANAGEMENT
Preparation for various kinds of employment related to institutional and home management services. These include institutional housekeeping executive housekeeping, and hotel and motel housekeeping.

14.0101 ACCOUNTANTS
Programs concerned with the paraprofessional duties supporting the accountant in organizing, designing, and controlling numerical and financial data.

14.0102 BOOKKEEPERS
Programs concerned with computing, classifying, and recording numerical data to keep financial records.

14.0105 TELLERS
Programs concerned with disbursing and receiving money in a bank and recording the transactions.

14.0201 COMPUTER AND CONSOLE OPERATORS
Programs concerned with operation of an electronic data processing computer, including reviewing program instructions, determining procedures for a specific run, readying equipment for operation, and manipulating and monitoring controls during operation.

14.0202 PERIPHERAL EQUIPMENT OPERATORS
Programs concerned with operating alphabetic/numerical key punch machines for transcribing data from source materials and machines that print identification codes on wire, tape, plastic tubing, and other materials, including installing specified type, code letters, and symbols in mandrels.

14.0302 FILE CLERKS
Programs concerned with the recording and retrieval of data, including classifying, sorting, and filing correspondence, records, and other data.

14.0303 GENERAL OFFICE CLERKS
Programs concerned with performing a variety of clerical duties utilizing knowledge of systems and reports, including copying data, and compiling records and reports; tabulating and posting data in record books; providing information and conducting interviews; operating office machines; and handling mail and correspondence.

14.0406 RECEPTIONISTS AND INFORMATION CLERKS
Programs concerned with meeting the public through (1) answering

telephone and information requests; (2) locating offices and employees; and (3) keeping records of callers, making appointments, interviewing people to secure required data, e.g., hospital admittance data, insurance data, and similar information.

14.0499 INFORMATION COMMUNICATION OCCUPATIONS, OTHER
Programs concerned with information communication occupations which are emphasized in instruction not classified above, including emerging occupations. (Specify.)

14.0601 EDUCATIONAL ASSISTANTS AND TRAINING SPECIALISTS
Programs concerned with the training of personnel in the facilitating functions of an organization, dealing with personnel such as teacher aides in education, training specialists in industry, and others.

14.0602 INTERVIEWERS AND TEST TECHNICIANS
Programs concerned with interviewing and administering tests to individuals to determine their appropriateness for employment and/or advancement. Also involved are the uses of appropriate measuring devices, and the administration, scoring, and analysis of individual and group progress.

14.0603 PERSONNEL ASSISTANTS
Programs concerned with formulating policies relating to the personnel administration of an organization. Emphasized are the conduct of programs of recruitment, selection, training, promotion, welfare, safety, compensation, separation of employees, and recreation involving personnel. A practical background in psychology, is required for some occupations in personnel research, and in the administration of testing and counseling programs.

14.0699 PERSONNEL, TRAINING, AND RELATED OCCUPATIONS, OTHER
Programs concerned with personnel, training, and related occupations which are emphasized in instruction which are classified above, including emerging occupations. (Specify.)

14.0701 EXECUTIVE SECRETARY
Programs concerned with secretarial coordinating, expediting, and facilitating functions of the office for aiding the executive under his direction and in a confidential relationship. (See also 14.0801 ADMINISTRATIVE ASSISTANTS under SUPERVISORY AND ADMINISTRATIVE MANAGEMENT OCCUPATIONS.)

14.0702 SECRETARIES
Programs related to occupations concerned with carrying out administrative and general office duties, in addition to taking and transcribing dictation.

14.0703 STENOGRAPHERS
Programs concerned with taking shorthand or special writing of notes by hand or machines and transcribing them.

14.0797 MEDICAL SECRETARIES
Programs concerned with preparing medical charts and reports for doctor or hospital personnel, utilizing knowledge of medical terminology. May prepare and send bills to patients and record appointments.

14.0798 LEGAL SECRETARIES
Programs concerned with preparing legal papers and correspondence of legal nature, such as summonses, complaints, motions, and subpoenas.

14.0800 SUPERVISORY AND ADMINISTRATION
Learning activities and experiences concerned with various responsibilities such as (1) studying policies, organizational structures, and administrative practices of organizations such as governmental units, industrial firms, and non-profit groups; (2) reviewing periodic budgets submitted by operations personnel; (3) preparing reports summarizing findings and recommending to line management changes in policy, organization, and administration; (4) consolidating budget estimates and preparing financial reports for comment; and (5) supervising and coordinating activities, determining work procedures, and assigning duties.

14.0801 ADMINISTRATIVE ASSISTANTS
Programs concerned with the coordinating, expediting, and facilitating functions of the office for aiding the executive, under his direction and in a confidential relationship, in the discharge of his duties as related to personnel, the budget, records control, housekeeping, conducting studies and analyses, reviewing reports, and other responsibilities. (See also 14.0701 EXECUTIVE SECRETARY.)

14.0803 CLERICAL AND OFFICE SUPERVISORS
Programs concerned with supervisory occupations involving the facilitating function of an organization, rather than a scientific, technical, or administrative specialty.

14.0805 OFFICE MANAGERS AND CHIEF CLERKS
Programs concerned with the facilitating function of the office involving supervision of the budget and management analysis staff of an office, scheduling and conducting work, and other administrative specializations.

14.0899 SUPERVISORY AND ADMINISTRATIVE MANAGEMENT OCCUPATIONS, OTHER
Programs concerned with supervisory and administrative management occupations emphasized in instruction which are not classified above, including emerging occupations. (Specify.)

14.0901 CLERK-TYPISTS
Programs concerned with the performance of general clerical work requiring the use of a typewriter in a majority of the duties, including compiling and typing reports, application forms, shipping tickets, and other data from clerical records. Activities also

include filing records and reports, posting information to records, sorting and distributing mail, answering telephones, computing with adding machines, and other similar duties.

16.0103 ARCHITECTURAL TECHNOLOGY
A program of instruction designed to provide the pupil with knowledge and understanding of scientific principles, mathematical concepts, and communicative and technical skills combined with laboratory experiences including creative design, testing, and model building which will enable him to be supportive to the architect and the architechtural engineer. The subject matter is concerned with design estimating, inspection, supervision, and contracts and specifications--primarily in the field of building construction--with emphasis on the art of form.

16.0104 AUTOMOTIVE TECHNOLOGY
A sequence of classroom and laboratory experiences including the study of scientific and mathematical principles which lead to understanding of the design, development, and testing of internal combustion engines and related component parts of the motor vehicle, including transmissions, electrical systems, and braking systems. This program is planned to prepare the graduate to perform duties concerned with designing, testing, and development in direct support of the automotive engineer.

16.0105 CHEMICAL TECHNOLOGY
A program of instruction designed to provide the pupil with knowledge of scientific principles, mathematical concepts, and communicative and technical skills combined with appropriate laboratory experiences which will enable him to be supportive to professional personnel in the chemical field. The subject matter emphasizes qualitative, quantitative and analytical analyses in general and organic chemistry. In the unit-operation laboratory he studies material handling, crushing, grinding, and sizing. By pilot-plant operation he studies the machinery and methods used in extraction, distillation, evaporation, drying, absorption, and heat transfer in chemical technology. He designs installs, and operates pilot plants for chemical manufacturing processes.

16.0106 CIVIL TECHNOLOGY
A planned program of classroom and laboratory experiences including the study of physical sciences, mathematics, surveying, strength of materials, and other specialty courses leading to preparation for designing, testing, and supervising the construction of highways, railroads, airports, bridges and harbors, irrigation works, sanitary plants, and other structures. The graduate works in direct support of the civil engineer.

16.0107 ELECTRICAL TECHNOLOGY
An organization of subject matter and laboratory experiences designed to provide preparation in specialty courses, physical

sciences, mathematics, and general education as applied to the design, development, and testing of electrical circuits, devices, and systems for generating electricity, and the distribution and utilization of electrical power. These electrical systems incorporate and require knowledge about the application of electronic and instrumentation devices.
The program is designed to develop in the individual the capacity to perform in such areas as: model and prototype development and testing; systems analysis and integration including, design, selection, installation, calibration, and testing; development of corrective and preventive maintenance techniques; application of engineering data; and the preparation of reports and test results in support of the electrical engineer.

16.0103 ELECTRONIC TECHNOLOGY
Subject matter and laboratory experiences organized to provide preparation in the specialty courses, physical science, mathematics, and general education concerned with the design, development, modification, and testing of electronic circuits, devices, and systems. Subject matter incorporates solid state and microminiaturization devices and representative systems such as microwave systems, computers, and controls.

16.0109 ELECTROMECHANICAL TECHNOLOGY
A selection and integration of specialized classroom and laboratory learning experiences in both the mechanical and electrical fields. Instruction is planned to provide preparation for responsibilities concerned with the design, development, and testing of electromechanical devices and systems such as automatic control systems and servomechanisms, including vending machines, elevator controls, missile controls, tape-control machines, and auxiliary computer equipment. This program of instruction is designed to develop understanding, knowledge, and skills which will provide the capacity to perform effectively in such areas as: feasibility testing of engineering concepts; systems analysis including design, selection, and testing application of engineering data; and the preparation of written reports and test results in support of mechanical and electrical engineers.

16.0110 ENVIRONMENTAL CONTROL TECHNOLOGY
Classroom and laboratory experiences designed to develop in the pupil knowledge and understanding concerned with the scientific principles and basic mathematics dealing with the control of temperature and quality of aid, and the design, testing, installation, and development of heating and cooling systems. (See also 17.0100 AIR CONDITIONING under TRADE AND INDUSTRIAL OCCUPATIONS)

16.0111 INDUSTRIAL TECHNOLOGY
A program of instruction designed to develop knowledge and understanding of scientific principles, mathematical concepts, and communicative and technical skills, combined with appropriate

laboratory experiences which will prepare the pupil to be supportive to the industrial engineer in production and planning. The subject matter emphasizes the design and installation of integrated systems of materials, machinery, equipment, and personnel.

16.0112 INSTRUMENTATION TECHNOLOGY
A sequence of classroom and laboratory experiences, supported by physical sciences and mathematics, concerned with providing an understanding in the fields of electricity, electronics, mechanics, pneumatics, and hyduaulics as they pertain to applications of the principles of control and recording systems and automated devices. The instructional program is planned to prepare the pupil to design, develop prototypes, and test and evaluate control systems or automated systems and to prepare graphs, written reports and test results in support of the professional personnel working in the field of instrumentation.

16.0113 MECHANICAL TECHNOLOGY
A program of instruction designed to develop knowledge and understanding concerning scientific principles, mathematical concepts, and communicative skills, combined with appropriate laboratory experiences which will prepare a pupil to become supportive to the mechanical engineer.

16.011302 MACHINE AND TOOL DESIGN
An organization of subject matter and experiences concerned with the preparation of drawings, specifications, calculations, and procedures emphasized in the design or redesign of parts, assemblies, tools, jigs, and fixtures, and the testing of the characteristics and performance of units and components.

16.011303 PRODUCTION
Specialized learning experiences designed to prepare personnel to perform duties in such areas of responsibility as process planning, machine selection, materials-handling, quality control, economics of production, inspection, and coordination between engineering design and production.

16.0114 METALLURGICAL TECHNOLOGY
An organization of subject matter and laboratory experiences including specialty courses, physical sciences, mathematics, and general education concerned with the production, research, and/or quality control of metals. The instructional program is designed to prepare pupils for performing duties in such areas as: Conducting tests on the properties of metals, pilot and production plant design and development, the development, operation, and alteration of test procedures and equipment; and the collection and analysis of data and preparation of comprehensive and detailed reports in support of professional personnel in the metallurgical field. (See also 17.2400 Metallurgy Occupations under Trade and Industrial Occupations.)

16.0203 FOOD PROCESSING TECHNOLOGY
A combination of subject matter and learning experiences concerned with the scientific principles and operations involved in the preparation of agricultural products for sale and consumption, including home and institutional preparation of food and its nutritive value

16.0204 PLANT SCIENCE
Planned learning experiences which are concerned with the study and operations dealing with principles and practices involved in the culture and production of agricultural plants.

16.0397 MEDICAL EMERGENCY TECHNICIAN
A combination of subject matter and experiences designed to prepare technicians to become members of the health team responsible to professional members qualified to: a) respond to medical emergency calls; b) evaluate the nature of the emergency; c) take appropriate prompt action to reduce the medical hazards to the receiving station; e) serve as technical assistant to the emergency room staff of general hospitals.

16.0398 DENTAL ASSISTANT
A combination of subject matter and experiences designed to prepare a person to assist the dentist at the chairside in the dental operatory, to perform reception and clerical functions, and to carry out selected dental laboratory work.

16.0401 COMPUTER PROGRAMMER
Programs concerned with converting symbolic statements of business problems to detailed logical flow charts for coding into computer language. Including analyzing all or part of a workflow chart of diagram representing a business problem by applying knowledge of computer capabilities subject matter, algebra, and symbolic to develop the sequence of program steps; conferring with supervisors and representatives of departments concerned with programs to resolve questions of program intent, output requirements, input data acquisition, extent of automatic programming, coding and modification, and inclusions of interval checks and controls; writing detailed logical flow charts in symbolic form to represent work order of data to be processed by a computer system, and to describe input, output, arithmetic, and logical operations involved; concerning detailed logical flow charts to language processable by computer; devising sample input data to provide testing of program adequacy; preparing block diagrams to specify equipment configuration; observing or operating a computer to test a coded program using actual or sample input data; correcting program errors by such methods as altering program steps and sequence; preparing written instructions (run book) to guide operating personnel during production runs; analyzing, revising, and rewriting programs to increase operating efficiency or to adapt to new

requirements; compiling documentation of program development and subsequent revisions; and specializing in some instances in writing programs for one make and type of computer.

16.0503 TEACHER'S ASSISTANT AT THE PREPRIMARY LEVEL
Preparation for various kinds of employment related to child care centers and young children, e.g., assisting directors of child day care centers or nursery schools, assisting with activities on playgrounds and in recreation centers, and caring for children in homes and in such public places as stores, playgrounds, recreation centers, and transportation terminals.

16.0504 FOOD SERVICE SUPERVISOR
Preparation for various kinds of employment related to institutional and commercial food services. Employment may include workers and supervisors.

16.0505 INTERIOR DECORATOR ASSISTANT
Preparation for various kinds of employment related to home furnishings and/or equipment. It includes assisting purchasers in the selection of suitable home furnishings and/or equipment, assisting interior decorators, and custom-making of curtains, draperies, slip covers, and similar items.

16.0601 COMMERCIAL PILOT
A program of classroom instruction and practical experience, including mathematics and the appropriate physical sciences, designed to prepare the student to pilot and eventually assume command responsibility for aircraft carrying passengers or freight. The program is planned to enable the student to acquire competency and knowledge in such fields as: aircraft structure, behavior, and operation, and controls; radio communications as applied to aircraft; meteorology; navigation; airways safety and traffic regulations; and other aspects of a pilot's duties and responsibilities. The student will be expected to become conversant with govermental rules and regulations pertaining to piloting aircraft and will be expected to pass any tests prescribed by the Federal Aviation Agency for a Commerical Pilot's Certificate upon satisfactory completion of the designated sequence of courses.

16.0602 FIRE AND SAFETY TECHNOLOGY
A planned sequence of classroom instruction (including the appropriate sciences such as chemistry) and practical experiences designed to prepare the student to function as a fire control and fire safety specialist. The program is planned to enable the student to acquire competency and knowledge in one of more of such diverse fields as: structural design and materials; meteorological factors impinging upon fire situations; fire fighting and control, wherein he inspects equipment and advises as to its proper usage based upon an understanding of the chemistry of combustion and

the most modern techniques for coping with fires; the handling of hazardous materials (such as petroleum products, and other volatile, explosive, or corrosive materials; either routinely or in an accident situation; the inspection of public and private property to evaluate fire and fire safety conditions, wherein he makes recommendations for correction of unsafe conditions; advising local governments, private industries, and individual citizens concerning the prevention of accidents and fires; conducting educational activities, through regular school programs or special campaigns to promote fire safety and the prevention of accidents and fires.

16.0604 OCEANOGRAPHIC TECHNOLOGY (PHYSICAL, BIOLOGICAL, AND FISHERIES)
This item is not defined here because it is presently undergoing extensive study and development.

16.0605 POLICE SCIENCE TECHNOLOGY
A planned sequence of classroom instruction and laboratory experiences designed to prepare a student to function as one of more of the following: (1) a generalist in any law enforcement agency concerned with patrol and investigative activities, traffic control, initial contact with the public such as obtaining information, preparing reports, and testifying in court; (2) an evidence technician operating in a crime laboratory or mobile unit concerned with the collection, preparation, and transportation of physical evidence--including the use of skills in photography and report writing and (3) a technician--primarily concerned with delinquency or crime prevention--who may be employed by a police agency, juvenile court, or correctional institution to (a) carry out responsibilities which may include investigation and referral of dependent-neglected children as well as delinquents and youthful offenders, (b) supervise persons on probation, or (c) provide rehabilitative services to offenders.

17.0100 AIR CONDITIONING
Classroom and shop experiences which enable the student to become proficient in the installation, repair and maintenance of commercial and domestic air conditioning systems. Included is instruction in the theory and application of basic principles involved in conditioning of air - cooling, heating, filtering, and controlling humidity; the operating characteristics of various units and parts; bluepring reading; the use of technical reference manuals; the diagnosis of malfunctions; the overhaul, repair, and adjustment of units and parts such as pumps, compressors, valves, springs, and connections; and the repair of electric and pneumatic control systems. (See also 16.0110 ENVIRONMENTAL-CONTROL TECHNOLOGY under TECHNICAL EDUCATION.)

17.0101 COOLING
Learning experiences specifically concerned with the installation, operation, testing, and trouble-shooting of various types of air cooling equipment and of the controls needed for operation.

17.0102 HEATING
Learning experiences specifically concerned with the installation, operation, testing, and trouble-shooting of various types of heating equipment, including the controls needed for operation.

17.0200 APPLIANCE REPAIR
Classroom and shop experiences concerned with the theory of electrical circuitry, simple gearing, linkages, and lubrication in the operation, maintenance, and repair of components including relays, time switches, pumps, and agitators used in appliances such as washers, dryers, vacuum cleaners, toasters, water heaters, and stoves. Related training is provided in the use of familiar tools, test equipment, and service manuals, and in making cash estimates for repairs.

17.0300 AUTOMOTIVE SERVICES
Classroom and shop experiences which include training in all phases of automotive maintenance repair work on all types of automotive vehicles. Included is training in the use of technical manuals and variety of hand and power tools. Instruction and practice is provided in diagnosis of malfunctions, disassembly of units, parts inspection, and repair or replacement of parts involving engine overhaul and repair, ignition systems, carburetion, brakes, transmission, front end alinement, body and fender repair, and the installation of a variety of acessories such as radios, heaters, mirrors, and windshield wipers.

17.0301 BODY AND FENDER
Specialized learning experiences concerned with all phases of the repair of damaged bodies and fenders. including metal straightening by hammering; smoothing areas by filing, grinding, or sanding; concealment of imperfections; painting; and replacement of body components, including trim.

17.0302 MECHANICS, AUTO
Learning experiences concerned with the components of the vehicle, including engine, power transmission, steering, brakes, and electrical systems. Included is training in the use of diagnostic and testing equipment and tools used in the repair process.

17.0303 SPECIALIZATION, AUTO
Learning experiences which emphasize more detailed training in the adjustment and repair of individual components and systems of the automobile, such as the radiator, transmission, carburetor, and brake system to achieve greater proficiency in the servicing of selected components.

17.0400 AVIATION OCCUPATIONS
Classroom and practical experience which include instruction relating to aircraft maintenance, operation, and ground support.

17.0401 AIRCRAFT MAINTENANCE
Classroom and shop experiences concerned with the inspection, repair, servicing, and overhauling of all airplane parts including engines, propellers, instruments, airframes, fuel and oil tanks, control cables, and hydraulic units. Learning the use of technical manuals and various kinds of testing equipment also is emphasized.

17.040101 AIRFRAME
Specialized classroom and shop experiences concerned with the maintenance and repair of all airplane parts other than engines, propellers, and instruments. Training emphasizes the layout and fabrication of sheet metal and other materials into parts, fittings, and structural members; equipment and mechanical parts; and the disassembly and replacement of damaged or worn parts. Training prepares the student for the Federal Aviation Administration examination for the airframe mechanic's license.

17.040102 POWER PLANT
Specialized classroom and shop experiences concerned with the maintenance and repair of all types of power plants for aircraft. Course work included engine inspection and maintenance; lubrication and cooling; electrical and ignition systems; carburetion, fuels and fuel systems; and propellers. Training prepares the student for the Federal Aviation Administration examination for the power plant mechanic's license.

17.0402 AIRCRAFT OPERATIONS
Classroom and practical experiences concerned with the in-flight operation of commercial airplanes, including piloting, navigating, and passenger services.

17.0600 BUSINESS MACHINE MAINTENANCE
Classroom and shop experiences concerned with maintaining and repairing a variety of office machines such as typewriters, dictation machines, and calculators; data processing equipment used for recording and processing data; and duplicating and mailing machines. Instruction includes diagnostic techniques; understanding of mechanical principles such as those involved in gears, cams, levers and eccentrics; nomenclature; uses and care of special hand and power tools; soldering; mechanical drawing; principles of electricity and electronics; uses of testing devices; and business procedures and customer relations.

17.0698 VENDING MACHINE REPAIR
Classroom and shop experience concerned with maintenance and repair of a variety of vending machines.

17.0700 COMMERCIAL ART OCCUPATIONS
Organized specialized learning experiences which include theory, laboratory, and shopwork as they related to the design and

execution of layouts and making illustrations for advertising, display, and instructional manuals. Instruction includes advertising theory and preparation of copy, lettering, poster design, fashion illustration, silk screen, air bruch and touch-up, inks and color dynamics, package and product design, drawings for line and halftone reproduction, and other display devices and exhibits.

17.0701 INTERIOR DECORATING
Organized learning experiences concerned with the application of art principles to the design, selection, and arrangment of materials and objects in interiors or residential and commercial structures, and in ships and aircraft to achieve aesthetic effects or as a media for conveying ideas.

17.0703 PRODUCT DESIGN
Organized subject matter and experiences concerned with the application of knowledge of commercial art to the design of commercial products for the purpose of decorative, aesthetic effects and current styling consistent with utilization value of such products. Occupations in this area also require knowledge of products and production methods.

17.0900 COMMERCIAL PHOTOGRAPHY
Organized specialized learning experiences which include theory, laboratory, and studio work as each relates to all phases of camera uses and photographic processing. Instruction includes composition and color dynamics, contact printing, and enlarging; developing film; air brush and cameras, meters and other photographic equipment; portrait, commercial, and industrial photography; and processes such as microfilming and preparing copy for other printing and graphic arts processing. Instruction also emphasized the development in planning, developing, and producing in such areas as audiovisual materials and telecasting.

17.1000 CONSTRUCTION AND MAINTENANCE TRADES
Classroom and shop experiences concerned with the erection, installation, maintenance, and repair of building, highways, airports, missile sites, earth, and other structures using assorted materials such as metal, wood, stone, brick, glass, concrete, or composition substances. Instruction is provided in a variety of activities such as cost estimating; cutting, fitting, fastening, and finishing various materials; the uses of a variety of hand and power tools; and blueprint reading and following technical specifications. Knowledge concerning the physical properties of materials also is emphasized.

17.1001 CARPENTRY
Classroom and shop experiences involving layout, fabrication, assembly, installation, and repair of structural units. Emphasized in instruction are the care and use of hand and power tools, equipment, and ,aterials; common systems of frame construction and the principles involved; and drafting, blueprint reading, applied mathematics, and materials estimating.

17.1002 ELECTRICITY
Classroom and shop experiences concerned with the layout, assembly, installation, testing, and maintenance of electrical fixtures, apparatus, and wiring used in electrical systems. Instruction is provided in the reading, interpretation, and industrial wiring based on controlling electrical codes.

17.1004 MASONRY
Specialized classroom and shop experiences concerned with the cutting, chipping, and fixing in position of concrete blocks, brick, and glass blocks using bonding materials and handtools. Included is training in reading architectural plans, planning, and estimating.

17.1005 PAINTING AND DECORATING
Specialized classroom and shop experiences concerned with the preparation and finishing of exterior and interior surfaces by the application of protective or decorative coating materials such as lacquer, paint, and wallpaper. Instruction includes experiences in scraping, buring, or sanding surfaces; making, mixing, and matching paints and colors; and applying coating with brush, roller or spray gun, or by cutting, pasting, and hanging wallpaper.

17.1007 PLUMBING AND PIPEFITTING
Specialized classroom and shop experiences concerned with layout, assembly, installing, altering and repairing piping systems, including related fixtures and fittings in structures by use of pipecutting, bending and threading tools; welding, soldering and brazing equipment; and other hand and power tools and equipment.

17.1009 GLAZING
Organized learning experiences concerned with preparing, fitting, and installing glass in structures and other openings of buildings such as windows, doors, and partitions or in objects such as display cases and table tops.

17.1098 CONSTRUCTION AND MAINTENANCE, ON-SITE
See 17.1000 and relate to on-site experiences.

17.1100 CUSTODIAL SERVICES
Classroom and shop experiences concerned with all phases of the care and cleaning of buildings, fixtures, and furnishings,

including all types of building interiors such as linoleum, plastic, terrazzo, tile and wood floors; rugs; and plastic, wood panel, paint and synthetic wall coverings.
Skills are taught in the use and care of hand and power tools for such operations as dusting, dust mopping, wet mopping, scrubbing, waxing, and refinishing, and the cleaning of toilet rooms, windows, and walls. Additional emphasis is on (1) characteristics of various cleaning agents and protective coatings--and procedures for applying them; (2) sanitation and disinfectants (3) scheduling work; and (4) purchasing custodial supplies.

17.1200 DIESEL MECHANIC
Classroom and shop experiences concerned with all phases of repair work on diesel engines used to power buses, ships, trucks, railroad trains, electrical generators, construction machinery, and similar equipment. Instruction and practice is provided in diagnosis of malfunction; disassembly of engines and examination of parts; reconditioning and replacement of parts; repair and adjustment of fuel injection systems, oil and water pumps, generators, governors, auxiliary and accompanying power units, controls, and transmissions. The uses of technical manuals, of a variety of hand and power tools, and of testing and diagnostic equipment also are studied.

17.1300 DRAFTING OCCUPATIONS
Organized specialized learning experiences which emphasize theory, use of the drafting room and laboratory and shopwork as each relates to gathering and translating of data or specifications, including the aspects of planning, preparing, and interpreting mechanical, architec-ural, structural, pneumatic, marine, electrical/electronic, topographical, and other drawings and sketches. Instruction is designed to provide experiences in drawing; the use of reproduction materials, equipment, and processes; the preparation of reports and data sheets for writing specifications; the development of plan and process charts and drawings; and the development of models. Instruction emphasized the development of skills and knowledge essential for employment in ancillary capacities.

17.1398 ENGINEERING/ARCHITECTURAL DRAFTING

17.1400 ELECTRICAL OCCUPATIONS
Organized subject matter and experiences which include theory, laboratory, and shopwork as each relates to planning functions, generating and transmitting electricity, installing and maintaining electrical and communications systems, and equipment and components. Instruction emphasized practical application of mathematics, the sciences, circuit diagrams and blueprint reading, sketching, and other subjects essential to preparation for employment in the electrical occupations.

17.1401 INDUSTRIAL ELECTRICITY
Specialized classroom and practical instruction related to the maintenance and repair of a variety of industrial machinery driven by electric motors or which are electrically controlled.

17.1500 ELECTRONICS OCCUPATIONS
Organized specialized learning experiences which include theory, laboratory, and shopwork as each is related to planning, producing, testing, assembling, installing, and maintaining electronic communications equipment such as radio, radar, and television; industrial electronic equipment, including digital computers; new electronic systems, components, and equipment; and controll devices. Emphasis is on solid-state devices and eomponents, electron tube characteristics, low frequency amplifiers, LC and RC oscillators, transistors, and amplitude and frequency modulation. Instruction is designed to develop knowledge, understanding, and skills essential for employment in communications, industrial electronics, radio/ television, and other electronics occupations.

17.1501 COMMUNICATIONS
Specialized classroom and practical experiences concerned with the assembly, installation, operation, maintenance, and repair of communications equipment and systems o. all types, e.g. industrial and entertainment sound systems, data processing, telephone dial systems, two-way radio, central circuits, hearing aids, and high-fidelity receiving sets.

17.1502 INDUSTRIAL ELECTRONICS
Specialized classroom, laboratory, and practical experiences concerned with the basic elements of vacuum tubes and circuitry; using and servicing testing equipment, and troubleshooting circuits; the study of and experience in repairing photo-electric controls, timers, selector switches, counters, recorders, and transducers; and the study of the characteristics and intricacies of equipment and components used in industry and research centers. More advanced instruction includes study, analysis, and repair of magnetic amplifiers, motors, motor controls, electronic heating, saturable reactors, servomechanisms, pulse circuits, computers, and test instruments--including basic principles and servicing procedures. Field trips are taken frequently.

17.1503 RADIO AND TELEVISION
Specialized theory and practice which are concerned with the construction, maintenance, and repair of radios and television sets. Trainins also prepares students to diagnose troubles and make repairs on other electronic products such as high-fidelity sound equipment, phonographs, and tape recorders.

17.1598 RADIO AND TELEVISION BROADCASTING
Classroom and laboratory experience concerned with the production of radio and television broadcasting which prepares students for

employment opportunities with radio/television broadcasting studios. Training also prepares students with the maintenance and repair of selected radio/television broadcasting equipment as well as staffing with the use of properties and devices.

17.1700 FOREMANSHIP-SUPERVISION
Planned learning experiences designed to assist the supervisor in effectively utilizing the men, machines, and materials under his supervision by broadening his background knowledge and developing his leadership abilities. Included is the study of human behavior; organization and management; oral communication; labor laws; personnel procedures; job analysis; work simplification; employee unilization; the development of writing techniques as applied to the preparation of letters, memos, and technical reports; speed reading; and safety and first-aid practices.

17.1900 GRAPHIC ARTS OCCUPATIONS
Organized, specialized learning experiences which include theory, laboratory, and shopwork as they relate to all phases of hot and cold typesetting, layout, composition, presswork, and binding, including flexography, lithography, photoengraving, and other graphic arts related to the printing endustry. Emphasis is on typographical layouts and design, hand and machine typesetting, camera and plate work, imposition, typecasting, offset and platen press makeup and operation, papercutting, ink and color preparation, binding, and production by silk screen process.

17.1903 LITHOGRAPHY, PHOTOGRAPHY, AND PLATEMAKING
Organized learning experiences concerned with lithography, lithographic photography, stripping, and related platemaking processes.

17.2200 MARITIME OCCUPATIONS
Classroom, laboratory, theory, and practical experiences concerned with preparation for the performance of tasks on fresh-water and seagoing ships, tugboats, barges, floating drydocks, and other marine craft and floating structures, as well as related harbor and dock machinery and equipment. Firefighting, lifeboat work, and swimming are taught to all pupils. Emphasis is on fiber and wire rope handling and splicing, chipping and painting the hull, cargo handling gear and ground tackle, and watchstanding and lookout in the deck department; maintenance, operation, repair, and servicing main engines and suxiliary steam, refrigeration, water, and electrical systems in the engine department; and storekeeping, food preparation and service, and cabin upkeep in the steward department.

17.2301 FOUNDRY
Specialized classroom and shop experiences designed to provide knowledge of the theory and applications of foundry practice in ferrous and nonferrous foundries. Instruction emphasizes foundry

equipment, various sands and refractories. sand and machine molding, foundry chemistry and metallurgy, coremaking, chipping, and grinding.

17.2302 MACHINE SHOP
Specialized classroom and shop experiences concerned with all aspects of shaping metal parts. Instruction involves making computations relating to work dimensions, tooling, feeds, and speeds of machining. Also emphasized are: work on the bench and on lathes, shapers, milling machines, grinders, and drills; uses of precision measuring instruments such as layout tools, micrometers, and gages; methods of machining and heat treatment of various metals; blueprint reading; and the layout of machine parts. Instruction prepares the pupil to operate and repair all machines.

17.2305 SHEET METAL
Specialized classroom and shop experiences concerned with the layout, fabrication, erection or installation, and maintenance of items made of steel, copper, stainless steel, and aluminum, such as ventilating, air-conditioning and heating ducts, kitchen equipment, signs, furniture, and skylights. Instruction includes the use of handtools and machines, such as the cornice brake, forming rolls, and squaring shears; drafting; and blueprint reading.

17.2306 WELDING AND CUTTING
Specialized classroom and shop experiences concerned with all types of metal welding, brazing, and flame cutting. Instruction emphasizes properties of metals, blueprint reading, electrical principles, welding symbols, and mechanical drawing.

17.2307 TOOL AND DIE MAKING
Organized classroom and shop experiences concerned with analyzing specifications, laying out metal stock, setting up and operating machine tools, and fitting and assembling parts to make and repair metalworking dies, cutting tools, jigs fixtures, gages, and machinists' handtools, including instruction in the application of tool-and-die designs and construction, shop mathematics, metal properties, and layout, machining, and assembly procedures.

17.2400 METALLURGY OCCUPATIONS
Classroom and laboratory experiences concerned with assisting in examining and testing metal samples under the direction of physical metallurgists for determining the physical properties of metals, e.g., crystalline structure, porosity, hemogeneity, and other characteristics. Instruction includes examining metals with X-ray, gamma ray, and magretic-flux equipment for detecting defects and the use of pressure devices, hot-acid baths, and other apparatus to test hardness, toughness, and other properties of metals. (See also 16.0114 METALLURGICAL TECHNOLOGY under TECHNICAL EDUCATION.)

17.2600 PERSONAL SERVICES
Planned learning experiences concerned with rendering a variety of personal services related to the physical appearance of individuals. These experiences include giving various kinds of beauty treatment, applying makeup to faces of studio and stage performers, attending clients taking baths, administering elementary message, and fitting wigs.

17.2602 COSMETOLOGY
Classroom and practical experiences concerned with a variety of beauty treatments, including the care and beautification of the hair, complexion, and hands. Instruction includes training in giving shampoos, rinses, and scalp treatments; hair styling, setting, cutting, dying, tinting, and bleaching; permanent waving; facials; manicuring; and hand and arm massaging. Bacteriology, anatomy, hygiene, sanitation, salon management (including keeping records), and customer relations also are emphasized. Instruction is designed to qualify pupils for the licensing examination.

17.2700 PLASTICS OCCUPATIONS
Classroom and shop experiences dealing with plastics and their characteristics, and with bench molding, fitting, internal carving, and finishing plastics and fiberglass materials into products. Instruction includes using hand and power tools.

17.2800 PUBLIC SERVICE OCCUPATIONS
Planned learning experiences concerned with training for the performance of occupations in local, State, and Federal government agencies. These occupations usually are concerned with specialized activities limited to local, county, State, and Federal governments, and do not occur elsewhere in the economy. Typical activities include police and fire protection, emergency and rescue squad work, safety, sanitation, transportation and school bus driving.

17.2801 FIREMAN TRAINING
Specialized classroom and practical experiences concerned with the practices and techniques of firefighting. Instruction treats the organization of a community fire department; the chemistry of fire; the use of water and other materials in fighting fires; the various kinds of materials in fighting fires; the various kinds of firefighting equipment and aids and their uses, such as extinguishers, pumps, hose, rope, ladders, gas masks, hydrants, and standpipe and sprinkler systems; methods of entry; rescue principles, practices, and equipment; salvage equipment and work; fire and arson investigation; inspection techniques; and radiation hazards.

17.2802 LAW ENFORCEMENT
Specialized classroom and practical experiences designed to supplement the training provided by officially designated law

enforcement agencies. Instruction includes acquiring and maintaining the uniform; patrolling on foot or in an automobile during the day or at night; dealing with misdemeanors, felonies, traffic violations and accidents; making arrests; and testifying in court.

17.2900 QUANTITY FOOD OCCUPATIONS
Organized specialized learning experiences which include theory, laboratory, and shopwork as they relate to planning, selection, purchasing, preserving, preparing, and serving food and food products. Included is the study of a variety of foods and their nutritional values, food processing, quantity cooking, storing equipment, and sanitation in food handling and management. Instruction emphasizes quantity food service activities in commercial food service establishments such as restaurants, cafeterias, drive-ins, tearooms, bakeries, and meat, fish, and poultry markets; in other retail food shops which are operated independently or are located in enterprises such as hotels, travel terminals, industrial plants, hospitals, or clubhouses; and in special food services such as those associated with airline catering or with take-out food establishments.

17.2902 COOK/CHEF
Specialized classroom and practical work experiences concerned with the preparation and cooking of a variety of foods. Included is study of the use and care of equipment; food standards such as the selection and preparation of food and the determination of size of servings; sanitation procedures, including food handling; cooking methods such as broiling and steaming; and the preparation of special dishes such as soups, salads, garnishes, souffles, and meringues. Although the pupil qualifies as an all-round worker, he may, depending on the size of the establishment, specialize in the preparation of specific types of foods, e.g., vegetables, meats, or sauces.

17.2904 WAITER/WAITRESS
Specialized classroom and practical work experiences in table preparation, food handling, and serving. Instruction is provided in personal cleanliness and appearance, sanitary handling of food and equipment, setting a table, receiving and seating guests, taking orders and interpreting the menu, carrying the tray and dishes, placing orders in the kitchen, serving procedures, making out checks, accepting money and making change for checks, and proper relations with fellow employees and customers.

17.3000 REFRIGERATION
Classroom and shop experiences concerned with commercial chilling and freezing systems, including theory, application, and operating of compressors, expansion and float valves, thermostats, and pressure controlls; diagnosing overhauling, and testing methods and procedures; charging and discharging systems with refrigerants; and testing hermetic units, relays, and overload devices.

17.3100 SMALL ENGINE REPAIR
Classroom and shop experiences concerned with maintaining and repairing a variety of small engines used on portable power equipment, e.g., lawnmowers, outboard motors, chain saws, and rotary tillers. Instruction includes principles of internal conbustion engine operation, reading technical manuals, and customer relations.

17.3402 SHOE REPAIR
Organized classroom and shop experiences concerned with the repair of all types of footwear. Instruction emphasizes types and care of shoes; kinds and uses of tools and machines; shoe construction; shoe repairing, including replacement of worn parts such as heels and soles, and sewing parts that need mending; orthopedic shoemaking and repair; leather refinishing and dyeing; salesmanship and simple bookkeeping. Repairing of other leather articles, such as handbags, luggage and belts may be included in instruction.

17.3500 UPHOLSTERING
Classroom and shop experiences concerned with all aspects of upholstering, including furniture, automobile seats, caskets, mattresses, and bedsprings. Instruction includes history and styles of furniture; installing, repairing, arranging and securing springs, filler, padding, and covering material; patternmaking; cutting, sewing, and trimming; outside coverings; cushion filling; styling and designing; tufting and buttoning; and wood refinishing.

17.3600 WOODWORKING
Classroom and shop experiences concerned with woodworking occupations other than construction carpentry. Instruction emphasizes laying out and shaping stock; assembling complete wooden articles or subassemblies; marking, binding, sawing, carving, and sanding wood products; and repairing wooden articles. Also emphasized are various hand and power tools and their uses.

17.3601 MILLWORK-CABINET MAKING
Specialized class and practical work experiences concerned with mass production of products such as window frames, moldings, trim, and panels; and with making such products as furniture, store fixtures, kitchen cabinets, and office equipment. Instruction includes training in cutting, shaping, and assembling parts by means of handtools and woodworking machines; refinishing furniture; installing hardward, e.g., hinges, catches, and drawer pulls; planning layouts; blueprint reading; drafting; and features of various kinds of woods.

17.9800 HYDRAULIC AND PNEUMATIC

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Animal Science

U.S.O.E. Code Number: 01.0101

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title)		
Cooperative Education Technique	(See statement included under this title if applicable)		
Selecting Production Animals	1. Given visual aids, performance records or live animals,	the learner will identify, select and rank a group of cattle for specific purposes such as production of breeding stock or feeders	with 60% accuracy as determined by a qualified judge or industry standards.
	2. Given performance records, visual aids, or live animals,	the learner will identify, select and rank a group of dairy animals	with 60% accuracy as determined by a qualified judge industry standards.
	3. Given visual aids, performance records or live birds,	the learner will identify, select and rank a group of birds for specific purposes of meat production, laying and/or breeding flocks	with 60% accuracy as determined by a qualified judge or industry standards.
	4. Given performance records, visual aids, or live animals,	the learner will identify, select and rank a group of breeding sheep or feeders for specific purposes such as wool, meat, or dual purpose flocks	with 60% accuracy as determined by a qualified judge or industry standards.
	5. Given performance records, visual aids, or live animals,	the learner will identify, select and rank a group of swine for specific purposes such as breeding stock, feeder pigs or market hogs	with 60% accuracy as determined by a qualified judge or industry standards.

Topic	Conditions	Performance	Criteria
Animal Reproduction	1. Using charts, models, or samples of reproductive systems,	the learner will name the primary parts and identify the functions of the reproductive system parts	with 75% accuracy.
	2. Using sample pedigrees, and/or performance records,	the learner will interpret and evaluate animal pedigrees for use in selection and breeding farm animals	with 75% accuracy according to standards established by breed associations.
	3. Using sample production records,	the learner will interpret and evaluate animal production records for use in selection and breeding farm animals, such as Dairy Herd Improvement Association	with 75% accuracy according to standards established by breed associations and other industry standards.
	4. Using gestation tables,	the learner will determine the expected date of birth or hatching of various farm animals or birds	with 80% accuracy.
	5. Using references and live animals,	the learner will identify the heat period in estrus cycles of the various farm animals	within 80% accuracy.
Farm Animal Care	1. Given housing models, reference materials, material prices, local building codes and visual aids,	the learner will develop a model or plans for efficient and economical livestock housing units	according to the standards established by the Animal Husbandry Dept. of M.S.U. or industry standards.
	2. Given sample material handling systems, reference materials, material prices, local building codes and visual aids,	the learner will compare and evaluate efficiency and economics of material handling systems	according to the standards established by the Animal Husbandry Dept. of M.S.U. or commercial standards.
	3. Using specimens, reference materials, post mortem demonstrations, visual aids, and/or field trips,	the learner will identify the common diseases (i.e., enteritis, mastitis, pneumonia, shipping fever, etc.) and their control	with 75% accuracy.

Topic	Conditions	Performance	Criteria
	4. Using specimens, reference materials, post mortem demonstrations, visual aids, and/or field trips,	the learner will identify the common parasites (i.e., lice, mites, ticks, mange, intestinal round work, etc.) and their control	with 75% accuracy.
	5. Using live animals, reference materials, visual aids, and field trips,	the learner will perform such pertinent skills as castrating, dehorning, ringing, docking, and debeaking	with 100% accuracy
Economic Livestock Feeding	1. Using samples of minerals, carbohydrates, fats, vitamins and water, feeding references and visual aids,	the learner will list nutrients used by the farm animals	with 70% accuracy for specific farm animals.
22	2. Given samples of common farm grains, supplemental concentrates and roughages,	the learner will recognize and select quality feed stuff	with 75% accuracy for ruminant and non-ruminant farm animals.
	3. Given samples of common feed additives, prices, and their sources,	the learner will recognize the function of and plan the efficient use of feed additives	with 75% accuracy for ruminant and non-ruminant farm animals, according to recognized feeding standards.
	4. Using visual aids, models or samples of digestive systems,	the learner will identify and explain the function of the primary parts of the digestive systems of the ruminant and non-ruminant farm animals and fowl	with 75% accuracy.
	5. Given samples of home-grown feeds, concentrates, additives and their prices, feeding references and/or visual aids,	the learner will identify, select and balance an efficient and economical ration	with 75% accuracy for specific farm animals.
	6. Given samples of home-grown feeds, concentrates, additives, and their prices,	the learner will interpret the results of a computer print-out	with 80% accuracy.

Topic	Conditions	Performance	Criteria
Marketing Farm Animals	1. Using live farm animals, visual aids, field trips and/or reference material,	the learner will identify the alternative systems for marketing the farm animal	with 60% accuracy.
	2. Given market reports, cost of individual food stuffs, and overhead costs,	the learner will calculate marketing costs of an individual animal	with 60% accuracy.
	3. After calculating the market cost of an individual animal,	the learner will identify the alternative systems for marketing the farm animal	with 60% accuracy.
	4. Given case studies in which animals are exposed to feed additives, antibiotics, hormones, drugs and diseases,	the learner will determine whether the animal or animals can be marketed	with 100% accuracy according to all legal requirements.
	5. Given visual aids, live animal carcasses, wholesale and retail cuts of meat,	the learner will identify, compare, and evaluate the wholesale and retail cuts of meat from the common farm animals	with 60% accuracy.
	6. Using visual aids, samples, candling equipment, and egg scales,	the learner will grade eggs	according to USDA standards with 60% accuracy.
	7. Given data on feed costs, egg seasonal price trends and information concerning egg contracts,	the learner will determine when and how to market eggs	a profit is realized 90% of the time.
	8. Given visual aids, milk samples, and demonstrations,	the learner will list items which determine milk standards	with 60% accuracy.
	9. Given milk seasonal price trends feed price ratios,	the learner will determine when and how to market milk	a profit is realized 90% of the time.
Marketing of Animal Products	1. Using visual aids, samples and demonstrations,	the learner will list the criteria needed to grade and market wool	with 75% accuracy.

Topic	Conditions	Performance	Criteria
	2. Using visual aids, samples and demonstrations,	the learner will identify animal by-products and give an example of their usage (i.e., hides, leather goods, manure, organic compounds, intestinal tracts, dog food,	with 75% accuracy.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Plant Science

U.S.O.E. Code Number: 01.0102

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Plants	1. Given a list of five plants and five weeds and without reference material,	the learner will categorize each plant and weed on the list as to whether it is a winter or spring annual, or a biennial or perennial plant,	with 100% accuracy.
	2. Given an unlabeled drawing of a plant and without reference material,	the learner will: 1. label sections that bring food nutrients into the plant from the soil 2. label the parts that manufacture plant food from raw materials in the plant 3. label the parts which reproduce new plants from the parent plant 4. label the parts that are harvested and provide income to the producer	with 100% accuracy.
	3. Given any one or combination of the following: (5) pictures of deficiencies, (3) plant specimens, (2) descriptions of plant symptoms,	the learner will identify plant nutrient deficiencies from both major and micro nutrients which affect a particular Michigan agricultural field crops,	any 7 of the 10 are identified.

Topic	Conditions	Performance	Criteria
Crops	1. Given actual samples of five crops, field situation, or pictures of the crops and a moisture tester if applicable,	the learner will list crops ready to harvest,	at least 3 of the 5, including: a. the proper stage of maturity b. the proper moisture c. what the crops will be used for d. method of harvest e. method of storing f. method of drying and the weather.
	2. Given a sample (if available) of a harvested crop, moisture content, seed coat quality, maturity, etc. of the crop, and proper reference materials describing: a. crop use based on crop quality b. handling crops harvested in different ways c. handling crops of varying quality,	the learner will explain the proper handling methods, crop treatment and storage procedures,	will keep the high quality of the crop in accordance with the reference bulletins used.
	3. Given a Michigan Agricultural field crop being studied, weather and climate considerations for his section of the state, soil conditions, MSU bulletins, or other references applicable to Michigan,	the learner will write down the optimum time of planting for that particular crop,	according to the MSU Bulletin or the other references used.
	4. Given 10 samples and/or pictures of agricultural crops grown in the area, seed samples of these agricultural crops, and without reference material,	the learner will identify,	9 of the 10 agricultural samples.

Topic	Conditions	Performance	Criteria
	5. Given major crops in the area, MSU Bulletin and/or other available reference materials,	the learner will determine optimum row width; seeding rate; optimum depth of seed; optimum fertilizer placement; seed treatment, in order to satisfactorily seed, fertilize and treat,	all of the major crops, in accordance with the guidelines listed in the reference materials.
	6. Given soil test results, an agricultural crop, soil type information, past crop history, yield goal, fertilizer recommendations bulletin from MSU,	the learner will recommend the amount of lime, nitrogen, phosphorus, potassium and micro nutrients needed per acre to efficiently produce that crop,	as determined by using the information provided in the bulletin, with 100% accuracy.
	7. Given a soil type, land capability classification, soil drainage, and length of growing seasons and other soil conditions, and an MSU Bulletin listing crop variety characteristics,	the learner will recommend the crop and crop variety,	which is most adaptable to the given conditions 4 out of 5 times according to the MSU Bulletin.
Seeds	1. Given 5 samples, photographs or illustrations of seeds, and a list of acceptable standards for quality seed,	the learner will select that sample which is the "best" quality, "2nd best", and "3rd best" quality seed,	according to standards provided.
	2. Given 5 actual field conditions by example, photograph, or field sample, and a model or ideal situation by means of a photograph, example, or field situation as a "standard of comparison",	the learner will choose the 3 most nearly ideal seed bed situations,	as compared to the model or "standard of comparison".
Weeds	1. Given: a. a picture, sample or description of a particular weed b. stage of growth of the weed c. soil type and weather conditions	the learner will recommend a proper amount of chemical weed control for the particular given weed,	to the extent that the problem is controlled with the least crop damage or other harmful side effects.

Topic	Conditions	Performance	Criteria
	d. crop the weed is found in e. stage of growth of crop that weeds are found in f. crop rotation g. type of farming enterprise h. government restrictions i. current MSU or other weed control reference bulletin		
	2. Given a particular weed problem of a major agricultural crop, soil and weather conditions, weed control references, resource personnel, available mechanical cultivation equipment and attachments,	the learner will: 1. determine the correct equipment and attachments necessary for the given problem 2. determine the proper time of day 3. weed and stage of crop development 4. determine the proper weather and soil conditions for cultivation 5. determine proper cultivation depth and relationship to crop roots	the weed problem is controlled and the crop is not physically damaged.
	3. Given the top 10 most common weeds in the area and the seeds which correspond to the plants, and without reference material,	the learner will identify the seeds and plants,	7 of the 10 seeds and the plants by sight and match the seeds to the proper plants.
Insects and Diseases	1. Given a crop disease problem common to the area, the crop affected, reference materials identifying crop disease problems, reference materials for controlling and/or preventing crop disease problems,	the learner will identify the problem; identify cultural methods for prevention and/or control; identify chemical methods for prevention and/or control,	the problem is controlled or prevented with no crop damage or other harmful side effects caused to the environment.

Topic	Conditions	Performance	Criteria
	2. Given an illustration of a crop which is affected by an insect and MSU Bulletin on controlling insects,	the learner will identify the insect problem, tell if control is necessary, and make a recommendation for controlling the problem,	identification is made without MSU Bulletin and proper control of the problem is according to MSU Bulletin specifications.
Fertilizer	1. Given a fertilizer recommendation for a crop in terms of total pounds of each nutrient per acre, a list of fertilizer analysis available for purchase or application, the cost of each available fertilizer, examples of calculations needed to be made,	the learner will determine the quantity of each analysis fertilizer needed to most nearly meet recommended fertilizer requirements per acre,	the analysis or combination of analysis will result in the least cost.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Farm Business Management

U.S.O.E. Code Number: 01.0104

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated.

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Agriculture Finances - Checking	1. Given a blank deposit slip,	the learner will fill it out,	name, date, cash, change and checks are in their proper place and the total deposited equals the amount actually in hand.
	2. Given a blank check and a bill to be paid,	the learner will write the check,	name, date, amount paid in writing and amount paid in figures equals the amount of the bill being paid.
	3. Given at least 20 checks and a previous balance,	the learner will balance the account,	with 100% accuracy at least two out of three times.
Credit and Borrowing	1. Given the term "credit" and without reference material,	the learner will list and explain,	two correct out of three means of maintaining a good credit standing.
	2. Given a blank lending form from PCA, FHA, Land Bank or a commercial bank, and a listing of assets and liabilities,	the learner will fill it out,	all requirements of forms completion of the lending agency are met and all assets and liabilities have been listed.

Topic	Conditions	Performance	Criteria
	3. Given the term "credit source" and without reference material,	the learner will list and explain,	five correct out of seven local sources where credit can be obtained.
	4. Without reference material,	the learner will list and explain,	the four parts of a loan: amount borrowed, time, number of payments and interest.
	5. Given a commodity and three parts of a loan,	the learner will compute,	the fourth part of the loan two out of three times.
Insurance	1. Given five capital investments and five types of insurance coverages, and without reference material,	the learner will match the coverages needed to protect the investments,	with the proper types of insurance coverages with 100% accuracy.
Marketing	1. Given a current market report and a certain commodity,	the learner will analyze the price fluctuations so as to be able t determine when to buy, sell or invest,	the decision made would indicate a profit or a good investment for the student two out of three times.
	2. Given any commodity and without reference material,	the learner will list and explain the five steps,	of producing, transporting, processing, packaging and selling of that commodity according to standard market reports.
	3. Given the terms "cooperative" and "corporation" and without reference material,	the learner will define the terms,	they are correctly identified as to owner, liability and taxation.
	4. Given three commodities and without reference material,	the learner will list the three grading systems for the commodities and define each part of the three systems,	according to appropriate U.S.D.A. grading publications for the commodities assigned.

Topic	Conditions	Performance	Criteria
Business Arrangements	1. Given the terms partnership and sole proprietorship and without reference material,	the learner will define them,	as to include the considerations, liabilities and limitations of both terms with 100% accuracy.
	2. Given five local government agencies (i.e., Extension, A.S.C., CAP, FHA, City Commission and others) and without reference material,	the learner will list and explain the functions and purposes,	of at least three of the five given governmental agencies in the local area.
Farm Law	1. Given a blank legal contract with at least ten underscored items and without reference material,	the learner will explain the definition and importance,	of at least five of the ten terms according to the actual legal description.
	2. Given any blank contract,	the learner will fill it out	at least six items on the contract have been identified and filled in properly.
	3. Given a completed contract and without reference materials,	the learner will identify,	preliminaries, explanatory clause, considerations, obligations, time, non-performance penalty, and others, according to the contract three correct out of five times.
	4. Given the term "will" and a simulated farm situation, i.e., money, investments, equipment and anything else needed to run and maintain a farm,	the learner will explain the purpose of a will,	the money distribution and property distribution are properly identified and categorized in the simulated situation two out of three times without legal assistance.
	5. Given a simulated situation, i.e., 40 acres of land, equipment, and a buy or sell situation,	the learner will list the steps necessary for getting clear title and deed of land and equipment,	according to State of Michigan law.

Topic	Conditions	Performance	Criteria
	6. Given a "plat" book, three shaded areas or three blanks with legal land descriptions,	the learner will write a legal description in the blanks or locate areas and give acreages in the plat book,	according to legal descriptions used by the State of Michigan.
	7. Given a local zoning ordinance and without reference material,	the learner will list the guidelines and limitations of construction for rural or urban use,	according to the actual guidelines in the ordinance two out of three times.
Labor Management	1. Given a situation where a farmer is considering hiring a youth 14 years old and without reference material,	the learner will list at least ten laws affecting his employment,	according to current Michigan Department of Labor laws, with 100% accuracy of the ten listed.
Farm Records	1. Given an M.S.U. Farm Record Book or comparable record book, a set income, set expenses and production records, and an inventory accounting exercise sheet,	the learner will fill out the record book,	all items are properly recorded according to the appropriate record book used guidelines.
	2. Given a completed record book, a blank 1040 and blank Schedule F tax form,	the learner will, by referring to the record book, complete the 1040 and Schedule F forms,	all items are placed in their proper places and the forms are completed so as to be acceptable by the IRS two out of three times.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Agricultural Supplies

U.S.O.E. Code Number: 01.0200

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Sales	1. Given an actual or simulated situation, a sales invoice, and material to be sold,	the learner will fill out a bill of sale	to include the following and it is 100% accurate as per policies and practices of the given situation: 1. Name of customer 2. Date 3. Terms of sale 4. Number of item(s) 5. Description of item(s) including manufacturer's unique codes 6. Price of item(s) 7. Tax applicable to sale 8. Total cost of sale 9. Signature of customer, if applicable.
	2. Given an actual or simulated situation,	the learner will make correct change	the amount returned to the customer will equal the difference between the payment and the sales price 100% of the time, within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
	3. Given an actual or simulated situation and access to the necessary information,	the learner will provide product information to the customer	such information will include price, objective comparison between the product and competitive products, manufacturers and locations, product usage, etc., so that 3 out of 4 customers indicate their satisfaction with the information as provided through a structured evaluation.
	4. Given an agricultural product selected by a customer in an actual or simulated situation,	the learner will make a sales presentation	he can do the following as recorded on a given checklist: 1. Use a greeting 2. Determine needs of customer 3. Describe and/or demonstrate characteristics of product 4. Illustrate to customer how product will fill his needs 5. Close out sale
	5. Without the use of reference materials,	the learner will define basic credit terms (e.g., interest, principal, charge, discount, rate, etc.)	with an accuracy of 100%.
	6. Given pre-priced items, an adding/calculating machine and a cash register,	the learner will calculate the extended price of each product, calculate sales tax as appropriate, and register the sale	with 100% accuracy within an appropriate specified period of time.
Product Information	1. Given label(s) from common agricultural chemical container(s),	the learner will classify the product into the following categories: 1. Insecticide 2. Herbicide 3. Pesticide 4. [illegible]gicide 5. [illegible]enticide	with no less than 90% accuracy.

Topic	Conditions	Performance	Criteria
	2. Given a labeled agricultural feed bag,	the learner will define terms used to describe the composition of the product	with no less than 90% of the terms defined correctly.
	3. Given actual samples and/or pictures of major locally grown crop plants and their seeds,	the learner will identify each crop plant and seed	with 100% accuracy.
	4. Given a bag of agricultural fertilizer,	the learner will identify the chemical symbol of the major plant nutrients: nitrogen, phosphorus, and potash; describe the basic growth function of each nutrient; and calculate the amounts of each nutrient per 100 pounds of fertilizer.	with 100% accuracy.
	5. Given a standard unit of any locally grown crop (volume),	the learner will list the generally accepted weight range	for each product.
Weighing	1. Given a scaling device and typical materials commonly weighed for customers for use in the agricultural supply and service industry (e.g., feed, seeds, etc.),	the learner will operate a balance beam scale	the materials will be weighed with an accuracy of $\pm$ 1/2% of a verified reading within an appropriate, specified period of time.
Telephone	1. Given an operating telephone and: 1. a telephone directory , or 2. a telephone number and area code, or 3. a company name, city and state,	the learner will place a telephone call as directed to a local and, if authorized, long distance pre-determined party(ies)	the person/company being called is reached with an appropriate specified period of time.
Inventory	1. Given an inventory sheet with columns for listing the item and the quantity of each item, and given items of varying quantity to inventory,	the learner will correctly list the items and their quantities on the inventory sheet	with 100% accuracy within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
Display	1. Given an agricultural product of his/her choice plus related advertising materials as provided by the manufacturer and/or developed by the learner,	the learner will set up a point of purchase display	the following conditions exist: 1. Three contrasting or complimentary colors 2. Arrangement that will allow removal of product by customer with minimum of difficulty 3. Product name prominently displayed.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Agriculture Mechanics

U.S.O.E. Code Number: 01.0300

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Agricultural Power	1. Given a 2-cycle and a 4-cycle engine, charts and diagrams or a cutaway model,	the learner will identify a two (2) and a four (4) cycle engine,	100% of the time
	2. Given a complete magneto ignition system, a complete battery ignition system or charts and diagrams of magneto and battery ignitions,	the learner will identify the basic components of those ignition systems,	according to manufacturer's manual for a given engine ignition system,
	3. Given a complete magneto ignition system, a complete battery ignition system, and charts and diagrams of magneto and battery ignition systems,	the learner will demonstrate the operation of a battery and magneto ignition system,	according to manufacturer's operating manual
	4. Given running battery or magneto types of engines with operator's manual,	the learner will disassemble, inspect, and reassemble properly the ignition components of a battery or magneto system,	the engine runs to manufacturer's specification and in not more than three times flat rate manual
	5. Given a runable engine, necessary tools and parts, and service manual,	the learner will disassemble, inspect and reassemble this engine,	to proper running condition in not more than three times the flat rate manual and according to manufacturer's specifications

Topic	Conditions	Performance	Criteria
	6. Given actual diaphragm, gravity feed, suction, downdraft, updraft, and sidedraft types of carburetors, and/or diagrams, slides, and manual for each,	the learner will identify the type of carburetor and identify the parts of each,	all six types of carburetors and according to the manufacturer's manuals
	7. Given actual diaphragm, gravity feed, suction, downdraft, updraft, and sidedraft types of carburctors, and manufacturer's manuals for each and necessary tools,	the learner will disassemble and display parts in an orderly manner, inspect and repair or replace worn parts and reassemble the carburetor	to meet the factory specifications and within three times the time listed in flat rate manual
	8. Given actual valves, seats, and guides, necessary tools, and factory specifications,	the learner will clean and inspect valves, seats, and guides for wear and recondition or replace them,	they meet factory specifications and within three times the time listed in the flat rate manual
	9. Given actual valves,	the learner will identify the following valve failures: 1. Burned 2. Bent 3. Dished 4. Nicked 5. Too thin a margin	each to be identified
	10. Given an actual valve assembly,	the learner will identify the following parts: 1. Head 2. Stem 3. Face 4. Margin 5. Retainers 6. Exhaust Springs 7. Intake Spring 8. Valve Guides 9. Valve Seats	each to be identified

Topic	Conditions	Performance	Criteria
	11. Given an actual engine and parts of an engine,	the learner will correct the following small engine problems: 1. Engine Timing 2. Carburetor 3. Ignition 4. Starter Rewind	each to be identified
	12. Given a diesel engine, charts, diagrams, and/or slides of diesel engines,	the learner will identify differences and similarities of a diesel engine comparing it to a gasoline engine	at least 10 differences and 10 similarities
	13. Given a diesel engine and it's operator's manual,	the learner will perform the daily preventive maintenance skills on that engine,	in not more than three times the flat time rate manual
	14. Given the following actual basic hydraulic system components: 1. Single action cylinder 2. Double action cylinder 3. A gear type pump 4. A piston type pump 5. A vane type pump 6. An internal gear pump 7. Check valves 8. Relief Valve 9. Directional control valve 10. A flow control valve	the learner will identify the components	in not more than 15 minutes
	15. Given a hydraulic system and appropriate operator's manual,	the learner will perform normal preventive maintenance skills	in not more than three times the flat rate time
Welding	1. While using the equipment given,	the learner will select arc welding and oxyacetylene welding safety equipment that will adequately protect his eyes, skin and clothing from burns	100% of the time according to the recommended welding and safety references available from the trade.

Topic	Conditions	Performance	Criteria
	2. Without the use of reference materials,	the learner will list common welding safety precautions specified in the Michigan OSHA standards	at least 15
	3. Given the necessary metal, equipment, and selected electrodes, charts and references,	the learner will select the best electrode and weld a butt, lap, outside corner, and fillet welding on 1/8" tp 1/2" mild steel, in a flat position	it will withstand the guided bend test or similar tests and meet other criteria used in the trade
	4. Given oxy-acetylene welding equipment and proper safety equipment,	the learner will turn on, select, correct operating pressures, light and adjust the flame, and turn off oxyacetylene welding and cutting equipment	each task to be performed to a prescribed procedure
	5. Given necessary metal, materials and equipment,	the learner will perform basic brazing, welding and cutting skills in the flat position with oxy-acetylene welding equipment	well enough to pass the guided bend test or other similar tests
Electric Power	1. Given a basic wiring circuit manual, necessary tools, wiring board, similar charts and other related materials,	the learner will describe and construct the basic wiring circuits used in rural areas	it will meet local electrical codes
Agricultural Building Construction	1. Given the following portable hand tools: 1. Circular hand saw (Skill saw) 2. Electric drill 3. Jigsaw or Sabre Saw	the learner will demonstrate the safe use and maintenance procedures	for each hand tool listed
	2. Given the necessary tools, materials, and equipment,	the learner will construct forms for a side walk	according to the specifications of the Portland Cement Association

Topic	Conditions	Performance	Criteria
	3. Given the necessary tools, materials, and equipment,	the learner will pour, finish and cure concrete	according to directions and specifications of the Portland Cement Association
	4. Given the necessary tools, materials and equipment	the learner will cut, thread, and install steel pipe from a stationary "tee" thru a 90° elbow, thru a union, reducing from 3/4" to 1/2" and finally into a stationary automatic water bucket, or similar unit,	with no leaks under 60 psi pressure
	5. Given the necessary tools, materials and equipment,	the learner will install plastic pipe from a stationary source (steel pipe) thru a 90° turn and into another stationary point,	with no leaks under 60 psi pressure
	6. Given the necessary tools, materials and equipment,	the learner will make standard and inverted flares, cut and solder copper pipe,	with no leaks under 60 psi pressure
	7. Given the necessary tools, materials and equipment,	the learner will layout the corners of a 40' x 50' rectangle	within 1" of being square as measured by diagnals
	8. Given the necessary tools, materials, and equipment,	the learner will set four 16 ft. poles,	that are plumb
Preventive Maintenance and Repair	1. Given a large outside area, Farm Machinery Operation Score Sheet (Rural Manpower Center Special Paper No. 8 (revised) Bulletin), Office Box 231, MSU, East Lansing 48832, Tractor Operation Manual and a farm tractor equipped with a power take-off, a remote hydraulic cylinder coupling, and a 3-point hitch,	the learner will pass written operator's tests in 4H manual and using a tractor and another piece of equipment	A. Begin with a tractor at a starting point, spot the tractor to a 3-point hitch implement, attach the implement to the tractor, move the implement approximately ten (10) feet, then detach the implement from the tractor and return to the starting point with the tractor.

Topic	Conditions	Performance	Criteria
			B. Begin with a tractor at a starting point, move the tractor to a self-unloading wagon, attach wagon to the tractor drawbar, then properly connect the power take-off shaft of the wagon to the tractor. Return the tractor seat, engage the PTO and operate the unloading mechanism at low speed for approximately 20 seconds. Disengage the PTO, disassemble and disconnect the PTO shaft from the tractor, returning it to proper transport position on the wagon, unhitch from the tractor drawbar, and move the tractor back to the starting point. C. Begin with a tractor at a starting point, spot the tractor to an implement equipped with a remote hydraulic cylinder (with the implement in "Transport" position). Connect the hydraulic hoses to the tractor , release the transport locking devices, and (if present), operate the remote cylinder through one cycle, return the implement to transport position, engage the transport locking devices, and then disconnect hydraulic hoses, replace dust protective devices and return the tractor to the start[illegible] point.

Topic	Conditions	Performance	Criteria
			Receive 90% or better on the written tests and receive no more than 70 points off on the skills tests as outlined in the Rural Manpower Paper No. 8 (revised).
	2. Given an actual tractor, charts or drawings, or a mock-up model,	the learner will identify the external parts of a farm tractor	based on the operator's manual
	3. Given an actual tractor and operator's manual, charts or drawings of a tractor and the operators manual and/or mock-up model of a tractor and the operator's manual,	the learner will define the common terms and approved preventive maintenance practices in daily servicing and operation of farm tractors,	90% of terms and maintenance to be according to the operator's manual.
	4. Given a tractor or self-powered unit containing a gasoline engine, hand tools, shop manual, and compression gauge,	the learner will measure the compression of all cylinders, indicate condition of the valves and rings and compare these results to the factory specifications	within 45 minutes
	5. Given actual tractor, charts or drawings, and a mock-up model of an ignition system,	the learner will time the ignition system of a tractor	according to operator's service manual within three times recommended flat rate.
	6. Given a tractor engine, hand tools, and shop manual,	the learner will remove and replace a carburetor assembly, completely disassemble and make necessary repairs,	within three times the time listed. in the flat rate manual and the engine will run according to factory specifications
	7. Given a tractor or self-powered unit equipped with a gasoline engine, hand tools and shop manual,	the learner will make all carburetor, throttle linkage adjustments,	the engine is adjusted according to factory specifications

Topic	Conditions	Performance	Criteria
	8. Given a tractor or self-powered unit equipped with a gasoline engine, hand tools, and shop manual,	the learner will remove and replace the fuel tank, lines and filters, check the system for leaks and damage and make necessary repairs,	there are no leaks under normal fuel line pressure and done within three times the flat rate manual.
	9. Given a tractor or self-powered unit containing an engine with hand tools and shop manual,	the learner will replace bad fuses, install new light units, install new switches, flashers, etc., and replace and/or repair the instrument cluster,	in three times the time listed in the flat rate manual and have them working, according to factory specifications.
	10. Given a battery, hand tools, shop manual, hydrometer, and battery charger/tester,	the learner will perform necessary tests to determine battery condition and recharge and service the battery,	according to specifications
	11. Given a tractor or self-powered unit with a water cooled engine, necessary tools and equipment, and shop manual,	the learner will both remove and replace the thermostat and check the complete unit for leaks	following the procedures in the service manual, within three times the time listed in the flat rate manual.
	12. Given a tractor or self-powered unit, necessary tools, equipment and shop manual,	the learner will replace spark plugs, breakers points, condenser, and time engine,	within three times the flat rate manual time, according to specifications.
	13. Given a farm implement, manual and necessary materials,	the learner will lubricate the parts that need lubrication ,	100% of the parts to be lubricated according to operator's manual
	14. Given selected farm implements,	the learner will identify the parts,	based on the operator's manual
	15. Given a farm implement,	the learner will inspect and replace worn parts,	where needed based on the requirements of the operator's manual.
	16. Given a weed sprayer, charts, and/or mock-up of a weed sprayer	the learner will identify parts of a weed sprayer,	9 of 10 parts correct and based on the operator's manual.

Topic	Conditions	Performance	Criteria
	17. Given a weed sprayer,	the learner will inspect and replace worn parts of a weed sprayer	based on the requirements of the operator's manual and service manual
	18. Given an actual weed sprayer or a mock-up model of a weed sprayer,	the learner will calibrate the rate of water and spray materials supplied per acre	within plus or minus 10% the amount selected by the instructor based on the operator's manual specifications
	19. Given a plow or charts of a trailer or mounted plow,	the learner will identify the parts,	based on the operator's manual
	20. Given a plow,	the learner will adjust a trailer, mounted or semi-mounted plow	in accordance with the operator's manual

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Agricultural Power and Machinery

U.S.O.E. Code Number: 01.0301

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable)		
Parts Person	1. Given assorted machine parts (or pictures of parts), name and model of machine they are from, parts catalog and price lists,	the learner will find each part in the parts catalog assembly break-down picture, identify each part by its proper part number in price index and obtain correct price of each.	so accurately that all above information is correctly located in four of five attempts.
	2. Given sales ticket forms, price lists and description of customer goods being purchased,	the learner will fill out sales invoice with appropriate information to include customer name and address, date, quantity, description of item(s) and their prices, total the bill, calculate tax (if applicable), and add the grand total,	there are no math errors and that all information is complete, accurate and legible.
	3. Given sample parts inventory cards and/or computer inventory control readouts, list of information (either actual or mock) or with the use of a commercially available laboratory exercise manual for training parts person,	the learner will fill in the given information onto the inventory record card	all information is complete and without error.

Topic	Conditions	Performance	Criteria
	4. Given an on-job-training situation of at least one semester at a parts supplier or as a student parts person in a school laboratory,	the learner will perform such skills as: use parts catalogs and price lists, keep inventory records, wait on customers and assist them in determining their needs, bill out parts, assist in ordering parts and supplies, set up in-store displays, receive, check in and store incoming parts and balance out cash daily,	the learner will listen and talk to customers and help interpret their needs, resulting in a sales transaction, cash is balanced, and all parts accounted for.
Mechanic	1. Given repair shop equipment,	the learner will operate hand tools and power shop equipment in a safe manner and with approved procedure to assemble, repair, adjust, calibrate agricultural machinery common to local area,	machines operate according to manufacturer's requirements.
	2. Given hand tools, manufacturer's specifications manuals, diagnostic equipment,	the learner will troubleshoot and locate ignition problems in internal combustion engines and correct the problem by means of tune-up, adjustment, remove and replace defective parts	engine operates according to manufacturer's specifications.
	3. Given repair shop equipment, specification manuals, and an internal combustion engine,	the learner will perform over-all repair service to include cleaning, valve grinding and seating, piston repair, bearing service, disassemble and reassemble engine parts and adjust clearances	all manufacturer's specifications are followed and engine performs to manufacturer's specifications.
	4. Given a piece of factory assembled equipment, appropriate set-up tools and manuals,	the learner will unpack, sort out and inventory parts against packing list (note and report damaged and missing parts), assemble, adjust, lubricate, touch-up and prepare for operation of a given piece of agricultural or industrial equipment	so manufacturer's set-up procedures are followed and all specifications are satisfied and job completed within 1-1/2 times manufacturer's set-up time.

Topic	Conditions	Performance	Criteria
	5. Given repair shop equipment, an hydraulically equipped unit, and service manuals,	the learner will diagnose and make proper adjustments or minor repairs to the unit	it meets manufacturer's operating specifications.
Sales Person	1. Given a situational problem for acquiring a piece of new or used agricultural or industrial equipment, available reference publications, manufacturer's sales literature,	the learner will analyze and select equipment units (power units or machinery) that best fit the given selling situation, based on the compatibility of the machine to the system, size and capacity, maintenance costs, purchase costs, or use of custom rental programs and dealer service	a transfer of ownership occurs at a profit.
Farm Owner/ Operator	1. Given an actual agricultural production power unit or machine, proper tools, shop service manual and/or operators manual	the learner will operate, adjust, perform preventative maintenance procedures, calibrate said item	according to manufacturer's specifications given in owner-operator's manual or similar manual.
	2. Given an actual agricultural production unit (tractor or implement), tools, repair equipment, shop manuals,	the learner will remove and replace worn or damaged parts, recognize need for major repairs, adapt or modify existing machine to local conditions, clean and refinish and make adjustments for wear	manufacturer's specifications and procedures are followed or requirements for local conditions are met.
	3. Given a situational problem for acquiring a piece of new or used agricultural equipment, available reference publications, manufacturer's sales literature, and/or resource people,	the learner will analyze and select agricultural equipment units (power units or machinery)	that best fit the given situation, taking into consideration compatibility of the machine to the system, size and capacity, annual maintenance costs, purchase costs, availability and advisability of use of custom rental programs and dealer services.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Soil Management

U.S.O.E. Code Number: 01.0303

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Soil	1. Given 5 samples of soil,	the learner will identify the soil texture	of at least 3 according to the Michigan Conservation Score Card using visual observation and feel.
	2. Given the percents of sand, silt and clay in a sample of soil and texture triangle chart,	the learner will determine the soil texture	correctly according to the instructions on the chart.
	3. Given a soil profile,	the learner will locate and label the A, B, C, horizons	according to Soil Conservation information sheets.
	4. Given a field that has at least two identifiable sampling areas,	the learner will take a soil sample	according to procedures as described in the MSU Soil Sampling Bulletin.
	5. Given soil samples and using the "Guide for Michigan Land Judging",	the learner will determine the drainage conditions of the soil by the color of the subsoil	consistent with the "Guide".
	6. Given soil samples and using the "Guide for Michigan Land Judging",	the learner will determine the organic matter content of a soil by its color	consistent with the Guide for Michigan Land Judging.

Topic	Conditions	Performance	Criteria
Land Conservation	1. Given a slope finder chart and two stakes 100 feet apart,	the learner will determine the slope of a field, which has been defined	according to the Michigan Land Conservation Score Card.
	2. Given a field area, a Land Conservation Score Card and a number of field problems,	the learner will determine the problems and recommend treatments	as listed on the Score Card.
	3. Using the information obtained on the Land Conservation Score Card,	the learner will determine the land capability classification	according to the standards outlined in "Guide for Land Judging in Michigan".
	4. Given a soil mapping number with the appropriate legends,	the learner will interpret the codes to identify the soil type, drainage conditions, erosion and slope according to appropriate legends	100% accuracy.
Fertilizer	1. Given the crop and the most recent, authoritative "fertilizer recommendations" pamphlet,	the learner will determine the yield goal for a specific soil group	according to the instructions in the pamphlet.
	2. Provided a specific crop, soil test result sheet and the MSU Fertilizer Recommendation bulletin,	the learner will determine the amount of N, P_2O_5 and K_2O to apply to the soil	consistent with the MSU Soil Test Lab recommendation.
	3. Given a specific crop, a type of fertilizer and amounts to apply, and stage of growth according to MSU Soil Sampling Bulletin,	the learner will determine the correct application method, or methods, for applying the fertilizer	in accordance with the MSU bulletin.
	4. Given 3 specific crops, requiring different fertilizer placement,	the learner will explain the proper placement of fertilizer in relationship to the seed	according to recent soils and fertilizer recommendations.
	5. Given the amounts of nitrogen, phosphorous and potash carriers in a complete fertilizer,	the learner will determine the fertilizer analysis,	to within 1/2% accuracy.

Topic	Conditions	Performance	Criteria
Plant Nutrients	1. Given plants or pictures of plants which exhibit typical mineral deficiency symptoms in the leaves,	the learner will identify the specific deficiency	consistent with published fertilizer bulletins.
	2. Without the use of reference materials,	the learner will identify the symbols for major, minor and micro-nutrients	all symbols according to MSU fertilizer bulletins.
Drainage	1. Without the use of reference materials,	the learner will list advantages of tile drainage	according to printed information on tile drainage.
	2. Given 10 samples of clay, concrete and plastic tile,	the learner will identify the visable tile defects, if any	in 8 out of 10 tiles.
Irrigation	1. Given pictures and/or diagrams of irrigation systems,	the learner will identify 4 basic types	each type identified according to accepted soil reference material.
Surveying	1. In an actual or simulated field situation,	the learner will set up a surveyor's level or transit	it is level throughout a 360 degree turn.
	2. Given a transit or surveyor's level, and a field situation,	the learner will determine the slope of the field	from point "A" to point "B" one hundred feet away, within one-hundredth of a foot.
	3. Given a marked area of land on a drawing of a section of land, the range and townline of the township,	the learner will write out the legal description of that marked area	it is complete, correct, and consistent with published land description requirements.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Agriculture Products - Processes

U.S.O.E. Code Number: 01.0400

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Preparing to Slaughter	1. Given photos of, or 8 pieces of equipment used to slaughter and dress animals,	the learner will identify,	6 of the 8 pieces used.
	2. Given knives used for dressing animals,	the learner will grind and hone the knives,	they cut smoothly, not leaving ripped or torn conditions on the cut, and they cut without undue resistance.
Federal Meat Inspection	1. Given the terms ante-mortem and post-mortem, and without reference material,	the learner will explain the importance each plays in the inspection of meat before and after the slaughter of the animal,	consistent with selected reference materials.
	2. Given two sides of beef from a processing plant with one side having been federally inspected and stamped,	the learner will locate and interpret the stamp,	with 100% accuracy.
Selection and Slaughter	1. Given a set of scales and a market class chart,	the learner will determine if a hog or beef is ready for market,	by actually weighing the animal and refer to the chart to make a decision whether to sell or not sell based on that weight.

Topic	Conditions	Performance	Criteria
	2. Given the proper killing equipment, a hoist, a sharp narrow-bladed knife,	the learner will kill, stick, and bleed a hog,	the animal bleeds quickly and a minimum amount of blood clots are found when the animal is dressed out.
	3. Given a bled out hog and a hog scalding vat with water at the proper temperature,	the learner will operate the hog scalding vat safely and properly,	all of the hair slips from the hide when using the hog scraper.
	4. Given a scalded hog and a sharp knife,	the learner will remove the viscera from the hog properly,	without any damage to the meat.
	5. Given a scalded hog with the viscera removed, hide removed, a sharp knife and a meat saw,	the learner will properly halve a hog,	with no damage to the retail meat cuts.
Beef Selection and Slaughtering	1. Given a live beef steer and reference materials describing the six major grades of beef cattle,	the learner will grade live animals to determine the correct market price to pay,	within an accuracy of 1 grade.
	2. Given 8 tools used to slaughter beef animals,	the learner will identify,	6 of the 8.
	3. Given the proper killing equipment and a sharp knife,	the learner will demonstrate the safe and humane killing of a beef animal,	a minimum number of blood clots are found when dressing the animal out.
	4. Given a bled out beef animal and sharp skinning knives,	the learner will skin a beef animal,	no damage is done to the carcass.
	5. Given a skinned beef animal, sharp knives, meat saw and a hoist,	the learner will demonstrate the proper procedure in eviscerating a beef animal,	there is no damage done to the carcass.
	6. Given a skinned, eviscerated beef carcass, a sharp knife, a meat saw and a heavy cleaver,	the learner will demonstrate the proper procedure in halving a beef carcass,	it produces two salable halves.

Topic	Conditions	Performance	Criteria
Packing House By Products	1. Given a list of by-products of meat processing,	the learner will classify them according to edible and non-edible by-products,	as currently defined by the USDA and State Regulations.
	2. Given the same list of by-products,	the learner will, with the aid of current references, attach a wholesale price to the by-products,	based on current market prices.
	3. Given the same list of by-products and the pounds of meat yield of a given animal,	the learner will determine the total price received by the processor for an animal,	based on current wholesale prices.
Pork Carcass Retail Cuts	1. Given a side of pork and proper USDA publications,	the learner will identify the major retail cuts from a side of pork,	as shown in the USDA publications.
	2. Given a half of pork, sharp knife and a meat saw,	the learner will break down a half (side) of pork into its major retail cuts,	they are the proper cuts and labeled the same, excess fat is trimmed, and the cuts would be acceptable in a meat case.
	3. Given a walk-in cooler and a temperature gauge,	the learner will determine and set the proper holding temperature for the meat,	there is no deterioration of the meat within a minimum of 7 days.
Beef Carcass Retail Cuts	1. Given a half (side) of beef and proper reference material,	the learner will identify the major cuts of beef,	as defined in the USDA publication on retail cuts of beef.
	2. Given a side of beef, a sharp knife and a meat saw,	the learner will break a side of beef down into its major retail cuts,	the proper cuts are labeled and excess fat is trimmed and the cuts would be salable in a meat case.
Meat Judging	1. Given 15 cuts of beef or pork and without reference material,	the learner will identify the wholesale cut or retail cut,	for 12 of the 15.

Topic	Conditions	Performance	Criteria
Controlled Atmosphere Storage	1. Given a product to be stored in a C.A. unit, the desired date of harvest, and specified levels of CO_2 and O_2 per cents,	the learner will calculate and recommend the amount of CO_2 and O_2 and the date for opening the unit,	within $\pm$ 5% of the actual calculations.
	2. Given the equipment to measure O_2 and CO_2 content,	the learner will determine the % of CO_2 and O_2 in the air,	within 10% of the actual calculations.
Hydro-Cooling	1. Given the temperature of the water in a hydro-cooling unit, the desired cooling temperature, the total volume of water in the unit, the capacity of the unit's refrigeration system in BTU's per hour, and any necessary references,	the learner will calculate the time delay necessary before a hydro-cooling unit is ready for use,	within $\pm$ 5% of the actual amount of time.
	2. Given the necessary equipment and maintenance check list,	the learner will do the necessary daily maintenance required by a hydro-cooling unit,	within 1.5 times the normal allotted time so that major filters and cooling coils are cleaned and proper lubrications are performed.
Crop Drying	1. Given a psychrometric chart, 10 different dry bulb temperatures, and the relative himidity,	the learner will determine the number of pounds of water vapor the air will hold,	with 100% accuracy for 10 of the 10 temperatures.
	2. Given a list of ten crops,	the learner will state the maximum drying temperatures,	for 9 of the 10 crops, according to USDA, Agriculture Engineering Extension Service, or other appropriate references.
	3. Given USDA, Agriculture Engineering Extension, or appropriate information, an actual or simulated situation and 5 different crop drying systems,	the learner will calculate and compare the systems as to number of bushels that will dry per hour and the minimum number of acres each system needs to operate efficiently,	all within $\pm$ 5% of actual calculations for that situation.

Topic	Conditions	Performance	Criteria
	4. Given a specified number of bushels of shelled corn at 23%, the type and capacity of a crop dryer in bushels per hour per percent moisture,	the learner will calculate the time necessary to dry the grain,	to the 15.5% storage moisture 4 out of 5 times, ignoring the outside temperature and humidity.
	5. Given a sample of a seed crop (such as corn, soybeans, field beans, etc.), a crop moisture tester, and a scale,	the learner will calculate the percent of moisture in the crop,	within 1% of the average calculations.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Ornamental Horticulture

U.S.O.E. Code Number: 01.0500

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Watering of Plant Materials	1. Given at least one containerized greenhouse or nursery-type plant and a source of water,	the learner will determine need for watering and will properly water the potted plant material,	dry plant material should be watered to a point where the soil ball is saturated and excess water drains from the pot, unless soil conditions dictate otherwise. The learner will maintain the plant material in a healthy condition for at least four weeks. During this period of time, the learner will recognize the conditions of wilt and overwater if they should occur.
Properties of Soil	1. Given soil samples of mineral soils ranging from coarse to very fine textures,	the learner will identify basic soil classes by their properties using the hand feel method or mechanical analysis,	the learner will identify immediately when given clays, loam, and sandy soils.
Preparation of Soil or Growing Medium	1. Given a quantity of soil, sharp coarse sand, peat moss, and artificial soil amendments (i.e., perlite, vermiculite, calcified clay),	the learner will formulate and prepare soil mixtures or growing mediums for common plants grown in the greenhouse or nursery,	when watered the water will immediately penetrate into the soil mixture and the excess will drain away. Plant material grown in the soil mix will have healthy, vigorous, white roots after a four to six week period.

Topic	Conditions	Performance	Criteria
Soil Sterilization	1. Given soil mixture, steam sterilizer, electric sterilizer, soil sterilizing chemicals, and equipment for operation,	the learner will sterilize soil,	the learner will steam, heat or apply chemicals to soil within a reasonable length of time (in accordance with manufacturer's recommendation and/or recommendations by state university extension service).
Detecting and Correcting Soil Problems	1. Given potted plant with excess salts, very close structure, coarse sand for a soil, PH 8.5, the equipment necessary to test soil for nutrient deficiencies, pH level and soluble salts, and those conditions and materials necessary to correct the soil problem,	the learner will identify the soil problem and prescribe and administer treatment, administer soil tests, and make solu-bridge test,	plants will respond to treatment and show improved growth over a period of 6-8 weeks.
Propagation of Plant Material	1. Given seed, cuttings, stock plant, bulbs, or plants to be divided; germination bench, pots, etc., germination medium and/or potting soil; an electric heat cable or pad for bottom heat; soil and air thermometers, and method of maintaining humidity for cuttings,	the learner will propagate common plants by seeds and vegetative reproduction,	the learner will start and establish quality plants from seed and by vegatative means within a period of 2 to 6 weeks. This included seeding a flat (preparation and seeding) in a period of 15-20 minutes and sticking cuttings at the rate of 200/hour.
How to Plant or Transplant Seedlings	1. Given seedlings, growing medium, containers, shade from sun, and equipment such as dibble, mattock, containers, shovel-spade, and others,	the learner will select plant at proper time for transplanting and be able to plant and/or transplant it; provide or prepare proper growing medium and keep moist; use proper containers in relation to size of transplant; shade properly, water properly and use equipment necessary to do the job and harden off plants,	the learner will transplant seedlings properly in a time pro-rated at 20 minutes per flat. Plants will become established and grow within 1-2 weeks.

Topic	Conditions	Performance	Criteria
Identification And Use Of Growing Containers	1. Given plants, a variety of common growing containers: i.e., market pack (wood pulp impregnated with asphalt) molded thin-walled plastic packs, thick-walled plastic packs, cling pack-aluminum packs-pots and plant bands, peat pots-jiffy strip-jiffy troy, plastic clay pots, cans and burlap for B&B flats (wood or plastic),	the learner will identify and select proper container for given plants and market conditions, and select proper size container for size of plant,	the learner will identify immediately the type of growing container, its size and use for a given plant, i.e., a 4-inch clay pot for a rooted geranium 6-8 inches tall, a gallon nursery container for well-rooted Juniper liner.
Potting Up Plant Material	1. Given the following materials at least 1 plant and 1 pot, a source of water, drainage material, and growing medium,	the learner will properly pot up a plant,	in five minutes, pot the plant so as to insure good drainage, proper compaction of soil and leave 1/2 the width of the pot lip for freeboard.
Fertilization of Plant Material	1. Given some plant material and fertilizer recommended for that plant material by the State University Experiment Station and equipment necessary for the application of the fertilizer if available,	the learner will apply the proper fertilizer to the plant material as directed,	maintain the plant material in good growing condition over a period of four to six weeks.
Maintain Sanitary Conditions	1. Given equipment and supplies necessary for maintaining clean conditions, i.e., brushes, brooms, cleaning cloths, cleaning soap and powders, etc., sterilization equipment and chemicals, i.e., steam, hot water, and chemicals,	the learner will maintain sanitary conditions of potting, holding, and growing areas as well as tools, supplies and equipment,	the learner will use sanitary pots, flats, equipment and sterilized soil; remove all organic waste from greenhouse and/or plant growing area all of the time he works in the greenhouse area or nursery for a minimum of 3-4 weeks.
Safe Use of Chemicals	1. Given chemicals, protective clothing as stipulated by chemical labels, properly marked chemical containers, and equipment necessary for measuring,	the learner will handle chemicals safely and correctly according to manufacturer's recommendations; this includes reading the label,	the learner will demonstrate that he can handle chemicals in a safe manner using proper equipment, measuring and applying chemicals correctly and within

Topic	Conditions	Performance	Criteria
	mixing, and safe application of the chemical,		a reasonable length of time as recommended by the manufacturer.
Measure and Mix Horticultural Chemicals	1. Given chemicals recommended by Michigan State University (Insecticides, fertilizer, herbicides, growth regulators, etc.) recommended measuring spoons, cups, and containers, and equipment recommended by Michigan State University for application	the learner will mix chemicals according to recommendations by Michigan State University,	the learner will measure and mix chemicals correctly within an appropriate, specified period of time.
Identification And Control Of Insects, Diseases And Pests	1. Given abnormal plant material in a greenhouse, nursery, landscape, or similar situation, suitable reference materials, chemical labels and instruction in proper techniques for recognition of plant problems,	the learner will identify the problem and specifically recommend the proper control for maximum effectiveness and safety,	the learner will recommend that specific control for the problem which is the most effective and safe.
Identification Of Basic Plant Parts	1. Given a complete plant with the following parts: flower, stem, leaves, roots, node, internode, stamen, pistil, terminal bud, axil bud, 1 year old growth, two year old growth, three year old growth, root hairs and cambium on woody plants,	the learner will identify the following basic plant parts: flower, stem, leaves, roots, and any of the above plant parts that the instructor considers important to their area,	the learner will identify immediately upon seeing these basic plant parts.
Understanding Osmosis	1. Given any material needed to explain osmosis orally or by written test,	the learner will explain the basic process of osmosis in respect to growing plants,	the learner will be tested by explaining his understanding of the osmotic process (i.e., a wilted plant caused by excess fertilizer resulting in the movement of water molecules from the root hair cells to the soil surrounding the root.

Topic	Conditions	Performance	Criteria
Understanding The Effects Of Temperature On Plant Growth	1. Given those materials and conditions needed to explain temperature effects by written or oral test,	the learner will explain temperature effects on plants,	the learner will be tested by explaining his understanding of the effects of temperature on plant growth (i.e., cooler temperatures cause plants to grow more slowly, tending to keep soil damp longer and may encourage disease problems).
Understanding Photosynthesis	1. Given those materials and conditions needed to explain photosynthesis and its effects on plant growth,	the learner will explain photosynthesis and how it affects plant growth,	the learner will be tested by explaining his understanding of photosynthesis and how it affects plant growth (i.e., in order for plant growth to occur; water, carbon dioxide, sunlight, proper temperature, and live green plant cells must be present. If any of these raw materials are lacking or too low, plant growth would be slow or not at all).
Plant Identification	1. Given common landscape, bedding, greenhouse, and foliage plants,	the learner will identify and name by common name,	10 evergreen shrubs, 10 deciduous shrubs, 20 trees, 3 vines, 3 ground covers, 4 turfgrasses, 10 common weeds, 15 bedding plants, 15 house (foliage) plants including some greenhouse type plants. The selection of these plants is left to the discretion of the instructor as each local situation is different; however, there are plants basic to the industry and as many of these as possible are to be included in the list.

Topic	Conditions	Performance	Criteria
Understanding The Basic Elements Of Landscape Design	1. Given an actual landscape or a simulated landscape situation,	the learner will look at given landscape and recognize these basic elements,	each of the following elements to be identified: 1. rhythm 2. repetition 3. proportion and scale 4. harmony 5. focalization 6. balance and stability
Identification Of Landscape Symbols, Scale And Contours	1. Given a landscape plan which includes commonly used landscape symbols, scale and contours,	the learner will: 1. identify commonly used landscape symbols 2. identify the scale of a landscape plan 3. identify the contours of a landscape plan,	the learner will identify landscape symbols, scale, and contours immediately after seeing them.
Site Survey	1. Given an actual or simulated site to be landscaped, graph, paper, pencil, clipboard, ruler, 100 foot tape, and/or any other materials used locally, and after viewing the site to be landscaped,	the learner will draw a simple site survey,	this survey will include all items previously indicated as necessary by the instructor within an appropriate, specified period of time.
Figure A Job Estimate	1. Given a landscape plan, price list of landscape plants and materials, hourly rates for planting trees, and hourly rates for seeding and sodding lawns,	the learner will: 1. make out a bill of sale, listing landscape plants and materials and their prices 2. figure cost of landscaping jobs,	the learner will figure the cost of landscaping a home within an appropriate, specified period of time.
Balling And Burlapping Nursery Stock	1. Given a plant suitable for digging, burlap, pinning nails, 1/4" rope, nursery spade, and any other locally used materials,	the learner will ball and burlap the plant.	it can be handled with no fear of breaking, has a properly proportioned ball, would be usable in a landscape or nursery, within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
Completion of A Bill Of Sale	1. Given an actual or simulated situation, a sales invoice, and material to be sold,	the learner will correctly fill out the bill of sale,	100% accurate as per policies and practices of the given situation: 1. name of customer 2. date 3. terms of sale 4. number of items 5. description of items including manufacturer's unique codes 6. price of items 7. tax applicable to sale 8. total cost of sale 9. signature of customer, if customer's name is applicable.
Sales Presentation	1. Given a horticultural product selected by a customer in an actual or simulated situation,	the learner will make a sales presentation,	including each of the following: 1. use a greeting 2. determine needs of the customer 3. describe and/or demonstrate characteristics of product 4. illustrate to customer how the product will fill his needs 5. close out the sale.
Safe Operation Of Tractors And Power Equipment	1. Given any power equipment which is available for instructional use in the horticultural industry, i.e., tractor, power mower, power rake, roto-tiller, power edger, sod-cutter, etc.,	the learner will demonstrate the safe use of each piece of power equipment available for instruction,	each piece of equipment will be operated in a manner which will not endanger the learner or others in the area.
Maintenance of Machinery and Equipment	1. Given common landscape machines and equipment used by the department; oil, grease and materials necessary to maintain equipment, and list of maintenance instructions recommended by the manufacturer,	the learner will maintain machinery and equipment in good condition,	the learner will carry out recommended practices of maintenance on equipment and machinery as recommended by the manufacturer within appropriate, specified period of time.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Floriculture

U.S.O.E. Code Number: 01.0502

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Filler Flowers	1. Given an assortment of filler flowers (baby breath, acacia, pompon, statice, cornflowers, waxflowers, heather),	the learner will identify	five out of seven flowers.
Fresh Plant Material	1. Given a box of assorted fresh plant material,	the learner will condition or harden-off the plant material	according to the book, Flower Arranging, by Bill Hixson or equivalent.
House Plant	1. Given the names of 20 common house plants,	the learner will describe light, water, temperature and soil requirements	with 75% accuracy according to standard references.
Live Plants	1. Given samples or pictures of 30 house plants,	the learner will identify each plant by common name	with 75% accuracy according to standard references.
Dried Materials	1. Given some dock, lagurus, yarrow, cattail, star flowers, wheat, straw flowers, happy flowers, everlastings, dried grasses, immortelles, floral buttons, German statice, dried baby's breath, seafoam statice, eucalyptus, celosia, pampas grass,	the learner will identify and correctly name	15 of the flowers.

Topic	Conditions	Performance	Criteria
Planters	1. Given an example of a dish garden, a deep container, crock, soil and plants,	the learner will plant a dish garden	it looks like the given example.
Wrapping	1. Given an arrangement, green waxed paper, box, outer wrapping paper and hand stapler,	the learner will wrap arrangement for delivery	the plant material is not stapled to paper; plant material is held in place by waxed green paper; arrangement is steadied in box, arrangement is protected from elements by outer wrapping; arrangement, under usual circumstances, should arrive in the same condition it was originally made.
Terrarium	1. Given a bubble bowl, charcoal, broken crock, sand, sterilized soil and small tropical plants,	the learner will construct a terrarium	1. Glass is clean 2. Plants are in good condition 3. Select plants that have the same cultural requirements 4. Resemble model on display
Bow Making	1. Given #3, #9, #40 ribbon and a floral taped wire,	the learner will execute a finished bow	1. Shiny side of ribbon should be facing outward 2. The bow is symmetrical 3. The bow should be similar to the illustrations from the Retail Florist
Refrigerator	1. Given a display refrigerator full of flowers and greens,	the learner will clean and re-organize the display refrigerator	1. All flowers have a fresh cut and are in the water 2. The floor is clean 3. The windows are washed 4. All items are priced 5. The display is put back in an attractive manner (judged against a model)

Topic	Conditions	Performance	Criteria
Mechanics	1. Given styrofoam, oasis, floral tape, a pinholder, chicken wire, shredded styrofoam, waterproof adhesive, steel picks, moss, wire and plant material,	the learner will use any of the above materials	the flower arrangement remains in place under simulated normal handling.
Line-Cut Flowers	1. Given samples of gladiolas, larkspur, stock, snapdragon, delphinium, liatris, tuberose, celosia,	the learner will identify	at least 5 correctly.
Mass-Cut Flowers	1. Given standard and pompon chrysanthemums, carnations, roses, dahlias, zinnias, marigolds, asters, daisies, sweet williams, cornflowers, peonies, geraniums, gerbera, ranunculus, anemone,	the learner will identify	12 out of 16 mass flowers on sight.
Foliage	1. Given an assortment of greens; caladium, croton, eucalyptus, galax, huckleberry, ivy, leather-leaf (Baker), salal (lemon), lycopodium, magnolia, scotch broom, ti leaves, podacarpus, pittosporum,	the learner will identify	12 out of 14 greens on sight.
Store Sales	1. Given a situation where he would serve a customer in person in the florist shop,	the learner will: 1. Greet the customer in a friendly manner 2. Interest his customer in the shop's merchandise 3. Convince the customer that he needs the product and service that the florists offers 4. Ask for and complete the sale 5. Get detailed information on order blank	each of the 5 steps are met to the satisfaction of the supervisor or teacher.

Topic	Conditions	Performance	Criteria
Form-Cut Flowers	1. Given agapanthus, iris, lilies, tulips, daffodils, orchids, anthurium, bird of paradise, and protea,	the learner will identify	6 out of the 9 flowers used in arrangements on sight.
Telephone Sales	1. Given a simulated customer phone call,	the learner will: 1. Answer the telephone in a courteous manner mentioning name of shop and clerk name 2. Speak with a clear, distinct, friendly voice 3. Find out who you are talking to so you can refer to them by name 4. Inquire into customer's needs 5. Give customer several suggestions by creating work pictures 6. Take order in legible fashion in full detail and read back to customer 7. Thank them for calling and let customer hang up first	each of the 7 steps are met to the satisfaction of the supervisor or teacher.
Displays	1. Given a specific location and free choice of materials,	the learner will arrange an attractive display with 1. Suitable theme 2. Color coordinated 3. Showing merchandise	with a rating of 40 or better, using the checklist in the Retail Florist (Pfahl), Chapter 7 or equivalent.
Sale	1. Given a sale,	the learner will operate a cash register and make change	with 100% accuracy.
Corsage	1. Given wire, tape, ribbon, leaves and flowers,	the learner will assemble an attractive, saleable corsage displaying the correct mechanics, style, color and packaging	within 20 minutes according to the Retail Florist (Pfahl).

Topic	Conditions	Performance	Criteria
Arrangement	1. Given dried, silk, fresh or artificial materials,	the learner will execute five basic arrangement designs; the vertical, triangle, horizontal, L-shape, and crescent, using each of these materials	according to the elements and principles of design for each listed in The Retail Florist (Pfahl).
Containers	1. Given a container to hold flowers and greens,	the learner will coordinate design, color and plant material appropriate for the container	1. Flowers and container blend in texture 2. There is color harmony between the container and the arrangement 3. The container enhances the flowers and does not dominate 4. Sturdy containers are used for heavy appearing flowers 5. Fragile containers used with delicate flowers 6. It is similar to pictures and examples seen in professional journals.
Receiving Wire Orders	1. Given an incoming wire order,	the learner will obtain and list the following information: 1. Name of shop placing the order 2. Identification number 3. City and State of sending shop 4. Name and address of recipient of the order. 5. Description of order and dollar amount 6. Message on card 7. Date of delivery	with 100% accuracy.

Topic	Conditions	Performance	Criteria
Sending Wire Order	1. Given a request for placing a wire order,	the learner will obtain, record and send the following information: 1. Full name, address and phone number of customer placing the order 2. Full name and complete address (phone number if RD or unusual address) of the recipient of the order in other city 3. Nature of the occasion for which flowers are ordered 4. The exact order and second choice if possible 5. Price of the order 6. Message for the card 7. Date of delivery	with 100% accuracy.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Agricultural Resources

U.S.O.E. Code Number: 01.0600

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Soil Conservation			
Soil Separates	1. Given a soil sample and a jar of water,	the learner will, by suspension and settling, identify sand, silt, and clay separates	correctly 100% of the time.
	2. Given a soil sample in the field,	the learner will identify sand, silt, and clay separates by feel	7 out of 10 samples are identified correctly.
Soil Types	1. Given a soil sample with the percent of sand, silt, and clay, and reference material with a soil triangle,	the learner will use the soil triangle to determine soil texture	with 80% accuracy.
Soils Maps and/or Aerial Photo	1. Given a soils map with color and symbol key,	the learner will identify the soil type on the map	with 100% accuracy.
	2. Given an aerial photo of a ground area,	the learner will identify land use features such as woodland, cropland, swamps, roadways, etc.	correctly identify 8 out of 10 features per photograph.
Land Use	1. Given a soils map and/or area of land and set of conditions as to previous or present use of field or area,	the learner will recommend land use or uses	in accordance with Soil Conservation Service Standards.

Topic	Conditions	Performance	Criteria
Land Use Practices	1. Given a soils map, or field area, set of conditions as to land use, soil and crop references, and class discussion,	the learner will list practices necessary to prevent loss of soil and water	in accordance with Soil Conservation Service recommendations.
Soil Class	1. Shown an actual land area with soil profile exposed and slope finder,	the learner will identify and give rationale, for the land class, (I - VIII)	correctly, plus or minus one classification for each area according to the Soil Conservation Service.
Water			
Causes of Pollution and the Pollutants	1. Given a lake, stream, or body of water in a specific area,	the learner will identify the potential source or sources of pollution	and not omit more than two sources as compared to Department of Health and/or Department of Natural Resources findings.
Conserving Practices Relative to Pollution	1. Given a lake, stream well, or body of water in a specific area,	the learner will identify some conservation problems	and list two practices and corrective procedures according to Soil Conservation and/or Department of Natural Resources recommendations.
Forestry			
Identification of Common Trees	1. Given leaf, bark, buds, seed, and/or a complete tree in the area,	the learner will identify and name 15 common species	within 30 minutes and get 12 out of 15 correct.
Plant Pine Seedlings	1. Given a planting bar, pine seedling, and a pail,	the learner will plant the tree	at the same depth as in the nursery so that upon inspection there are no air pockets around the roots; and no roots are above ground.
Axe and Chain Saw	1. Given a chain saw and a block of wood, limb, or trunk of felled tree,	the learner will cut the block, limb, or trunk of felled tree	without pinching, stalling, or hitting a foreign object.

Topic	Conditions	Performance	Criteria
	2. Given a chain saw, screw driver, a spark plug wrench, and adjustable wrench,	the learner will change spark plug, adjust idle needle, clean or replace air filter, and set chain tension	the motor runs smoothly without missing, either idling or under load.
Use of Compass	1. Given a forester's compass and a directed course map,	the learner will follow a course given in degrees,	without deviating from the course more than 5°.
Tree Pruning Practices	1. Given a tree pruning saw and a tree that needs to be pruned,	the learner will remove limbs flush with tree trunk	without damaging the bark and not removing more than the bottom 2/3 of the branches within a reasonable time limit according to size of tree.
Fisheries and Wildlife			
Pond Stocking	1. Given pictures, slides, and/or specimens,	the learner will identify all of the following mature fish: Large mouth bass Small mouth bass Bluegill Sunfish Perch Catfish Brook Trout Rainbow Trout Brown Trout Northern Pike Walleye Pike Coho Chinook Lake Trout Smelt	with 75% accuracy.
Natural Food Sources	1. Given the names of 15 common mammals and birds,	the learner will list natural food sources	for each species correctly with 75% accuracy.

Topic	Conditions	Performance	Criteria
Conduct Water Tests	1. Given any water source and a water collection unit,	the learner will collect a water sample	a valid test can be made.
	2. Given samples of water, nitrate test kit, ph kit, dissolved oxygen demand kit, turbidity discs, and thermometer,	the learner will determine nitrate levels, acidity level, dissolved oxygen, biological oxygen demand, turbidity, and temperature	all results will be determined at 80% accuracy.
Identification of Native Wildlife	1. Given pictures, slides, and/or specimens of the following species: Deer, Elk, Moose, Bear, Squirrel, Skunk, Weasel, Mink, Muskrat, Raccoon, Opossum, Fox, Woodchuck, Badger, Beaver, Porcupine, Rabbit	the learner will identify	14 out of 17.
Identification of Native Game Birds	1. Given pictures, slides and/or specimens of the following game birds Pheasant, Grouse, Quail, Ducks, Partridge, Woodcock, Morning Dove, Geese	the learner will identify	7 out of 8.
Air Pollution			
Causes of Air Pollution	1. Without the use of reference materials,	the learner will describe causes of air pollution	the causes are given correctly based on authoritative books, such as the Air Pollution Primer.
Parks Use of Transit	1. Given a level, philadelphia rod, 100' tape, and grade stakes,	the learner will lay out a simple campsite	within 20 minutes.

Topic	Conditions	Performance	Criteria
	2. Given a level, philadelphia rod, clip board, and note paper,	the learner will set up level, read a philadelphia rod, take notes, and record readings	within 20 minutes so that they can take field notes into a classroom and place on a map.
Basic Plumbing Maintenance	1. Given a rule, pipe cutter, two Stillson wrenches, one length 1" pipe, two 90° elbows, one union, one pipe vise, one can of joint compound, and one set of pipe dies,	the learner will cut, assemble, and replace a broken length of 1" pipe with union in the center for assembly	within 60 minutes and there will be no leaks at the joints.
	2. Given two Stillson wrenches, one globe valve, and one can of joint compound,	the learner will remove and replace a faulty valve at a campsite	within 15 minutes and there will be no leaks.
	3. Given 1 crosscut saw (8 tooth), 1 rule, 1 paint brush, 1 can cleaner, 1 can resin, 1 length 1" plastic (rigid) pipe, and two 1" couplings,	the learner will repair a break in a plastic supply line in utility building by removing faulty section and replace with a new one	within 30 minutes and there will be no leaks in the repaired section.
Basic Electrical Maintenance	1. Given a broken duplex outlet at campsite, one insulated screw driver, one pair side cutting pliers, and one exterior duplex outlet,	the learner will remove face plate, faulty outlet, and replace with a new outlet	attaching wires as per electrical code within 20 minutes and there will be no disruption of service by a blown fuse.
Pesticides	1. Given the problem of fly control, knapsack sprayer, pesticide, and water supply,	the learner will mix pesticides with water and spray area for fly control	90% fly control will be achieved.
	2. Given the problem of cleaning fertilizer spreader for storage, one fertilizer spreader, air compressor, one set combination end wrenches, one pair pliers, one gallon #1 fuel oil, and one shop rag,	the learner will remove and clean by air blast all fertilizer from spreader and clean all surfaces exposed to fertilizer with damp oil rag	within 60 minutes and when the spreader comes out of storage the next time, all parts work perfectly.

Topic	Conditions	Performance	Criteria
Recreation			
Trails for Hiking, Horseback Riding, and All Terrain Vehicles	1. Given a topographic map and aerial photo of an area,	the learner will select a route suited for hiking, horseback riding, or all terrain vehicles	according to accepted principles of recreation trail design.
Insurance Needs for Recreational Activities	1. Given data concerning a private recreational enterprise and the name of an appropriate insurance agent,	the learner will contact and consult with the agent to determine insurance needs for the enterprise	a report will be submitted detailing coverage and cost of coverage included.
Land Description	1. Given a Plot Book, a legal description of a parcel of land,	the learner will identify the location of the parcel of land	he can list the landowner's name and the size of the plot.
Human Relations			
Communications	1. Given three people,	the learner will state aloud five verbal instructions	the three people will demonstrate understanding and carry out the instructions with 90% accuracy.
	2. Given paper, pencil, and three people,	the learner will write a set of directions involving five separate instructions	three people can read and carry out the directions accurately without consulting other sources.
Employer/ Employee Relationship	1. Given 25 multiple-choice questions dealing with relationships between employer and employees,	the learner will answer the questions	22 answers are correct based upon principles agreed upon in class discussion.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Forestry

U.S.O.E. Code Number: 01.0700

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Tree Identification and Use	1. Given 10 examples of commercial tree species and without reference material,	the learner will identify and explain their major uses	he identifies the 10 examples and explains the uses for each.
Equipment Identification and Operation	1. Given the proper forestry equipment, i.e., chainsaw, axe, wedge, canthook, etc.,	the learner will identify, explain and properly operate the equipment	all are identified, their uses properly noted, and they are safely operated so that the learner and learners in his area are safe from bodily harm.
Equipment Maintenance	1. Given a chainsaw in need of sharpening and a file,	the learner will sharpen the saw,	it cuts straight and has proper chip size to indicate sharpness.
	2. Given a chainsaw and proper tools,	the learner will adjust for proper oil flow, tighten or loosen chain and clean filters	the saw runs efficiently and all adjustments are performed according to recommended manufacturer's specifications.
Related Information	1. Given the terms: clear cut, seed tree, selective cutting, thinning and pruning, and no reference material,	the learner will explain	the proper methods of harvesting trees for each term based upon: A. Types of trees to be cut B. When to cut C. How to cut

Topic	Conditions	Performance	Criteria
	2. Given 10 examples of weed or cull trees and no reference materials,	the learner will explain why the trees should be culled	for 8 out of 10 examples.
	3. Given examples of major insect problems,	the learner will identify the insect problem	he will be able to identify the insect present, based on damage to bark, leaves, roots, branches, etc.
Safety	1. Given an actual or simulated woodland accident,	the learner will analyze the accident	he can identify causes and loses (personal injury, loss of time, loss of capital, materials and contracts), 4 out of 5 times.
Planting	1. Given seedlings, planting bar, mattock, mechanical planter or shovel,	the learner will plan and plant the trees	the plan meets approval of the local forester (points to consider---spacing, timber typing, soil conditions, etc.) and the trees are then planted according to that plan.
Land Description	1. Given a plat book, or equivalent aerial photo, etc., and a compass,	the learner will find a certain plot of land in a certain township, section and range, and then actually pace its four boundaries	according to State of Michigan legal land descriptions and the boundaries are ± 1 rod.
Scaling	1. Given a scaling standard, scaling tool and a volume of material,	the learner will scale the type of material (i.e., saw logs, firewood, pulp, post, etc.)	the volume is correct to ± 5%.
Equipment Operation	1. Given felled timber and appropriate tools and equipment,	the learner will buck 10 logs	to the prescribed length with a tolerance of plus 2" to 4" and minus 0" on all ten logs.
	2. Given standing timber and appropriate tools and equipment,	the learner will fell a tree	it falls in the predicted direction, the butt does not kick back and no unpredictable lodging occurs, 8 out of 10 times.

Topic	Conditions	Performance	Criteria
	3. Given a loader, skidder, dozer or slasher,	the learner will safely operate	2 of the 4 machines so as not to endanger himself or other learners in the area.
Records	1. Given a blank record book at the beginning of woodlot work or forestry work,	the learner will keep an up-to-date record of	time spent in woods: cutting, pruning, examining, planting, locating, etc., so all are noted and legible.
Hydraulics	1. Given the following 7 terms of an hydraulic system: pump, motor, cylinder, oil, reservoir, filter, line, and without reference materials,	the learner will explain the part each plays in the system	for 6 of the 7 terms.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Advertising Services

U.S.O.E. Code Number: 04.0100

Remarks: These Advertising Services performance objectives encompass four separate but related areas of specialization:

A. Layout and Design; Typography
B. Copywriter
C. Display Design and Sign Making
D. Electronic Media

Many performance objectives are applicable to more than one of these areas of specialization; others are unique to a specialty. The capital letters in parenthesis which precede each performance objective indicate to which of the areas of specialization above that particular objective applies.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
LAYOUT DESIGN	1. (A) Given advertisements,	the learner will identify the basic structural elements: Illustration, body copy, logo and headlines,	with 100% accuracy.
	2. (A) Given unarranged advertising copy,	the learner will execute thumbnail sketches and rough layouts	that is balanced and contains the following essential elements: logo, headlines, body copy, and illustration.
	3. (A) Given a rough layout,	the learner will execute the comprehensive layout in a form suitable for presentation to a client	and which is consistent with a given model.

Topic	Conditions	Performance	Criteria
	4. (A) Given materials and a model of the "9 basic layout formats",	the learner will execute rough layouts of each of the 9 formats for one ad	which must be consistent with the appropriate model.
	5. (A) Given supplies and a model of "formal" and "informal" balance,	the learner will execute rough layouts	which conform to each model.
	6. (A) Given supplies and a model of "thumbnail" layouts,	the learner will execute 9 different thumbnail variations for one ad	consistent with the model.
	7. (A) Given supplies and a model of rough layouts,	the learner will execute variations of rough layouts for several different ads	being consistent with the model.
1.6 Magazine (Print Media)	8. (A) Given an assignment concerning the principles involved in planning the page layout of a multi-page (or fold) magazine publication,	the learner will make a well-balanced layout of a multi-page (or fold) publication	to exact specifications.
Newspaper (Print Media)	9. (A) Given necessary materials,	the learner will make a well-balanced newspaper layout and paste-up	suitable for mechanical reproduction.
	10. (A) Given materials, mat books as a resource,	the learner will do well-balanced newspaper layouts for a variety of ads such as: Men's and Women's Clothing, Department Stores, Supermarkets, Restaurants, Hardware Stores, etc.	that are well-balanced and consistent with the product image.

Topic	Conditions	Performance	Criteria
	11. (A) Given a variety of newspaper and magazine layout assignments,	the learner will include all necessary given information as well as a headline, illustration, body copy and logo	for each ad.
Illustration Techniques (Media)	12. (A) Given the proper materials,	the learner will select and position the correct type of Ben Day transfer screen	that is consistent with the texture and effect desired for a given production.
	13. (A) Given an assigned project,	the learner will identify and use the various types of shading screens	as used in mechanical reproduction.
	14. (A) Given required materials, mat books,	the learner will trace cartoons and illustrations	to accomplish a given advertising effect.
Typography, Finished Art	15. (A) Given any project,	the learner will execute a layout	following the proper sequence: 1. Thumbnail 2. Roughs 3. Semi-comprehensive 4. Comprehensive 5. Mechanical
	16. (A) Given the necessary materials,	the learner will develop a rough layout into a camera ready format	including the utilization of line art, percentage and texture screens.
Package Design	17. (A) Given a product, package shape and material,	the learner will design a package	it has visual balance, color coordination and demonstrates a knowledge of consumer tastes correlated with the specific consumer group.

U.S.O.E. Code Number: 04.0100

Topic	Conditions	Performance	Criteria
LAYOUT			
Color & Media	1. (A) Given necessary materials,	the learner will appropriately use color in various media applications, applying the various principles of hue, value, contrast, tint, tone, shade and intensity	to adequately reflect given information and desired effect.
	2. (A) Given a layout assignment,	the learner will choose the proper color scheme	best reflecting a given product or service.
	3. (A, C) Given necessary supplies,	the learner will indicate color on rough layouts	with magic markers and other felt tip media.
Paste-Up	4. (A) Given scissors and adhesive,	the learner will correctly adhere cold type proofs and mat books illustrations to his layout	it conforms to pencil guidelines with no protruding edges and is clean.
	5. (A) Given materials and a model of layouts based upon letter forms,	the learner will execute simple "clip art" paste-up layouts	accurately, based upon these forms.
	6. (A) Given required materials, mat books,	the learner will execute a "clip art" ad layout	it is well-balanced.
Media	7. (A, C) Given samples of paper,	the learner will distinguish and correctly use the different paper stock used in the graphic arts and advertising, such as: illustration board, poster board, matt board, tracing paper, layout paper, cresent paper, etc.	choosing the correct surface when doing layout, paste-up, comprehensives and overlays.
	8. (A) Given necessary supplies,	the learner will work with mixed media	choosing the correct [illegible] and procedures for the variety of projects assigned in class.

Topic	Conditions	Performance	Criteria
Techniques	9. (A) Given any assignment,	the learner will employ the correct principles and procedures in applying the accepted practices of: tracing, line work, texture, balance, proportion, variation, contrast, unity, color coordination, neatness, etc.	consistent with given models.
	10. (A, C) Given a layout assignment,	the learner will measure and cut paper on the paper cutter.	to exact specifications.
Illustration	11. (A) Given materials and appropriate media and product information,	the learner will develop an illustration that has visual balance, color coordination, and demonstrates knowledge of consumer tastes	by use of visual clues usually associated with the specified consumer group.
Keylining	12. (A) Given necessary materials,	the learner will make dummies or mock-ups for brochures, pamphlets, books, etc.	out of paper stock.
Specialized Design	13. (A) Given a model and materials,	the learner will design and execute in semi-comprehensive form, a Greeting or Holiday card	to include a die-cut, pop-up, or moveable part.
PRINTING PRODUCTION	1. (A) Given a percentage screen guide and printer's specifications,	the learner will correctly match and visually estimate the proper tint screen values.	to achieve a certain effect for printer specifications.
	2. (A, B) Given a paper and a model of the make-up of a booklet, brochure or catalogue,	the learner will prepare a printer's "dummy"	accurately, to exact specifications.

Topic	Conditions	Performance	Criteria
Typography, Keylining	3. (A) Given photographs or illustrations and tracing paper,	the learner will crop photographs and illustrations and indicate the exact specifications for printing, including specifications for pica widths, depth, etc.	using the overlay system.
	4. (A, B) Given tracing paper and copy,	the learner will correctly indicate "hot type" specifications	in terms of pica on a transparent overlay sheet.
Color	5. (A) Given an assigned project,	the learner will visually match colors exactly by using the I P I of Pantone Matching System	to give accurate specifications to the printer for color separations.
TYPOGRAPHY	1. (A, C) Given supplies,	the learner will indicate copy blocks with straight edges to produce evenly spaced lines of uniform thickness	so as to suggest the relative weights of the blocks.
	2. (A, C) Given advertising copy,	the learner will select type faces which are appropriate to the subject matter being advertised	consistent with the product image.
	3. (A, C) Given an assigned project,	the learner will select the style and size of type face appropriate for a given application	consistent with models as provided.
	4. (A, C) Given a model of basic practical type faces,	the learner will accurately identify and trace given copy	in Roman, Gothic, Script, and Contemporary alphabets.
	5. (A) Given necessary materials and an assignment involving the basic principles of good illustration,	the learner will produce the type of body copy	that is consistent with the illustrations being used in a given presentation.
	6. (A,C) Given necessary supplies,	the learner will indicate, identify and trace italic, condensed medium and extended lettering	according to the sa sheets with 10 accuracy.

Topic	Conditions	Performance	Criteria
	7. (A,C) Given necessary supplies,	the learner will identify, trace, and indicate the three basic typography weights (light, medium, and bold)	with 100% accuracy.
	8. (A, C) Given one sheet of adhesive transfer type,	the learner will space letters, center lines of type, and transfer down type	without cracking.
	9. (A) Given the use of the Varitype Headliner Typesetter,	the learner will produce strips of lettering of any type style by choosing the correct type font strips, placing it correctly on the machine, making the correct settings, and working the font to produce cold copies for paste-up and layout work	the type must be accurately word spaced, letter spaced, and exposed.
	10. (A, C) Given a sheet of adhesive transfer lettering,	the learner will align, space, and burnish transfer lettering	in correct comprehensive form.
Paste-Up	11. (A) Given necessary supplies,	the learner will make a paste-up using "cold type". art materials and other graphic materials and procedures including: burnishing, aligning, measuring, etc.	neatly and correctly.
Lettering	12. (A, C) Given materials, including adhesive lettering, presstype, chisel point pencil, etc.,	the learner will apply and render letters using mechanical and optical spacing methods	consistent with each model.
Copyfitting	13. (A, C) Given any assignment and specifications,	the learner will determine, select, measure, fit and prepare copy for a given assignment	to exact specifications.

Topic	Conditions	Performance	Criteria
Layout	14. (A) Given a Greek Copy Block,	the learner will align and adhere the copy blocks for semi-comprehensive layouts	correctly.
Layout - Corporate Image Design	15. (A, C) Given materials,	the learner will design and execute in semi-comprehensive form a Letterhead, Business Card, and Envelope for a company	which are related to each other by one unifying design, and which is consistent with the company's image.
ADVERTISING CAMPAIGN (Layout Design, Copywriting)	1. (A, B) Given materials,	the learner will design and execute a series of ads for one company organized around the variation of one basic theme or selling point	which is reflected in a series which is unified by similarity of copy appeal, approach and platform and correlated design elements.
ADVERTISING RESEARCH	1. (A, B, C, D) Given a product or service,	the learner will supply research material from at least four different sources	which adequately provide materials for the assigned product or service.
	2. (A, B, C) Using whatever resources that are available and given a specific research objective,	the learner will construct a simple research questionnaire that will gather the necessary data	to satisfy the research objectives.
ADVERTISING CONCEPTS CONCEPTUAL KNOWLEDGE	1. (A, B, C, D) Given a series of objective tests concerning selected vocabulary and terminology used in advertising,	the learner will attain a score in tests dealing with the subject areas such as: Headline analysis, copy writing, layout and design, careers, media research, market research, legal aspects, retail and local advertising, advertising theory and practices, printing production, typography, color theory and practices, radio, television, outdoor and transit, direct mail, equipment and tools, rates and costs, newspaper and magazine,	of at least 70% correct.

Topic	Conditions	Performance	Criteria
PHOTOGRAPHY	1. (A, C, D) Given a camera and a photographic assignment,	the learner will photograph his subject	the photograph will have balanced composition and appropriate lighting.
	2. (A, C, D) Given an adjustable camera,	the learner will correctly focus, frame, make shutter, speed and lens setting adjustments	consistent with the film speed and light meter readings with 100% accuracy.
COPYWRITING	1. (A, B) Given a sheet of "proofing" symbols,	the learner will interpret the symbols and correct and/or revise copy with a transparent overlay sheet	consistent with a model.
	2. (B) Given a newspaper and magazine,	the learner will write promotional and institutional advertisements	which conform to given models.
	3. (B) Given a copywriting assignment,	the learner will write a short body of copy	consistent with each copy approach (emotional, factual, narrative and humorous).
	4. (B) Given a copywriting assignment,	the learner will write advertising copy	that utilizes any of the various copy appeal approaches and combine more than one approach in a given body of copy.
	5. (B) Given various copywriting assignments,	the learner will write any of the five basic types of headlines	which is consistent with his copy appeal and approach.
	6. (B) Given a fact sheet of information on four different products,	the learner will prepare proof-quality copy	for each product, free from errors.

Topic	Conditions	Performance	Criteria
	7. (B) Given advertising copy,	the learner will rewrite a previous copywriting assignment	by substituting the "new" words for over-worked adjectives and cliches, but without changing the meaning of his copy.
	8. (B) Given any copywriting assignment,	the learner will write copy	which follows the AIDCA copywriting formula.
TECHNIQUES	1. (A) Given the use of an Enlarger-Reducer and illustrations,	the learner will enlarge and/or reduce the given illustrations	to exact specifications.
	2. (A) Given a light table and necessary materials,	the learner will trace mat book illustrations on the light table	tracing reflects the desired degree of specifics of detail.
(Media)	3. (A) Given necessary materials,	the learner will distinguish between the different types of pencils used in advertising art	to use the correct pencil as needed on various assignments.
DIRECT MAIL	1. (A, B) Given paper and models of the 7 basic formats of leaflet folders,	the learner will duplicate the 7 basic Self-Mailer folding formats and indicate the basic make-up of each	correctly, in rough layout form.
(Print Media) Copywriting, Copyfitting	2. (A, B, C) Given a direct mail assignment,	the learner will write, group, plan and fit copy	to a given space allowance.
LOGO TYPE - TRADEMARK DESIGN	1. (A) Given necessary materials,	the learner will design a logo	that reasonably reflects the nature of the product, service or corporate image related to the manufacturer or merchandiser.

Topic	Conditions	Performance	Criteria
ADVERTISING Outdoor	1. (A, C) Given necessary materials,	the learner will design a semi-comprehensive scale model of a billboard ad	which must be readable from a distance and have attention getting impact through use of color and organization.
Transportation	2. (A, C) Given necessary materials,	the learner will design a semi-comprehensive layout of a transit ad such as a car - card	to exact specifications - employ the principles of good design.
PACKAGE DESIGN	1. (A, C) Given necessary materials,	the learner will design and fabricate the prototypes of the packaging and display materials needed to market a given product	which are consistent with the product image and employ the principles of good design.
POSTER DESIGN	1. (A, C) Given the necessary materials,	the learner will design and execute a full-color poster for any given publicity or promotional function	in semi-comprehensive form.
DISPLAY	(A, C) Given necessary display equipment and supplies,	the learner will design and arrange a complete window display including mannequins, props and display signs	which is consistent with the type of merchandise being advertised and the store image.
DISPLAY AND SIGN MAKING	1. (A, C) Given various types of display lettering,	the learner will make signs with display lettering which are accurately spaced and legible from a distance and which include all necessary information	in a clear and concise format.
	2. (A,C) Given a letterpress,	the learner will operate the press, set and select type, and legibly space letters and words	to make a simple display sign to advertise a given product.

Topic	Conditions	Performance	Criteria
ELECTRONIC MEDIA (TV Layout)	1. (A,B,D) Given a TV storyboard model, necessary supplies,	the learner will design and make storyboards for television, education and other promotional activities	which are consistent with the model.
	2. (A, B, D) Given a TV storyboard, Video tape or film-making equipment,	the learner will create and execute a short TV commercial	which is consistent with the model and is accurately timed to fit into a time limit.
	3. (A, B, D) Given a specific time limit, a script model and a fact sheet,	the learner will develop a script for radio and television presentation	which conforms to the specified time limit and is consistent to the model.
	4. (A, B, D) Given Video Tape or film-making equipment,	the learner will be the camera-man in taping a TV commercial	correctly utilizing the proper techniques involved, such as camera adjustments, panning, close-ups, focusing, back-ground coordination, directions, etc.
	5. (A, C, D) Given the necessary materials, supplies, and equipment,	the learner will design a small "set" complete with props and background for a given television commercial assignment	the "set" is consistent with the product image and is appropriate for television taping and/or filming techniques.
(Radio)	6. (A, B, D) Given a fact sheet, time limit and a tape recorder,	the learner will write, create, and present a short radio commercial	which conforms to the specified time limit and is technically flawless in terms of the recording procedures.

Topic	Conditions	Performance	Criteria
MARKET & MEDIA RESEARCH	1. (A, B, C) Given a survey form,	the learner will survey a group of local businesses or school store	to find out which are the best items of merchandise to advertise and to evaluate and summarize the results of the survey on the sample form.
	2. (A, B, C) Without the use of reference materials,	the learner will list several purposes of survey research and media research	to include determining average amount spent on advertising, types of media used, most and least effective advertising media, etc.
	3. (A, B, C) Given appropriate demographic information,	the learner will select the most applicable mediums	on any given assignment.
MARKETING STRATEGY	1. (A, B, C, D) Given a model,	the learner (individually or as part of a team) will prepare a comprehensive marketing plan (strategy) for a given product or service	starting with an analysis of it and continuing through its completion (including a system for analyzing the relative effectiveness of the same).
MARKETING PLAN	1. (A, B, C, D) Given the necessary information,	the learner will establish a "realistic" time schedule and distribution procedure for a given marketing or production program or campaign	consistent with guidelines as provided.
SALES PROMOTION	1. (A, B, C) Given a large list of merchandise handled by a given retail store or school store,	the learner will select the best items to advertise and feature	in any given layout assignment.

Topic	Conditions	Performance	Criteria
Advertising Campaign	2. (A, B, C) Given Maslow's five categories of motives and the five methods for motivating people,	the learner will use these methods separately or in combination in planning a short term or long term advertising campaign and in dealing with employer-employee relations	evidence of appropriate Maslow motive and method.
	3. (A, B, C) Given a copy of any one of the specialized advertising periodicals,	the learner will accurately summarize a given article	by listing the basic important points.
	4. (A, B, C, D) Given a simulated presentation assignment,	the learner will make a professional presentation which gives the "client" a number of choices	doing so within a given budget allowance.
		the learner will accept the viewpoint of the "client"	in a professional manner, giving him what he wants but, if necessary, advising him of any improvements he might recommend to better accomplish his goals and be able to make his goals and be able to make budget cuts if necessary.
	5. (A, B, C) Given a model of the uses of promotional advertising,	the learner will develop a promotional campaign	that takes advantage of merchandise aids and sales techniques such as coupons, money games, premiums, etc.
	6. (A, B, C) Given a product and a budget,	the learner will plan an advertising and sales promotion campaign	that emphasizes the psychological factors that can affect the acceptance of a new product or service.

Topic	Conditions	Performance	Criteria
Corporate Image-Logo	7. (A, B) Given a selection of products to be merchandised,	the learner will design a brand name, slogan and logo for these products	which is consistent with the product image.
Basic Concepts Conceptual Knowledge	8. (A, B, C, D) Given a model,	the learner will correctly define and identify	the three stages of advertising: Pioneering, Competitive, and Retentive stages.
Advertising Concepts Conceptual Knowledge	9. (A, B, C, D) Given a series of objective tests concerning selected vocabulary and terminology used in advertising,	the learner will attain a score in tests dealing with the subject areas such as: Headline analysis, copywriting, layout and design, careers, media research, market research, legal aspects, retail and local advertising, advertising theory and practices, printing production, typography, color theory and practices, radio, television, outdoor and transit, direct mail, equipment and tools, rates and costs, newspaper and magazine,	of at least 70% correct.
Rate and Cost Analysis	10. (A, B, C, D) Given a series of problems concerning the calculation of rates and costs for advertising media,	the learner will calculate costs in the following areas: Radio, Television, Magazine, Newspaper, Direct Mail, Outdoor and Transit, Advertising Agency Fees, Printers Fees, and Retail Advertising	with 90% accuracy.

Topic	Conditions	Performance	Criteria
BUSINESS PRACTICES			
Decision Making	1. (A, B, C) Given examples of poor business practices as related to advertising,	the learner will analyze and provide recommendations for solutions	which would improve the situation.
Business Policies	2. (A, B, C) Given a list of types of business policies and a policy manual,	the learner will identify the policies and explain the need for the policy	according to types: A. Merchandise B. Sales C. Promotion D. Customer-Service E. Personnel F. General Policies

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: General Merchandise

U.S.O.E. Code Number: 04.0800

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Advertising	1. Given an actual or simulated situation and a local newspaper issue,	the learner will select three advertisements from three retailers. In each advertisement the learner will identify: a. newspaper name, page and date b. name of retailer c. department(s) of advertised merchandise d. location(s) of stores where merchandise is sold e. advertised merchandise f. facts on advertised merchandise g. price/sale priced or regular priced h. if sale priced, sale time i. terms of sale (telephone order, mail order, C.O.D., delivery, delivery charges, coupons, cash or charge) j. store policies: special orders, limited quantities	with 100% accuracy as compared to the newspaper advertisements selected.

Topic	Conditions	Performance	Criteria
		k. store hours l. parts of advertisement (logo, illustration, copy and headline).	
Display	1. Given an actual or simulated situation, merchandise to be displayed, related display props, and display materials as provided by the manufacturer and/or developed by the learner,	the learner will construct a promotional countertop, shelf, show case, or window display,	the display will be consistent with policies and procedures of a given retailer(s).
Merchandising	1. Given an actual or simulated situation, an item of damaged or broken merchandise and a form for listing damaged and/or broken merchandise,	the learner will enter this item of merchandise on the form for damaged and/or broken merchandise,	with 100% accuracy as consistent with policies and procedures of a given retailer(s).
	2. Given an actual or simulated situation, a merchandise catalog, an order blank, and the description of three different products, without catalog numbers,	the learner will write an order that includes: a. quantity b. product description and catalog number c. price d. tax e. total cost	with 100% accuracy as consistent with policies and procedures of a given retailer(s).
	3. Given an actual or simulated situation, new merchandise, and a partially stocked shelf of old merchandise,	the learner will remove the old merchandise, place the new merchandise on the shelf, and rotate the old merchandise to the front of the shelf,	as consistent with the policies and procedures of a given retailer(s).
	4. Given an actual or simulated situation, a merchandise invoice which lists the suggested retail price, appropriate marking equipment, and merchandise,	the learner will mark each item with the correct price for that item,	with 100% accuracy as consistent with policies and procedures of a given retailer(s).

Topic	Conditions	Performance	Criteria
	5. Given an actual or simulated situation, a showcase with shelves, an assortment of merchandise in the showcase, and appropriate cleaning materials,	the learner will remove the merchandise from the shelves, dust the shelves and merchandise, clean the glass and showcase, and replace and arrange the merchandise in the showcase,	the shelves, showcases, and glass are clean, the merchandise is free from dust and is replaced in original position.
	6. Given actual or simulated situations or shoplifting and pilferage,	the learner will list the steps to take to report shoplifting and pilferage,	as consistent with policies and procedures of a given retailer(s).
Merchandise Mathematics	1. Given an actual or simulated situation, priced merchandise, a sales check and a Michigan 4% Sales Tax Collection Schedule,	the learner will fill out and compute a sales check to include the following: a. name and address of customer b. date c. number of item(s) d. description of item(s) e. department and/or stock number f. price of items g. tax h. computed total i. terms of sale j. signature of customers, if applicable k. employee discount, if applicable	it is legible and 100% accurate.
	2. Given an actual or simulated situation, merchandise price tags, and inventory tabulation sheets from retailer(s),	the learner will count and record the retail price, quantity, description (name of merchandise, style, color, size, brand, vendor, and season code),	with 100% accuracy as consistent with policies and procedures of a given retailer(s).
	3. Given an actual or simulated situation, a Michigan 4% Sales Tax Schedule and a total sale	the learner will compute the sales tax and total the sales price,	with 100% accuracy.

Topic	Conditions	Performance	Criteria
	that exceeds the amount on the Michigan 4% Sales Tax Collection Schedule,		
	4. Given an actual or simulated situation, merchandise to be returned and a merchandise return form,	the learner will legibly fill out the merchandise return form,	with 100% accuracy as consistent with the policies and procedures of a given retailer(s).
	5. Given an actual or simulated situation, money, the sales total, and the amount received,	the learner will give correct change,	with 100% accuracy.
Operations	1. Given an actual or simulated situation, merchandise, a merchandise invoice, and merchandise receipt forms,	the learner will check merchandise for breakage, damage, spoilage, overage and shortage and record such occurrences on merchandise receipt forms,	with 100% accuracy as consistent with policies and procedures of a given retailer(s).
	2. Given an actual or simulated situation, incoming merchandise, and an inventory receiving report form,	the learner will record the retail price, quantity, and description (name of merchandise, style, color, size, brand, vendor, and season code),	with 100% accuracy as consistent with policies and procedures of a given retailer(s).
	3. Given an actual or simulated situation, packed boxes to be unloaded and moved to a given area,	the learner will lift, unload, and move the boxes to the given area,	to avoid personal injury.
	4. Given an actual or simulated situation and breakable and non-breakable merchandise,	the learner will pack and wrap the merchandise,	as consistent with policies and procedures of a given retailer(s).
	5. Given an actual or simulated situation and appropriate cleaning materials,	the learner will clean a given store area,	it is free from dust and dirt as consistent with policies and procedures of a given retailer(s).

Topic	Conditions	Performance	Criteria
Salesmanship	1. Given an actual or simulated situation and a tangible product,	the learner will give a sales presentation,	all of the following will be included: a. uses an appropriate sales approach b. determines need c. demonstrates the use of the product d. gives the selling points of the product e. answers customer objections and/or questions f. asks for the sale g. suggest related merchandise h. closes the sale.
	2. Given an actual or simulated situation, a cash register, and priced merchandise,	the learner will record on the cash register the: a. price and department of the merchandise b. total price of merchandise rendered c. total tax for merchandise rendered d. total cost to the customer	with 100% accuracy.
	3. Given an actual or simulated situation, a cash register, and a receipt tape,	the learner will remove the tape and install the new receipt tape,	the register operates properly.
	4. Given an actual or simulated situation and samples of complete and incomplete personal checks,	the learner will identify those checks that are negotiable or non-negotiable,	as consistent with policies and procedures of a given bank(s).
	5. Given an actual or simulated situation, a telephone, a telephone order sales check and a Michigan 4% Sales Tax Collection Schedule,	the learner will answer the telephone and: 1. give a greeting 2. identify him/her self 3. identify the retail store and department	with 100% accuracy as consistent with policies and procedures of a given retailer(s).

Topic	Conditions	Performance	Criteria
		4. take a request for service 5. write a telephone order salescheck which contains the following information: a. customer's name b. customer's address c. date and time of order d. number of item(s) e. description of item(s) f. department number g. price of item(s) h. tax i. total cost of sale j. terms of sale 6. repeat all recorded information to the caller,	
	6. Given an actual or simulated situation, priced merchandise, a national bank credit sales form, a national bank credit card, and a Michigan 4% Sales Tax Collection Schedule,	the learner will legibly complete the national bank credit sales form,	the following is included and is consistent with the policies and procedures of a given retailer(s): a. name of customer b. date c. number of item(s) d. description of item(s) e. department number f. price of item(s) g. tax h. total cost of sale i. terms of sale j. signature of customer k. credit card number l. expiration date of credit card m. salesperson's number.

DEFINITIONS OF TERMS

1. GIVEN AN ACTUAL OR SIMULATED SITUATION

   A. ACTUAL SITUATION: Existing in act and not merely potentially; refers to the experiences that the distributive education student would have in a school store, training station or fund raising activity.

   B. SIMULATED SITUATION: Utilized in distributive education to structure information and problems which are likely to be characteristic of a real project, task, experiment or program. Delivery systems that specifically utilize this approach are: case study, demonstration, discovery, project method, role playing and simulation gaming.

2. POLICIES AND PROCEDURES OF A GIVEN RETAILER(S)

   A. POLICIES: Set of guidelines for the intentions, goals and actions of a retail organization in accomplishing specified objectives.

   B. PROCEDURES: A series of precise, pre-determined, step-by-step methods for getting routine tasks accomplished in an efficient manner. The written or oral instructions or orders which govern the activities of a retail organization.

   C. RETAILER(S): Retail establishment(s) in the distributive education teachers' respective geographical location.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Hotel and Lodging

U.S.O.E. Code Number: 04.1100

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
General	1. Given the terms: 1) Health Care - including hospital - extended care and nursing. 2) Institutional and Industrial Feeding. 3) In-flight Feeding. 4) Hotel, Motel, Condominium. 5) Recreationals. 6) Club - City and Country. 7) Resort - Ski lodge, Dude Ranch, General recreational. 8) Franchising and Fast Food. 9) Vending. 10) Commercial Restaurants.	the learner will list and explain the characteristics and types of employment possibilities,	for 8 of the 10 areas of the "hospitality industry".
	2. Given the legal definitions of transient, residential, American plan, European plan, and modified American plan,	the learner will identify at least one hotel/motel operation utilizing each plan,	with 100% accuracy.
Management	1. Given the terms independent operation, franchise operations, and chain operations,	the learner will define the terms and give examples of hotel/motel operations for each of the 3 categories,	with 100% accuracy.

Topic	Conditions	Performance	Criteria
	2. Given an organizational chart of a large hotel/motel,	the learner will explain the relationship and interdependence of the various departments,	with 100% accuracy.
	3. Given a hypothetical problem of undesirable employee behavior,	the learner will analyze the situation and suggest a corrective course of action designed to achieve an effective management of human resources,	based upon standard management practices.
Law	1. Given the requirement to identify the legal aspects of innkeeping,	the learner will identify and list where to locate applicable major health and sanitation regulations, fire and safety regulations, employment laws and local codes and ordinances,	with 100% accuracy.
	2. Given a situation of a guest complaint about an "undesirable" person being on the hotel/motel premises,	the learner will explain the legal considerations involved in excluding the "undersirable" person and suggest a course of managerial action,	other guests receive adequate protection and potential law suits are minimized.
	3. Given a guest who is suspected as not being able to pay his accumulated bills,	the learner will list and explain,	three legally acceptable alternatives available to a hotel/motel manager to encourage guest payments.
Front Office Operations	1. Given a hotel/motel front desk with a potential guest approaching, a reservation sheet, a rooming policy manual, and a supply of blank registration cards, guest ledgers, and information slips,	the learner will: a. follow procedures for ascertaining whether a reservation is being held. b. sell a suitable room if no reservation is held. c. obtain essential guest information during the registration process. d. room the guest. e. initiate guest information and accounting records.	well enough that a reasonable guest and hotel/motel owner would be satisfied with the learner's procedures.

Topic	Conditions	Performance	Criteria
	2. Given a front office room rack,	the learner will interpret and explain the contents of the rack,	explaining at least ten symbols used to describe locations of rooms, the equipment that each contains and the status of individual rooms.
	3. Given a completed housekeeper's report,	the learner will interpret at least four symbols commonly used to indicate room status,	with 100% accuracy, as described in a standard text.
	4. Given a front office accounting system and a series of guest-generated transactions,	the learner will post transactions to guest and city ledgers and perform the night audit,	the night audit balances and individual guest accounts reflect the correct end-of-day balances.
	5. Given at least two hotel/motel reservation systems, a reservation inquiry by a potential guest, and a reservation policy manual,	the learner will ascertain room availability, make a reservation, and confirm by return mail utilizing both reservation systems,	all essential information is reflected in the reservation records and that a properly drafted mail confirmation is prepared including communication of reservation policies to the prospective guest.
Housekeeping Operations	1. Given the following terms: a) Cleansers - abrasive b) Cleansers - non-abrasive c) Cleansers - all purpose d) Deodorizers e) Neutralizers f) Solvents g) Cleaning compounds h) Protective coatings,	the learner will describe the characteristics of each and provide examples of the surfaces or fabrics to which each can be applied,	the recommended application would not cause undue property damage nor create a potential health hazard to employees or guests.
	2. Given all necessary operating information and hotel/motel housekeeping record forms; such as room status reports, inspection reports, and production records,	the learner will complete these forms,	with 100% accuracy.

Topic	Conditions	Performance	Criteria
Property Management	1. Given a hotel/motel operation,	the learner will develop a schedule for preventive equipment maintenance, identifying that equipment which must be serviced by a trained serviceman and that equipment which can be serviced by employees,	with the suggested schedule conforming to equipment manufacturer's recommendations.
Financial Analysis	1. Given a hotel/motel financial statement including balance sheet, funds flow statement, and income statement,	the learner will interpret the statements from a manager's view,	the ratios, percentages and trends are comparable to current industry averages.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Dental Assistant (Secondary)

U.S.O.E. Code Number: 07.0101

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
CHAIRSIDE			
X-Rays	1. Assigned a specific diagnostic problem,	the learner will select, process and mount an intraoral radiograph	it is useable for diagnosti purposes.
Impression Materials	1. Given a situation where an impression is needed,	the learner will select necessary armamentarium, mix materials and deliver to operator	a useable diagnostic negative is obtained.
Charting	1. Given a dental examination chart,	the learner will chart the various decayed areas as dictated by the operator on the correct surface of the correct tooth	with 100% accuracy.
	2. Given 6 cavity preparations,	the learner will identify the cavity classification	with 100% accuracy.
Dental Cements and Restorative Materials	1. Given the necessary materials,	the learner will select, prepare and mix the proper dental cements and/or restorative material as specified by the dentist or instructor	the consistency is compatible with the dental purpose and manufacturer's instructions.

Topic	Conditions	Performance	Criteria
Patient Communication	1. Given a patient and a sequential check sheet,	the learner will promptly greet and seat the patient, with attention to the patient's comfort, protection and the operative position, and dismiss him or her	according to the given check sheet.
Instrumentation	1. Given instruments and materials,	the learner will select and set up instruments and equipment necessary for a variety of operative and non-operative procedures	they can be del ered or received to the convenience of the operator, with 100% accuracy.
Sterilization and Disinfection	1. Given various contaminated instruments,	the learner will prepare them for the sterilizing or disinfecting procedure, select the proper method indicated by the type of instrument to be processed, and operate the equipment and use the solutions	to the specifications of the manufacturer.
LABORATORY			
Pouring and Trimming Casts and/or Dies	1. Given any impression,	the learner will select, mix and pour the correct gypsum product	it results in a useable cast for study and/or construction of appliances, and casting procedures.
PRACTICE MANAGMENT	1. Given an imconing telephone call,	the learner will answer and record the necessary information	in a prompt and clear voice and the information will be neat and legible.
	2. Given the following business procedures: statements, record keeping, recall, filing, appointment control, day book, letter writing, daily fee collection, and bank balancing,	the learner will properly complete all transactions	with 100% accuracy.

Topic	Conditions	Performance	Criteria
GENERAL DENTAL KNOWLEDGE	1. Given a patient (fellow student)	the learner will teach personal oral hygiene through techniques of toothbrushing, flossing and staining of the teeth	the teeth appear plaque free when patient's mouth is stained.
	2. Given 5 causes of dental disease,	the learner will select the 3 most important factors leading to the diseases	with 100% accuracy.
	3. Given a simulated office emergency situation,	the learner will proceed with the proper first-aid care, and demonstrate the ability to cope with selected, appropriate situations	according to the current American Red Cross First Aid Book.
	4. Given a basic maintenance requirement and/or a malfunctioning piece of dental equipment,	the learner will perform the basic required maintenance or procure proper servicing assistance	according to the manufacturer's specifications for the equipment.
	5. Given 8 dental specialties,	the learner will identify each	according to the service rendered, with 100% accuracy.
	6. Given 60 terms pertaining to the following subjects: specialties, instruments, laboratory, office procedures, diseases, oral anatomical landmarks,	the learner will explain each	with 100% accuracy.
	7. Given a variety of dental operative procedures,	the learner will describe the necessary pre-operative and post-operative care	the patient remains calm, confident, and comfortable.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Employability Skills

U.S.O.E. Code Number: All Vocational/ Technical Programs

Remarks: These objectives are to be considered an integral part of each individual set of recommended minimum program performance objectives for all vocational and technical programs.

Note: In these objectives the expression, "Without the use of reference materials" is used to indicate that the learner would perform this task during the testing situation without access to reference sources, notes, etc.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Sources of Employment Opportunities	1. Without the use of reference materials,	the learner will list the prime sources of information concerning opportunities for employment and describe those special procedures, if any, required to effectively utilize their services, information, etc.,	which is (1) consistent with the model, (2) complete with all information as required by the model, and (3) correct, legible and spelled correctly.
Requirements Of The Occupation (Health, Physical etc.)	1. Without the use of reference materials,	the learner will list the significant requirements (health, physical, legal, educational, etc.), if any, of the appropriate occupation,	consistent with available data on the occupation and pertinent local, state, and federal regulations.
Wage Information	1. Without the use of reference materials,	the learner will list the approximate entry wages, general wage range, and significant fringe benefits for the appropriate occupation as well as compare these wages and fringe benefits with other selected occupations,	consistent with available information and based upon local norms.

Topic	Conditions	Performance	Criteria
Non-Wage Information	1. Without the use of reference materials,	the learner will list and describe the significant non-wage characteristics (e.g., shift requirements, union affiliation, apprenticeships, occupational hazards, characteristics of work environment, etc.)	with sufficient detail as to accurately describe those characteristics which are significant to the appropriate occupation.
Employment Opportunities	1. Without the use of reference materials,	the learner will describe the local, regional, and national employment opportunities for the appropriate occupation,	in terms generally consistent with data available from business and industrial sources, governmental agencies, and other selected sources.
Opportunities For Advancement	1. Without the use of reference materials,	the learner will describe the career ladder associated with the appropriate occupational area of training in which he/she is enrolled,	consistent with an authoritatively prepared model which is characteristic of that occupational area.
Decision Making	1. Given a decision making situation (job offer, further training, job termination, etc.) and procedures/skills in decision making,	the learner will compare his/her personal criteria with information about available alternatives and choose among them,	the decision is made by the learner listing and describing the reasons for choosing an alternative or the decision is acted upon.
Resume/Data Sheet	1. Given a topical information outline for completing a resume or data sheet and the necessary personal notes, documents, etc.	the learner will prepare a resume or data sheet,	which is (1) consistent with the outline, (2) all information necessary to complete the resume or data sheet assembled in advance by the learner, (3) with all information entered into each area of the outline as illustrated, and (4) all information correct, legible, and spelled correctly.
Letter Of Application Inquiry 9/74	1. Given a model for a letter of application/inquiry and the necessary personal notes, documents, etc.,	the learner will write a letter of application/inquiry,	which is (1) consistent with the model, (2) complete with all information as required by the model, and (3) correct, legible and spelled correctly.

Topic	Conditions	Performance	Criteria
Employment Application	1. Given a sample employment application characteristic of the type common to the appropriate area of employment and the necessary personal notes, documents, etc.,	the learner will complete the employment application,	with (1) all information necessary to complete the application assembled in advance by the learner, (2) all information entered into each area of the application as directed, and (3) all information correct, legible and spelled correctly.
Standards of On-The-Job Dress, Grooming, Etc.	1. Without the use of reference materials,	the learner will describe and/or dress in the attire of the appropriate occupational area including personal grooming, required health and safety equipment, uniforms, etc.,	consistent with legal requirements (if any), appropriate safety considerations, and conventional attire of that occupation.
Interviewing	1. Without the use of reference materials,	the learner will describe and/or demonstrate appropriate characteristics of the job applicant, including: (a) attire, (b) grooming and (c) conduct during interview,	generally consistent with a model of procedures and practices as provided for the appropriate occupational area.
	2. Without the use of reference materials,	the learner will describe and/or demonstrate the interviewing process,	including at least the following: a. Pre-interview: how to set up an interview, what to bring to the interview, etc. b. Interview: typical employer questions and interview topics, significant applicant questions and topics, promptness, etc. c. Post-interview: notification of the outcome of the interview, follow-up correspondence, etc. Each of the above to be generally consistent with a model of procedures and practices as provided for the appropriate occupational area.

Topic	Conditions	Performance	Criteria
Evaluation Of Job Offer	1. Without the use of reference materials,	the learner will list his/her personal criteria (financial, social, etc.) which describe a job offer,	which would be acceptable to him/her if offered.
Interpersonal Relationships	1. Given case descriptions of common on-the-job conflict situations: employer-employee, employee-employee, and employee-client/customer/etc.,	the learner will identify the probable cause for the conflict and suggest at least one possible action to relieve the conflict,	for the majority of cases presented and consistent with guidelines, etc., previously made available to the learner.
Continuing Education	1. Without the use of reference materials,	the learner will describe the type(s) and source(s) of related continuing education for the appropriate occupation and/or advancement within the career ladder associated with the occupation,	consistent with authoritative information appropriate for that occupational area.
Terminating A Job	1. Without the use of reference materials,	the learner will describe the procedures and practices for terminating a job,	generally consistent with a model of procedures and practices as provided for the appropriate occupational area which includes: length of notice, method of notification, request for references, etc.

PERFORMANCE OBJECTIVES DEVELOPMENT PROJECT

Overview

A performance objective is a description of what a learner should be able to do when he has learned a skill or acquired certain understandings. The performance objectives presented here contain all six elements of the State Department of Education recommended performance objectives model (who, when, performance, object of performance, measurement methodology, and criteria). [1]

The guidelines[2] used by writers of these objectives are attached. In addition, several characteristics of these objectives must be understood to be adequately utilized:

1. Minimum: these objectives represent the considered opinion of the writers, after completion of a structured review and expert input, as to the minimum skills and understandings necessary to gain job entry.

2. Recommended: these objectives are those which the particular writing team recommends to the Vocational-Technical Education Service and, in turn, the Vocational-Technical Education Service to the local educational agencies for their consideration as reasonable minimum learner objectives.

3. Terminal: these objectives describe only those significant performances which are to be mastered by the end of the training program. It is likely that each of these terminal objectives contains several intermediate or facilitating objectives which are assumed to be necessary to achieve the terminal objective.

4. Program: these objectives are presented by program rather than course, because it is the prerogative of the local educational agency to group content into courses, etc., as it sees fit.

5. Grading/Passing: the decision as to what grade a student will earn for achieving some, all, or in excess of the minimum recommended program performance objectives is a local educational agency decision. Some districts choose to include factors other than the achievement of objectives as the basis for assigning grades. It is not the intent here to suggest that this practice must change as a result of adopting performance objectives. It is also recognized that many factors may affect the decision as to whether credit for a course should be assigned to a particular student who may achieve less than the minimum objectives of the program.

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[1] Michigan Department of Education, "Developing Performance Objectives," booklet, undated.

[2] The abbreviated guidelines used by the members of the performance objectives writing teams are extracted from and consistent with: Bailey, Philip; Bland, David and Brown, Dan; "Guidelines for the Performance Objectives Development Project," Michigan Department of Education and Career Development Service, September, 1972.

Format

1. Each set of objectives is identified by a U.S. Office of Education Occupational Designation and Code Number. This practice is consistent with the system used to approve and fund vocational/technical programs in Michigan.

2. Each set of objectives begins with the standard statement, "Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced test (ORT's), unless otherwise indicated:". In order to avoid unnecessary duplication, this statement is presented as a constant, but it is to be interpreted as a part of each subsequent objective.

3. In addition to the performance objectives recommended for each program, each set of objectives for a vocational or technical program is to be understood to include the performance objectives for "Employability Skills" (except for non-wage earning Home Economics) and the "Statement on Cooperative Education Technique" (if applicable). Although these are presented separately, they are to be considered common to all vocational and technical programs if applicable. Both items are included in the adoption process as an integral part of each set of objectives, when appropriate, and are adopted if the set is adopted.

4. Four columns of information are used to present the content of each objective:

    a. Topic: a general category of subject matter into which the performance objectives have been grouped.

    b. Conditions: a description of the relevant materials and/or problems that will affect the learner's performance.

    c. Performance: an observable, measurable description of what the learner will do.

    d. Criteria: a description of the quantitative and qualitative standards against which the learner's performance is to be measured.

PERFORMANCE OBJECTIVES DEVELOPMENT PROJECT

Statement

On The

Cooperative Education Technique

An approved vocational/technical program may utilize, at the discretion of the local educational agency, a cooperative education component. As a method of instruction, the cooperative education technique does not have program performance objectives which are separate from those of the approved vocational/technical program (by U.S.O.E. Code Number). An approved program may appropriately develop and implement performance objectives; a method of instruction (co-op, lecture, exploratory work experiences, etc.) does not, however, have planned performance objectives apart from those of the approved program.

Expressed in the terminology of performance-oriented instruction, this goal may be stated as follows:

Goal 1. The learner will demonstrate the achievement of the performance objectives of the approved vocational education program in either the school setting and/or the training station.

For skills and understandings acquired prior to or concurrent with the cooperative vocational education experience through preparatory and/or related instruction:

While employed in an approved training station and subject to the conditions of a training agreement/plan, the learner will demonstrate those skills and understandings acquired in preparatory and/or related instruction to the criteria of the program performance objectives or to the criteria of the cooperating employer. The criteria with the higher standard will be applied in the evaluation of learner achievement.

It is possible that a learner might be involved in cooperatively planned unique learning activities while a cooperative education student. In such cases, it would be desirable to include additional performance objectives specifically developed to cover these unanticipated needs of the learner as a part of the training plan/agreement. Performance objectives so developed would probably have the following characteristics:

1. Few in number
2. Cooperatively developed and agreed to by learner, employer, and school.
3. Highly individualized because of their uniqueness.

(OVER)

In performance-oriented instructional terminology, this goal may be expressed as follows:

Goal 2. The learner will demonstrate the achievement of the performance objectives unique to a particular training station.

For skills and understandings which are not a part of the regular approved vocational program and which originate because of the unique requirements of a particular training station.

Given a deficiency in skills and/or understandings necessary to perform satisfactorily in a particular training station (identified by either the learner, the coordinator, or the employer) the learner will participate in the development of performance objectives to eliminate such deficiencies and will achieve those skills and/or understandings to the criteria mutually agreed upon by the parties to the training agreement.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Dental Hygienist

U.S.O.E. Code Number: 07.0102

Remarks: The following objectives will be performed under the direction of a dentist with a patient's well-being the primary concern.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Health History	1. Given patients that present non-normal conditions that a patient might record on a health history questionnaire that might influence treatment,	the learner will obtain and record the health history and utilize information to plan dental hygiene care,	without harm and undue discomfort to the patient, operator, and/or others 100% of the time.
Emergency Care	1. Given a person simulating a patient and/or sufficient simulations or descriptions of each of the following conditions: adverse drug reaction, circulatory disturbance or failure, hemorrhage, hysterical behavior, nausea, respiratory disturbance or failure, shock, seizure, syncope and retrieval of instrument parts,	the learner will determine the emergency care appropriate to the situation,	without harm and undue discomfort to the patient.

Topic	Conditions	Performance	Criteria
Oral Inspection and Charting	1. Given patients that include all normal and non-normal oral and dental conditions that a patient might exhibit,	the learner will observe and record normal and non-normal oral and dental conditions,	the necessary dental hygiene and dental services can be planned to meet these patient's needs.
Appointment Planning	1. Given data from oral inspections and health histories,	the learner will plan appointments,	the necessary dental hygiene services are offered in proper sequence.
Oral Health Instruction	1. Given a variety of patients and their dental data,	the learner will provide oral health instructions,	the learner has discussed and/or demonstrated with the patient the following methods of preventing periodontal disease and tooth decay: 1. Plaque removal technics a. flossing b. toothbrushing c. auxiliary aids 2. Diet and nutrition 3. Flouride a. ingested b. topical
Prevention of Disease Transmission	1. Given a patient in a dental operatory,	the learner will maintain asepsis,	at all times.
Scaling Teeth And Planing Roots	1. Given any patient with calcareous deposits and periodontal involvement,	the learner will scale the teeth and plane the roots,	100% of the supra-marginal, non-decalcified surfaces are visually clean and smooth to tactile sense, 95% of the sub-marginal, non-decalcified surfaces feel smooth, and no soft tissue laceration is visible within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
Polishing	1. Given an appropriate patient, equipment and supplies,	the learner will polish the teeth, fixed appliances and restorations,	1. no soft deposits and extrinsic stains remain. 2. restorations are free of tarnish and overhanging margins. 3. gingiva is not lacerated. 4. abrasion of the gingiva is minimized.
Removable Dental Appliances	1. Given a patient with a removable dental appliance with calculus and extrinsic stain,	the learner will clean and polish the appliance,	the appliance is clean, smooth, and unscratched 100% of the time.
Safety Standards For Exposing Radiographs	1. Given dental patient, written policy and equipment,	the learner will safely expose a variety of radiographs,	according to the regulations governing the use of radioactive isotopes, X-radiation and all other forms of ionizing radiation, Michigan Department of Public Health, Division of Occupational Health.
Preparation of Radiographs of Diagnostic Quality	1. Given dental patients, written policy and necessary equipment,	the learner will expose, process, and mount a variety of radiographs,	the radiographs are of diagnostic quality.
Interpretation of Radiographs	1. Given any radiograph of diagnostic quality,	the learner will interpret all images recorded,	the dentist may plan appropriate dental services.
Caries Preventive and Desensitizing Agent Application	1. Given an appropriate dental patient and necessary equipment,	the learner will apply Caries Preventive and Desensitizing Agents,	without tissue trauma and unnecessary patient discomfort.
Placement and Removal of Sutures and Surgical Dressings	1. Given a patient, equipment and supplies,	the learner will place and/or remove sutures and surgical dressings,	without tissue trauma and unnecessary patient discomfort.

Topic	Conditions	Performance	Criteria
Jurisprudence	1. Given hypothetical situations involving members of the dental health team,	the learner will indicate the role the dental hygienist may legally assume in each situation,	according to the amended Michigan Dental Practice Act.
Dental Equipment	1. Given dental equipment utilized by dental hygienists for performing their procedures,	the learner will maintain the equipment,	according to the manufacturer's instructions.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Dental Lab Technician

U.S.O.E. Code Number: 07.0103

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Dental Orientation	1. Without the use of reference materials,	the learner will describe the duties of a dental technician as prescribed by law,	ethics and jurisprudence in dentistry are followed according to appropriate legislation or dentist authorization.
Dental Morphology	1. Given illustrations, 1/2" or 5/8" carving blocks, Roach Carver, Bunsen burner, Boley gauge, Buffalo knife, wax spatula, Wesco #7 (B),	the learner will use the table of measurements to: 1. make instant comparisons mentally of the proportion of one tooth to another from any aspect 2. to draw accurate outlines of any aspect of any tooth 3. to carve with precision any design he can illustrate with line drawings	the drawings and carved teeth conform to normal tooth structure according to description of model or structures.
Dental Laboratory	1. Given the necessary tools, equipment and materials,	the learner will pour models, fabricate bite blocks with occlusal rim and mount cases on articulators	1. specified water and powder ratio is free of air pockets 2. base plate is adapted properly, extended to palatal seal, occlusal rim on alveolar ridge 3. mounted cases are centrically aligned and trimmed, with minimum excess material.

Topic	Conditions	Performance	Criteria
Partial Dentures	1. Given a master model, surveyor, duplicating material for refractory model (investment) oven, rosin dip, blue wax, preformed wax and sealon patterns; flasks, duplicating and investment rings, crucible formers, sprues, casting machine and technique metal-Jelenko,	the learner will fabricate a partial denture	the learner will construct a partial denture accurately to comply with specified measurements of master model, with 100% accuracy.
Complete Dentures	1. Given a master model for a full denture, stone, plaster, articulator, base plate, pink wax, artificial teeth, spatula, Bunsen burner, flask, liquid foil, acrylic resin, press,	the learner will fabricate a complete denture	he will select the proper teeth, have positive measurements of materials, use correct materials, complete a denture that is workable and esthetically presentable as per specifications.
Crown and Bridge	1. Given the necessary information and without reference materials,	the learner will list and describe the five specialized areas of the field and the work done in each of the areas	according to the N.A.D.L. definitions and with 100% accuracy.
	2. Given a set of models,	the learner will identify the following: the incisal papilla, the median suture, hamulor notches, frenums retromolar pads, ridges, rugae and fovea	6 of 7 are identified.
	3. Given a cross section drawing of a tooth and its surrounding structures,	the learner will correctly identify the following components: enamel, dentin, pulp, pulp canals, periodontal membrane, cementum, lamina dura and alveolar bone,	with 100% accuracy.
	4. Given models or drawings,	the learner will identify point angles, line angles, ridges, grooves, and fossas according to the position on the crown	with 100% accuracy.

Topic	Conditions	Performance	Criteria
	5. Given a set of 28 anatomically correct normal teeth,	the learner will identify these teeth as to anteriors and posterior, maxilliary and mandibular right and left, and place them in proper relation to each other	with 100% accuracy.
	6. Given an impression and the necessary materials,	the learner will mix an acceptable material and pour the impression	it is bubble free and produces a positive model with accurate detail when compared to a master model with 100% accuracy.
	7. Given models and bite registrations and any acceptable instrument; straight line, semi-anatomical or anatomical articulator, and the necessary materials and equipment,	the learner will articulate models of a common variety, maintaining proper vertical and centric occlusion or relation	as determined by the bite and compared to a similar set of models that have been articulated correctly.
	8. Given a model and the necessary materials and equipment,	the learner will fabricate removable dies, accurately, maintaining the exact position in relation to its adjacent and opposing teeth	with 100% accuracy.
	9. Given a model with removable dies, and the necessary equipment and material,	the learner will trim and detach the dies	when compared to a master model, it is 100% accurate.
	10. Given any tooth preparation and equipment and materials necessary,	the learner will fabricate in wax or other acceptable material the coronol portion of a tooth or any other part	to its proper anatomic form.
	11. Given drawings of various sprued patterns or wax patterns of various types,	the learner will identify those which are properly sprued and correct those that are improperly sprued, or sprue them correctly	they are sprued according to accepted and standardized manufacturer's specifications.

Topic	Conditions	Performance	Criteria
	12. Given a properly invested pattern and suitable materials (precious or non-precious metals) and equipment (electric muffle, hand lock) or vacuum casting machine or centrifical casting machine,	the learner will cast the pattern	with 95% accuracy.
	13. Given an inlay ring with investment and casting in place, and water hand brush, sand blast equipment and pickeling solutions,	the learner will properly prepare the casting for tie-in on die and finishing and polishing	without distorting or damaging the casting or margins.
	14. Given a raw casting, dental lathe, dental engine with handpiece, cut-off discs, stones, burs, brushes, buffs and abrasives,	the learner will finish and polish a restoration	without altering the anatomy and maintaining the margins, contacts and contours.
	15. Given an actual case or drawing and a prescription and the necessary materials and equipment,	the learner will fabricate or list and describe how to fabricate various types of pontics	they are esthetically acceptable and of biologically sound design according to manufacturer's suggested techniques.
	16. Given a typical soldering situation and an actual case or a list of procedural steps,	the learner will select the proper materials and procedures for completing the task, or list the steps and material necessary for completing the task	in proper order; with 100% accuracy.
	17. Given a prescription, veneer crown or pontic and the necessary equipment and materials,	the learner will match or alter shades	they are esthetically acceptable when compared to a shade guide or placed in the oral cavity.
Porcelain	1. Without the use of reference materials,	the learner will list in proper sequential order the various steps in the fabrication of a J.C. and a porcelain fused to metal restoration, both single units and multiple replacing missing teeth	with 100% accuracy.

Topic	Conditions	Performance	Criteria
	2. Given an impression and the necessary materials and equipment,	the learner will fabricate a working model that is compared to a master model with removable dies which have been articulated correctly	with 100% accuracy.
	3. Given a die and the necessary equipment and materials,	the learner will fabricate a platinum matrix	the matrix can be removed and replaced in the die without distoration with 100% accuracy.
	4. Given a die with a platinum matrix and the necessary instruments and materials,	the learner will manipulate the materials and form the restoration with proper condensed material and anatomy taking into consideration the shrinking of the material when fired	with 90% accuracy.
	5. Without reference materials,	the learner will list the advantages and disadvantages of air-fired and vacuum-fired porcelain	with 100% accuracy.
	6. Given a prescription, models and dies,	the learner will wax, invest, cast, solder if necessary, and condition the metal for opaque and apply a ceramic material, fire and glaze, producing acceptable restoration	according to the prescription.
	7. Given an appliance and the necessary stains,	the learner will correct the shade to match any given shade	80% of the time.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Medical Lab Technician

U.S.O.E. Code Number: 07.0200

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Hematology	1. Given a patient, a requisition, and the necessary supplies,	the learner will obtain appropriate blood samples by venipuncture or dermal puncture,	without undue discomfort to patient and without hemolyzing specimen.
	2. Given the necessary supplies,	the learner will construct a hemoglobin standard curve	so well that a known hemoglobin control can be read within - 2 S.D.
	3. Given blood samples and the necessary supplies,	the learner will perform a hemoglobin test following a recognized procedure	within 95% accuracy of a predetermined result.
	4. Given blood samples and the necessary supplies,	the learner will perform a hemotacrit test following a recognized procedure,	within 95% accuracy of a predetermined result.
	5. Given blood samples and the necessary supplies,	the learner will perform a manual red blood cell count following a recognized procedure,	within 90% accuracy of a predetermined result.
	6. Given the results for hemoglobin, hematocrit, and red cell counts on a patient,	the learner will calculate the MCH, MCV and MCHC	within 100% accuracy of predetermined results.

Topic	Conditions	Performance	Criteria
	7. Given MCH, MCV, and MCHC results,	the learner will describe how the red blood cells should appear on a stained smear	according to an acceptable reference
	8. Given blood samples and the necessary supplies,	the learner will perform a manual white blood cell count following a recognized procedure,	within 95% accuracy of a predetermined result.
	9. Given blood samples and the necessary supplies,	the learner will perform a sedimentation rate according to a recognized procedure,	within ± 1 mm of a predetermined result.
	10. Given blood samples and the necessary supplies,	the learner will prepare and stain a blood smear	so the following criteria are met: a. the smear has an even feathered edge. b. the blood does not touch the edge of the slide. c. red blood cells in the feathered edge barely touch one another. d. the RBC's are stained red, not blue or orange e. there is no precipitated stain on the smear
	11. Given well-stained blood smears and the necessary supplies,	the learner will in the feathered edge: a. Perform routine differential b. Estimate platelets c. Describe red blood cell morphology	 within 80% accuracy of a predetermined result according to acceptable reference. according to acceptable reference.
	12. Given blood samples and the necessary supplies,	the learner will perform a reticulocyte count by a recognized procedure,	within 80% accuracy of a predetermined result.
	13. Given blood samples and the necessary supplies,	the learner will perform a platelet count by a recognized procedure	within 90% accuracy of a predetermined result.

Topic	Conditions	Performance	Criteria
	14. Given blood samples and the necessary supplies,	the learner will perform a sickle cell test following a recognized procedure	arriving at same conclusion as predetermined results.
	15. Given blood samples and the necessary supplies,	the learner will perform a prothrombin test following a recognized procedure,	within 95% of a predetermined result
	16. Given blood samples and the necessary supplies,	the learner will perform a partial thromboplastin test following a recognzied procedure	within 95% of a predetermined result.
	17. Given a person and the necessary supplies,	the learner will perform a Lee-White clotting time,	according to an acceptable reference.
	18. Given a person and the necessary supplies,	the learner will perform a bleeding time,	according to an acceptable reference.
Blood Banking	1. Given blood samples and the necessary supplies,	the learner will determine and confirm the ABO blood type	according to a recognized procedure
	2. Given blood samples and the necessary supplies,	the learner will perform a complete Rh pheno-typing,	according to a recognized procedure
	3. Given blood samples and the necessary supplies,	the learner will perform a Direct Coomb's test	according to a recognized procedure.
	4. Given appropriate blood samples and the necessary supplies,	the learner will perform a major and a minor crossmatch	according to a recognized procedure
	5. Given blood samples and the necessary supplies,	the learner will perform antibody screening tests	according to a recognized procedure
Bacteriology	1. Given bacteriological specimens and the necessary supplies,	the learner will make direct smears and stain by the method of Gram	the gram positive and gram negative bacteria are accurate identified.
	2. Given bacteriological specimens and the necessary supplies,	the learner will streak plates for culture setup	so individual colonies can be isolated.

Topic	Conditions	Performance	Criteria
	3. Given bacteriological specimens and the necessary supplies,	the learner will initially culture bacteria,	in appropriate culture material for that specimen exactly following a checklist.
	4. Given bacteriological specimens and the necessary supplies,	the learner will transfer a single colony from initial culture to appropriate sub-culture media following a checklist.	bacteria can be identified
	5. Given bacteriological specimens and the necessary supplies,	the learner will prepare anaerobic and microaerophilic cultures,	the bacteria will grow.
	6. Given bacteriological specimens and the necessary supplies,	the learner will do antimicrobial susceptibility testing,	using a recognized procedure
	7. Given bacteriological specimens and the necessary supplies,	the learner will do colony counting on pour plates or surface on urine cultures,	within 95% accuracy of a predetermined result.
	8. Given specimens and the necessary supplies,	the learner will process specimens,	the parasites, if present, can be identified.
Serology	1. Given blood samples and the necessary supplies,	the learner will perform tests such as ASO titer	within required accuracy of a predetermined result.
	2. Given blood samples and the necessary supplies,	the learner will perform agglutination tests such as febrile agglutinins or latex procedure	within required accuracy of a predetermined result.
	3. Given blood samples and the necessary supplies,	the learner will perform flocculation tests such as the VDRL	within required accuracy of a predetermined result.
	4. Given blood samples and the necessary supplies,	the learner will perform precipitation tests such as CRP	within required accuracy of predetermined results.
Chemistry	. Given a balance and the necessary supplies,	the learner will prepare standard solutions by gravimetric method,	the solution can be used in a chemistry determination.

Topic	Conditions	Performance	Criteria
	2. Given the necessary supplies,	the learner will set up a standard curve for a chemical determination and read a control for that determination from this curve,	within ± 2 S.D. of a predetermined result
	3. Given blood samples and the necessary supplies,	the learner will prepare a protein-free filtrate	the procedure requiring the same can be performed within ± 2 S.D. of a predetermined result.
	4. Given blood samples and the necessary supplies,	the learner will do at least one titrimetric method, such as a chloride or calcium determination.	within ± 2 S.D. of a predetermined result.
	5. Given not less than ten random numbers,	the learner will do a standard deviation problem,	the mean and standard deviation is within 100% accuracy of a predetermined result.
	6. Given blood samples and the necessary supplies,	the learner will do the following: a. plasma hemoglobin b. hemoglobin c. electrolytes d. enzymes e. cholesterol f. blood urea nitrogen g. proteins h. bilirubin	within ± 2 S.D. of a predetermined result.
	7. Given blood samples and the necessary supplies,	the learner will perform an electrophoresis procedure following a checklist,	the fractions can be identified
Urinalysis	1. Given urine specimens and the necessary supplies,	the learner will do a chemical and physical exam to include: a. color b. turbidity c. pH d. Albumin e. sugar f. ketones g. bile h. specific gravity i. occult blood	obtain similar results.

Topic	Conditions	Performance	Criteria
	2. Given urine specimens and the necessary supplies,	the learner will do a microscopic on each, including identification of normal and abnormal sediment,	to concur with a predetermined result.
	3. Given urine specimens and the necessary reagents,	the learner will do urine pregnancy tests,	duplicating predetermined results.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Medical Lab Assistant

U.S.O.E. Code Number: 07.0203

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

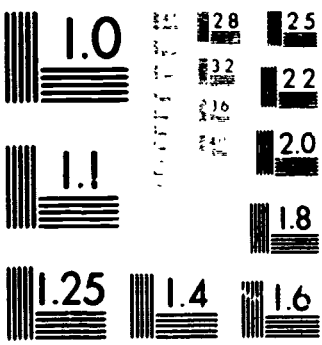
Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Ethics - Law	1. Given a combination of 30 different problems dealing with ethics, law, public relations, and workers and patient's rights,	the learner will explain the proper procedure for dealing with each problem	24 of the 30 problems are answered with 100% accuracy according to any standard text.
Medical Terminology	1. Given 30 laboratory oriented medical terms and 30 general medical terms, and without reference material,	the learner will list and explain	24 of the laboratory terms and 24 of the medical terms.
	2. Given 20 common laboratory abbreviations and without reference material,	the learner will explain the meaning of	15 of the 20 abbreviations.
	3. Given 20 definitions and without reference material,	the learner will change the definitions to abbreviations	for 15 of the 20 definitions.
Equipment	1. Given a Bunsen or Fisher burner, and necessary equipment,	the learner will light and adjust the flame	peak efficiency is attained and a steady, non-yellow-almost invisible flame is obtained.

Topic	Conditions	Performance	Criteria
	2. Given glass tubing and necessary equipment,	the learner will: a. cut a tube to fit a 5-gallon water bottle b. bend the tube to 90° c. insert the tube in a rubber stopper	a. when tube is bent, it is within 2" of the bottom b. the 90° angle is smooth and and without a kink c. the tube is inserted without breakage so no injury comes to him/herself or others.
	3. Given graduated pipets and 1% acetic acid,	the learner will select the most accurate pipet and pipet 1 ml., 5 ml., 10 ml., .1 ml., and .01 ml. amounts	the amount pipeted is exactly as designated within the accuracy limitations of the individual pipet.
	4. Given a variety of commonly used contaminated glassware, including micro-pipets, test tubes bottles, and electronic curvettes, cleaning solutions and necessary equipment,	the learner will select proper cleaning materials and clean used glassware	ionic or observable contamination is not evident and the electronic glassware is not scratches or scored.
	5. Given a triple-beam and platform balance, and five designated amounts of dry compound,	the learner will weigh the designated amounts of compound	the amount weighed is within the sensitivity of the individual balance with 100% accuracy.
	6. Given graduated cylinders and five designated amounts of fluid,	the learner will measure the designated amounts	the amount measured is exactly as designated to within accuracy limitations of the individual graduated cylinder.
	7. Given a microscope in need of cleaning, necessary cleaning equipment, and three specimens,	the learner will properly clean the microscope, select proper objective and focus each specimen	peak resolution and magnification is obtained for all three specimens without damage to the microscope or the specimen.
	8. Given necessary equipment and reference materials,	the learner will prepare a percent, molar, normal and staining solution	the prepared solutions perform efficiently in the test for which they are required with 100% accuracy.

Topic	Conditions	Performance	Criteria
	9. Given a test tube of a separated mixture,	the learner will pour off the filtrate from the solid material	maximum filtrate is obtained without spill-over of solid material.
	10. Given a centrifuge, a test tube containing a mixture, and a balance tube,	the learner will centrifuge a mixture of solid and liquid	the filtrate is clean, the centrifuge does not go off balance, and no tube breakage occurs.
	11. Given different filter papers, a filter, and a simulated blood and urine specimen,	the learner will select the proper filter paper, correctly fold the filter paper and filter the specimen	maximum filtrate is obtained without contamination by solid with 100% accuracy.
	12. Given 15 requests for: a. blood chemistry b. hematology c. cultures and necessary equipment,	the learner will set up a. blood chemistry b. hematology c. culture trays	15 simulated blood collections may be performed without interruption in procedure due to missing equipment, with 100% accuracy.
	13. Given a request slip, necessary equipment and an artificial blood collection arm,	the learner will select the proper equipment and draw the correct amount of specimen	on the first try for the test requested, according to standard references with no undue damage occurring to the arm.
	14. Given a concentrated solution and reference material for a dilute solution,	the learner will calculate the amount of solvent to be added to prepare the dilute solution and then prepare the solution	it performs satisfactorily in the test or service for which it is intended with 100% accuracy.
Metric System	1. Given 10 English and 10 metric measurements, and without reference material,	the learner will convert the measurements for length, volume and weight from one system to the other as applied	16 of the 20 conversions are 100% accurate.
Hematology	1. Given an actual patient, a stop watch and a capillary tube,	the learner will perform a capillary coagulation time	the capillary time is within previously established normal limits and no undue injury occurs to the patient.

Topic	Conditions	Performance	Criteria
	2. Given an actual patient and/or a test tube of human blood, and all necessary equipment,	the learner will perform a Hemoglobin, WBC, and HCT by pricking the finger of the patient and/or drawing blood from the test tube and diluting the blood when necessary, and counting or calculating on instruments	the resulting Hemoglobin, WBC and HCT have a deviation of no more than ± 5% from established values.
	3. Given a test tube of blood, micro pipet mouthpiece, and tubing and slides,	the learner will prepare a slide for a differential	a symetrical feather edge is obtained and all cells appear evenly dispersed throughout the slide.
	4. Given a prepared differential slide, stain, and the appropriate reference material,	the learner will stain the slide	all cells are stained within proper color dimensions as described in the reference, with 100% accuracy.
Urinalysis	1. Given a dipstix and a urine specimen of known analysis,	the learner will perform a urinalysis including analysis for blood, albumin, pH, ketone and sugar	the results obtained are 100% accurate with the known analysis.
	2. Given a urine specimen containing previously analyzed sediment, slide and color slip,	the learner will set up a urine for sediment analysis by pouring a representative sample from a urine specimen, centrifuging, decanting, placing a well-mixed drop of sediment on a slide and covering with a cover slip	the sediment drop does not overflow the slide and the analysis of the sediment agrees with the previous analysis of the same specimen
	3. Given three simulated urine specimens of known specific gravities and related equipment,	the learner will perform urine specific gravities on the specimens	the readings are within ± 1.002 of the known values.
	4. Given a previously analyzed urine specimen, clinitest tablets and water,	the learner will perform a urine sugar Clinitest	the results are 100% accurate with the previous analysis.

Topic	Conditions	Performance	Criteria
	5. Given three prepared urine specimens of known descriptions,	the learner will describe each specimen by color, odor and turbidity	the results are 100% accurate with the known descriptions.
Microbiology	1. Given a slide containing gram positive and gram negative bacteria, gram stain, and appropriate reference material,	the learner will stain the slide	the bacteria appear by color as described in the references used with 100% accuracy.
	2. Given autoclave, glassware media, Bunsen burner, other necessary equipment, and reference material,	the learner will prepare and sterilize 100 ml of nutrient agar and pour petrie dishes	after 24 hours the media appears as described in the reference material, remains without bacteria or fungus contamination, and when cultured it supports bacteria growth.
Serology	1. Given 3 specimens of blood and related equipment,	the learner will prepare the specimens for a V.D.R.L.	with 100% accuracy as described in any standard reference.
Blood Banking	1. Given 3 samples of known ABO and Rh type blood,	the learner will type for ABO and Rh	the results are 100% accurate with the known values.
Chemistry	1. Given 3 blood specimens and a list of proper steps to follow for auto analysis,	the learner will prepare the blood specimens for sugar, B.U.N. and chloride auto analysis	with 100% accuracy.



MICROCOPY RESOLUTION TEST CHART

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Nursing, Associate Degree

U.S.O.E. Code Number: 07.0301

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Supportive Skills	1. Given a hospitalized patient of any age or degree of illness with a common health problem, excluding those in specialized areas,	the learner will: 1. Assist the patient to meet personal hygiene and comfort needs, i.e., bathing, oral care hair care, nail care, bedmaking, other 2. Maintain an environment conducive to comfort, i.e., temperature, ventilation, lighting, noise, privacy, humidity, other 3. Turn and position a patient in correct body alignment utilizing correct body mechanics 4. Assist patients to perform range of motion (active and passive) exercises 5. Use supportive and comfort devices for the in-bed patient, i.e., cradle, footboard, trochanter roll, other 6. Transfer patients from or to bed via stretcher, wheel chair other 7. Use supportive and comfort devices for the out-of-bed patient, i.e., wheel chair, walker, cane, crutches	without error or as otherwise stated and according to currently accepted standards and procedures of the educational institution and/or health care facility

Topic	Conditions	Performance	Criteria
		8. Assist patients to become ambulatory, i.e., dangle, stand, walk 9. Assist the patient with elimination, i.e., bathroom, urinal, bedpan, other 10. Provide assistance to patients having special procedures, i.e. physical examination, lumbar puncture, pelvic examination, other a. reassure and explain to patient and/or family b. Prepare equipment c. Prepare the patient, i.e., drape and position d. Assist other members of the health team e. Follow through on care of equipment 11. Admit, transfer, and discharge patients, including care of personal property 12. Prepare the patient for surgery 13. Insure that the patient receives the correct diet at the correct time 14. Assist patients to eat 15. Assess dietary intake of patient	
		16. Weigh and measure a patient	with 100% accuracy
	a. Given a clinical thermometer, b. Given an aneroid or mercury (hg) sphygmomanometer and a stethoscope,	17. Obtain body temperature i.e., oral, rectal, or axillary. Obtain systolic and diastolic blood pressure	with 100% accuracy within 2-4 millimeters of absolute

Topic	Conditions	Performance	Criteria
	c. Given a stethoscope,	locate the apex of the heart and count heart rate	within 2-4 beats accuracy
	d. Given a watch with a second hand,	locate and count the pulse rate at these arterial sites: temporal, carotid, brachial, radial, femoral, popliteal and pedal	within 2-4 beats accuracy
	e. Given a watch with a second hand	count the respiratory rate	with 100% accuracy
	f. Given a fetoscope or ultrasonic monitor,	locate (by palpating) and count fetal heart tone	within 2-4 beats accuracy
		18. Obtain routine specimens according to test and type of specimen needed, i.e., stool, urine, throat, wound, other	
		19. Correctly handle, label, and route specimens obtained by a physician, i.e., tissue, body fluids, blood, fetus, other	
		20. Perform tests on urine, i.e., Clinitest, Testape, Acetest	with 100% accuracy
		21. Utilize protective measures a. Apply protective devices, i.e., side rails, restraints, other b. Observe and enforce safety regulations, i.e., fire, tornado, radiation, disaster c. Observe and enforce environmental safety, i.e., electrical outlets, dry floors, other	

Topic	Conditions	Performance	Criteria
		d. Utilize principles of asepsis while caring for patients: 1) Medical asepsis, i.e., isolation, handwashing, other 2) Surgical asepsis, i.e., dressing change, injections, catheterization, other 22. Maintain identification of patient, i.e., wrist band, bed card, record, footprint, chart, medication card, other	
	2. Given a hospitalized patient of any age or degree of illness with a common health problem in a specialized area, whose care involves supportive skills,	the learner will perform these skills (1 through 22) with assistance	without error or as otherwise stated and according to currently accepted standards and procedures of the educational institution and/or hospital.
Therapeutic Regime (Nursing and Medical)	1. Given a hpspitalized patient of any age or degree of illness with a common health problem excluding those in specialized areas and a physician's order,	the learner will: 1. Administer medications a. Oral b. Subcutaneous c. Intramuscular 2. Monitor intraveous therapy (including blood transfusions), using the following skills: a. Determine that solution is flowing into the vein b. Calculate mathematically desired rate of flow c. Adjust the rate of flow accordingly d. Add medications	without error or as otherwise stated and according to currently accepted standards and procedures of the educational institution and/or hospital

Topic	Conditions	Performance	Criteria
		e. Discontinue infusion f. Change tubing and bottles 3. Measure intake and output 4. Prepare and give enemas 5. Maintain patency and drainage from a. Chest tubes b. Nasogastric tubes c. Intestinal tubes d. Urinary catheters e. Incisional drains 6. Remove secretions via suctioning the naso-pharyngeal cavity, using bulb syringe and nasal catheter attached to suction machine 7. Position to facilitate drainage, i.e., chest pelvic, and wound 8. Assist with coughing, deep breathing, and leg exercises 9. Perform uterine fundal massage 10. Irrigate body cavities, i.e., bladder and colon 11. Change dressings 12. Care for wounds, i.e., incisions, decubitus, stoma, skin graft, other including cleansing, heat application, packing, and soaks 13. Apply binders, ace bandages, elastic stockings, 14. Apply hot, cold, moist, dry compresses 15. Give Sitz bath	

Topic	Conditions	Performance	Criteria
	2. Given a hospitalized patient of any age or degree of illness with a common health problem excluding those in specialized areas and a physician's order,	the learner will be familiar with and/or use the equipment with assistance necessary for the performance of skills (1 through 15),	without error or as otherwise stated and according to currently accepted standards and procedures of the educational institution and/or hospital
	3. Given a hospitalized patient of any age or degree of illness with a common health problem excluding those in specialized areas and a physician's order,	the learner will be familiar with and will assist with: 1. Application and use of rotating tourniquets 2. Irrigations: ear, throat, wound, vaginal 3. Set up and operation of commonly used oxygen equipment: nasal canula, catheter, mask, croupette, isolettes 4. Technique of venipuncture 5. Nasal gastric feedings 6. Urethral catheterization 7. Medications: a. Suppositories - - rectal and vaginal b. Instillations (bladder, eyedrops, eardrops, nose drops) c. Topical 8. Naso-gastric tube insertions 9. Cardio-pulmonary resuscitation	without error or as otherwise stated and according to currently accepted standards and procedures of the educational institution and/or hospital
	4. Given a hospitalized patient of any age or degree of illness with a common health problem in a specialized area and a physician's order, OR Given a patient whose condition or therapy involves the use of any of the following:	the learner will care for the patient with assistance: 1. Traction or casts 2. Respirators 3. Isolettes 4. Monitors 5. Special beds--Stryker frame, circo-electric, other 6. Dialysis 7. Other	without error or as otherwise stated and according to currently accepted standards and procedures of the educational institution and/or hospital

Topic	Conditions	Performance	Criteria
Observation Skills	1. Given a patient in a health care facility of any age or degree of illness with a common health problem,	the learner will recognize and interpret observations and initiate nursing action by: 1. Identifying symptoms of illness in contrast to the state of health[1], i.e., common disease conditions, drug reactions, circulatory impairment, fluid and electrolyte imbalance [1]World Health Organization: "Health is a state of complete physical, mental and social well-being, and not merely the absence of disease and infirmity." 2. Recognizing and interpreting gross deviations from normal, such as: a. Skeletal-muscular functions 1. Weight and height relationships 2. Posture body alignment 3. Muscle function and strength 4. Physical development throughout the life cycle b. Regulatory functions 1. Levels of consciousness 2. Pupil size and reaction 3. Tactile response 4. Integrity and characteristics of skin 5. Temperature 6. Reaction to external stimuli	without error or as otherwise stated and according to currently accepted standards and procedures of the educational institution and/or hospital

Topic	Conditions	Performance	Criteria
		c. Cardio-Pulmonary functions 1. Cardiac effectiveness a. Blood pressure b. Pulse--rate, rhythm, volume 2. Respiratory effectiveness a. Depth, rate and quality b. Color of skin, nail beds, earlobes d. Excretory functions 1. Urinary output--characteristics of urine 2. Diaphoresis 3. Dehydration e. Digestive functions 1. Ability to retain digested food and fluid 2. Passage of food through the digestive tract 3. Evacuation of bowel f. Development of the newborn, i.e., Apgar rating, congenital abnormalities, extra uterine transition g. Physical and mental development throughout the life cycle h. Behavior patterns 1. Anxiety 2. Depression or Elation 3. Hostility 4. Withdrawal 5. Aggression i. Other 1. Pain 2. Clinical laboratory	

Topic	Conditions	Performance	Criteria
		tests, i.e., complete blood count, hemoglobin, hematocrit, urine analysis, prothrombin time, others 3. Drainage from body cavities, i.e., chest, stomach, intestines and bladder 4. Wound drainage 3. Recognizing verbal and non-verbal communications which provide clues to the patient's needs and/or condition 4. Evaluating the patient's responses to the therapeutic regime and supportive measures	
Reporting and Recording Skills	1. Given a patient in a health care facility of any age or degree of illness with a common health problem,	the learner will : 1. Use correct medical terminology	without error or as otherwise stated and according to currently accepted standards and procedures of the educational institution and/or health care facility.
		2. Report and/or record observations relevant to the patient's condition to other members of the health team	conveying accurate and essential information to the right person(s) about the right patient at the right time via the right route or method, i.e., verbal or written report or the telephone
		3. Protect the confidentiality of information and patient's records	at all times
Organizational Skills Individual 9/74	1. Given an assignment of total care for a patient or group of patients of any age and degree of illness with a common health problem in a health care facility,	the learner will: 1. Assess the patient's immediate needs (physical, emotional, social, other) and set priorities for care	without error or as otherwise stated and according to currently accepted standards and procedures of the educational institution and/or health care facility

Topic	Conditions	Performance	Criteria
		2. Plan individualized care according to medical and nursing assessments 3. Develop and maintain a written plan of care 4. Implement the nursing care as planned 5. Evaluate the nursing care as implemented 6. Reassess the nursing needs 7. Change plans and set goals for nursing care as indicated, with assistance 8. Develop a plan of care for discharge	
Organizations Skills - - Leadership	1. Given an assignment as the leader of a group of health care workers who are responsible for the total care of a group of patients of any age and degree of illness with common health problems in a health care facility excluding those in specialized areas,	the learner, with assistance, will: 1. Assess the overall nursing needs of all patients assigned to the group and set priorities for care 2. Plan nursing care assignments for each member of the group in accordance with the member's level of preparation and competence 3. Direct and supervise the nursing care assignments as planned for each group 4. Evaluate the implementation of nursing intervention in the delivery of nursing care 5. Re-assess and change assignments, as necessary	without error or as otherwise stated and according to currently accepted standards and procedures of the educational institution and/or health care facility

Topic	Conditions	Performance	Criteria
Teaching Skills	1. Given a patient in any health care facility,	the learner will plan and carry out teaching of the patient and/or family in the following areas: 1. Activities of daily living a. instruct the patient in self care appropriate to his age, abilities, and health status b. interpret safety regulations as appropriate 2. Maintenance of health a. Explain health and personal nygiene practices b. Instruct the patient in hygienic care practices 3. Prevention of illness a. Instruct the patient and/or his family in prevention of illness b. Instruct parents concerning immunization needs of children 4. Therapeutic Regime (Nursing and Medical) a. Explain the nursing care to be given including demonstrating nursing procedures as appropriate b. Teach procedures as appropriate, such as, urine testing, administration of insulin and other medications, ostomy care, exercises, and alterations of diet, other	according to accepted methods and techniques of patient teaching, i.e., 1. Considering the patient's readiness, motivation and need for learning 2. Using appropriate language adjusted to the kind and type of patient, family member, or personnel to be taught 3. Making the information meaningful to the individual 4. Using the three essentials to learning: self-pacing, feedback, and reinforcement 5. Other

Topic	Conditions	Performance	Criteria
		5. Child-bearing cycle a. Instruct family members in 1. Antepartal care 2. Process of labor and delivery 3. Postpartal care 4. Newborn care 6. Adaptive activities of daily living a. With the assistance of other members of the health team, instruct the patient in how to make appropriate adaptations in his activities of daily living b. Explain to the family: 1.Patient's adaptation to loss 2.The dying process 7. Teach less skilled personnel to carry out delegated nursing activities such as: a. Nursing care to be given and selected procedures to be performed in carrying out the medical and nursing regime b. Procedures of safety c. Procedures appropriate to prevention of infection as medical and surgical asepsis, isolation techniques, other	

GLOSSARY OF TERMS - NURSING, A.D. 07.0301

Health Team:	Those persons who by training and/or education, have a specific responsibility in the total care of the patient(s).
Other:	Where used, intended to be "similar to". Not to be considered as an all-inclusive list.
Specialized area:	Area defined as such by the institution.
Support:	Physical, emotional, psychological as appropriate.
With Assistance:	Will perform with guidance or the direct aid of another health worker who is competent in the required task or technique.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Practical Nursing

U.S.O.E. Code Number: 07.0302

Remarks:
L.P.N.

Given an assigned patient or group of patients of any age, the student will perform the following tasks according to written procedures and policies of the health care agency with the necessary competency to be a safe practitioner while working under supervision.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Observation of Patient	1. Given an assigned patient or group of patients of any age,	the learner will obtain, record, and report factual information from or about a patient,	the patient care assessment can be made and a nursing care plan developed, implemented or changed.
	2. Given an assigned patient or group of patients of any age,	the learner will identify, record, and report behavior which indicates the emotional status of the patient	the patient care assessment can be made and a nursing care plan developed, implemented, or changed.
	3. Given a patient who has been given a medication,	the learner will observe the patient for any physical or behavioral changes that may indicate undesirable reaction to the drug and record and report the change to the appropriate person.	the appropriate action may be taken within any vital time period that may exist.

Topic	Conditions	Performance	Criteria
Communications	1. Given an assigned patient or group of patients of any age,	the learner will: a. record observations and/or changes in the patient's condition and progress b. report observations and/or changes in the patient's condition and progress	the information is concise, legible and accurate to the proper person within any vital time period that might exist so that appropriate action will be taken.
	2. Given an assigned patient or group of patients of any age,	the learner will communicate related health care principles to patients and/or family members	so clearly that the recipient can verbalize and/or demonstrate the instructions given
	3. Given an assigned patient or group of patients of any age,	the learner will communicate to the patient and/or his family those available community services,	that are appropriate to their needs.
20 Nursing Practices	1. Given an assigned patient or group of patients of any age,	the learner will admit, discharge, or transfer a patient	according to health agency's policy or procedures.
	2. Given an assigned patient or group of patients of any age,	the learner will maintain appropriate posture when performing nursing care or related tasks	in agreement with principles of body mechanics.
	3. Given an assigned patient or group of patients of any age,	the learner will maintain proper body alignment of the patient when performing nursing care,	using accepted supportive devices, comfort measures, and principles of body mechanics.
	4. Given an assigned patient or group of patients of any age,	the learner will perform nursing care to meet the physical needs of the patient	consistent with the nursing care plan.
	5. Given an assigned patient or group of patients of any age,	the learner will assist in maintaining optimal environmental conditions (temperature, light, noise, ventilation) in the patient's room	within the limitations of the situation, as appropriate for the particular patient.

Topic	Conditions	Performance	Criteria
	6. Given an assigned patient or group of patients of any age,	the learner will protect a patient's privacy at all times	the confidence is maintained and embarrassment is minimized.
	7. Given an assigned patient or group of patients of any age,	the learner will apply and assist in maintaining safety measures while practicing in the clinical areas,	the potential accidents are averted.
	8. Given a patient in labor,	the learner will assist in appropriate nursing care upon admission and throughout the various stages of labor and delivery	according to institutional policies and procedures.
	9. Given a post-partum patient and the necessary equipment,	the learner will: a. Give post-partum care b. Identify abnormal signs and symptoms c. Instruct the mother in personal hygiene	the post-partum hemorrhage is minimized, medical asepsis is maintained, and observations are accurately recorded and reported.
	10. Given a normal, newborn baby,	the learner will: a. Give routine care b. Identify, report and record abnormal conditions	the medical asepsis and proper identification is maintained and any complications are immediately reported and recorded.
	11. Given a patient with a common diagnosis,	the learner will recognize symptoms of a crisis situation and take action	that is appropriate within any vital time period that might exist.
	12. Given a patient of any age with a common disease,	the learner will participate in developing, implementing, and maintaining a nursing care plan	so that basic nursing care and restorative techniques are instituted.
	13. Given a patient needing a diagnostic examination or test,	the learner will assist other members of the health team in performing the appropriate tasks	according to institutional procedures.

Topic	Conditions	Performance	Criteria
	14. Given a patient,	the learner will take and record vital signs	to within .2 of accurate measure and report any significant deviations from normal to the appropriate person.
	15. Given an order,	the learner will administer medication to a patient	observing the five rights: the right patient, the right time, the right medication, the right amount and the right method.
	16. Given an order and a patient requiring irrigation,	the learner will irrigate wounds, body cavities, and/or tubes	maintaining medical/surgical asepsis according to institutional policies and procedures
	17. Given a patient in isolation,	the learner will administer nursing care to meet the patient's needs	maintaining medical/surgical asepsis according to institutional policies and procedures
	18. Given an order and a patient with a wound	the learner will change the dressing	maintaining medical/surgical asepsis according to institutional policies and procedures.
	19. Given a tray and a patient's specific diet order,	the learner will: a. check the contents of the tray b. remove any incorrect foods c. make necessary substitutions d. report any errors to the appropriate person e. record the eating patterns of the patient	the nutritional needs of the patient are met.
	20. Given a tray and a patient who needs assistance	the learner will feed the patient	using the appropriate method so that the nutritional needs of the patient are met.

Topic	Conditions	Performance	Criteria
	21. Given a patient receiving intravenous therapy,	the learner will monitor and/or discontinue the intravenous	as ordered by the physician
Legal & Ethical Considerations	1. Given an assignment in a health care facility,	the learner will practice nursing ethically and legally as a member of the health team	according to the current Michigan Nursing Practice Act and the L.P.N. Code of Ethics at all times.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Nursing Aide

U.S.O.E. Code Number: 07.0303

Remarks:

For those objectives which require the involvement of a patient, it is assumed that this person will be an actual patient in a clinical setting or a person simulating the condition of the patient as described within a classroom environment. Inasmuch as many performance objectives may have to be demonstrated within a classroom environment rather than a clinical setting, many of the criterion statements refer to "established procedure" rather than an outcome. This action is an attempt to acknowledge that procedures may vary from classroom to classroom and classroom to clinical setting. Whatever procedure is identified as being most appropriate for the actual or simulated situation is to be assumed as part of the objective.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Vital Signs	1. Given a thermometer and disinfectant,	the learner will clean, disinfect, and store the thermometer,	according to established procedure.
	2. Given a patient,	the learner will identify four out of six arteries where the pulse can be taken,	according to Nurse's Aid Manual.
	3. Given pencil and paper and a watch with a second hand,	the learner will count and record a radial pulse,	according to established procedure within four beats per minute variation.

Topic	Conditions	Performance	Criteria
	4. Given a patient, oral thermometer, watch with a second hand, tissue, cotton ball,	the learner will take, read, report, and record an oral temperature,	according to established procedure within .2° accuracy in 3 minutes.
	5. Given rectal thermometer, lubricant, pen and paper, watch with a second hand, tissue or cotton ball,	the learner will take, read and record a rectal temperature,	according to established procedure accurate within .2° in 5 minutes.
	6. Given oral thermometer, pen and paper, towel, watch with second hand,	the learner will take, read and report an auxiliary temperature,	according to established procedure within .2° in 10 minutes.
	7. Given sphygmomanometer, stethoscope, pen and paper,	the learner will take, record and report B/P,	according to established procedure.
	8. Given stethoscope, watch with second hand, two aides, pen and paper,	the learner will locate and account, record and report apical or radial pulse with another person simultaneously,	according to established procedure.
	9. Given pen and paper, watch with second hand,	the learner will count, record and report respirations,	according to established procedure.
Meals	1. Given a cart and trays,	the learner will wash hands and deliver trays to patients,	according to established procedure.
	2. Given tray with patient's diet,	the learner will feed a patient, report and record,	according to established procedure.
	3. Given a patient and patient's menu,	the learner will assist the patient to make selections,	according to established procedure.
Bath	1. Given a patient in bed, usual bedside equipment and personal items,	the learner will give a bed bath,	according to established procedure within 25 minutes.

Topic	Conditions	Performance	Criteria
	2. Given nail clippers, orange stick, file, basin of soap and water and any patient that is not diabetic,	the learner will give nail care,	according to established procedure within 10 minutes.
	3. Given a patient, soap, linen, water, and tub or shower,	the learner will assist the patient to take a tub bath or shower,	according to established procedure.
Oral Hygiene	1. Given a patient, gauze square, denture cup, cleaning agent, denture brush, mouth wash, drinking tube, and emesis basin,	the learner will give denture care,	according to standard procedure within 5 minutes.
	2. Given towel, emesis basin, toothbrush and toothpaste, tongue depressor with square taped to end, mouth swabs, container with water or mouthwash, and paper bag,	the learner will give mouth care (special)	according to established procedure.
	3. Given emesis basin, water or mouthwash, toothbrush, toothpaste, towel and straw,	the learner will provide equipment for patient oral hygiene,	according to standard procedure.
Hair Care and Shave	1. Given a towel, comb and brush,	the learner will care for the patient's hair,	according to established procedure in 5 minutes.
	2. Given small rubber sheet or rubber covered pillow, cotton balls, large rubber sheet, 4 large bath towels and washcloth, water and thermometer, shampoo, large bucket, stool, and newspapers,	the learner will give bed shampoo, and record,	according to established procedure.
	3. Given electric shaver and/or safety razor,	the learner will shave male patient,	according to standard procedure.

Topic	Conditions	Performance	Criteria
Elimination	1. Given a solution of 105°F, enema tray, lubricant, tissue, and bath blanket,	the learner will give a cleansing enema and record the time and results,	according to established procedure within 30 minutes.
	2. Given bedpan, cover, and toilet tissue,	the learner will give and remove a bedpan and record results,	according to established procedure.
	3. Given a patient with retention catheter, sterile irrigation equipment and solution,	the learner will irrigate Foley or Retention Catheter, using aseptic technique,	according to established procedure.
	4. Given urinal, cover and tissues,	the learner will give and remove a urinal and record results,	according to established procedure.
	5. Given solution, thermometer, emesis basin, enema unit, lubricant, tissue and bath blanket,	the learner will give a retention enema, record time, results and tolerance of patient,	according to standard procedure.
	6. Given a patient with a retention catheter,	the learner will tape catheter to patient, empty bag, and cleanse around urinary meatus,	according to established procedure.
	7. Given a patient with a colostomy,	the learner will assist the nursing staff with colostomy care,	according to established procedure.
	8. Given suppository, lubricant, tissue or medicine cup, glove or finger cot, and bath blanket,	the learner will insert a rectal suppository (non-medicated), and record,	according to established procedure within 5 minutes.
	9. Given water thermometer, enema kit, lubricant, incontinent pads, and a patient,	the learner will give a Harris flush,	according to established procedure.
Patient Beds	1. Given a hospital bed and linen,	the learner will make a post-operative bed,	according to established procedure within 15 minutes.

Topic	Conditions	Performance	Criteria
	2. Given hospital bed and linens,	the learner will make an open or closed bed,	according to established procedure within 8 minutes.
	3. Given hospital bed, linens and patient,	the learner will make occupied bed,	according to established procedure within 20 minutes.
Comfortable Environment	1. Given a patient in a room,	the learner will check and take necessary steps to correct the environment of a patient for temperature, light, humidity, noise, and placement of furniture and equipment,	the patient is maintained in a comfortable and safe environment.
Ambulation	1. Given a security belt and/or walker,	the learner will assist the patient to walk,	according to established procedure.
Rehabilitation Techniques	1. Given a patient,	the learner will assist with passive exercises,	according to established procedure and to pain tolerance of patient.
	2. Given a patient,	the learner will assist with active exercises,	according to established procedure and to pain tolerance of patient.
	3. Without reference materials,	the learner will list and describe 10 positions for a patient in bed,	according to Nurse Aide Manual.
Positional Deformities	1. Given sandbags, bath blankets, foot board, or a bed cradle,	the learner will place these devices in such a way as to maintain a patient in body alignment,	according to standard procedure.
Transfer Techniques	1. Given two other nursing personnel, a patient, cart, and bed,	the learner will do the three-man carry,	according to established procedure.
	2. Given bed, stretcher and bath blanket or sheet,	the learner will transfer a patient from bed to a stretcher,	according to established procedure.

Topic	Conditions	Performance	Criteria
	3. Given bed and chair,	the learner will assist a patient from the bed to a bedside chair or wheelchair,	according to established procedure.
	4. Given bed, sheet, and additional nurse personnel,	the learner will use a lifting sheet to move patients,	according to established procedure.
	5. Given a bed, hoyer lift, and chair,	the learner will use the hoyer lift to transfer a patient to a chair,	according to established procedure.
Security Measures	1. Given a patient and a call device,	the learner will instruct the patient in the use of the call device and place the call device	within the reach of the patient.
	2. Given a patient and safety rails,	the learner will use the side rails,	per the instructions of the physician or team leader.
	3. Given a patient with an order to use restraints,	the learner will reapply restraints before leaving the patient,	according to established procedure.
Patient Behavior	1. Given a simulated unusual incident involving a patient, visitor or employee,	the learner will report and record the situation,	according to established procedure.
Therapeutics	1. Given a water bottle, bath thermometer, and towel or cover,	the learner will prepare and apply a hot water bottle,	according to standard procedure within 5 minutes.
	2. Given water bottle, or ice cap, towel or cover,	the learner will prepare and apply an ice bag,	according to established procedure within 5 minutes.
	3. Given a patient and linen,	the learner will drape the patient for examination and/or treatment,	according to established procedure.
	4. Without reference materials,	the learner will list the steps in applying cold/warm compresses,	according to established procedure.

Topic	Conditions	Performance	Criteria
Fluid Intake and Output	1. Given a patient, meal tray, and intake-output sheet,	the learner will identify, measure, and record fluids consumed by the patient,	the amount recorded is accurate to within 2%.
	2. Without reference material,	the learner will list six types of fluid output,	according to established procedure from list of six.
	3. Given a graduate and fluid output (urine or other),	the learner will measure and record output,	according to established procedure.
Specimens	1. Given a special disposable unit,	the learner will collect and label a clean catch urine specimen, complete information on the label, and attach it to the specimen container,	according to established procedure.
	2. Given bedpan or urinal and cover, clean graduate, urine specimen bottle, specimen bottle cap, and label,	the learner will collect, label and record a urine specimen,	according to established procedure.
	3. Given bedpan, stool specimen bottle or waxed paper cup, lid or paper towel to cover the specimen, wooden tongue depressor, and label,	the learner will collect, label and record a stool specimen,	according to established procedure.
	4. Given sputum container and label,	the learner will collect, label and record a sputum specimen,	according to established procedure.
	5. Given large bottle, one gallon size, funnel, graduate and label,	the learner will collect, label and record a 24 hour urine specimen,	according to established procedure.

Topic	Conditions	Performance	Criteria
Sugar and Acetone Test	1. Given a urine specimen, reagent strip, test tape and/or Clinitest tablets and Acetest tablets, pencil and paper,	the learner will test urine specimens for sugar and acetone,	according to the established procedure with 100% accuracy.
Isolation Techniques	1. Given a room set up for isolation,	the learner will maintain isolation and carry out isolation techniques,	according to established procedure.
Admit, Discharge and Transfer Patient	1. Given an admittance form, clothing and valuables list, scale with measure, and pencil,	the learner will admit the patient,	according to established procedure.
	2. Given a clothing valuables list, discharge form, wheel chair and pencil,	the learner will discharge a patient,	according to established procedure.
Immobile Patients	1. Given a wheel chair, stretcher, and transfer order,	the learner will transfer the patient to another unit or facility,	according to established procedure.
	2. Given traction set-up and bed, cast, sandbags, and weights,	the learner will care for immobile patients,	according to traction procedures in the hospital manual and doctor's specific orders.
Patients Receiving Oxygen	1. Given an oxygen mask, tent, and nasal cunnula,	the learner will assist with care for a patient receiving oxygen therapy,	according to established procedure.
	2. Given patient receiving oxygen therapy and without the use of reference manual,	the learner will list the seven safety precautions when caring for a patient receiving oxygen therapy,	according to procedure manual.

Topic	Conditions	Performance	Criteria
Patient Centered Conferences	1. Given a team conference,	the learner will attend a patient-centered conference and contribute information,	according to the patient's diagnosis and established Nursing Care Plan and institutional procedure for conducting a patient-centered conference.
Patient Records	1. Given a patient's chart or medical record,	the learner will provide patient care information to a team leader or equivalent,	sufficient to document the care given.
	2. Given a patient's chart or medical record,	the learner will record procedures done for patients,	according to established procedure.
Basic Medical Terminology	1. Given a list of basic medical terms and abbreviations in the Nurse Aide Manual,	the learner will define these terms orally or in writing,	according to Aide Manual.
Special Skin Care	1. Given skin lotion, water, soap, towel and wash cloth,	the learner will give a back rub, observing and reporting skin condition,	according to standard procedure.
	2. Given a patient and heat lamp,	the learner will apply the heat lamp,	according to established procedure.
Perineal Care	1. Given warm water, soap, towel wash cloth, T-binder, peri-pad and heat lamp (for stitches),	the learner will give post partum perineal care,	according to established procedure.
	2. Given a sitz bath, basin or stool, water, thermometer, and towel,	the learner will assist the patient with a sitz bath,	according to established procedure.
	3 Given wash basin, warm water, wash cloth, towel, soap, perineal pad, and T-binder,	the learner will give perineal care,	according to established procedure.
	4. Given a douche unit, ordered solutions and a female patient,	the learner will administer a douche,	according to established procedure.

Topic	Conditions	Performance	Criteria
Sterilizing, Disinfecting and the Care of Equipment	1. Given water, a discharged patient unit, soap, disinfectant, cleaning cloths, needed linen,	the learner will clean and prepare the unit for a new patient,	according to established procedure.
	2. Given patient utensils, equipment, and instruments used in the care of the patient,	the learner will check, maintain, clean, disinfect and/or sterilize the equipment,	the equipment is clean and in proper working order.
Aseptic Hand-Washing Procedure	1. Given an assignment requiring aseptic handwashing,	the learner will perform the aseptic hand washing procedure,	according to established standards.
	2. Without the use of reference materials,	the learner will list the seven times when hand washing is necessary,	according to Nurse Aide Manual.
Intravenous Therapy	1. Given a patient receiving I.V. therapy,	the learner will identify the three signs of infiltration, swelling, redness, or pain and report any of these signs as soon as they are observed,	according to established procedure.
	2. Given patient receiving I.V. therapy, bath blanket, and clean gown,	the learner will change gown of patient receiving I.V. therapy,	according to established procedure. Time as determined by patient's condition.
	3. Given patient receiving I.V. therapy, watch with second hand, pencil and paper,	the learner will observe and report rate of I.V. flow,	according to established procedure within 3 minutes and within 5 drops per minute.
Pre-Operative Care	1. Given a pre-operative patient, pre-operative check list, thermometer, sphygmomanometer, stethoscope, O.R. patient pack, denture cup, and valuables envelope,	the learner will ready the patient for transfer to the operating room,	according to established procedure and doctor's orders.

Topic	Conditions	Performance	Criteria
	2. Given supportive hose, operative patient,	the learner will apply supportive hose,	according to standard procedure.
Post-Operative Care	1. Given bed linens, I.V. pole, suction, emesis basin, sphygomanometer, kleenex, tongue depressor, pencil and paper, and stethoscope,	the learner will ready a patient's room for return from recovery room.	according to established procedure within 15 minutes with no errors.
	2. Given pressure prevention devices and a patient,	the learner will apply the appropriate device,	according to established procedure.
	3. Given a patient and binder (abdominal, breast, scultetus, and T-binder),	the learner will apply the binder,	according to established procedure.
Terminally Ill Patient	1. Without reference materials,	the learner will list the 5 stages of death and dying in order,	according to Dr. Elizabeth Ross 1. Denial 2. Anger 3. Crying - Bargaining 4. Depression 5. Acceptance.
Post-Mortem Care	1. Given a deceased patient and post-mortem pack,	the learner will perform the post-mortem care,	according to health facility procedure within 30 minutes.
	2. Given a simulated patient who has stopped breathing and whose heart has stopped beating,	the learner will initiate C.P.R.	according to the A.B.C.'s of C.P.R. within 3 minutes without error.
First Aid Procedures	1. Without reference materials,	the learner will list 5 signs of shock,	according to Nurse Aide Manual.
	2. Without reference material,	the learner will list steps for immediate first aid of burns, hemorrhage, and convulsions,	according to Nurse Aide Manual.

Topic	Conditions	Performance	Criteria
Safe Environment	1. Without reference materials,	the learner will list five methods of preventing fires,	according to fire marshal's manual.
	2. Without reference materials,	the learner will identify five areas of environmental hazards of patients and employees,	according to Nurse Aide manual.
	3. Without reference materials,	the learner will list the various kinds of fires and an appropriate method for extinguishing each,	according to Nurse Aide Manual.
Role on the Health Team	1. Without reference materials,	the learner will list 10 duties of Nurse's Aide,	according to Nurse Aide Manual.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: X-Ray Technician

U.S.O.E. Code Number: 07.0501

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
History and Medical Ethics	1. Given a name of one of the members of the health team	the learner will discern the members role in the health team by describing its various work functions	to a degree that a lay person can quickly find satisfaction.
	2. Given the positions of each individual associated in a typical radiology department,	the learner will list the lines of authority of any one member upon request	to the extent that a health or lay person could interpret the duties of the individual in question.
	3. Without the use of reference materials,	the learner will relate in detail a brief history of the discovery of x-ray and its impact on the modern day medical diagnosis	to the extent that lay or health persons could cite evidence of its continued use.
	4. Given a list of professional organizations associated with health care,	the learner will identify those directly associated with his profession and list three reasons why membership in one of these organizations is desirable	with 100% accuracy.
	5. Given the "Code of Ethics for Registered Radiologic Technologist" as outlined by the American Registry of Radiologic Technologists,	the learner will relate two examples of how his clinical experience reflected the contents of the code	with 100% accuracy.

Topic	Conditions	Performance	Criteria
Medical Terminology	1. Given a medical term applicable to the specialty of radiology,	the learner will find the stem, prefix, suffix, and identify the term's meaning	to the extent that the technologist can converse its meaning in a period of time consistent with others in the health team, with 100% accuracy.
	2. Given an anatomical name of a bone or organ,	the learner will describe its location and placement to other anatomical landmarks	a fellow technologist could easily locate it radiographically during the first exposure.
	3. Given a locally accepted list of radiographic terms and their common abbreviations,	the learner will converse with his fellow technologist	the second technologist could duplicate the same procedure on the first attempt.
	4. Given a patient's medical record,	the learner will interpret the medical notations and abbreviations,	he/she can conduct the procedure and proper patient care to the extent that a good diagnostic examination and safe patient care is performed within the normally accepted time period.
	5. Given the proposed diagnosis and the specific examination ordered,	the learner will distinguish certain changes that occur in disease and injury and their application to the radiograph	a repeat examination is not necessary.
Patient Care	1. Given the suggested diagnosis of a patient,	the learner will provide safe patient care principles to seriously ill or injured patients	with 100% accuracy as stated in the Red Cross First Aid Manual.
Equipment Maintenance	1. Given a basic detection apparatus, such as a step wedge filter device, a spin top, chemistry test kit, or wire mesh screen,	the learner will perform routine preventive maintenance checks	simply and quickly and so well that minor malfunctions are identified.

Topic	Conditions	Performance	Criteria
Contrast Media	1. Given the types of radiographic procedures requiring the use of contrast media in order to demonstrate a particular type of anatomy,	the learner will list one type of contrast media used for each possible procedure	with 100% accuracy in accordance with The Physician's Desk Reference.
	2. Given the different types of contrast media,	the learner will describe and define the different forms of contrast media	the media can be classified as radiolucent or radiopaque.
	3. Given any particular radiographic examination,	the learner will write and/or describe the general preparation the patient required before the media is administered	to the extent that the diagnostic radiograph can be performed.
	4. Given any specific examination in which a media is administered,	the learner will describe in general the procedure to follow should the patient have a reaction	safe patient care is maintained.
Radiation Protection	1. When performing pediatric radiography,	the learner will: 1. Make the correct choice of exposure factors. 2. Make the best choice of screens and budky diaphrams to compensate for patient motion 3. Choose the size of film to fit the patient and part to be examined 4. Immobilize a patient by use of any of the available accessories 5. Use the collimator properly	with such proficiency so as to insure diagnostic radiographs and the least amount of radiation to the patient as possible.
	2. Given any patient,	the learner will perform any routine radiographic procedure using the following guidelines for radiation protection for the patient: (Continued)	the procedure is safe of unnecessary exposure and consistent with state and federal laws with the results being in the diagnostic range.

Topic	Conditions	Performance	Criteria
		1. General shielding 2. Gonodal shielding 3. Proper field aperature control 4. Proper devices and techniques to reduce radiation exposure absorption and by using the following guidelines for radiation protection of the technologist: 1. Use of lead aprons and gloves 2. Restrict holding patients during exposure 3. Remain behind shielding during exposure 4. Use of personal monitoring	
Patient Preparation	1. Given a fluoroscopic examination situation,	the learner will prepare the room for any of the following exams: 1. Esophogram 2. Upper G.I. 3. Small Bowel 4. Barium Enema	the exam can proceed.
Anatomy and Physiology	1. Given any anatomical plane, organ or system of the body,	the learner will describe and/or list the purpose and function of that particular bone, tissue, organ or system	with 80% accuracy as found in a basic anatomy and physiology book.
Radiographic Quality	1. Given a patient of any age and a requisition listing a diagnostic radiographic procedure,	the learner will position the patient in order to place the desired anatomical part for the specific procedure indicated and determine the following items in the selection of an exposure to diagnostic radiation levels: (Continued)	the resulting radiographs will be within acceptable diagnostic range.

Topic	Conditions	Performance	Criteria
Radiographic Positioning	1. Given any patient,	For Density Relationships: 1. Focal-film distance 2. Time; focal-film distance 3. Milliamperage; focal-film distance 4. Kilovoltage 5. Kilovoltage; milliampere-seconds 6. Time 7. Milliampere 8. Milliampere-seconds For Contrast Relationships: 1. Kilovoltage 2. Milliampere-time 3. Cone, grids and bucky diaphrams 4. Intensifying screens 5. Relative tissue absorption 6. Developer and processing cycle 7. Film inherent qualities 8. Magnification and distortion For Detail Relationships: 1. Radiographic sharpness 2. Radiographic definition 3. Visibility 4. Motion unsharpness 5. Object film distance 6. Focal spot size the learner will perform any routine examination involving accepted procedures of: 1. Anatomical body positioning 2. Patient assessment 3. Patient health maintenance 4. Selective exposure setting	the radiograph is within an acceptable diagnostic range.

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Topic	Conditions	Performance	Criteria
	2. Given a patient,	the learner will position the patient in an acceptable anatomical position to radiographically record any of the following structures: 1. Upper extremity 2. Shoulder girdle 3. Lower extremity 4. Hip joint and upper femur 5. Pelvic girdle 6. Cervical, thoracic and lumbar spine 7. Sacrum and coccyx 8. Bones of the thorax 9. Skull and its relative structures 10. Thoracic and abdominal viscera 11. Interstitial organs of the gastrointestinal tract, colon, biliary tract, urinary tract	the radiograph illustrates the desired structures on the first attempt.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Medical Assistant (Office)

U.S.O.E. Code Number: 07.0904

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Cognitive Skills	1. Given a sketch or model of the following: A. Ear (outer, middle, and inner) B. Eye C. Skin D. Reproductive systems E. Circulatory systems F. Skeletal system G. Digestive system H. Urinary system I. Muscular system J. Nervous system K. Respiratory system	the learner will identify their anatomical structures and describe their physiology,	all major anatomical structures identified and descriptions to be generally consistent with selected references.
	2. Given selected common medical terms,	the learner will define these terms and analyze them into their component prefixes, suffixes and roots,	with at least 85% accuracy.
	3. Without the use of reference material,	the learner will list examples of each of the following: A. Situation in which the doctor or his assistant could be sued.	at least five correct examples of each.

Topic	Conditions	Performance	Criteria
		B. Medical reports required by law C. Medical licensing requirements and/or reasons for revoking a license per Medical Practice Act	
	4. Without the use of reference materials,	the learner will describe the legal aspects of medical records regarding ownership, corrections, retention and release and/or transfer,	consistent with current medical/legal practices.
Laboratory Skills	1. Given a urine specimen and uninometer,	the learner will describe the physical characteristics (color, appearance, and specific gravity),	student's description agrees with the predetermined description and recordings of a qualified second party and within .0001 specific gravity.
	2. Given a urine specimen and a jar of labstix,	the learner will perform a labstix reading on pH, albumin, glucose, ketone and blood,	student's recordings agree within one color category of the predetermined recordings of a qualified second party.
	3. Given a urine specimen, centrifuge, centrifuge tubes, and microscope and slides,	the learner will process a urine specimen for microscopic analysis,	producing a microscopic specimen to be read which is not over filled, not dried up, and without bubbles or excessive artifacts.
	4. Given an EKG machine, recording paper, and EKG mounting card,	the learner will safely perform electrocardiograms by preparing patient; attaching limb and chest electrodes properly to the patient; standardizing the machine recording leads 1, 2, and 3, AVR, AVF, AVL, and chest leads 1-6; cutting and mounting an appropriate sample from each lead,	final result must reach acceptable EKG standards of base line width, 10 mm standard pulse, and minimal electrical and patient interference.

Topic	Conditions	Performance	Criteria
	5. Given a patient or culture plate and the necessary equipment (swabs, glass slides, gram stain, Bunsen burners, and microscope),	the learner will smear, fix and gram stain a slide,	yielding a clear microscopic differentiation between Gram positive and Gram negative bacteria.
	6. Given a patient or synthetic training arm, and the necessary equipment (tourniquet, alcohol, gauze, syringe, needle, vacutainer, and vacutainer holder),	the learner will obtain a blood sample,	by both the syringe and vacutainer method; sample must be obtained within an appropriate, specified period of time, and there must be no excessive trauma to the tissue or blood sample (example: Hematoma and Hemolysis).
	7. Given the appropriate equipment for doing a manual Hemoglobin, Hematocrit, and WBC count (Hemoglobin chamber, hemolysis sticks, Hemoglobinometer, micro-hematocrit tubes, sealing clay, hematocrit centrifuge, WBC pipettes, WBC diluting fluid, Hemacytometer, and microscope,	the learner will perform the following: A. Hemoglobin B. Hematocrit C. WBC Count	A. Hemoglobin: prepare, hemolyze and read results off the hemoglobinometer with results within 1 gm% of a reading of a qualified second party. B. Hematocrit: collect, seal, spin down and read results off the Hematocrit scale with results within 2% of the reading of a qualified second party. C. WBC Count: dilute, mix, load chamber, count, calculate the number of WBC/MM^3 with results within 1000 cells/mm^3 of the calculations of a qualified second party.

Topic	Conditions	Performance	Criteria
	8. Given a properly exposed X-ray,	the learner will develop and fix the X-ray film,	following standard photographic procedures and obtaining a usable result which is neither over nor under-developed, properly rinsed and dried, and free from visible artifacts.
	9. Without the use of reference materials,	the learner will describe dangers common to radiation exposure and state necessary precautions, compare types of radiation and describe proper preparation of patients for specific examinations with or without contrast media,	consistent with selected resource materials.
Clinical	1. Given an actual or simulated patient,	the learner will operate each piece of equipment necessary to perform the tasks described in the following objectives: temperature, pulse, respiration, B/P,	in such a way that no physical danger exists for any person involved in the activity.
	2. Given a simulated situation,	the learner will act as a medical assistant by calling the patient by name from the waiting room, communicating and preparing the patient for a specific exam or procedure,	maintaining proper asepsis and examination technique as specified, including: necessary diagnostic specimens, instrument set up, patient explanations, positions, and draping.
	3. Given appropriate instruments, equipment, and medical supplies,	the learner will perform the following measurement skills: A. blood pressure B. temperature C. pulse and respiration D. weight E. height	consistent with the readings of a qualified second party; as indicated below: A. blood pressure: within 2 mm. B. temperature: to the nearest tenth degree reading.

Topic	Conditions	Performance	Criteria
			C. pulse and respiration: within one point for a minute count or within two points for a 30 second count. D. weight: to the nearest fraction of a pound on an adult scale and the nearest fraction of an ounce on an infant scale. E. height: to the nearest fraction of an inch.
	4. Without the use of reference materials,	the learner will list equipment and supplies normally required for: A. Complete physical exam B. Pelvic and pap C. Rectal and sigmoid D. E.E.N.T. E. Minor surgery	consistent with previously identified inventories, checklists, and/or models.
	5. Without the use of reference materials,	the learner will describe the indications and contraindications of each of the following methods of physiotherapy: A. Thermal B. Light C. Electro D. Hydro E. Mechano F. Ultra-sound G. Massage	consistent with selected resource materials.
	6. Without the use of reference materials,	the learner will complete a practical and written examination of basic first aid principles and techniques as established by the American Red Cross,	with at least 80% accuracy.

Topic	Conditions	Performance	Criteria
	7. Given various medical instruments, cleansing agents, autoclave, and sterilization indicators,	the learner will clean, wrap, label, and sterilize supplies and instruments,	according to accepted medical and surgical aseptic standards.
	8. Given a diagram of the human body,	the learner will indicate appropriate sites for IM, Sub-Q, and IV injections,	at least two appropriate sites for each type of injection.
	9. Without the use of reference materials,	the learner will: A. Describe the most common classifications of drugs B. Write and interpret common prescription abbreviations C. Describe the proper administration of medicine,	A. By therapeutic use. B. From a previously identified, selected list of abbreviations. C. Consistent with the five "Rights" 1. Right patient 2. Right time 3. Right route 4. Right dosage 5. Right medication
	10. Without the use of reference materials,	the learner will prepare a patient for specimen collection, collect, label and preserve,	specimens to include: sputum, urine (mid-stream and 24-hour), feces, and blood (assorted tests).
Office Skills	1. Given a list of requested appointments, supporting details and an appointment book,	the learner will arrange the appointments in the book,	in given units of time, with priorities based upon patient's condition and doctor's available time and/or preference.
	2. Given a simulated situation,	the learner will receive telephone calls,	by obtaining and recording legibly and accurately all the necessary information to complete a telephone memorandum as provided.

Topic	Conditions	Performance	Criteria
	3. Given an actual or simulated filing exercise,	the learner will file and retrieve numeric and/or alphabetic materials into an established filing system which includes cross references,	with 100% accuracy.
	4. Given the necessary equipment, materials and information,	the learner will compose a letter, type it into a given format, and prepare it for mailing,	gramatically correct and error free (perfect copy or neatly corrected copy).
	5. Given appropriate pegboard (or write-it-once) materials and necessary information,	the learner will write a duplicate receipt for all incoming monies; record accurately all payments in log and patient's ledgers; and type and mail bill, when necessary,	log, bank deposits, and patient ledgers balance daily.
	6. Given the necessary materials and actual or simulated money,	the learner will maintain a petty cash balance, keep accurate records of money spent, and replenish supply when necessary,	balance will prove at any time.
	7. Given the necessary information and the required insurance forms (including Blue Shield, Medicaid, Medicare, and the standard medical insurance form),	the learner will type the information onto the forms,	accurately; all required information is included; and each form is typed to the specifications of the respective insurance company.
	8. Given a checkbook and a list of common medical disbursements and related information,	the learner will write checks,	which are complete and accurate, and the checkbook balances reflecting all disbursements.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Medical Emergency Technicians

U.S.O.E. Code Number: 07.0907

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Review Dispatch	1. Given (1) real dispatch data or (2) simulated dispatch data in the manner in which local services actually give dispatch information,	the learner will repeat the information, ask for missing information, describe possible injuries at the scene, and call for appropriate sources of help if needed,	he/she would be or actually is equipped and prepared for likely circumstances at the scene.
Overview Scene	1. Given a visual representation of a call scene,	the learner will note environmental and man-made hazards (such as radiation signs, fire, flooding, smoke, electrical wires, etc.), park the vehicle safely, initiate appropriate control measures or call for back-up help if needed, and plan an entrance and exit route,	emergency personnel equipment and patients would not be injured by elements of the scene.
Gaining Access	1. Given (1) an actual emergency, (2) a simulated emergency, or (3) a case description of an emergency which demands immediate access to the patient(s),	the learner will describe how to or actually gain access to the patient(s) by using his/her hands, DOT listed hand tools, and/or calling for additional help, stabilize and protect the patient(s), and develop an extrication plan,	using procedures as described in DOT recommended resources or their equivalent; the learner does not cause further injury to the patient(s).

Topic	Conditions	Performance	Criteria
Initial Patient Survey	1. Given (1) an actual patient, or (2) a simulated patient who is conscious or unconscious,	the learner will conduct a physical examination of the patient from the head to toe using his/her four senses (touch, hearing, sight, and smell), noting medic alert information and any variation from the patient's usual condition,	using procedures as described in the Michigan standardized training package, Initial Patient Survey or its equivalent; and appropriate emergency care can be initiated.
	2. Given (1) an actual patient, or (2) a simulated patient, or (3) a case description of a patient with multiple injuries,	the learner will prioritize treatment of the patient and describe or give emergency care in accepted order,	using procedures as described in DOT recommended resources or their equivalent; and the most life-threatening conditions are treated first.
	3. Given (1) an actual emergency, (2) a simulated emergency, or (3) a case description of an emergency with multiple patient(s),	the learner will prioritize the treatment of those patients and describe or give the emergency care in accepted order,	using procedures as described in DOT recommended resources or their equivalent and the patients with the most life-threatening conditions are treated first except for those judged moribund in the Initial Patient Survey.
	4. Given (1) a simulated, or (2) an actual patient,	the learner will determine and re-check the patient's vital signs (breathing, pulse, blood pressure), level of consciousness, responsiveness to pain and ability to move	using procedures as described in DOT recommended resources or their equivalent; and the patient's initial status and any changes can be reported to emergency department personnel, and student's accuracy will be within a tolerable range of the instructor's assessment.
Providing Emergency Care	1. Given (1) an actual patient, or (2) a simulated patient with acute respiratory distress,	the learner will recognize respiratory distress, clear an oral airway, and maintain an airway by using mouth-to-mouth resuscitation and a bag mask,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and/or no further injury is caused by the learner.

Topic	Conditions	Performance	Criteria
	2. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient who is hyperventilating,	the learner will recognize hyperventilation and describe how to or actually restore normal breathing by reducing the psychological stress of the patient and recycling the patient's carbon dioxide,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and/or no further injury is caused by the learner.
	3. Given a simulated conscious and unconscious patient with a stoma (neck breather),	the learner will check for and recognize the presence of a stoma and describe the procedure for airway management,	consistent with procedures described in DOT recommended resources or their equivalent.
	4. Given (1) an actual patient, or (2) a simulated patient with cardiac arrest,	the learner will recognize cardiac arrest, and working alone and as a member of a two-person team, will perform cardiopulmonary resuscitation,	for at least five minutes, using procedures as described in the most recent edition of the National Conference on Cardiopulmonary Resuscitation and Emergency Cardiac Care, or its equivalent.
	5. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient exhibiting external bleeding,	the learner will describe how to or actually control the bleeding by applying direct pressure, using pressure points and/or using an emergency tourniquet,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	6. Given (1) an actual patient, or (2) a simulated patient with symptoms of shock,	the learner will recognize the patient is in shock, classify the condition as (1) Hypovolemic shock, (2) Septic shock, or (3) Cardiogenic shock and administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	7. Given (1) an actual patient, or (2) a simulated patient with hypovolemic shock,	the learner will examine the patient for and recognize internal bleeding,	using procedures as described in DOT recommended resources or their equivalent; and no further injury is caused by the learner.

Topic	Conditions	Performance	Criteria
	8. Given (1) an actual patient, or (2) a simulated patient with an open wound including lacerations, punctures, eviscerations, and/or abrasions,	the learner will administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	9. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with avulsions,	the learner will administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	10. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with a puncture wound which contains an impaling object,	the learner will describe how to or actually administer emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the object is not removed and is immobilized at the point of protrusion from the patient.
	11. Given an actual or simulated patient who has a neck injury,	the learner will obtain a history and conduct an examination to determine to the possible presence of a spinal injury and will apply each of the following: a. cervical collar (commercial) or b. cervical splint--using available material and c. short backboard and/or d. long backboard In addition, he will demonstrate the proper method of moving such a patient,	using procedures as outlined in the Michigan Standardized Training Package Backboarding Spinal Injuries, or its equivalent, so that the head, neck and spinal column make a straight line, and the patient is immobilized on the backboard(s).

Topic	Conditions	Performance	Criteria
	12. Given an actual or simulated patient who has sustained an injury to the upper arm,	the learner will assess the injury to determine the presence of a fracture of the humerus or a dislocation of the shoulder by obtaining a history of (a) method of injury, (b) area of pain; and by conducting an examination, he/she will apply an arm sling, with or without splint,	using procedures as described in DOT recommended resources or their equivalent; and the upper arm is immobilized.
	13. Given an actual or simulated patient who has sustained an injury to the lower arm,	the learner will determine the presence or absence of a fracture of (1) the lower arm, (2) the wrist, (3) the hand, or (4) the fingers. The learner will apply splints to the appropriate area of the following types: a. inflatable b. preformed c. makeshift (i.e., using available materials)	utilizing procedures as described in DOT recommended resources or their equivalent; and the lower arm is immobilized.
	14. Given an actual or simulated patient who has sustained an injury to the upper leg and hip,	the learner will obtain a history and conduct an examination to determine the possibility of (a) fracture of femur, (b) fracture of the hip, or (c) dislocation of the hip. Following this, he/she will apply each of the following: a. traction spling (Thomas) b. long backboard c. a splint from available material d. splint by tying both legs together	utilizing procedures outlined in DOT recommended resources or their equivalent; and the femur and/or hip is immobilized with appropriate traction.

Topic	Conditions	Performance	Criteria
	15. Given an actual or simulated patient who has sustained an injury to the lower leg (the knee and below),	the learner will obtain a history and conduct an examination to determine the possibility of a fracture. She/he will apply the following splints: a. short leg inflatable b. long leg inflatable c. using available material d. aluminum	utilizing those procedures outlined in DOT recommended resources or their equivalent; and the lower leg is immobilized.
	16. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with a traumatic amputation,	the learner will describe how to or actually administer emergency care including the application of cold to the dismembered part,	using procedures as described in DOT recommended resources or their equivalent; patient's condition is stabilized and no further injury is caused by the learner.
	17. Given (1) an actual patient, (2) a simulated patient with head injuries,	the learner will recognize possible injuries and administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	18. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with eye, ear, and nose injuries,	the learner will recognize possible injuries, describe how to or actually administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	19. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with open or closed chest wounds, a crushed chest, flailed chest and/or tension pneumothorax,	the learner will recognize possible injuries, describe how to or actually administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.

Topic	Conditions	Performance	Criteria
	20. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with internal abdominal injuries,	the learner will recognize possible injuries, describe how to or actually administer appropriate emergency care and test for guarding, rigidity, and tenderness,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	21. Given (1) an actual patient, or (2) a simulated patient with injuries to the breasts and/or genitalia,	the learner will prepare the patient for, and conduct an examination, recognize possible injuries and administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	22. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with chemical or thermal burns,	the learner will describe how to or actually administer emergency care,	using procedures as described in DOT recommended resources; and the patient's condition is stabilized and no further injury is caused by the learner.
	23. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with electrical burns,	the learner will describe how to or actually recognize the burns may be caused by electricity, detect the presence or absence of a heart beat, and administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	24. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with heat exhaustion, heat cramps, heat stroke, and/or cold injuries,	the learner will describe how to or actually recognize these conditions and administer emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.

Topic	Conditions	Performance	Criteria
	25. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with an adverse drug reaction,	the learner will recognize the condition and will describe how to or actually handle the patient's psychological and physiological reactions,	using procedures as described in Alfred Koumans' Manual for the Treatment of Acute Drug Intoxication, 3rd edition, 1973, or its equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	26. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient whose symptoms or history indicate internal and/or external poisoning,	the learner will recognize the condition and describe how to or actually administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	27. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with a mammal, reptile, or insect bite,	the learner will describe how to or actually administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	28. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient who is drowned or near drowned,	the learner will describe how to or actually rescue the patient and administer appropriate emergency care recognizing the dangers of possible aspiration, respiratory distress and spinal injuries,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	29. Given (1) a simulated scene or (2) a case description involving radiation exposure,	the learner will recognize the universal radiation symbol, describe the potential hazards to him/herself and the patient(s), notify the appropriate authorities, and describe how to or actually decontaminate the patient(s), the vehicle and him/herself,	using procedures as described in DOT recommended resources or their equivalent; and no further injury is caused by the learner.

Topic	Conditions	Performance	Criteria
	20. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with internal abdominal injuries,	the learner will recognize possible injuries, describe how to or actually administer appropriate emergency care and test for guarding, rigidity, and tenderness,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	21. Given (1) an actual patient, or (2) a simulated patient with injuries to the breasts and/or genitalia,	the learner will prepare the patient for, and conduct an examination, recognize possible injuries and administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	22. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with chemical or thermal burns,	the learner will describe how to or actually administer emergency care,	using procedures as described in DOT recommended resources; and the patient's condition is stabilized and no further injury is caused by the learner.
	23. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with electrical burns,	the learner will describe how to or actually recognize the burns may be caused by electricity, detect the presence or absence of a heart beat, and administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	24. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with heat exhaustion, heat cramps, heat stroke, and/or cold injuries,	the learner will describe how to or actually recognize these conditions and administer emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.

Topic	Conditions	Performance	Criteria
	25. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with an adverse drug reaction,	the learner will recognize the condition and will describe how to or actually handle the patient's psychological and physiological reactions,	using procedures as described in Alfred Koumans' Manual for the Treatment of Acute Drug Intoxication, 3rd edition, 1973, or its equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	26. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient whose symptoms or history indicate internal and/or external poisoning,	the learner will recognize the condition and describe how to or actually administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	27. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with a mammal, reptile, or insect bite,	the learner will describe how to or actually administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	28. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient who is drowned or near drowned,	the learner will describe how to or actually rescue the patient and administer appropriate emergency care recognizing the dangers of possible aspiration, respiratory distress and spinal injuries,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and no further injury is caused by the learner.
	29. Given (1) a simulated scene or (2) a case description involving radiation exposure,	the learner will recognize the universal radiation symbol, describe the potential hazards to him/herself and the patient(s), notify the appropriate authorities, and describe how to or actually decontaminate the patient(s), the vehicle and him/herself,	using procedures as described in DOT recommended resources or their equivalent; and no further injury is caused by the learner.

Topic	Conditions	Performance	Criteria
	30. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient who has a contagious disease,	the learner will describe how to or actually take the necessary precautions to protect him/herself, the ambulance and others from the disease and notify the appropriate authorities,	using procedures as described in DOT recommended resources or their equivalent; and no further injury to the patient or health personnel is caused by the learner.
	31. Given (1) an actual pregnant woman, (2) a simulated pregnant woman, or (3) a visual representation of a pregnant woman who is in labor,	the learner will recognize the woman is in labor, describe how to or actually administer appropriate emergency care such as caring for the woman and baby during labor, delivery and/or post delivery,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and/or no injury is caused by the learner.
	32. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with convulsions,	the learner will recognize the patient is convulsing and describe how to or actually administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and/or no further injury is caused by the learner.
	33. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient experiencing a diabetic coma or insulin shock,	the learner will recognize a diabetic coma or insulin shock, and will describe how to or actually administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and/or no further injury is caused by the learner.
	34. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with symptoms of characteristic of myocardial infarction and/or angina pectoris,	the learner will recognize symptoms of myocardial infarction or angina pectoris and will describe how to or actually administer emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and/or no further injury is caused by the learner.

Topic	Conditions	Performance	Criteria
	35. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with symptoms of congestive heart failure,	the learner will recognize symptoms of congestive heart failure and will describe how to or actually administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and/or no further injury is caused by the learner.
	36. Given (1) an actual patient, (2) a simulated patient, or (3) a case description of a patient with symptoms of a stroke,	the learner will recognize the symptoms of stroke and will describe how to or actually administer appropriate emergency care,	using procedures as described in DOT recommended resources or their equivalent; and the patient's condition is stabilized and/or no further injury is caused by the learner.
	37. Given (1) an actual patient, or (2) a simulated patient,	the learner will identify the patient's feelings, identify his/her own feelings and practice the helping behaviors,	according to the Michigan Standardized Training Package on Psychological Intervention or the equivalent.
	38. Given (1) an actual emergency situation, or (2) a simulated emergency,	the learner will recognize the psychological stress of the patient(s), their families, companions, and/or bystanders and will be able to reduce the psychological stress by providing reassurance, explaining what has happened and what he/she is doing, and verbalizing the person's feelings in emphatic responses,	according to the Michigan Standardized Training Package on Psychological Intervention or the equivalent; and the patient's/relatives'/ bystanders' stress is lessened and not increased.
	39. Given (1) an actual emergency, or (2) a simulated emergency involving a patient(s) who is difficult to handle such as in the case of a violent, mentally ill, or suicidal person(s),	the learner will control the patient and/or recognize the need for additional help, identify the appropriate local source of help, and take appropriate action to secure help,	appropriate action can be taken to prevent further injury to the patient and/or others around the patient.

Topic	Conditions	Performance	Criteria
Transport	1. Given (1) an actual patient, or (2) a simulated patient,	the learner will determine whether or not the patient requires transport and if necessary, prepare the patient for removal and transport, and transport the patient,	in a manner consistent with the patient's condition; using procedures as described in DOT recommended resources or their equivalent; and no further injury is caused by the learner.
Role and Responsibilities of the MET	1. Given (1) an actual emergency, (2) a simulated emergency, or (3) a case description,	the learner will clearly define his/her responsibilities and differentiate these from the responsibilities of other health and emergency service personnel--especially the responsibilities of physicians, nurses, police and fire fighters,	consistent with the accepted local practices.
	2. Given a case study or case studies which illustrate one or more of the following problems: (1) Abandonment of patient, (2) Patient refusal of service, (3) Physical violence, (4) Implied consent (5) Treatment of minors, (6) Negligence, (7) Preservation of criminal evidence, (8) Confidentiality	the learner will explain the correct procedures for handling each problem,	consistent with applicable federal, state, and local regulations.
Communications and Reporting	1. Given (1) an actual emergency situation, (2) a simulated emergency, or (3) a case description of an emergency,	the learner will describe how to or actually relay the necessary emergency information to the appropriate authorities and medical personnel,	according to local practices; all information required is transmitted and verified in the manner prescribed by the agencies with whom the EMT is required to communicate.

Topic	Conditions	Performance	Criteria
	2. Given (1) an actual emergency call, (2) a simulated emergency call, or (3) a case description of an emergency call involving each of the following problems: secondary observed crime, obvious foul play (such as assault, rape, robbery, sale of drugs, fighting, etc.) gunshot or stabbing wounds, animal bites, suspected child abuse, communicable disease, and death,	the learner will identify what information should be reported and report the information to the hospital and/or the police,	consistent with applicable federal, state and local laws and local practices.
Emergency Medical Service Vehicles	1. Given a check list of DOT standards for ambulance equipment and an ambulance that is partially or fully equipped,	the learner will determine whether the ambulance meets DOT standards and determine which, if any, items of equipment are missing,	all DOT recommended equipment is either present and/or accounted for.
	2. Given an ambulance fully equipped to DOT standards in a non-emergency situation,	the learner will operate and maintain the ambulance and equipment; according to: (1) manufacturer's specifications, (2) Michigan Motor Vehicle Code, (3) local ordinances, (4) local MES standard operating procedures, by performing routine maintenance and/or by identifying problems which require special assistance	the ambulance is always ready for operation.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Comprehensive Homemaking

U.S.O.E. Code Number: 09.0101

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Child Care And Development	1. Without the use of reference materials,	the learner will demonstrate her awareness of the responsibilities of baby-sitting by preparing a list of ten responsibilities of the sitter; three responsibilities of her parents; and five responsibilities of the parents of the child,	as documented by previously cited reference sources.
	2. Given a series of case studies,	the learner will demonstrate or explain how to properly care for infants and toddlers in the following situations: feeding, dressing, bathing, holding, interpreting crying, and recognized potential dangers,	the explanation should be generally consistent with all the points listed in a locally used child care reference.
	3. Given case studies dealing with common behavior of pre-schoolers in problem areas (temper tantrums, bed-time rebellion, meal-time feeding, jealousy, shyness, etc.),	the learner will explain how to cope with the child,	by including all techniques given in the locally used child care reference.
	4. Given a series of case studies covering the topics of basic social behavior,	the learner will explain how they would handle a specific situation	as documented by previously cited reference sources.

Topic	Conditions	Performance	Criteria
Family Relations	1. Without the use of reference materials,	the learner will prepare lists of family responsibilities and will list the responsibilities for each of the following situations: a. one-parent employed family b. both parents employed family c. one-parent family d. three-generation family	including five for each of the family members. The responsibilities will be considered suitable if generally consistent with a previously cited reference.
	2. Given a series of case studies (including parent-teen conflicts, sibling rivalry) and/or family descriptions,	the learner will explain how to handle specific situations in order to improve family relationships,	the explanation will be acceptable if generally consistent with explanations accompanying case studies.
Family Health	1. Using the Red Cross Home Nursing text or Health Department pamphlets,	the learner will list all of the common communicable diseases	including venereal disease, measles, ruebella, chicken pox, mumps.
	2. Without the use of reference materials,	the learner will demonstrate methods of caring for patients in the home when illness occurs	judged according to standards in the Red Cross Home Nursing text.
	3. Without the use of reference materials,	the learner will list and describe three physical effects of abuse of alcohol, tobacco, and drugs	according to publications from local health agencies.
	4. Given the necessary materials and equipment,	the learner will demonstrate how to cope with common first aid emergencies (bandaging, shock, burns, electrical shock, artificial respiration, bleeding, broken bones, poison),	judged according to standards in Red Cross First Aid text.
	5. Without the use of reference materials,	the learner will compile a checklist of ten home safety practices	in accordance with the Red Cross First Aid text.
Foods and Nutrition	1. Without the use of reference materials,	the learner will prepare a list of five common kitchen dangers and explain how to completely eli[illegible]te these	as documented by previously cited reference sources.

Topic	Conditions	Performance	Criteria
	2. Given the necessary large and small home appliances and utensils,	the learner will demonstrate proper and safe use of such appliances and utensils while preparing food	judged according to the equipment care and use manuals and recognized text.
	3. Without the use of reference materials,	the learner will explain the function of the six major nutrients in the body	with 70% accuracy, according to the United States Department of Agriculture standards.
	4. Given a list of 20 commonly eaten foods including snack foods,	the learner will identify the major nutrients of each	according to USDA publications.
	5. Given the Basic Four Food Group Guides,	the learner will write a menu	meeting the daily requirements according to USDA standards.
	6. Given the necessary materials and equipment,	the learner will demonstrate 20 out of the following 28 techniques: dice — pan broil chop — stew blend — bake stir — par-boil beat — pre-cook saute — blanch fold — toss cut-in — julienne dredge — slice simmer — mince scald — knead broil — cream braise — whip pan fry — measuring	according to previously established local standards.
	7. Given the necessary equipment,	the learner will set a family-style table correctly	according to any general Home Economics text.
Clothing and Textiles	1. Given reference materials,	the learner will select a wardrobe becoming to her figure type, size and coloring	in agreement with design principles as stated in a designated reference.

Topic	Conditions	Performance	Criteria
	2. Using reference materials,	the learner will explain the procedures necessary for home care of garments including laundering, pressing and storage based on the type of fabric, fabric finishes, construction features, amount of wear and use intended	with 70% accuracy.
	3. Given the necessary equipment,	the learner will demonstrate proper use and care, excluding repairs, of sewing and pressing equipment,	with 100% accuracy according to care and use manuals and locally used clothing text.
	4. Given the necessary equipment and materials,	the learner will construct a wearable garment using the following construction techniques: a. use a guide sheet b. lay out, cut, and mark pattern pieces correctly c. staystitch d. use appropriate seam finishes e. apply zipper f. demonstrate hand-hemming g. buttonhole (machine-made) h. facing application i. apply interfacing j. pressing	in correct sequence and according to previously established standards.
Home Furnishings	1. Without the use of reference materials,	the learner will explain the design elements and design principles	according to locally used Home Furnishings text, with at least 70% accuracy.
Consumer Education	1. Given a newspaper with several store advertisements for equivalent items (at least six),	the learner will compare items advertised and explain from the advertisement the economies that can be realized by an analysis of the advertising	for at least two items, using the principles described in an authoritative text or equivalent reference material for cost comparison.
	2. Without the use of reference materials,	the learner will list five characteristics to look for when purchasing ready-to-wear clothing	according to locally used Clothing text.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Child Development

U.S.O.E. Code Number: 09.0102

Remarks: These recommended minimum program performance objectives apply to both one-semester and one-year approved programs. It is understood that the second semester of a one-year program would be devoted to:

(1) Those students who have not yet achieved the minimum program performance objectives.

(2) Enrichment beyond those performance objectives identified as program minimums.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Heredity/ Environment	1. Without the use of reference materials,	the learner will list a minimum of three factors each of heredity and environment and explain briefly how each may affect the future of the unborn child,	as documented by previously cited reference sources
Health Practices	1. Without the use of reference materials,	the learner will explain the importance of good health practices such as adequate professional care, good nutrition, adequate rest and exercise and the avoidance of unprescribed medication by the female prior to, during, and after pregnancy,	as documented by previously cited reference sources
The Newborn	1. Without the use of reference materials,	the learner will explain briefly the effects of the newborn on the family, including: a) sibling rivalry b) extended family c) time demands d) change in life style	as documented by previously cited reference sources

Topic	Conditions	Performance	Criteria
Physical Growth Characteristics	1. Given a nonsequential list of physical growth characteristics, (common to the child during the first five years),	the learner will list the characteristics,	in sequential order with 100% accuracy
Physical Needs	1. Given the following list of the five basic physical needs of the young child: a) Nutrition b) Activity c) Rest d) Clothing e) Environment	the learner will list a minimum of one way of meeting each need,	generally consistent with previously cited reference sources
Deviations	1. Without the use of reference materials,	the learner will state four deviations from normal physical growth development and four deviations from normal intellectual development,	consistent with previously cited reference sources
Intellectual Development	1. Given the following list of phases of the intellectual development of the young child: A. Physical Skills (1) Talking (2) Reading (3) Drawing (4) Counting (5) Writing B. Thinking Skills (1) Reasoning (2) Curiosity (3) Imagination (4) Perception (5) Memory	the learner will list a minimum of one activity or toy for each that will aid in the intellectual development,	generally consistent with previously cited reference sources

Topic	Condition	[illegible]	Criteria
Emotional Needs	1. Given the [illegible] of the [illegible] of the [illegible] a) Love b) Anger c) Fear d) [illegible] e) [illegible]	[illegible]	[illegible] consistent with [illegible]
Social Behavior	1. Given a list of [illegible] behavior characteristics as: a) Cooperation b) Generosity (sharing) c) Consideration d) Good Disposition	[illegible] the development of social behavior,	generally consistent with previously cited reference sources
Home Hazards	1. Given a list of any ten common home hazards,	the learner will list at least one way of eliminating each hazard,	generally consistent with previously cited reference sources
Discipline	1. Given a case study involving a child needing discipline,	the learner will state how the five principles of good discipline might be applied: a) Positive direction b) Consistency c) Fairness d) Timing (immediate response) e) Reason	as determined by the seriousness of the act of disobedience and the age of the child.
Medical/Dental Care	1. Without the use of reference materials,	the learner will state three reasons why a planned program of medical and dental care is important to the young child,	generally consistent with previously cited reference sources

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Clothing and Textiles

U.S.O.E. Code Number: 09.0103

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Understanding Fabrics	1. Given ten different fabric samples and without reference materials,	the learner will identify and list correct construction and care techniques,	for seven of the ten samples.
	2. Given a chart that lists four natural and six man-made fabrics,	the learner will fill in the chart with identifying characteristics,	three of the four natural and four of the six man-made are correctly identified.
	3. Given ten samples of assorted materials that are woven, knitted, felted or bonded,	the learner will state the method of fabric construction and list a characteristic of,	six out of ten samples.
	4. Given ten labels describing different fabric finishes,	the learner will identify the characteristics (i.e., wearability, machinability, etc.) to expect from the garment,	for six out of the ten labels.
Understanding Oneself	1. Given color charts, or color collars,	the learner will select colors becoming to herself in agreement,	with principles of color selection and coordination as stated in designated references.
	2. Given a pattern book,	the learner will select a pattern becoming to her figure type and the correct size,	in agreement with design principles as stated in a designated reference.
Understanding Construction	1. Using a student-selected, teacher-supervised pattern and fabric,	the learner will construct, in correct sequence, a wearable garment,	according to directions on the pattern guide and within an appropriate, specified period of time.
	2. Given a sewing machine and various fabric samples,	the learner will make the necessary machine adjustments to achieve,	a "balanced stitch", according to the machine manual.

Topic	Conditions	Performance	Criteria
	3. Given a selection of ready-made garments,	the learner will identify construction details representing differing levels of quality,	based on: seam width, stitch construction, fasteners, material and price for each of the garments.
	4. Using sewing supplies and student-provided material,	the learner will select and complete an article relative to household use,	in an amount of time consistent with the size of the project and in accordance with standards in a reference text or the pattern guide sheet.
Garment Care	1. Given ten care labels from garments of different fabrics,	the learner will list the correct cleaning, pressing and storage process,	as given on the labels with 100% accuracy.
Alterations	1. Given material, sewing supplies and a garment in need of repair or alterations,	the learner will make necessary repair or alterations,	the garment is wearable.
Decision Making	1. Given an actual or simulated situation,	the learner will identify the factors involved in making a decision to buy a garment or construct a comparable garment,	the decision made represents the best decision for the person's situation (i.e., time involved, income, and ability).
Vocabulary	1. Given a list of 30 sewing terms and definitions,	the learner will match terms with definitions,	for 20 of the 30 terms.
Safety	1. Given any sewing equipment,	the learner will safely operate that equipment,	the learner does not endanger herself or any others in the classroom.
Wardrobe Planning	1. Given a simulated family in a designated part of the country,	the learner will identify the factors involved in planning the clothing needs for the entire family,	the planning is based upon income, family occupations, climate, etc.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Consumer Education

U.S.O.E. Code Number: 09.0104

Remarks: These recommended minimum program performance objectives apply to both one-semester and one-year approved programs. It is understood that the second semester of a one-year program would be devoted to:

(1) Those students who have not yet achieved the minimum program performance objectives.

(2) Enrichment beyond those performance objectives identified as program minimums.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Consumer Rights and Responsibilities	1. Given the four rights of consumers: a. The right to information b. The right to be heard c. The right to selection d. The right to safety	the learner will name the right illustrated,	in each situation.
	2. Given a representative list of consumer responsibilities and a corresponding list of simulated situations,	the learner will identify the responsibility illustrated,	in each situation.
Money Management	1. Given an individual's basic personal needs and available resources for one school year,	the learner will work out a spending plan,	which meets 90% of the listed needs and stays within the resources.
	2. Given a specific family situation including goals, values, needs, resources, and a suggested budget breakdown,	the learner will work out a family spending plan,	which is applicable to the situation and in agreement with the given spending guide.

Topic	Conditions	Performance	Criteria
Using Credit	1. Without the use of reference materials,	the learner will list three advantages and three disadvantages of using credit,	in agreement with the textbook.
	2. Given the following list of credit terms and corresponding definitions: a. contract b. principal c. credit rate d. interest e. credit charge f. balance g. collateral h. co-signer i. installment j. credit line k. default l. dun m. repossession n. annual percentage rate o. balloon clause p. balance of payments q. bankruptcy r. usury s. wage assignment t. revolving credit u. debt consolidation v. acceleration clause w. credit bureau	the learner will match correctly	20 of 23 of these terms.
	3. Given a list of common types of retail credit such as: regular charges, revolving charges, installment plans, and 60/90 days-same-as-cash, and their corresponding definitions,	the learner will match types and definitions,	without error.
	4. Given a properly prepared contract and a list of items that must be included in a legal contract,	the learner will underline and number each of the listed items in the contract,	with 100% accuracy.

Topic	Conditions	Performance	Criteria
	5. Given the purchase price for a specific item and the rates of interest for three different sources of credit,	the learner will either: a. Compute actual interest in dollars and cents for each type of credit, or b. "Shop" the problem locally from three sources	indicate which source provides credit at the lowest total cost, without error.
	6. Given a list of information or items commonly included in a credit contract,	the learner will indicate which of the items must be included in a valid contract	as determined by the Truth-In Lending Act (Consumer Credit Protection Act).
Savings and Protection Plans	1. Given a list of savings plans available from a variety of financial institutions and a list of distinguishing characteristics of savings plans,	the learner will select those characteristics descriptive of each of the plans	with no more than one error per plan.
Insurance	1. Given a list of insurance terms and definitions, including the following: a. policy b. face value c. cash value d. surrender value e. premium f. benefits g. beneficiary h. dividends i. insured j. grace period k. claim l. right of conversion m. double indemnity	the learner will match	at least 10 of the 13 correctly.
	2. Given the following list of the various types of insurance coverage and a list of corresponding definitions: A. Life Insurance 1. straight life 2. limited payment life 3. endowment 4. term	the learner will match	a minimum of 16 of the 22 types of coverage and the definitions.

Topic	Conditions	Performance	Criteria
	B. Health Insurance 1. hospital 2. surgical 3. physician 4. major medical 5. comprehensive major medical 6. disability 7. income protection C. Household Insurance 1. fire 2. theft 3. liability 4. mortgage 5. homeowners D. Automobile 1. liability 2. medical payment 3. uninsured motorists 4. comprehensive 5. collision 6. towage and repairs 7. no fault		
Advertising	1. Without the use of reference materials,	the learner will: a. List a minimum of three ways in which advertising can be beneficial to the consumer b. List a minimum of three techniques commonly used by advertisers to persuade consumers to buy	in agreement with a reference text or as validated by a student-selected example.

Topic	Conditions	Performance	Criteria
	2. Given ten examples of printed advertising from any source,	the learner will analyze each ad by: a. Classifying the appeal of the ad as informational or emotional b. Citing any buying incentives, if used, such as free samples, coupons, trading stamps, etc. c. Citing at least one of the persuasion techniques used	the analysis will be complete as determined by the above for at least 8 of the 10 ads.
Consumer Protection	1. Given the following or a similar list of agencies and organizations which aid the consumer, and a list of their functions: a. Agricultural Research Service b. Consumer Marketing Service c. Federal Extension Service d. Food and Drug Administration e. Bureau of Family Services f. Federal Housing Administration g. Office of Renewal and Housing Assistance h. Office of Economic Opportunity i. Federal Trade Commission j. Consumers Union k. Consumers Research l. Better Business Bureau m. Underwriters Laboratories, Inc. n. Office of Consumer Affairs o. Attorney General's Office	the learner will match agencies and their functions	10 of the 15.
	2. Given a sample warranty/guarantee,	the learner will cite examples of the manufacturer's responsibility and examples of the consumer's responsibility	at least one each.

Topic	Conditions	Performance	Criteria
	3. Given a hypothetical consumer legal problem that can be handled by the Small Claims Court,	the learner will list the procedure for filing his claim	so the claim could be processed.
	4. Given five case studies selected from different consumer areas illustrating possible fraudulant practices,	the learner will cite the suspected fraud and list a referral point for further action	for at least 4 of the 5 cases.
	5. Given the following list of consumer protection laws and a list of descriptions of their major coverage: a. Care Labeling Act b. Flammable Fabrics Act c. Food, Drug and Cosmetic Act d. Fair Packaging and Labeling Act e. Textile Fibre Identification Act f. Automobile Information Disclosure Act g. Child Protection Act h. Federal Hazardous Substance Act i. Wool Products Labeling Act j. Fur Products Labeling Act	the learner will match	a minimum of 7 of the 10 laws with their descriptions.
Shopping	1. Given a list of the various types of sales facilities such as independent retailer, chain store, specialty shop, variety store, department store, shopping centers, discount store, consumer cooperative, mail-order retailer, vending machines, door-to-door salesmen and private individuals, and a list of services commonly provided by sales facilities,	the learner will match facilities and services	with 80% accuracy.

Topic	Conditions	Performance	Criteria
	2. Given a list of items to purchase (including clothing, hardware, various types of foods, etc.),	the learner will state the most economical time of the year to purchase each item	based upon traditional and/or seasonal sales for 90% of the items.
	3. Given three samples of the same brand of a packaged product (in different weights),	the learner will compute the unit price of each size and select the least expensive size	without error.
	4. Given three case studies illustrating various unwise purchasing decisions,	the learner will identify one example of an unwise purchase	in 2 of the 3 cases.
Shopping - Clothing	1. Given a hypothetical situation, such as: You purchased a cloth coat yesterday at a fashionable store for $99.95. Today a coat, which appears to be the same as your purchase, is pictured in your local paper at $49.95,	the learner will "comparison shop"	by listing a minimum of 5 features he would use as a basis for comparing clothing quality.
Purchasing Foods and Drugs	1. Given a product (milk, fruits, vegetables, etc.) in various forms (canned, dried, fresh, frozen) and its price,	the learner will compute the cost per serving and rate the products from the most expensive to the least expensive	without error.
Selecting Housing	1. Without the use of reference materials,	the learner will list three advantages and three disadvantages for purchasing a home, and three advantages and three disadvantages for renting a home,	as validated by the reference text or other previously cited sources.
	2. Given the following list of types of housing available: a. Single-family house b. Duplex c. Apartment d. Condominium e. Cooperative f. Mobile home	the learner will list one advantage and one disadvantage for each type	as validated by the reference text.

Topic	Conditions	Performance	Criteria
	3. Without the use of reference materials,	the learner will cite a minimum of one factor under each of the following major considerations that would affect a decision on a home purchase: a. Family life cycle stage b. Family income c. Family assets and liabilities d. Family needs and wants	according to the reference text.
	4. Given the following terms relating to the purchase of a home and corresponding definitions: a. escrow b. land survey c. down payment d. title search e. abstract f. deed g. pre-payment clause h. closing costs i. open-ended mortgage j. amortized loan	the learner will match	7 of the 10 correctly.
Selecting Furnishings and Major Appliances	1. Given a checklist and three like appliances or furnishings in a similar price range, (EXAMPLE: large appliances, furniture pieces, carpeting, small appliances, etc.)	the learner will evaluate the objects and select the one of best quality	in accordance with the checklist.
Social Security	1. Given a list of Social Security types of coverage and a corresponding list of major benefits: a. Survivor's b. Disability c. Old Age d. Unemployment e. Medicare	the learner will match the coverage and the benefit	with 100% accuracy.

Topic	Conditions	Performance	Criteria
	2. Given a list of Social Security types of coverage and a list of ten eligible situations,	the learner will match	at least 8 of the 10 coverages and situations.
Environment	1. Given three hypothetical situations involving misuse of the environment and a list of three possible solutions,	the learner will select	the most ecologically sound solution for each situation.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Family Health

U.S.O.E. Code Number: 09.0105

Remarks: These recommended minimum program performance objectives apply to both one-semester and one-year approved programs. It is understood that the second semester of a one-year program would be devoted to:

(1) Those students who have not yet achieved the minimum program performance objectives.

(2) Enrichment beyond those performance objectives identified as program minimums.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Family Health	1. Without the use of reference materials,	the learner will list practices of personal and home sanitation procedures that contribute to the well-being of family health,	at least 5 each as outlined in publications of the County Health Department and the Michigan Department of Public Health.
	2. Without the use of reference materials,	the learner will list safety precautions that contribute to the well-being of the family,	at least 10 as outlined in publications of the County Health Department and the Michigan Department of Public Health.
	3. Given a list of the stages of the family life cycle,	the learner will give examples of a physical need and a related health practice for each stage,	at least 1 example for each stage consistent with the family health text used or cited.
	4. Without the use of reference materials,	the learner will list and describe the physical effects of abuse of each of the following:	at least 3 effects for each substance. Validation of information will be publicati

Topic	Conditions	Performance	Criteria
		a. Alcohol b. Tobacco c. Drugs	of the County Health Department of Michigan Department of Public Health.
	5. Given a list of ten family health needs and/or emergencies and a list of health-related agencies,	the learner will match the emergency and/or need,	with the most helpful agency with 80% accuracy.
Management and Skills in Caring for the Ill and Convalescent	1a. If equipment is available or can be improvised,	the learner will perform basic home nursing skills (listed below in 1b.), as used when caring for the ill or convalescent person at home	following procedures recommended by the American Red Cross
	or	or	or
	1b. If equipment is not available	the learner will describe the following: A. Routine physical care. 1. Following correct bathing procedures. 2. Assisting with mouth care, including dentures. 3. Assisting with personal grooming. 4. Tending to patient comfort. 5. Making a bed, with patient in or out. 6. Turning the patient. 7. Dispensing of medications, as prescribed. 8. Assisting in elimination. 9. Taking and reading of temperature, pulse and respirations accurately.	consistent with procedures recommended by the American Red Cross.

Topic	Conditions	Performance	Criteria
		B. Correct body mechanics for student when caring for a patient. C. Basic home treatments. 1. Changing dressings. 2. Applying warm and cold packs D. Safety practices. 1. Handwashing 2. Storing medicines safely. 3. Controlling spread of infection through sanitary procedures. 4. Protecting patient from accidental injury. E. Feeding practices. 1. Tending to patient's immediate nutritional needs. 2. Providing for proper daily meals and additional nourishments. 3. Demonstrating feeding techniques.	
Nutrition	1. Without the use of reference materials,	the learner will plan menus, for teacher-specified family members in generally good health,	which would include within any 24-hour period each of the food groups in the amounts recommended by the Basic Four Food Guide.
	2. Given a specific diet for one family member having special needs.	the learner will plan or adjust the daily family menu,	to meet the specifications of the diet for that person while maintaining the menu for other family members.
Emotions	1. Given a list of anxiety-producing emotions,	the learner will list at least one constructive method for dealing with each emotion,	as recognized by the Michigan Department of Public Health.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Family Relations

U.S.O.E. Code Number: 09.0106

Remarks: These recommended minimum program performance objectives apply to both one-semester and one-year approved programs. It is understood that the second semester of a one-year program would be devoted to:

(1) Those students who have not yet achieved the minimum program performance objectives.

(2) Enrichment beyond those performance objectives identified as program minimums.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
The Family	1. Without the use of reference materials,	the learner will compare in writing, the extended family, the nuclear family, the single-parent family and the commune,	as to their membership, their expected responsibilities, and their expected roles, in agreement with selected text(s).
	2. Without the use of reference materials,	the learner will portray through role-playing, the dominant family member(s) in the traditional authoritarian family, an egalitarian family and a family where the traditional roles are reversed.	in each example, the roles of the family members are shown accurately, in agreement with selected text(s).
	3. Given ten case studies each of which will center on one of the five family life cycle stages (founding, child-bearing, child launching, empty nest and aging) and a related problem,	the learner will identify the cycle and the problem which are illustrated.	in each case.

Topic	Conditions	Performance	Criteria
	4. Without the use of reference materials,	the learner will list the four general functions of the family,	including reproduction, economic cooperation, sexual affectional relationships and socialization.
Reproduction	1. Given diagrams of the human reproductive system,	the learner will label the following parts and state their major functions: a) ovaries b) fallopian tubes c) uterus d) vagina e) penis f) testes g) scrotum	with 100% accuracy
Preparation for Marriage	1. Given a case study of an emotionally and socially immature person,	the learner will identify three actions which show immaturity and state method(s) for changing each action to mature behavior,	in agreement with the selected text.
	2. Without the use of reference materials,	the learner will list three purposes of dating,	in agreement with the selected text.
	3. Without the use of reference materials,	the learner will state four purposes of the engagement period,	in agreement with the family living text.
	4. Given a list of the following types of love: a) self love b) mother love c) infatuation d) brotherly love e) mature love	the learner will write a brief description of each,	in agreement with selected reference sources.
The Marriage	1. Given five examples of marriage customs and/or laws,	the learner will state a reason (laws) or the symbolism (customs) involved in the existance of each,	in agreement with selected reference sources.

Topic	Conditions	Performance	Criteria
	2. Without the use of reference materials,	the learner will state three purposes of the honeymoon,	in agreement with the family living text.
	3. Given brief descriptions of situations requiring personal adjustments in marriage and the following exemplary list of major adjustments: a) learning to share b) adjusting to lack of privacy c) managing family resources d) learning to communicate e) accepting one's partner's family and friends	the learner will state which of the listed personal adjustment was needed,	in each situation.
Family Decision Making	1. Given the five steps in the decision-making process and a hypothetical family problem,	the learner will solve the problem,	following the five steps in sequence.
Family Services	1. Given a list of social agencies common to the geographical area,	the learner will list the services offered to the family,	at least one service for each of these agencies.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Foods and Nutrition

U.S.O.E. Code Number: 9.0107

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Physiological Needs	1. Given the terms: fats, carbohydrates, protein, vitamins, minerals, and water,	the learner will list the major contributions of each of these nutrients to the functions of the body,	according to an authoritative text or equivalent reference material
	2. Given a list of 20 basic foods,	the learner will identify the main nutrients,	in 18 and according to an authoritative text or equivalent reference material
	3. Given the basic four food groups,	the learner will list the food in each group and the amount of food in each group needed per day for a good diet to maintain a healthy body,	according to an authoritative text or equivalent reference material
	4. Given a standard reference chart (RDA, NRC),	the learner will select a day's menu,	suitable for persons of different ages and activity to meet the nutritional needs of each, according to the given chart
	5. Given the necessary charts,	the learner will tabulate and evaluate the nutritional caloric value of any given day's diet,	according to the charts
Social Aspects	1. Given the list of special or social occasions: Picnic, Birthday, Graduation, Wedding, Reception, Shower, Holiday, Dinner, Farewell Party,	the learner will select a suitable menu,	for four of his choosing, correctly, according to an authoritative text or equivalent reference material

Topic	Conditions	Performance	Criteria
	2. Given the necessary tableware,	the learner will demonstrate the proper table setting techniques,	for at least two different types of family food service of his own choosing; correctly, according to an authoritative text or equivalent reference material.
	3. Given a series of three meal-time situations,	the learner will demonstrate the proper etiquette for each.	according to Amy Vanderbilt or equivalent authority.
Meal Planning	1. Given a description of an assortment of foods sufficient for the task,	the learner will develop a menu of foods for up to a family of four for one week,	meeting the requirements as described in an authoritative text or equivalent reference material.
	2. Given the hypothetical situation of up to a family of four with a working mother,	the learner will develop four simple meals that could be prepared within a limited time that would also meet the nutritional requirements,	according to NRC or RDA charts.
	3. Given the requirement to purchase food for a family of up to four,	the learner will identify factors important in comparative shopping	for at least five, according to an authoritative text or equivalent reference material.
	4. Given a newspaper with several food store advertisements, for equivalent items (at least 6),	the learner will compare items advertised and explain from the advertisement, the economics that can be realized by an analysis of the advertising,	for at least two items, using the principles described in an authoritative text or equivalent reference material for unit cost comparison.
Food Management	1. Given reference food storage charts and a list of 10 foods with at least one frozen, one canned and one dried item,	the learner will identify the proper storage for each,	according to the charts as provided
	2. Given basic food preparation equipment and utensils,	the learner will demonstrate the safe and proper use of the equipment and utensils,	according to an authoritative text or equivalent reference material

Topic	Conditions	Performance	Criteria
	3. Given two examples of fresh foods appropriate for canning and two for freezing found in the U.S.D.A. leaflets,	the learner will select and describe the appropriate method of preparation,	according to the leaflets or equivalent resource
Food Preparation	1. Given descriptions of four different vegetables from a common list of vegetables available locally and a description of three different cooking times and amounts of water for each (cooking method),	the learner will explain the relationship of the cooking method to appearance, texture, shape, flavor and nutritional value of each,	according to an authoritative text or equivalent reference material.
	2. Given descriptions of two different cooking methods for three different fruits,	the learner will explain the relationship of cooking method to appearance, texture, tenderness and flavor,	according to an authoritative text or equivalent reference material.
	3. Given ten meat cuts, facsimilies or colored illustrations,	the learner will identify the cuts by name and describe a method of preparation,	according to leaflets of the National Livestock Board
	4. Given six egg recipes, the ingredients and required utensils,	the learner will prepare	six egg dishes, according to the recipes.
	5. Given 6 cheese dish recipes, ingredients and required utensils,	the learner will prepare	six cheese dishes, according to the recipes.
	6. Given 4 milk dessert recipes, ingredients and required utensils,	the learner will prepare	four milk dessert dishes, according to the recipes,
	7. Given 6 convenience or commercial semi-prepared foods,	the learner will prepare	six foods, according to directions.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Home Management

U.S.O.E. Code Number: 09.0108

Remarks: These recommended minimum program performance objectives apply to both one-semester and one-year approved programs. It is understood that the second semester of a one-year program would be devoted to:

(1) Those students who have not yet achieved the minimum program performance objectives.

(2) Enrichment beyond those performance objectives identified as program minimums.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Community Resources	1. Without the use of reference materials,	the learner will name and give a general description of available community resources (local, state, federal, and private)	description to be consistent with the actual services as provided and will include one or more organizations for at least the following areas of need: a. health b. finance c. interpersonal problems d. legal issues e. aging and aged
Problem Solving	1. Given a decision-making situation,	the learner will identify each step of the decision-making process	consistent with a locally selected model.
		and dictate a selected alternative,	if appropriate, giving the rationale for its selection.
Management Process	1. Without the use of reference materials,	the learner will name and define each step of the management process	consistent with a locally selected management model.

Topic	Conditions	Performance	Criteria
	2. Given a list of daily household tasks to be completed in a family situation of four family members,	the learner will develop a work plan	which includes: all tasks, realistic time allotment, resources needed, dovetailing of tasks, and a balance in high and low energy tasks for each "worker" of the family; each of these criteria to be consistent with a locally selected model.
	3. Given a meal planning situation which includes a list of available foods, a given number of persons who will be eating, a maximum meal preparation time of 45 minutes, a limit of one person to prepare the meal, and necessary references,	the learner will develop a menu and a time and energy plan	which would produce a meal that: a. could be prepared within 45 minutes b. could be prepared by one person, and c. could be prepared from the list of available foods
	4. Given the necessary references, a list of available foods and/or a food budget allowance, and a given number of persons who will be eating,	the learner will develop a day's menus	which would produce meals that: a. could be prepared from the list of available foods, and b. which are nutritious when compared to food charts which describe minimum daily requirements for nutrition
	5. Given a case study of a teenager owning a car,	the learner will write an ownership plan which incorporates the appropriate management principles	the principles of the management process are listed and consistent with a locally selected model and include: a. money (initial cost, payments/credit, insurance, and upkeep---weekly and long term) b. time (self-maintenance versus garage maintenance) c. energy (self-maintenance versus garage maintenance)

Topic	Conditions	Performance	Criteria
Values and Goals	1. Given a case study of a young married couple including their weekly activities, and the decisions which reflect their values and goals,	the learner will identify the family's goals and values and label them as goals and values	with 80% accuracy.
Family Finances (Goals, Wants, and Needs)	1. Given a case study including family size, income, fixed and flexible expenses, wants, long- and short-term family goals, and necessary references,	the learner will develop a budget plan for one month	within the stated income, meets the fixed and flexible expenses, and identifies goals that fall beyond the given budget and will require special action.
	2. Given a family crisis situation which requires a source of significant readily available funds beyond the available income of the family, and a list of possible sources of such financial assistance (banks, credit unions, insurance policies, etc.)	the learner will list at least one advantage and disadvantage for each source as well as select the most probable source for the situation as described	the advantage and disadvantage cited are accurate for each source with at least 80% accuracy and the source selected as most probable could generally be regarded as the best or second best source for that situation.
	3. Given a list of basic insurance terms and their corresponding definitions,	the learner will match the terms and their definitions	with 80% accuracy.
	4. Given a list of basic credit terms and their corresponding definitions,	the learner will match the terms and their definitions	with 80% accuracy.
Women's Roles	1. Without the use of reference materials,	the learner will list and describe the multiple and broadening concepts of women's roles	the description to include multiple roles, such as: consumer, homemaker, wage earner, etc., and currently evolving changes in these roles.
Leisure	1. Without the use of reference materials,	the learner will define leisure time and describe anticipated trends in leisure time	consistent with selected authoritative sources.

Topic	Conditions	Performance	Criteria
	2. Given a specific dollar amount of expendable leisure-time money (appropriate for the particular locale),	the learner will list alternative leisure time activities	at least 20 activities which are within the dollar amount specified.
Environment	1. Given a list of common household waste products, disposables, etc.,	the learner will classify the items as either recyclable or pollutants	with 80% accuracy.
	2. Given case studies which illustrate possible energy wasting situations in home management (car fuel usage, house humidity, use of heat in cooking, selection of cooking utensils and methods, etc.),	the learner will identify the energy wasting situation and suggest corrective action,	the situations will be correctly identified with at least 80% accuracy and at least one appropriate corrective action will be suggested for each energy wasting situation correctly identified.
Home Safety	1. Given a selected room which may or may not contain actual or potential safety hazards,	the learner will identify the safety hazards, if any, related to construction and/or arrangement of the components or contents of the room	all safety standards of locally developed checklists will be satisfied.
Equipment	1. Given a list of selected large and small household equipment (such as, refrigerator, range, dishwasher, washer, dryer, toaster, mixer, electric frypan, iron, hair dryer, etc.)	the learner will demonstrate and/or explain the use and maintenance of each selected piece of equipment	consistent with manufacturer's manuals.
	2. Given a list of selected major household appliances, appliance brochures, and references, such as, "Consumer Reports", class text, etc.,	the learner will evaluate the major appliances by listing the desirable features of several brands and models	the list will include at least: cost, length of warranty, design features, service availability, ease of maintenance features, and performance standards.

Topic	Conditions	Performance	Criteria
Laundry	1. Given the following problems: gray whites, stains (such as blood, grass, grease, ball point pen, mustard, ketchup, etc.) fading and bleeding, and the products (such as soap, detergent, bleach, water softener, etc.) and the conditions (such as water temperature, hardness of water, drying procedures, etc.)	the learner will demonstrate and/or describe the procedures and products necessary to alleviate the problem	the fading and bleeding are prevented and stains are removed within the reasonable capabilities of the product and the nature of the stain.
Home Maintenance	1. Given two cleaning agents for various selected surfaces (such as porcelain, wool carpeting, formica, wood, etc.),	the learner will select one cleaning agent for each surface and give the rationale for each selection	based upon cost, suitability for the surface, energy output, and time involved.
Storage	1. Given a room and the materials which are to be stored in it,	the learner will write a plan for the storage of those materials,	the materials are easily accessible for use consistent with a locally selected model which includes criteria, such as: place of first use, ease of replacement, reach length, etc.
Kitchen Planning	1. Given diagrams of four basic kitchen shapes ("U", corridor, "L", and one wall) and the placement of the three activity centers of the work triangle (sink, range, and refrigerator),	the learner will list the advantages and disadvantages	for each kitchen shape in relation to the ideal work triangle.
Work Simplification	1. Given work simplification problems involving lifting, pushing, pulling, and carrying heavy objects,	the learner will identify body motion principles which are being properly or improperly utilized	with 80% accuracy.

PERFORMANCE OBJECTIVES DEVELOPMENT PROJECT

Overview

A performance objective is a description of what a learner should be able to do when he has learned a skill or acquired certain understandings. The performance objectives presented here contain all six elements of the State Department of Education recommended performance objectives model (who, when, performance, object of performance, measurement methodology, and criteria). [1]

The guidelines[2] used by writers of these objectives are attached. In addition, several characteristics of these objectives must be understood to be adequately utilized:

1. Minimum: these objectives represent the considered opinion of the writers, after completion of a structured review and expert input, as to the minimum skills and understandings necessary to gain job entry.

2. Recommended: these objectives are those which the particular writing team recommends to the Vocational-Technical Education Service and, in turn, the Vocational-Technical Education Service to the local educational agencies for their consideration as reasonable minimum learner objectives.

3. Terminal: these objectives describe only those significant performances which are to be mastered by the end of the training program. It is likely that each of these terminal objectives contains several intermediate or facilitating objectives which are assumed to be necessary to achieve the terminal objective.

4. Program: these objectives are presented by program rather than course, because it is the prerogative of the local educational agency to group content into courses, etc., as it sees fit.

5. Grading/Passing: the decision as to what grade a student will earn for achieving some, all, or in excess of the minimum recommended program performance objectives is a local educational agency decision. Some districts choose to include factors other than the achievement of objectives as the basis for assigning grades. It is not the intent here to suggest that this practice must change as a result of adopting performance objectives. It is also recognized that many factors may affect the decision as to whether credit for a course should be assigned to a particular student who may achieve less than the minimum objectives of the program.

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[1] Michigan Department of Education, "Developing Performance Objectives," booklet, undated.

[2] The abbreviated guidelines used by the members of the performance objectives writing teams are extracted rom and consistent with: Bailey, Philip; Bland, David and Brown, Dan; "Guidelines for the Performance Objectives Development Project," Michigan Department of Education and Career Development Service, September, 1972.

Format

1. Each set of objectives is identified by a U.S. Office of Education Occupational Designation and Code Number. This practice is consistent with the system used to approve and fund vocational/technical programs in Michigan.

2. Each set of objectives begins with the standard statement, "Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced test (ORT's), unless otherwise indicated:". In order to avoid unnecessary duplication, this statement is presented as a constant, but it is to be interpreted as a part of each subsequent objective.

3. In addition to the performance objectives recommended for each program, each set of objectives for a vocational or technical program is to be understood to include the performance objectives for "Employability Skills" (except for non-wage earning Home Economics) and the "Statement on Cooperative Education Technique" (if applicable). Although these are presented separately, they are to be considered common to all vocational and technical programs if applicable. Both items are included in the adoption process as an integral part of each set of objectives, when appropriate, and are adopted if the set is adopted.

4. Four columns of information are used to present the content of each objective:

    a. Topic: a general category of subject matter into which the performance objectives have been grouped.

    b. Conditions: a description of the relevant materials and/or problems that will affect the learner's performance.

    c. Performance: an observable, measurable description of what the learner will do.

    d. Criteria: a description of the quantitative and qualitative standards against which the learner's performance is to be measured.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Housing and Home Furnishings

U.S.O.E. Code Number: 09.0109

Remarks: These recommended minimum program performance objectives apply to both one-semester and one-year approved programs. It is understood that the second semester of a one-year program would be devoted to:

(1) Those students who have not yet achieved the minimum program performance objectives.

(2) Enrichment beyond those performance objectives identified as program minimums.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Housing	1. Shown a collection of pictures depicting various dwellings, such as igloos, mud houses, tents, cave dwellings, castles, log cabins, tree houses, pueblos and windbreaks,	the learner will identify and describe ways in which man's needs for protection, recovery, permanency and physical care have been satisfied,	for each dwelling type based upon available resources and state of technology.
	2. Shown a collection of pictures which illustrate the major styles of architecture which have influenced American housing (e.g., Tudor, French Provincial, Greek Revival, Colonial, Cape Cod, etc.)	the learner will identify the style,	by labeling no less than 12 different styles correctly.
	3. Given written descriptions of varicus family life styles,	the learner will list and describe the housing needs of each family,	based upon at least 5 criteria, including: 1. stages in family life cycle 2. income 3. family size

Topic	Conditions	Performance	Criteria
			4. transportation considerations 5. social needs and obligations
	4. When shown various types of house elevations, such as split level, one story, one and one-half story, and two story,	the learner will list the advantages and disadvantages of the homes shown,	as they relate to topography, climate, cost, neighborhood, size, and shape of lot and zoning ordinances.
	5. Given a collection of blueprints of houses,	the learner will identify symbols used on standard house plans	no less than the following: bi-fold doors stairways cupboards door openings and direction of swing windows electrical and gas outlets furnace, fireplace and hot water heater entrance ways and passage ways plumbing fixtures
	6. Without the use of reference materials,	the learner will define the following electrical terms: volts, amps, fuse, circuit breakers, circuit, switches and watts,	consistent with standard electrical references.
	7. Without the use of reference materials,	the learner will compare the following heating systems: forced air, gravity, radiant, steam, electric, hot water,	based upon: 1. Cost of installation, operation and repair 2. Availability of fuel 3. Cleanliness
	8. Given a collection of floor plans and a description of a particular family's needs,	the learner will evaluate the plans as to the storage, traffic patterns, cost, size and arrangement, safety, family activities, flexibility and privacy,	they identify those floor plans which best meet the family's needs as described.

Topic	Conditions	Performance	Criteria
	9. Without the use of reference materials,	the learner will rate the basic kitchen styles and their variations,	based upon location of work centers, size of work triangle, storage space, efficiency and traffic patterns.
	10. Without the use of reference materials,	the learner will define at least each of the following basic legal terms related to house financing: 1. Abstract 2. Appraisal 3. Deed 4. Default 5. Amortize 6. Earnest Money 7. Equity 8. Escrow 9. Land Contract 10. Mortgage	generally consistent with selected legal and/or banking references.
	11. Given simulated or actual examples of houses,	the learner will identify the quality of workmanship and materials in construction of finishing of the house,	including: door closures, wood finishes, etc.
	12. Without the use of reference materials,	the learner will compare high-rise apartment, a condominium, a co-op, a garden apartment, a duplex, a studio apartment, a micro-city, a mobile home and a townhouse,	using at least the following categories: 1. Ease of and need for maintenance 2. Financial responsibility 3. Legal rights and responsibilities 4. Initial and ongoing costs
Home Furnishings	1. Without the use of reference materials,	the learner will define, illustrate and/or identify each of the terms as related to interior design: line, form, texture, balance,	define each term.

Topic	Conditions	Performance	Criteria
		proportion, rhythm, emphasis, unity, hue, value, intensity, warm color, cool color, primary color, secondary color, and various color harmonies,	
	2. Given room size, exposure, specific color harmonies, choice of furniture styles and description of structural features and sample of fabrics, wall coverings, paint, and floor coverings,	the learner will prepare two room illustrations,	which are generally consistent with a predetermined plan for total room treatment.
	3. Shown a collection of window styles,	the learner will identify the styles and identify those room locations most appropriate for each style,	based upon the need for proper ventilation, directional openings, safety, privacy, security, continuity of design, etc.
	4. Shown a transparency or an actual window,	the learner will identify each of the following parts: apron, sill, sash, and frame, and explain how to measure for curtain and drapery lengths,	the procedure described could produce a window treatment of a given length.
	5. Given a list of window problems, such as poorly proportioned and poorly placed windows, and constraints (budget, structural, etc.),	the learner will suggest solutions to the problem,	more than one solution within the constraints as given.
	6. Shown pictures of rooms with different styles of furniture,	the learner will categorize the pictures into the major styles, including: French Provincial, Early American Victorian, Modern, Mediterranean, Spanish, Queen Anne, and Chippendale,	any illustration of these styles will be categorized correctly.

Topic	Conditions	Performance	Criteria
	7. Given furniture templates, room floor plans to scale, and a list of recommended measurements for clearance and area groupings,	the learner will make an arrangement of furniture groupings,	the arrangement satisfies the recommendations as provided
	8. Given illustrations of the following types of lighting: valance, cornice, bracket, cove, soffits, luminous ceiling, recessed downlights, portable lamps, and ceiling and wall fixtures,	the learner will identify each	all illustrations correctly identified.
Consumer Buying	1. Given a list of major household appliances and small labor-saving appliances,	the learner will list factors to consider in buying each,	at least four factors to be listed for each device.
	2. Without the use of reference materials,	the learner will compare the chief characteristics of wool, cotton, nylon, polyester, acrylic, and olefin carpeting in their various forms of construction (shag, cut, pile, etc.) and care requirements of each,	each description should be consistent with manufacturer's published materials.
	3. Given samples of the following hard surface floor coverings: slate, ceramic tile, poured seamless vinyl, asphalt tile, linoleum, vinyls, cushion back vinyl and hardwood,	the learner will identify and describe the characteristics, potential uses, relative cost and care,	of each surface listed.
	4. Without the use of reference materials,	the learner will list criteria for evaluating the quality of the following household linens (towels, sheets, table cloths, blankets, etc.) dinnerware, glassware, flatware,	at least three relevant criteria for each category of goods.

Topic	Conditions	Performance	Criteria
	5. Given samples of the following solid wood, veneered wood, soft wood, hardwood, dovetail joining, mortise and tenon joining, dowel joining, corner joining, gloss finish, and hard-rubbed finish,	the learner will identify each, compare the durability, and describe appropriate care for each wood and finish,	consistent with selected published materials.
	6. Given samples, pictures or illustrations of sleep equipment,	the learner will identify the following items: covered and padded coil springs, uncovered coil springs, flat springs, innerspring and foam mattresses, acrylic, foam latex and down pillows,	each item to be identified correctly.
	7. Given samples of decorative fabrics, such as those used for curtains, draperies, upholstery, and bedspreads,	the learner will identify different fabrics for each of these uses and rank them according to durability and ease of care,	at least two fabrics for each use and ranking to be in correct order as to durability and ease of care.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Advanced Comprehensive Homemaking

U.S.O.E. Code Number: 09.0198

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Child Development			
Heredity/ Environment	1. Without the use of reference materials,	the learner will list a minimum of three factors each of heredity and environment and explain briefly how each may effect the future of the unborn child,	as documented by previously cited reference sources.
Health Practices	2. Without the use of reference materials,	the learner will explain the importance of good health practices such as adequate professional care, good nutrition, adequate rest and exercise and the avoidance of unprescribed medication, by the female prior to, during, and after pregnancy,	as documented by previously cited reference sources.
The Newborn	3. Without the use of reference materials,	the learner will explain briefly the effects of the newborn on the family, including: a. sibling rivalry b. extended family c. time demands d. change in life style	as documented by previously cited reference sources.
Physical Needs	4. Given the following list of the five basic physical needs of the young child: a. Nutrition b. Activity c. Rest d. Clothing e. Environment	the learner will list a minimum of one way of meeting each need,	generally consistent with previously cited reference sources.

Topic	Conditions	Performance	Criteria
Deviations	5. Without the use of reference materials,	the learner will state four deviations from normal physical growth/development and four deviations from normal intellectual development,	consistent with previously cited reference sources.
Home Hazards	6. Given a list of any ten common home hazards,	the learner will list at least one way of eliminating each hazard,	generally consistent with previously cited reference sources.
Discipline	7. Given a case study involving a child needing discipline,	the learner will state how the five principles of good discipline might be applied: a. positive direction b. consistency c. fairness d. timing (immediate response) e. reason	as determined by the seriousness of the act of disobedience, the age of the child and the reoccurrance of the same act.
291 Family Relations			
The Family	1. Given 8 family situations	the learner will identify the fulfillment of one or more of the basic needs: a. love b. security c. sense of worth d. new experiences	for at least 7 of the 8 situations and consistent with previously cited reference sources.
Reproduction	2. Given diagrams of the human reproductive system,	the learner will label the following parts and state their major functions: a. ovaries b. fallopian tubes c. uterus d. vagina e. penis f. testes g. scrotum	with 100% accuracy.

Topic	Conditions	Performance	Criteria
Preparation For Marriage	3. Given a case study of an emotionally and socially immature person,	the learner will identify three actions which show immaturity and state method(s) for changing each action to mature behavior,	in agreement with the selected text.
	4. Without the use of reference materials,	the learner will list three purposes of dating,	in agreement with the selected text.
	5. Given a list of the following types of love: a. self love b. mother love c. infatuation d. brotherly love e. mature love	the learner will write a brief description of each,	in agreement with selected reference sources.
The Marriage	6. Given brief descriptions of situations requiring personal adjustments in marriage and the following exemplary list of major adjustments: a. learning to share b. adjusting to lack of privacy c. use and management of family resources d. learning to communicate (verbal and non-verbal) e. accepting one's partner's family and friends	the learner will state which of the listed personal adjustment was needed,	in each situation.
Housing & Home Furnishings			
Housing	1. Shown a collection of pictures depicting various dwellings, such as igloos, mud houses, tents, cave dwellings, castles, log cabins, tree houses, pueblos and windbreaks,	the learner will identify and describe ways in which man's needs for protection, recovery, permanency, and physical care have been satisfied,	for each dwelling type based upon available resources and state of technology.

Topic	Conditions	Performance	Criteria
	2. Given written descriptions of two or more family life styles,	the learner will list and describe the housing needs of each family,	based upon at least 5 criteria including: 1. stages in family life cycle 2. income 3. family size 4. transportation considerations 5. social needs and obligations
	3. Given at least one floor plan,	the learner will identify symbols used on standard house plans,	no less than the following: 1. stairways 2. cupboards 3. door openings and direction of swing 4. windows 5. entrance ways and passage ways.
	4. Given a collection of floor plans and a description of a particular family's needs,	the learner will evaluate the plans as to the storage, traffic patterns, size and arrangement, safety, family activities, flexibility and privacy,	they identify those floor plans which best meet the family's needs as described.
	5. Without the use of reference materials,	the learner will define each of the following basic legal terms related to house financing: 1. Abstract 2. Deed 3. Earnest Money (good money, deposit, etc.) 4. Equity 5. Land Contract 6. Mortgage 7. Down payment 8. Closing costs	generally consistent with selected legal and/or banking references.
Consumer Education Selecting Housing 9/74	1. Given the following list of types of housing available: a. single-family house	the learner will list one advantage and one disadvantage for each type,	as validated by the reference text.

Topic	Conditions	Performance	Criteria
	b. Duplex c. Apartment d. Condominium e. Cooperative f. Mobile home		
Consumer Buying	2. Given consumer resources, use and care manuals and observation of models, a list of major household appliances and small labor-saving appliances,	the learner will list factors to consider in buying each,	listing at least four factors to be used in the selection of each appliance.
Using Credit	3. Without the use of reference materials,	the learner will list three advantages and three disadvantages of using credit,	in agreement with the textbook.
	4. Given the following list of credit terms and corresponding definitions,	the learner will match correctly,	7 out of 9 of these terms: a. contract b. principal c. credit rate d. interest e. credit charge f. balance g. collateral h. co-signer i. installment
	5. Given a list of common types of retail credit such as, regular charges, revolving charges, installment plans, service credit and 60/90 days-same-as-cash, and their corresponding definitions,	the learner will match types and definitions,	without error.
	6. Given a properly prepared contract and a list of items that must be included in a legal contract,	the learner will underline and number each of the listed items in the contract,	with 85% accuracy.

Topic	Conditions	Performance	Criteria
Insurance	7. Given a list of insurance terms, including the following: a. policy b. face value c. cash value d. premium e. benefits f. beneficiary g. dividends	the learner will match,	at least 6 of the 7 correctly,
Banking Procedures	8. Given a list of banking and lending services and their definitions,	the learner will match terms and definitions,	with 85% accuracy.
Foods And Nutrition			
Physiological Needs	1. Given the terms: fats, carbohydrates, protein, vitamins, minerals, and water, cellulose,	the learner will list the major contributions of each of these nutrients to the functions of the body,	according to an authoritative text or equivalent reference material.
	2. Given a list of 20 commonly eaten foods, including snack foods,	the learner will identify the main nutrient,	in 18 and according to an authoritative text or equivalent reference material.
	3. Given the basic four food groups,	the learner will list food in each group and the amount of food in each group needed per day for a good diet to maintain a healthy body,	according to an authoritative text or equivalent reference material.
	4. Given standard menu planning criteria,	the learner will select a day's balanced menu,	suitable for persons of different ages and activity.
Social Aspects	5. Given the necessary tableware,	the learner will demonstrate the proper table setting techniques,	for at least two different types of family food service of his own choosing, correctly according to an authoritative text or equivalent reference material.
Comparison Shopping	6. Given a newspaper with several food store advertisements, for equivalent items (at least 6),	the learner will compare items advertised and explain from the advertisement, the savings that can be realized by comparison shop	for at least two items, using the principles described in an authoritative text or equivalent reference material for unit cost comparison.

Topic	Conditions	Performance	Criteria
Food Labeling	7. Without the use of reference materials,	the learner will list information commonly contained on food labels	including: a. nutritional information b. servings c. ingredients d. recipes e. additives f. style of pack
Food Management	8. Given basic food preparation equipment and utensils,	the learner will demonstrate the safe and proper use and care of the equipment and utensils,	according to an authoritative text or equivalent reference material.
Food Preparation	9. Given ten popular meat, poultry and/or fish cuts, facsimilies or colored illustrations,	the learner will identify the cuts by name and describe a method of preparation,	according to an authoritative text or equivalent reference material.
	10. Given a convenience or commercial semi-prepared food,	a. the learner will prepare the food b. evaluate the product	a. according to directions. b. suggest changes, if appropriate, which, in their estimation, would improve the quality of the product.
	11. Given the necessary ingredients and a recipe for a quick bread,	a. the learner will prepare the quick bread, b. evaluate the product,	a. at least one quick bread according to the recipe b. suggest changes, if appropriate, which, in their estimation, would improve the quality of the product.
	12. Given the necessary ingredients and a recipe for a high-protein dish,	a. the learner will prepare the dish, b. evaluate the product,	a. at least one high-protein dish according to the recipe. b. suggest changes, if appropriate, which, in their estimation, would improve the quality of the product.
	13. Given a list of 30 food preparation terms and definitions,	the learner will correctly match terms with definitions,	for 20 of the 30 terms; according to an authoritative text or equivalent reference material.

Topic	Conditions	Performance	Criteria
Clothing And Textiles			
Fabrics	1. Given 10 commonly used textile fabric samples with bolt-end labeling information,	the learner will list appropriate construction techniques to be used,	for 7 of 10 samples.
	2. Given a chart that lists four natural and six man-made fabrics,	the learner will fill in the chart with identifying characteristics,	three of the four natural and four of the six man-made are correctly identified.
Construction	3. Given a pattern book,	the learner will select a pattern becoming to her figure type and the correct size,	in agreement with design principles as stated in a designated reference.
	4. Using a student-selected, teacher supervised pattern and fabric,	the learner will construct, in correct sequence, a wearable garment,	according to directions on the pattern guide and within an appropriate, specified period of time.
	5. Given an actual or simulated situation,	the learner will identify the factors involved in making a decision to buy a garment or construct a comparable garment,	the decision made represents the best decision for the person's situation (i.e., time involved, income, and ability).
Family Health			
Substance Abuse	1. Without the use of reference materials,	the learner will list and describe the physical effects of abuse of each of the following: a. Alcohol b. Tobacco c. Drugs	at least 3 effects for each substance. Validation of information will be publications of the County Health Department of Michigan Department of Public Health.
Venereal Disease	2. Given the names of common venereal diseases,	the learner will compare the frequency of occurrance, symptoms and treatment for each,	as accepted by documented reference.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Child Care and Guidance

U.S.O.E. Code Number: 09.0201

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Child Care Facilities	1. Given 15 possibilities and without resource materials,	the learner will select correct purposes of child care centers,	at least 10, according to State of Michigan licensing and regulations of child care organizations.
	2. Without the use of reference materials,	the learner will differentiate between the following: a) Co-op nursery schools b) Day care centers c) Private nursery schools d) Head start programs e) Family day care home	according to State of Michigan licensing and child care centers regulations of child care organizations.
	3. Without the use of resource materials,	the learner will list Michigan State regulations for child care facilities using the State of Michigan Guidebook,	at least five.
	4. Using all appropriate, available resources,	the learner will outline a weekly schedule of activities for a child care center,	which includes the following: (1) Greeting Children (2) Art Project (3) Nutritious Snack (4) Quiet Time (5) Music Time

Topic	Conditions	Performance	Criteria
			(6) Outdoor Play (7) Group Activity (8) Dismissing Children (9) Clean up
	5. Given access to necessary resource materials,	the learner will construct a written floor plan for a child care center with an area for each of the following activities: art, dramatic play, music, books, science, large motor skills, small manipulative toys, table activities, and group activities,	(1) Safety of child is considered (2) Materials are readily accessible to children (3) Adequate space provided for each activity (4) Materials are located in definite areas according to their purpose
	6. Without the use of resource materials,	the learner will make a list of materials and equipment needed in each of the following areas in a child care center: a) Art b) Dramatic c) Science d) Music e) Outdoor f) Block g) Small manipulative toys	there is an adequate ratio of materials for each child, according to the Michigan Council of co-operative nurseries information guide.
Child and His Environment	1. Without the use of reference materials,	the learner will list the physical and psychological needs of human beings,	at least 5 physical and 5 psychomotor, according to resource materials as provided.
	2. Without the use of resource materials,	the learner will identify examples of human behavior as being either physical or psychological needs,	at least twenty.
	3. Without the use of resource materials,	the learner will list: a) personal characteristics that are hereditary	at least five each.

Topic	Conditions	Performance	Criteria
		b) personal characteristics coming from environment, according to a locally designated child development manual.	
Developmental Processes	1. Without the use of resource materials and given a list of 20 developmental principles,	the learner will identify which ones are examples of social, intellectual, physical, and emotional growth,	with 100% accuracy, based on given resource materials.
	2. Given observation time and a list of typical characteristics, from Extension Office Bulletins,	the learner will check characteristics of the observed: two, three, four, and five-year old child,	at least 10.
Child Care Aide	1. Given a list of 20 personal characteristics,	the learner will correctly check personal characteristics necessary for child care workers, according to locally approved resource material,	at least 15 out of 20.
	2. Given an opportunity to observe child care aides at work in a child care center,	the learner will identify responsibilities of child care aides, according to locally approved references,	at least 10.
	3. Given a child care setting,	the learner will demonstrate knowledge of guidance skills,	by displaying the following behaviors daily: a) Speaking in quiet tones to children b) Does not talk down to children c) Listens to children, allows them to communicate d) Can bring humor and imagination into group situations e) Shows pleasure in children's successes f) Enforces limits appropriate to stage of development

Topic	Conditions	Performance	Criteria
	4. Given a child care setting and 20 children,	the learner will allow children to achieve independence to develop at their own speed,	by displaying the following behaviors daily: a) Letting child select and return materials b) Allowing children to remove and hang up own garments c) Clearly explaining limits d) Allows children to express feelings, both positive and negative e) Helps child to channel feelings in acceptable manner
Foods & Nutrition	1. Given a nutrition guide, resource materials, supplies and equipment,	the learner will plan and prepare a weekly menu,	it meets standards set in nutrition guide and remains within fixed budget.
Child and His Play	1. Without the use of resource materials,	the learner will describe how children learn and develop through play,	ten examples, according to a previously designated resource.
	2. Without the use of resource materials,	the learner will describe, in writing, at least three stages of play, including the age of the child most likely to be involved in each stage,	it meets the description given in locally prescribed resource materials.
Health & Safety	1. Without the use of reference materials,	the learner will write correct responses to questions taken from the Red Cross First Aid Chart,	at least 15 out of 20
	2. Given a child care setting,	the learner will supervise children during play activities,	for at least a 30-minute period without an instructor interceding; no child or equipment is physically harmed and basic needs of children are met.

Topic	Conditions	Performance	Criteria
Activities for Children	1. Given a child care setting,	the learner will select, read, or demonstrate a story,	75% of the children remain interested and involved for 5 minutes.
	2. Given a child care setting,	the learner will memorize and teach five-finger plays,	75% of the children are able to recite finger plays from memory.
	3. Given a child care setting,	the learner will set up an art activity table,	the necessary materials are available and 75% of the children become involved in the activity.
	4. Given a child care setting,	the learner will explain and lead five group games,	75% of the children are actively participating in the game.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Clothing Management

U.S.O.E. Code Number: 09.0202

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Sewing and Pressing Equipment	1. Using both a home and standard commercial sewing machine and their manuals,	the learner will thread, adjust and operate the machine	to produce well-balanced stitching such as viewed in an illustration of this stitching
	2. Given pressing equipment (irons, boards, cloths, hams, plus commercial equipment where available),	the learner will press seams, details, hems,	so seams will lie flat, no shine appear on face of fabric and garment will have shaping and grain follows body contour
	3. Given scissors, marking equipment, measuring tools, rippers, pins and a garment to alter,	the learner will demonstrate their use when cutting, measuring, removing stitches	so as not to damage the fabric of the garment
	4. Given a garment to be pressed,	the learner will identify the type of commercial pressing equipment to be used,	according to fabric and type of garment and press so the garment has a smooth, neat appearance
Clothing Construction	1. Given description of 20 clothing construction procedures, references, necessary materials, and equipment,	the learner will reproduce on fabric all these procedures	to match a standard sewing text or visuals available in the classroom

Topic	Conditions	Performance	Criteria
	2. Given a commercial pattern envelope and a tape measure,	the learner will determine and select size, yardage and notions	according to the measurements of an individual and width selection of the fabric of the view selected.
	3. Given the contents of a commercial pattern envelope,	the learner will follow guide sheet instructions for lay-out, marking construction details and finishing,	the garment will reproduce the illustration on envelope
	4. Given a commercial pattern, tape measure, and a body form or figure,	the learner will compare and change lengths, widths and dart placements,	the pattern will be corrected to the size or form and the figure will have the ease required for movement
	5. Given a customer pattern selection,	the learner will select the fabric choices, interfacing, all the notions listed on the envelope,	to complete the garment as illustrated
	6. Given pictures showing styles in clothing (shirt-waist, empire-waist, princess style),	the learner will identify	at least 15 out of 20
Fabric Identification	1. Given thirty fabric samples,	the learner will identify the textile names that distinguish the fabric as being different from any other, i.e., corduroy, velvet, velveteen, flannel, satin, chiffon and jersey	at least 25 as defined in a textile dictionary
Alterations	1. Given a garment to lengthen or shorten,	the learner will remove original stitching, press and adjust to new length or pre-determined measurement,	within an 1/8", with stitching not visible on face of garment, except where the original garment had visible top-stitching this would be replaced

Topic	Conditions	Performance	Criteria
	2. Given men's or women's garments,	the learner will mend or darn a tear, replace worn pockets, reset buttons, restitch open or loose seams, replace zipper,	the garment is returned to usable condition
	3. Given a garment with loose or missing fasteners, belt carriers and/or thread loops,	the learner will secure or replace them	the garment is returned to a wearable condition
	4. Given a man's or woman's garment,	the learner will repair machine-made buttonholes	the garment is returned to usable condition
	5. Given a garment that fits improperly,	the learner will identify the corrections in length and width that need to be and can be made and to pin these corrections ready for sewing,	to produce a well-fitted garment
Cleaning	1. Given a list of 10 fibers and a list of chemicals used by laundries and dry cleaners,	the learner will identify the effects of these chemicals on the fibers,	at least one effect of each chemical on each fiber
Merchandising	1. Given a bolt of fabric	the learner will fold over bolt end to display face of fabric and place in display rack	according to type, color or price as directed
	2. Given a stationary yard guide or fabric yardage meter, table of yardage and prices,	the learner will operate it	to arrive at correct charge for the merchandise the customer ordered
	3. Given a display area in a showroom - (a wall, showcase, counter area, mannequin) and an available stock supply of either clothing and accessories or yard goods and notions,	the learner will arrange compatible items for sale and decorative objects,	to create an eye catching and pleasing area
	4. Using one item of pressing equipment, or a sewing machine or a hand operated tool,	the learner will demonstrate its use or function	following the sequence of steps outlined in the operator's direction supplied with the item

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Food Management

U.S.O.E. Code Number: 09.0203

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Principles of Cookery	1. Given the necessary equipment, materials, and a standardized recipe,	the learner will prepare a product following the recipe,	the appearance, texture and flavor of the finished product are consistent with predetermined standards for that product. (AHEA Handbook of Food Preparation or equivalent).
Vegetables	1. Given vegetables in a variety of forms (fresh, frozen, canned, or dehydrated), the necessary equipment and a standardized recipe,	the learner will: a. Clean the vegetables, if applicable b. Prepare a minimum of five vegetable dishes using at least the following methods: boiling, sauteing, and baking	using proper techniques to arrive at a standardized product. (AHEA Handbook or Food Preparation or equivalent).
Meats	1. Given the necessary food items, equipment and one standardized recipe per method,	the learner will prepare at least one meat, seafood, or poultry dish using each of the following methods: broiling, roasting, pan frying, deep fat frying and boiling,	to arrive at a standardized product. (AHEA Handbook of Food Preparation or equivalent)
Eggs	1. Given the necessary food items, equipment and a standardized recipe,	the learner will prepare at least one egg dish for each of the following methods: frying, scrambling, poaching, preparing omelets, cooking in shell,	using proper cooking methods/ techniques to arrive at a standardized product. (AHEA Handbook of Food Preparation or equivalent).

Topic	Conditions	Performance	Criteria
Soups	1. Given the necessary standardized recipes, ingredients and equipment,	the learner will prepare at least one of each of the following: a. Soup made from commercial soup base b. Cream-style soup c. Soup made via stock-pot method	using proper cooking methods to arrive at a standardized product. (AHEA Handbook of Food Preparation or equivalent).
Sauces And Gravies	1. Given the standardized recipe, necessary ingredients and equipment,	the learner will prepare at least one white or cream sauce and one gravy,	to a specified degree of thickness to arrive at a standardized product. (AHEA Handbook of Food Preparation or equivalent).
Starch Cookery	1. Given a standardized recipe, necessary ingredients and equipment,	the learner will prepare at least three different pasta or cereal products, such as: spaghetti, rice, or oatmeal,	using proper cooking methods to arrive at a standardized product. (AHEA Handbook of Food Preparation or equivalent).
Quick Breads	1. Given a standardized recipe, necessary ingredients and equipment,	the learner will measure and/or weigh ingredients, mix and bake at least one biscuit, one muffin and one pour batter recipe,	using proper preparation and baking methods to arrive at a standardized product. (AHEA Handbook of Food Preparation or equivalent).
Yeast Breads	1. Given a necessary standardized recipe, ingredients and equipment,	the learner will measure and/or weigh ingredients, mix, shape, proof and bake at least one roll or bread recipe,	using proper preparation and techniques to arrive at a standardized product. (AHEA Handbook of Food Preparation or equivalent).
Desserts: Cake, Cookies, Pie, Puddings	1. Given one standardized recipe for each product, the necessary ingredients and equipment,	the learner will prepare at least one cake, one cookie and one pie recipe,	using both conventional and prepared mix methods and using proper preparation techniques to arrive at a standardized product. (AHEA Handbook of Food Preparation or equivalent).
	2. Given the necessary materials, equipment and standardized recipe,	the learner will: a. Measure and/or weigh ingredients for a boiled or powdered sugar icing b. Apply the icing to the uniced cake	using proper techniques to arrive at a standardized product. (AHEA Handbook of Food Preparation or equivalent).

Topic	Conditions	Performance	Criteria
	3. Given the necessary materials, equipment and a standardized recipe,	the learner will prepare at least one custard, one starch-thickened pudding and one gelatin product,	using proper techniques to arrive at a standardized product. (AHEA Handbook of Food Preparation or equivalent).
Pantry			
Salads	1. Given a standard recipe for each salad, the necessary materials and equipment,	the learner will use fresh ingredients to prepare at least one of each of the following salads: appetizer, entree, accompaniment,	the finished product fits the dish and is garnished properly as determined by size, shape, color, texture and flavor.
Dressings	1. Given a standardized recipe, the necessary materials and equipment,	the learner will prepare at least one emulsion and one non-emulsion type dressing,	using proper techniques to arrive at a standardized product. (AHEA Handbook of Food Preparation or equivalent).
Sandwiches	1. Given the necessary recipe, ingredients, equipment and specified quantities,	the learner will assemble the following types of sandwiches for presentation: a. cold sandwiches b. toasted sandwiches c. grilled sandwiches	the filling is evenly distributed within the confines of the bread and visible to the customer; the toast is not burnt, if applicable; and the sandwich is cut for ease in handling; and garnished properly as determined by size, shape, color, and flavor.
Machine Dishwashing	1. Given the necessary equipment,	the learner will: a. Prepare the dishwashing station for use b. Receive, scrape, and stack soiled dishes c. Load racks with dishes, silver and trays and load machine with racks d. Operate dish machine and disposal e. Unload and store clean tableware f. Clean dish machine, disposal, drain tables, shelves, sinks, and carts	all applicable standards of sanitation and safety are met.

Topic	Conditions	Performance	Criteria
Safety and Sanitation	1. Given a teacher-prepared checklist of safety and sanitation practices to be observed in the food preparation area,	the learner will observe safety and sanitation rules and practices,	as measured by his successfully meeting at least 90% of the predetermined criteria on unannounced checks.
Care and Use Of Equipment	1. Given equipment commonly found in a food preparation area, such as: Oven Range Grill Deep Fat Fryer Mixers and Attachments Slicers and Attachments Beverage-making equipment Refrigerators Freezers	the learner will: a. Operate each piece of equipment b. Dismantle, clean and reassemble as necessary	according to manufacturer's operation manual. according to manufacturer's service manual.
Storage of Food	1. Given a list of foods selected from the following categories: Dairy Products Meat Produce Staples Frozen Foods	the learner will indicate the proper method of storage,	contamination and spoilage are minimized.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Institution, Home Management

U.S.O.E. Code Number: 09.0205

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Management	1. Given five work situations,	the learner will demonstrate time and energy management,	according to the principles of the management process found in an authoritative text or equivalent reference material in four out of five situations.
Accident Prevention	1. Without the use of reference materials,	the learner will list at least 20 health and safety standards related to job employment in institution and home management,	according to OSHA (Occupational Safety and Health Act), MIOSHA (Michigan Occupational Safety and Health Act), and an authoritative text or equivalent reference material.
	2. Given a simulated emergency situation,	the learner will list the necessary procedures to follow,	according to an authoritative text or equivalent reference material.
Care and Upkeep of Housekeeping Supplies and Equipment	1. Given combustible cleaning supplies and materials,	the learner will safely store materials,	according to product storage directions and consistent with instructions in an authoritative text or equivalent reference material.

Topic	Conditions	Performance	Criteria
	2. Given common electrical and manual equipment used in maintaining a home or an institution,	the learner will demonstrate each piece of equipment's use, cleaning, care and storage,	it is consistent with instructions in the equipment handbook or reference manual.
Basic Cleaning Procedures	1. Given cleaning products,	the learner will identify the products and demonstrate their use,	according to the product instructions.
	2. Given a dust cloth and a mop,	the learner will dust,	no dust is visible in four out of five attempts.
	3. Given cleaning supplies and equipment for washing walls,	the learner will wash a painted wall, woodwork and wallpaper,	no dirt is visible and streaks and smears are removed.
	4. Given a housekeeping cart,	the learner will stock and maintain the cart,	according to an authoritative text or equivalent reference.
	5. Given a vacuum sweeper,	the learner will vacuum a hard floor and a carpeted floor,	no dirt is visible and according to an authoritative text or equivalent reference material.
	6. Given cleaning supplies and equipment for windows,	the learner will clean windows,	no dirt is visible and streaks and smears are removed.
Area Cleaning	1. Given several types of rooms (bathroom, kitchen, living area, elevator, lobby, etc.),	the learner will select the proper supplies and equipment, sequence, and clean a given room,	according to an instructor/ employer-developed checklist.
	2. Given supplies and equipment,	the learner will organize and clean a storage area,	according to an authoritative text or equivalent reference material.
Floor Maintenance	1. Given cleaning materials for floors,	the learner will clean and care for masonry, woodlike, resilient, and conductive floors,	no dirt is visible and according to an authoritative text or equivalent reference material.
	2. Given cleaning supplies and equipment for rugs and carpeting,	the learner will clean and care for rugs and carpets,	according to an authoritative text or equivalent reference.
Special Cleaning	1. Given cleaning supplies and equipment,	the learner will clean wood, metal, plastic and upholstered furniture,	according to an authoritative text or equivalent reference material.

Topic	Conditions	Performance	Criteria
	2. Given equipment and supplies for cleaning window treatments (Venetian blinds, curtains, shades, shutters, etc.),	the learner will clean wood, metal, plastic and upholstered furniture,	according to an authoritative text or equivalent reference material.
	3. Given supplies and materials,	the learner will clean (wash, polish, etc.) and store flatware, hollowware, decorative objects, dinnerware, and figurines,	according to an authoritative text or equivalent reference material.
Laundry	1. Given laundry,	the learner will sort a wash according to color, degree of soil, fabric weight and construction and wash water temperature required,	according to an instructor checklist based on laundering reference materials.
	2. Given any wash load, washing machine and supplies,	the learner will select the appropriate supplies, load and operate the washing machine,	according to the instruction manual for the washing machine.
	3. Given any wash load and dryer,	the learner will load and operate the dryer,	according to the instruction manual for the dryer.
Ironing	1. Given supplies, equipment and laundry,	the learner will select the appropriate supplies and iron and press clothing and flatwork,	the finished products are acceptable in appearance according to an authoritative text or equivalent reference material.
Linens	1. Given bed linens,	the learner will strip and remake the bed,	according to an authoritative text or equivalent reference material.
	2. Given linens,	the learner will replace soiled linens with clean linens,	according to an instructor/ employer-developed checklist.
Recording/ Reporting Procedures	1. Given an institution or home work situation,	the learner will report damage, loss, forgotten items, etc.,	according to established procedures.
	2. Given incoming messages, (doors and telephone),	the learner will receive and record messages,	all pertinent information (name, date, time and message) is included.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Bookkeepers

U.S.O.E. Code Number: 14.0102

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Handwriting	1. Given any material,	the learner will write or print	so well that any document prepared by the learner will be usable according to an authoritative text or equivalent reference manual.
Journalizing and Posting	1. Given 25 business transactions,	the learner will journalize the debits and credits in a combination journal	with 90% accuracy.
	2. Given a completed combination journal with 25 journalized transactions,	the learner will select the correct accounts and post the debits and credits	with 90% accuracy.
	3. Given 25 business transactions,	the learner will select the correct special journal and journalize the debits and credits	with 90% accuracy.
	4. Given a completed set of special journals with 25 journalized transactions,	the learner will select the correct accounts and post the debits and credits	with 90% accuracy.
	5. Given 25 Accounts Receivable/ Accounts Payable business transactions,	the learner will journalize and post the entries in a Special journal	with 90% accuracy.

Topic	Conditions	Performance	Criteria
	6. Given 25 Accounts Receivable/ Accounts Payable business transactions,	the learner will journalize and post the entries in a combination journal	with 90% accuracy.
	7. Given 25 business transactions relating to distribution (i.e., departmental sales, profit-margin groups, product lines, sales territories, etc.),	the learner will journalize and post	with 90% accuracy.
	8. Given 10 business transactions affecting purchases on account and sales on account,	the learner will select the proper account in the Subsidiary ledger and post it for all transactions	with 100% accuracy.
	9. Given 10 business transactions affecting cash sales and cash purchases,	the learner will select the proper account in the Subsidiary ledger and post it for all transactions	with 100% accuracy.
	10. Given an incorrectly posted transaction,	the learner will prepare, journalize, and post the correcting entry	with 100% accuracy.
Cash Accounting	1. Given a bank deposit slip and a list of checks, currency, and coins,	the learner will prepare a checking account deposit slip	with 100% accuracy.
	2. Given a blank check, check stub or check register, and the amount owed,	the learner will fill in the check stub or register and write the check	in accordance with the American Bankers Association requirements.
	3. Given a list of cancelled checks, deposit slips, current and previous month bank statements, and a check register or check stubs,	the learner will reconcile the bank statements	with 100% accuracy.

Topic	Conditions	Performance	Criteria
	4. Given 10 petty cash transactions,	the learner will: 1. Disperse the fund 2. Balance the fund 3. Categorize (i.e., departmentalize, distribute, etc.) 4. Reimburse the fund 5. Journalize and post	with 100% accuracy.
Inventory Control	1. Given a Sales breakdown (by department, product, line, etc.)	the learner will calculate the new perpetual inventory totals	with 90% accuracy.
Payroll	1. Given 10 time cards with the "in" and "out" time punched for a week and the necessary supporting information,	the learner will compute the regular overtime, and total hours worked and gross earnings	with 90% accuracy.
	2. Given the computed gross wages for the current period, the employee earnings record from the previous pay period, and the necessary tax publications,	the learner will complete the payroll register	with 90% accuracy.
	3. Given a completed payroll register for 10 employees and the necessary forms,	the learner will complete the employee earnings record and employee check stub and payroll check	with 90% accuracy.
	4. Given a completed payroll register and the necessary forms,	the learner will journalize and post the payroll entry, and write the check to cover payroll	with 100% accuracy.
Taxes	1. Given the necessary information,	the learner will determine the employer's payroll tax liability and journalize and post the liability	with 100% accuracy.

Topic	Conditions	Performance	Criteria
	2. Given the following forms: 940 - Employers Annual Federal Unemployment Tax Return 941 - Employers Quarterly Federal Tax Return 501 - Withheld Income and FICA Taxes 508 - Federal Tax Deposit for Unemployment Taxes W-2 - Wage & Tax Statement W-3 - Reconciliation of Income Tax Withheld and Transmittal of Tax Statements W-4 - Employee's Withholding Allowance Certificate W-4E- Exemption From Withholding - Monthly Sales, Use and Withholding Tax Return (State of Michigan) - Annual and Monthly Sales Tax Return (State of Michigan) - Annual and Monthly Withholding Tax Return (State of Michigan) 1020- MESC Form (State Unemployment Tax)	the learner will determine the filing date and complete each form	it meets the guidelines established by the Federal or State Government.
	3. Given the necessary information,	the learner will write the necessary checks for the employer's tax liabilities, journalize and post these transactions	with 90% accuracy.
Verification Procedures	1. Given 25 Source documents,	the learner will verify the entire source document,	with 100% accuracy.
	2. Given an incorrect Trial Balance, Source documents, journals, and ledgers,	the learner will trace the errors and make the necessary correcting entries	to cause the Trial Balance to balance.

Topic	Conditions	Performance	Criteria
Accrual and Cash Systems	1. Given a description of transactions for a business,	the learner will describe a cash system and an accrual system	according to an authoritative text or its equivalent reference material.
Data Processing	1. Given a 10-key adding machine and an assortment of addition problems,	the learner will compute the answers	within an appropriate, specified period of time, with 90% accuracy.
	2. Given a written examination,	the learner will compare and contrast the manual and electronic data processing cycle, define common data processing terms, and describe input mediums	with 80% accuracy.
	3. Given Source documents,	the learner will flow chart the path from input to output, including processing	according to an authoritative text or equivalent reference material.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Computer and Console Operators

U.S.O.E. Code Number: 14.0201

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Terminology	1. During verbal and/or written communications with other data processing personnel,	the learner will use a given appropriate set of technical terms such as: A. core B. drum storage C. thin film D. cryogenics E. crybergenics F. photo digital memory G. laser memory H. batch processing I. real-time processing J. on-line processing K. magnetic card	appropriate and correct use of terms as given.
Peripheral Equipment	1. Given a keypunch machine manual, keypunch machine and job specifications,	the learner will keypunch and/or duplicate data onto cards,	with 100% accuracy.
	2. Given a sorter, deck of at least 4,000 pre-punched cards, format sheet and instruction sheet,	the learner will demonstrate proper card handling as he sorts the deck of cards in correct alphabetical, numerical order and digit select (and where appropriate, edit).	according to the specifications of the job with 100% accuracy.

Topic	Conditions	Performance	Criteria
	3. Given a sorter and a sorter manual,	the learner will make the necessary operational machine adjustments, any hand operations necessary and unjam cards at any location within the sorter,	to complete the job with 100% accuracy.
	4. Given two or more ply paper, necessary materials and equipment, and instruction sheet,	the learner will operate a decollator and/or hand decollate and separate two-ply paper from its carbon or from any data form according to the specifications of the job,	all data are readable, materials are not smeared, torn, and are neatly stacked.
	5. Given a burster, stock paper, and reference manual,	the learner will burst the paper at the perforations, trim the edges, and slit the form down the middle and clear the machine of any jams, if necessary,	according to the specifications of the job.
	6. Given a printer, various sizes of pre-printed forms, carriage tape punch, reference manual, and a carriage tape,	the learner will mount the paper, prepare and mount the carriage tape and align the forms,	the printer will print the data in the proper spaces provided on the form.
Operations	1. Given console, job instruction sheet, run book, at least two input/output media, and auxiliary equipment; including card reader, printer, disc and tape drive,	the learner will run the job,	according to job specifications within the appropriate, specified period of time.
	2. Given a magnetic tape reel and a specific tape drive,	the learner will load the tape on the drive,	the job will run according to specifications within an appropriate, specified period of time.
	3. Given a disc pack and a specified disc drive,	the learner will load the disc pack,	within an appropriate, specified period of time and the job will run according to the specifications.

Topic	Conditions	Performance	Criteria
	4. Given error messages on the console and access to manuals,	the learner will take corrective action and/or describe the error condition requiring supervisory action including: A. printer malfunction B. reader failure C. tape drive halt D. disc drive halt E. console, I/O failure	the job can be completed according to the specifications of the job within an appropriate, specified period of time.
	5. Given several error messages as displayed by the console, indicator lights, manual and run book,	the learner will interpret the indicator lights,	he can take appropriate corrective action.
	6. Given conversion charts (including BCD, EBCDIC codes) and any number in the following bases: Base 2 Base 8 Base 10 Base 16	the learner will convert the given numbers into their required base or code,	with 100% accuracy.
	7. Without the aid of reference material,	the learner will define and illustrate the flow of information and work through a computer system,	as is generally consistent with installation procedures.
	8. Given a systems flowchart, necessary materials and equipment and access to the required tapes, cards, files, programs,	the learner will put up the jobs in sequence,	they will run correctly and on schedule.
	9. Given a utility program, job specifications sheet, necessary material and equipment,	the learner will change or modify the parameter cards,	according to job specifications so the job runs correctly.

Topic	Conditions	Performance	Criteria
	10. Given an introductory manual, coding sheets, and a simple read/write problem,	the learner will write an executable program,	in at least one programming language within a reasonable amount of time.
Basic Information	1. Without the use of reference materials,	the learner will describe the expected computer operator's role and duties within a small, medium or large computer installation,	generally consistent with the reference materials and experiences provided.
	2. Given a list of different types of computers and systems including: a. Analog Computer b. Digital Computer c. Hybred Computer d. Special Purpose Computer e. (OS) Operating Systems f. (TOS) Tape Operated Systems g. (DOS) Disk Operated Systems	the learner will describe their function,	generally consistent with the manufacturer's literature.
	3. Without the use of reference materials,	the learner will identify each generation of computer, when they were developed, why they were developed, the advantages and disadvantages of each generation,	generally consistent with the source material provided.
	4. Without the aid of reference material,	the learner will define and illustrate the operations necessary to complete the data processing cycle,	consistent with selected references.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Peripheral Equipment Operators--Key Punch and Coding Equipment Operators

U.S.O.E. Code Number: 14.0202

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Card Concepts	1. Without the aid of reference materials,	the learner will identify the physical characteristics (9 edge, 12 edge, face, back, 1 edge, 80 edge, corner cut, etc.) of the 80 column card and/or 96 column card,	according to the specifications in a keypunch manual without error.
	2. Given any punched cards, without the aid of reference materials,	the learner will visually interpret the 80 and/or 96 column card.	according to the specifications of the appropriate code, so well that all numbers and letters will be identified with 100% accuracy.
	3. Given rough-draft document specifications and a card layout form,	the learner will document the job (lay out the fields),	according to the job specifications.
	4. Without the use of reference materials,	the learner will define and illustrate the following concepts: A. field B. record C. file D. control punch E. card code	each concept will be defined and illustrated.

Topic	Conditions	Performance	Criteria
Keypunching Concepts	1. Given a completed card layout form,	the learner will punch a program card, including alternate programming,	according to specifications of the job within an appropriate, specified period of time.
	2. Given an alpha-numeric speed/accuracy test of no less than 15 minutes,	the learner will keypunch,	no less than 150 strokes per minute with 95% accuracy.
	3. Given a prepunched deck, card layout format, and source documents,	the learner will verify the job,	with 100% card accuracy within an appropriate, specified period of time.
	4. Given a keypunch machine and ribbon and a diagram of the ribbon mechanism,	the learner will change the ribbon,	in accordance with the manufacturer's instructions and specifications.
	5. Given a reference chart of program codes, an unfamiliar card format, and a job requiring alternate programs,	the learner will punch the job,	with 95% accuracy within an appropriate, specified period of time.
Sorter Concepts,	1. Given a job scheduling sheet, name of the job, sorter, directions for filing techniques, and the master card file,	the learner will pick from the file the desired deck,	the sorting job may be run according to specifications and the deck and materials will be back in its original order at the completion of the job.
Equipment Identification	1. Given illustrations of the following equipment: A. sorter B. interpreter C. reproducer D. collator E. accounting machine F. burster G. decollator	the learner will identify them, and describe their functions,	with 100% accuracy as generally consistent with the manufacturer's literature.

Topic	Conditions	Performance	Criteria
	H. keytape I. keydisc J. CRT K. micro film reader L. microfilm reader M. teletype N. MICR sorter O. scanner P. terminals		
Media Identification	1. Without use of reference materials,	the learner will describe the following media--punched card, paper tape, magnetic tape, direct entry diskette,	according to the characteristics listed below: A. length of record B. ease of recording C. means of storage D. ease of verification E. ease of search and retrieval of information generally consistent with the source material as provided.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: General Office Clerk

U.S.O.E. Code Number: 14.0303

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Typing	1. Given a straight-copy employment test,	the learner will type	a minimum of 40 gross words per minute for 5 minutes with a maximum of 5 errors.
	2. Given edited, rough draft copy,	the learner will type letters and/or memos,	in an acceptable, given format, with carbon copies if required.
		use chain-feeding techniques	when applicable
		type addresses and/or other pertinent information on envelopes, cards, or labels as well as specific information as required onto form letters,	the product of each task will be mailable copy (or usable copy which is defined as copy that is grammatically correct and error free (perfect copy or neatly corrected copy).
	3. Given business forms and the necessary information for completing them,	the learner will type the information onto the forms and verify any computations,	information will be inserted correctly with correct alignment and spacing, copy will be usable, and all computations will be verified.

Topic	Conditions	Performance	Criteria
Filing	1. Given a set of materials,	the learner will file and/or retrieve the specified materials in an established alphabetic or numeric system	within an appropriate, specified period of time and with 100% accuracy.
Business Machines	1. Given prepared copy to be reproduced	the learner will select the supplies	according to the machine to be used
		operate each of the following as required: a. Spirit duplicator b. Mimeograph c. Copier	consistent with manufacturer's operating instructions, producing mailable copy
		collate and distribute copy	as directed
		store materials properly	as applicable
		clean equipment and work area	so each is ready for next operator.
	2. Given an adding machine, a calculator, and a predetermined number of simple math problems including decimals, percentages, and amounts of money,	the learner will perform addition and subtraction calculations on the adding machine	with 95% accuracy within an appropriate, specified period of time.
		perform addition, subtraction, multiplication, and division calculations on the calculator	with 95% accuracy within an appropriate, specified period of time.
		record the answers to the problems	with 100% accuracy
Business Procedures			
Telephone	1. Given a telephone or a simulated setting,	the learner will use the telephone efficiently by performing the following functions: a. Receiving, placing and transferring local, intra-office and long-distance calls	the performance of each function is verified according to established procedures as provided

Topic	Conditions	Performance	Criteria
		b. Recording messages	all pertinent information (name, date, time, and messages) is included.
		c. Distributing messages	appropriate action may be taken within a required time limit.
	2. Given a telephone directory and a list of names,	the learner will locate individual and/or company names	with 90% accuracy within an appropriate, specified period of time.
Mail	1. Given incoming office mail, a company directory, a date stamp, and any other desired supplies,	the learner will sort and deliver the mail to proper areas or offices	according to established procedures
327	2. Given outgoing office mail,	the learner will follow outgoing mail procedures, as directed: a. Addressing mail, according to postal regulations b. Folding and inserting business papers into envelopes properly c. Affixing correct postage d. Depositing mail in appropriate places at proper times for most efficient delivery	the performance of each procedure is verified
	3. Given a Zip Code Directory and a list of addresses,	the learner will locate zip codes	with 90% accuracy within an appropriate, specified period of time.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Journalism

U.S.O.E. Code Number: 14.0499

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Writing a News Story	1. Given an assigned event and/or fact sheet using one or more of the following techniques: 1. Interviewing actual news situation 2. Covering speeches - recorded or live 3. Attending meetings - live 4. Covering a beat - live 5. Observing unusual events - on and off beat 6. Receiving news releases - public relations and others	the learner will gather news information and write a publishable news story	which conforms to the United Press International - Associated Press Style Book, News Media ethics and libel laws, and follows guidelines requiring a maximum of 35 words in the lead, and paragraphs of 4 to 6 lines; is free of spelling and grammar errors and reporter opinion, and contains attribution of all news facts and quotations. In the news story, the first or lead paragraph will contain the most important story facts with the body or rest of the story containing the additional story facts in logical sequence.
(Interviewing)	2. Given the assignment to conduct an interview,	the learner will arrange for the interview, gather background information, prepare questions, conduct the interview, and write a news story	which meets the criteria in Obj. 1 and reflects information gathered prior to and during the interview, including the presentation of the interviewer's remarks in direct quotations and/or paraphrases.

Topic	Conditions	Performance	Criteria
(Covering Speeches and Meetings)	3. Given the assignment to cover a meeting or speech using the news media "morgue" and any advance information furnished,	the learner will gather information at the speech or meeting and write a news story	which covers necessary background information on the speaker and meets the criteria stated in Objectives 1 and 2.
(Rewriting News Releases)	4. Given a single news release from one source or two or more news releases from different sources,	the learner will rewrite the single news release or combine the facts contained in multiple releases producing a news story	which is a factual expansion of the original release and meets the criteria stated in Objective 1.
Copy Editing	1. Given news copy and using the dictionary, grammar, Associated Press - United Press International style book and copy reading symbols, the news writing guidelines of media ethics and libel laws, and the news story structure guidelines of a maximum of 35 words in the lead and paragraphs of 4 to 6 lines,	the learner will copy read, cut, revise, and mark that copy for the printer	it is free of grammatical, spelling and/or style errors, non-news facts, opinions, wordiness, unethical and/or libelous statements, and makes proper attribution of news facts and quotations.
Typing	1. Given a news story of 200 words,	the learner will type the story	within 5 minutes, with 85% accuracy.
Understanding Electronic Journalism	1. Given the following terms: Cathode Ray Terminal (CRT), Video Display Terminal (VDT), and Optical Character Recognitive (OCR),	the learner will define the terms and explain its function within the news room	with 85% accuracy.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Employability Skills

U.S.O.E. Code Number: All Vocational/ Technical Programs

Remarks: These objectives are to be considered an integral part of each individual set of recommended minimum program performance objectives for all vocational and technical programs.

Note: In these objectives the expression, "Without the use of reference materials" is used to indicate that the learner would perform this task during the testing situation without access to reference sources, notes, etc.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Sources of Employment Opportunities	1. Without the use of reference materials,	the learner will list the prime sources of information concerning opportunities for employment and describe those special procedures, if any, required to effectively utilize their services, information, etc.,	which is (1) consistent with the model, (2) complete with all information as required by the model, and (3) correct, legible and spelled correctly.
Requirements Of The Occupation (Health, Physical etc.)	1. Without the use of reference materials,	the learner will list the significant requirements (health, physical, legal, educational, etc.), if any, of the appropriate occupation,	consistent with available data on the occupation and pertinent local, state, and federal regulations.
Wage Information	1. Without the use of reference materials,	the learner will list the approximate entry wages, general wage range, and significant fringe benefits for the appropriate occupation as well as compare these wages and fringe benefits with other selected occupations,	consistent with available information and based upon local norms.

Topic	Conditions	Performance	Criteria
Non-Wage Information	1. Without the use of reference materials,	the learner will list and describe the significant non-wage characteristics (e.g., shift requirements, union affiliation, apprenticeships, occupational hazards, characteristics of work environment, etc.)	with sufficient detail as to accurately describe those characteristics which are significant to the appropriate occupation.
Employment Opportunities	1. Without the use of reference materials,	the learner will describe the local, regional, and national employment opportunities for the appropriate occupation,	in terms generally consistent with data available from business and industrial sources, governmental agencies, and other selected sources.
Opportunities For Advancement	1. Without the use of reference materials,	the learner will describe the career ladder associated with the appropriate occupational area of training in which he/she is enrolled,	consistent with an authoritatively prepared model which is characteristic of that occupational area.
Decision Making	1. Given a decision making situation (job offer, further training, job termination, etc.) and procedures/skills in decision making,	the learner will compare his/her personal criteria with information about available alternatives and choose among them,	the decision is made by the learner listing and describing the reasons for choosing an alternative or the decision is acted upon.
Resume/Data Sheet	1. Given a topical information outline for completing a resume or data sheet and the necessary personal notes, documents, etc.	the learner will prepare a resume or data sheet,	which is (1) consistent with the outline, (2) all information necessary to complete the resume or data sheet assembled in advance by the learner, (3) with all information entered into each area of the outline as illustrated, and (4) all information correct, legible, and spelled correctly.
Letter Of Application Inquiry 9/74	1. Given a model for a letter of application/inquiry and the necessary personal notes, documents, etc.,	the learner will write a letter of application/inquiry,	which is (1) consistent with the model, (2) complete with all information as required by the model, and (3) correct, legible and spelled correctly.

Topic	Conditions	Performance	Criteria
Employment Application	1. Given a sample employment application characteristic of the type common to the appropriate area of employment and the necessary personal notes, documents, etc.,	the learner will complete the employment application,	with (1) all information necessary to complete the application assembled in advance by the learner, (2) all information entered into each area of the application as directed, and (3) all information correct, legible and spelled correctly.
Standards of On-The-Job Dress, Grooming, Etc.	1. Without the use of reference materials,	the learner will describe and/or dress in the attire of the appropriate occupational area including personal grooming, required health and safety equipment, uniforms, etc.,	consistent with legal requirements (if any), appropriate safety considerations, and conventional attire of that occupation.
Interviewing	1. Without the use of reference materials,	the learner will describe and/or demonstrate appropriate characteristics of the job applicant, including: (a) attire, (b) grooming and (c) conduct during interview,	generally consistent with a model of procedures and practices as provided for the appropriate occupational area.
	2. Without the use of reference materials,	the learner will describe and/or demonstrate the interviewing process,	including at least the following: a. Pre-interview: how to set up an interview, what to bring to the interview, etc. b. Interview: typical employer questions and interview topics, significant applicant questions and topics, promptness, etc. c. Post-interview: notification of the outcome of the interview, follow-up correspondence, etc. Each of the above to be generally consistent with a model of procedures and practices as provided for the appropriate occupational area.

Topic	Conditions	Performance	Criteria
Evaluation Of Job Offer	1. Without the use of reference materials,	the learner will list his/her personal criteria (financial, social, etc.) which describe a job offer,	which would be acceptable to him/her if offered.
Interpersonal Relationships	1. Given case descriptions of common on-the-job conflict situations: employer-employee, employee-employee, and employee-client/customer/etc.,	the learner will identify the probable cause for the conflict and suggest at least one possible action to relieve the conflict,	for the majority of cases presented and consistent with guidelines, etc., previously made available to the learner.
Continuing Education	1. Without the use of reference materials,	the learner will describe the type(s) and source(s) of related continuing education for the appropriate occupation and/or advancement within the career ladder associated with the occupation,	consistent with authoritative information appropriate for that occupational area.
Terminating A Job	1. Without the use of reference materials,	the learner will describe the procedures and practices for terminating a job,	generally consistent with a model of procedures and practices as provided for the appropriate occupational area which includes: length of notice, method of notification, request for references, etc.

PERFORMANCE OBJECTIVES DEVELOPMENT PROJECT

Overview

A performance objective is a description of what a learner should be able to do when he has learned a skill or acquired certain understandings. The performance objectives presented here contain all six elements of the State Department of Education recommended performance objectives model (who, when, performance, object of performance, measurement methodology, and criteria). [1]

The guidelines[2] used by writers of these objectives are attached. In addition, several characteristics of these objectives must be understood to be adequately utilized:

1. Minimum: these objectives represent the considered opinion of the writers, after completion of a structured review and expert input, as to the minimum skills and understandings necessary to gain job entry.

2. Recommended: these objectives are those which the particular writing team recommends to the Vocational-Technical Education Service and, in turn, the Vocational-Technical Education Service to the local educational agencies for their consideration as reasonable minimum learner objectives.

3. Terminal: these objectives describe only those significant performances which are to be mastered by the end of the training program. It is likely that each of these terminal objectives contains several intermediate or facilitating objectives which are assumed to be necessary to achieve the terminal objective.

4. Program: these objectives are presented by program rather than course, because it is the prerogative of the local educational agency to group content into courses, etc., as it sees fit.

5. Grading/Passing: the decision as to what grade a student will earn for achieving some, all, or in excess of the minimum recommended program performance objectives is a local educational agency decision. Some districts choose to include factors other than the achievement of objectives as the basis for assigning grades. It is not the intent here to suggest that this practice must change as a result of adopting performance objectives. It is also recognized that many factors may affect the decision as to whether credit for a course should be assigned to a particular student who may achieve less than the minimum objectives of the program.

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[1] Michigan Department of Education, "Developing Performance Objectives," booklet, undated.

[2] The abbreviated guidelines used by the members of the performance objectives writing teams are extracted from and consistent with: Bailey, Philip; Bland, David and Brown, Dan; "Guidelines for the Performance Objectives Development Project," Michigan Department of Education and Career Development Service, September, 1972.

Format

1. Each set of objectives is identified by a U.S. Office of Education Occupational Designation and Code Number. This practice is consistent with the system used to approve and fund vocational/technical programs in Michigan.

2. Each set of objectives begins with the standard statement, "Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced test (ORT's), unless otherwise indicated:". In order to avoid unnecessary duplication, this statement is presented as a constant, but it is to be interpreted as a part of each subsequent objective.

3. In addition to the performance objectives recommended for each program, each set of objectives for a vocational or technical program is to be understood to include the performance objectives for "Employability Skills" (except for non-wage earning Home Economics) and the "Statement on Cooperative Education Technique" (if applicable). Although these are presented separately, they are to be considered common to all vocational and technical programs if applicable. Both items are included in the adoption process as an integral part of each set of objectives, when appropriate, and are adopted if the set is adopted.

4. Four columns of information are used to present the content of each objective:

    a. Topic: a general category of subject matter into which the performance objectives have been grouped.

    b. Conditions: a description of the relevant materials and/or problems that will affect the learner's performance.

    c. Performance: an observable, measurable description of what the learner will do.

    d. Criteria: a description of the quantitative and qualitative standards against which the learner's performance is to be measured.

PERFORMANCE OBJECTIVES DEVELOPMENT PROJECT

Statement

On The

Cooperative Education Technique

An approved vocational/technical program may utilize, at the discretion of the local educational agency, a cooperative education component. As a method of instruction, the cooperative education technique does not have program performance objectives which are separate from those of the approved vocational/technical program (by U.S.O.E. Code Number). An approved program may appropriately develop and implement performance objectives; a method of instruction (co-op, lecture, exploratory work experiences, etc.) does not, however, have planned performance objectives apart from those of the approved program.

Expressed in the terminology of performance-oriented instruction, this goal may be stated as follows:

Goal 1. The learner will demonstrate the achievement of the performance objectives of the approved vocational education program in either the school setting and/or the training station.

For skills and understandings acquired prior to or concurrent with the cooperative vocational education experience through preparatory and/or related instruction:

While employed in an approved training station and subject to the conditions of a training agreement/plan, the learner will demonstrate those skills and understandings acquired in preparatory and/or related instruction to the criteria of the program performance objectives or to the criteria of the cooperating employer. The criteria with the higher standard will be applied in the evaluation of learner achievement.

It is possible that a learner might be involved in cooperatively planned unique learning activities while a cooperative education student. In such cases, it would be desirable to include additional performance objectives specifically developed to cover these unanticipated needs of the learner as a part of the training plan/agreement. Performance objectives so developed would probably have the following characteristics:

1. Few in number
2. Cooperatively developed and agreed to by learner, employer, and school.
3. Highly individualized because of their uniqueness.

In performance-oriented instructional terminology, this goal may be expressed as follows:

Goal 2. The learner will demonstrate the achievement of the performance objectives unique to a particular training station.

For skills and understandings which are not a part of the regular approved vocational program and which originate because of the unique requirements of a particular training station.

Given a deficiency in skills and/or understandings necessary to perform satisfactorily in a particular training station (identified by either the learner, the coordinator, or the employer) the learner will participate in the development of performance objectives to eliminate such deficiencies and will achieve those skills and/or understandings to the criteria mutually agreed upon by the parties to the training agreement.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Stenographer

U.S.O.E. Code Number: 14.0703

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Typing	1. Given a straight-copy employment test,	the learner will type	a minimum of 50 gross words per minute for 5 minutes with a maximum of 5 errors.
	2. Given edited, rough-draft copy of a business letter of average length (125-175 words) to be typed,	the learner will type the letter and/or memo including any special features,	in an identified style or format in mailable form (or usable which is defined as copy that is grammatically correct and error free (perfect copy or neatly corrected copy) within a 20-minute sequence.
	3. Given copy for a manuscript, minutes, financial reports, agenda, itinerary, statistical reports, and/or expense reports,	the learner will type the report	in a specified format in mailable form at a production rate of ten words per minute.
	4. Given a variety of business forms such as a bill of lading, acknowledgment, purchase order, invoice, etc., and the necessary information for completing the forms,	the learner will select the appropriate form to be used and type the information on the forms	in mailable form.
		verify the typing	the figures are 100% accurate.

Topic	Conditions	Performance	Criteria
	5. Given a list of addresses and/or other information,	the learner will type addresses and/or other pertinent information on envelopes, cards, or labels as well as specific information as required onto form letters,	in mailable form
		use chain-feeding techniques	when applicable
	6. Given statistical data including financial reports,	the learner will determine vertical and horizontal placement and type the tabulation	it is centered on the paper and contains no uncorrected typing errors.
	7. Given edited, rough-draft copy for a one-page business report,	the learner will type the report including any special footnotes	according to a specified format in usable form within a 20-minute sequence.
	8. Given information to be prepared for duplicating,	the learner will type and properly correct a (n): a. Spirit master b. Stencil c. Original for copying	usable copies will result
Business Machines	1. Given a transcription unit and belts or tapes,	the learner will set up the unit, listen to the information on the belts or tapes and transcribe the information,	in typed mailable form with desired carbon copies at a production rate of at least ten words.
	2. Given an adding machine, a calculator and a predetermined number of simple math problems including decimals, percentages, and amounts of money,	the learner will perform addition and subtraction calculations on the adding machine	with 95% accuracy within an appropriate, specified period of time
		perform addition, subtraction, multiplication, and division calculations on the calculator	with 95% accuracy within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
		record the answers to the problems,	with 100% accuracy
Shorthand	1. Given dictation that has not been previewed or practiced at 80 words per minute for three minutes,	the learner will transcribe	with 95% accuracy at a production rate of ten words per minute.
	2. Given office-style dictation that has not been previewed or practiced,	the learner will transcribe mailable letters, inter-office memorandums, etc.,	at a production rate of ten words per minute.
Filing	1. Given a set of materials,	the learner will file and/or retrieve the specified materials in an established alphabetic or numeric system,	within an appropriate specified period of time and with 100% accuracy
Business Procedures			
Telephone	1. Given a telephone or a simulated setting,	the learner will use the telephone efficiently by performing the following functions: a. Receiving, placing and transferring local, intra-office and long-distance calls	the performance of each function is verified.
		b. Recording messages	all pertinent information (name, date, time, and message)is included.
		c. Distributing messages	appropriate action may be taken within a required time limit
	2. Given a telephone directory and a list of names,	the learner will locate individual and/or company names	with 90% accuracy within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
Mail	1. Given incoming office mail, a company directory, a date stamp, and any other desired supplies,	the learner will sort and deliver the mail to proper areas or offices,	according to established procedures.
	2. Given outgoing office mail,	the learner will follow outgoing mail procedures, as directed: a. Addressing mail, according to postal regulations b. Folding and inserting business papers into envelopes properly c. Affixing correct postage d. Depositing mail in appropriate places at proper times for most efficient delivery	the performance of each procedure is verified
	3. Given a Zip Code Directory and a list of addresses,	the learner will locate zip codes,	with 90% accuracy within an appropriate, specified period of time
Special Skills	1. Given a request for an appointment, calendar, telephone, and appointment cards,	the learner will make an appointment.	so the appointment fits the schedule of all parties concerned, all requests are handled so that needs of all parties concerned are met, and all callers are properly screened.
	2. Given a simulated situation requiring travel or other reservations,	the learner will make and confirm the needed reservations,	arrangements fit the predetermined needs of all parties concerned.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Medical Secretary

U.S.O.E. Code Number: 14.0797

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Typing	1. Given a straight-copy employment test,	the learner will type	a minimum of 50 gross words per minute for 5 minutes with a maximum of 5 errors.
	2. Given edited, rough-draft copy of a business letter of average length (125-175 words) to be typed,	the learner will type the letter and/or memo including any special features	in an identified style or format in mailable form (or usable which is defined as copy that is grammatically correct and error free (perfect copy or neatly corrected copy) within a 20-minute sequence.
	3. Given copy for a manuscript, minutes, financial reports, agenda, itinerary, statistical reports, and/or expense reports,	the learner will type the report	in a specified format in mailable form at a production rate of ten words per minute.
	4. Given a variety of business forms such as a bill of lading, acknowledgment, purchase order, invoice, etc., and the necessary information for completing the forms,	the learner will select the appropriate form to be used and type the information on the forms	in mailable form.
		verify the typing	the figures are 100% accurate.

Topic	Conditions	Performance	Criteria
	5. Given a list of addresses and/or other information,	the learner will type addresses and/or other pertinent information on envelopes, cards, or labels as well as specific information as required onto form letters	in mailable form
		use chain-feeding techniques	when applicable.
	6. Given statistical data including financial reports,	the learner will determine vertical and horizontal placement and type the tabulation	it is centered on the paper and contains no uncorrected typing errors.
	7. Given edited, rough-draft copy for a one-page business report,	the learner will type the report, including any special footnotes	according to a specified format in usable form within a 20-minute sequence.
	8. Given information to be prepared for duplicating,	the learner will type and properly correct a(n): a. Spirit master b. Stencil c. Original for copying	usable copies will result.
Shorthand/ Transcription	1. Given medical dictation (either manual or machine) and medical and stenographic reference materials,	the learner will transcribe	usable copy on a 1:4 basis (EX: 1 hour dictation/ 4 hours transcription). Mailable or usable is defined as "copy that is grammatically correct and error free (perfect copy or neatly corrected copy)."
Terminology	1. Given a situation requiring the use of a professional vocabulary, and reference materials,	the learner will pronounce, spell, and define medical and pharmaceutical terms and abbreviations	with 100% accuracy OR so well that needs of the situation are communicated and any necessary action could be taken.
Filing	1. Given a set of materials,	the learner will file and/or retrieve the specified materials in an established alphabetic, numeric, or subject filing system	within an appropriate, specified period of time and with 100% accuracy.

Topic	Conditions	Performance	Criteria
Insurance Forms	1. Given private carrier forms, Medicare payment request forms, Medicaid claim forms, Workmen's Compensation forms, Indemnity forms, and assigned insurance claims including personal data,	the learner will complete each form	it is acceptable to the carrier's standard example, completed within an appropriate, specified period of time as determined by the comprehensiveness of the form, and error free.
Office Accounting	1. Given the necessary materials for a pegboard accounting system,	the learner will maintain financial records (cash paid in and out, charges, etc.)	the ledger and cash balance at the end of the specified accounting period, i.e., day or week.
	2. Given the responsibility for recording and managing credit and collections,	the learner will determine appropriate procedures to follow	with 100% accuracy and as stated in the instructor's or physician's oral or written directions.
Legal and Ethical Considerations	1. Given simulated situations involving legal and ethical considerations,	the learner will state her level of responsibility and/or liability	in agreement with Medical Practice Acts, the legal relationship of physician and patient professional liability, and physician's public duties and liabilities.
Reference Sources	1. Given a medical situation requiring the use of reference sources,	the learner will locate and use the appropriate source (Ex: Physician's Desk Reference)	with 100% accuracy.
Appointment Scheduling	1. Given an appointment book and physician's schedule,	the learner will schedule appointments on the telephone or in person with the patient	with 100% accuracy and as stated in the instructor's oral or written directions.
Telephone	1. Given a simulated telephone situation,	the learner will illicit pertinent patient information (name, symptoms, telephone number or location of patient, etc.)	with 100% accuracy and so well that appropriate action may be taken within a required time limit.

Topic	Conditions	Performance	Criteria
	2. Given incoming telephone calls,	the learner will maintain a list of telephone calls which the physician must return regarding prescriptions, referral appointments, etc.	with 100% accuracy and so well that appropriate action may be taken within a required amount of time.
	3. Given incoming and outgoing telephone calls,	the learner will maintain communication with appropriate telephone answering services	with 100% accuracy and so well that appropriate action may be taken within a required amount of time.
Mail	1. Given incoming office mail, a company directory, a date stamp, and any other desired supplies,	the learner will sort and deliver the mail to proper areas or offices	according to established procedures.
	2. Given outgoing office mail,	the learner will follow outgoing mail procedures, as directed: a. Addressing mail, according to postal regulations b. Folding and inserting business papers into envelopes properly c. Affixing correct postage d. Depositing mail in appropriate places at proper time for most efficient delivery	the performance of each procedure is verified.
	3. Given a Zip Code Directory and a list of addresses,	the learner will locate zip codes	with 100% accuracy within an appropriate, specified period of time.
Special Skills	1. Given a simulated situation requiring travel or other reservations,	the learner will make and confirm the needed reservations	arrangements fit the predetermined needs of all parties concerned.

Topic	Conditions	Performance	Criteria
Business Machines	1. Given a transcription unit and belts or tapes,	the learner will set up the unit, listen to the information on the belts or tapes, and transcribe the information	in typed mailable form with desired carbon copies at a production rate of at least 10 words.
	2. Given an adding machine, a calculator and a predetermined number of simple math problems including decimals, percentages, and amounts of money,	the learner will perform addition and subtraction calculations on the adding machine	with 95% accuracy within an appropriate, specified period of time.
		perform addition, subtraction, multiplication, and division calculations on the calculator	with 95% accuracy within an appropriate, specified period of time.
		record the answers to the problems	with 100% accuracy.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Legal Secretary

U.S.O.E. Code Number: 14.0798

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Typing	1. Given a straight-copy employment test,	the learner will type,	a minimum of 55 gross words per minute for 5 minutes with a maximum of 3 errors.
	2. Given edited, rough-draft copy of a business letter of average length (125-175 words) to be typed,	the learner will type the letter and/or memo including any special features,	in an identified style or format in mailable form (or usable which is defined as copy that is grammatically correct and error free (perfect copy or neatly corrected copy) within a 20-minute sequence.
	3. Given copy for a manuscript, minutes, financial reports, agenda, itinerary, statistical reports, and/or expense reports,	the learner will type the report,	in a specified format in mailable form at a production rate of ten words per minute.
	4. Given a variety of business forms such as a bill of lading, acknowledgment, purchase order, invoice, etc., and the necessary information for completing the forms,	the learner will select the appropriate form to be used and type the information on the forms, verify the typing,	in mailable form. the figures are 100% accurate.

Topic	Conditions	Performance	Criteria
	5. Given a list of addresses and/or other information,	the learner will type addresses and/or other pertinent information on envelopes, cards, or labels as well as specific information as required onto form letters,	in mailable form.
		use chain-feeding techniques,	when applicable.
	6. Given statistical data including financial reports,	the learner will determine vertical and horizontal placement and type the tabulation,	it is centered on the paper and contains no uncorrected typing errors.
	7. Given edited, rough-draft copy for a one-page business report,	the learner will type the report including any special footnotes,	according to a specified format in usable form within a 20-minute sequence.
	8. Given information to be prepared for duplicating,	the learner will type and properly correct a (n): a. Spirit master b. Stencil c. Original for copying	usable copies will result.
Shorthand/ Transcription	1. Given new, unpreviewed dictation at the rate of 100 words per minute for 3 minutes,	the learner will transcribe,	with 95% accuracy within an appropriate, specified period of time.
	2. Given legal dictation (either manual or machine) and legal and stenographic reference materials,	the learner will transcribe,	usable copy on a 1:4 basis (EX: 1 hour dictation/ 4 hours transcription) Mailable or usable is defined as "copy that is grammatically correct and error free (perfect copy or neatly corrected copy)."
Terminology	1. Given a list of common legal terms and abbreviations,	the learner will define, spell, and/or pronounce the terms,	with 90% accuracy without the use of reference materials.

Topic	Conditions	Performance	Criteria
Reference Sources	1. Given sample copies of legal reference materials, such as Michigan Compiled Laws, Michigan Reports, Northwestern Reporter, American Jurisprudence, Corpus Juris Secundum, Callaghan's Digest,	the learner will locate specif ed information and transmit page number, section, and/or paragraph,	with 100% accuracy and in agreement with the predetermined findings of the instructor.
Legal Forms	1. Given a case and samples of Michigan legal forms selected from real estate, probate, and/or a civil action,	the learner will: a. Select the form appropriate to the case b. Type in the given information c. Designate the correct destination of the document,	with 100% accuracy. in usable form. as determined by its intent with 100% accuracy.
Legal and Ethical Considerations	1. Given simulated situations involving legal and ethical considerations,	the learner will state her level of responsibility,	in agreement with National Association of Legal Secretaries' Code of Ethics.
Business Machines	1. Given a transcription unit and belts or tapes,	the learner will set up the unit, listen to the information on the belts or tapes and transcribe the information,	in typed mailable form with desired carbon copies at a production rate of at least ten words per minute.
	2. Given an adding machine, a calculator and a predetermined number of simple math problems including decimals, percentages, and amounts of money,	the learner will perform addition and subtraction calculations on the adding machine,	with 95% accuracy within an appropriate, specified period of time.
		perform addition, subtraction, multiplication, and division calculations on the calculator,	with 95% accuracy within an appropriate, specified period of time.
		record the answers to the problems,	with 100% accuracy.
Filing	1. Given a set of materials,	the learner will: a. Code, index, file and/or retrieve the specified materials in an established alphabetic, numeric or subject filing system, b. Maintain a tickler file,	within an appropriate, specified period of time and with 100% accuracy.

Topic	Conditions	Performance	Criteria
Business Procedures			
Telephone	1. Given a telephone or a simulated setting,	the learner will use the telephone efficiently by performing the following functions: a. Receiving, placing and transferring local, intra-office and long distance calls b. Recording messages,	the performance of each function is verified. all pertinent information (name, date, time and message) is included.
	2. Given a telephone directory and a list of names,	the learner will locate individual and/or company names,	with 90% accuracy within an appropriate, specified period of time.
Mail	1. Given incoming office mail, a company directory, a date stamp and any other desired supplies,	the learner will sort and deliver the mail to proper areas or offices,	according to established procedures.
	2. Given outgoing office mail,	the learner will follow outgoing mail procedures, as directed: a. Addressing mail, according to postal regulations b. Folding and inserting business papers into envelopes properly c. Affixing correct postage d. Depositing mail in appropriate places at proper times for most efficient delivery	the performance of each procedure is verified.
	3. Given a Zip Code Directory and a list of addresses,	the learner will locate zip codes,	with 90% accuracy within an appropriate, specified period of time.
Special Skills	1. Given a simulated situation requiring travel or other reservations,	the learner will make and confirm the needed reservations,	arrangements fit the predetermined needs of all parties concerned.
Appointment Scheduling	1. Given an appointment book and attorney's schedule,	the learner will schedule appointments on the telephone or in person with the client,	with 100% accuracy and as stated in oral or written directions.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Clerk - Typists

U.S.O.E. Code Number: 14.0901

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Typing	1. Given a straight-copy employment test,	the learner will type	a minimum of 45 gross words per minute for 5 minutes with a maximum of 5 errors.
	2. Given edited, rough-draft copy of a business letter of average length (125-175 words) to be typed,	the learner will type the letter and/or memo including any special features, will type a carbon copy, if required will type the address on either a No. 6 or No. 10 envelope, as needed	in an identified style or format in mailable form (or usable which is defined as copy that is grammatically correct and error free - perfect copy or neatly corrected copy) within a 20 minute sequence.
	3. Given a list of addresses and/or other information,	the learner will type addresses and/or other pertinent information on envelopes, cards, or labels as well as specific information as required onto form letters use chain-feeding techniques	in mailable form when applicable.

Topic	Conditions	Performance	Criteria
	4. Given a variety of business forms such as a bill of lading, acknowledgment, purchase order, invoice, etc., and the necessary information for completing the forms,	the learner will type the information on the forms	in mailable form
		verify the typing	the figures are 100% accurate
	5. Given statistical data including financial reports,	the learner will determine vertical and horizontal placement and type the tabulation	it is centered on the paper and contains no uncorrected typing errors.
	6. Given edited, rough draft copy for a one-page business report,	the learner will type the report including any special footnotes	according to a specified format in usable form within a 20-minute sequence.
	7. Given information to be prepared for duplicating,	the learner will type and properly correct a(n): A. Spirit master B. Stencil C. Original for copying	usable copies will result
Business Machines	1. Given a transcriber, predictated material, and reference materials,	the learner will transcribe a 150-word letter	within 30 minutes in mailable form.
	2. Given an adding machine, a calculator and a predetermined number of simple math problems including decimals, percentages, and amounts of money,	the learner will perform addition and subtraction calculations on the adding machine	with 95% accuracy within an appropriate, specified period of time.
		perform addition, subtraction, multiplication, and division calculations on the calculator	with 95% accuracy within an appropriate, specified period of time.
		record the answers to the problems	with 100% accuracy.
Filing	1. Given a set of materials,	the learner will file and/or retrieve the specified materials in an established alphabetic or numeric system	within an appropriate, specified period of time and with 100% accuracy.

Topic	Conditions	Performance	Criteria
Business Procedures			
Telephone	1. Given a telephone or a simulated setting,	the learner will use the telephone efficiently by performing the following functions: A. Receiving, placing, and transferring local, intra-office, and long-distance calls	the performance of each function if verified.
		B. Recording messages	all pertinent information (name, date, time, and message) is included
		C. Distributing messages	appropriate action may be taken within a required time limit.
	2. Given a telephone directory and a list of names,	the learner will locate individual and/or company names	with 90% accuracy within an appropriate, specified period of time.
Mail	1. Given incoming office mail, a company directory, a date stamp, and any other desired supplies,	the learner will sort and deliver the mail to proper areas or offices	according to established procedures.
	2. Given outgoing office mail,	the learner will follow outgoing mail procedures, as directed: A. Addressing mail, according to postal regulations B. Folding and inserting business papers into envelopes properly C. Affixing correct postage D. Depositing mail in appropriate places at proper times for most efficient delivery	the performance of each procedure is verified.
	3. Given a Zip Code Directory and a list of addresses,	the learner will locate zip codes	with 90% accuracy within an appropriate, specified period of time.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Architectural Technology

U.S.O.E. Code Number: 16.0103

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

INTRODUCTORY COMMENTS

Throughout the design and construction of structures, the site dominates all decisions. The end product, the building, will never be the same, as we would expect in an automobile or television set. Demographic factors and economic activity, topography, vegetation and soil, as well as legal restrictions, strongly affect the practice of architecture and construction. Accordingly, the work of the architectural technician varies greatly throughout the state of Michigan. He will work with large commercial and public structures of concrete in the vicinity of Detroit, and other population concentrations, while his counterpart north is more likely involved in lighter and more diversified buildings.

These performance objectives attempt to focus on the concepts, knowledge, and skills common to all types of structures, regardless of the form or materials in which they appear. At the same time, the technician deals in specifics, - dimensions, grades, and specifications. Therefore, many of the objectives appear in the form of a sample problem involving dimensions, but avoiding wherever possible, a particular type of building use. It is expected that the student would be able to solve a variety of problems of similar form and related content.

Some of the performance objectives require that the learner have access to "the usual architectural references". The following references would normally be available in design, engineering, and construction offices:

(1) Architectural Graphic Standards by Ramsey and Sleeper
(2) A.I.S.C. Manual by American Institute of Steel Construction
(3) Sweets Catalogs by McGraw-Hill
(4) Minimum Property Standards by Federal Housing Administration
(5) Tables of Heat Transfer Coefficients by American Society of Heating, Refrigeration, and Air Conditioning Engineers or other source.

The evaluation of any graphic work inevitably involves some subjectivity. However, instructors who have any real contact with design firms and their product, are aware that between the two extreme cases, the fastidious firm, and the large firm willing (and eager) to provide board experience for the beginner, lies a quality of work quickly identified by any professional as the norm or level of technique that the completing student should approach.

INTRODUCTORY COMMENTS (Cont'd)

Few of the objectives contain time constraints, most imply some standard of quality. The prevailing feeling among the professionals who utilize technicians is that, if understanding and accuracy are present, speed will follow.

While rounding procedures for calculations exist which could produce consistent calculations from person to person, measurements will produce variations. Tabulated values in handbooks also vary slightly. The procedure we propose for determining the acceptability of calculated answers then is:

(1) The instructor will calculate the answer using values rounded to 3 significant figures (not to be confused with decimal places).

(2) Calculations will be performed on a calculator and the result rounded to 3 significant figures.

(3) Unless specified, the acceptable value will be between 5% above or below the instructor calculated value.

Metric dimensioning conventions are not available at this time. When such information is developed and released, the performance objectives will be revised to reflect the new practices.

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Construction Practices	1. Without the use of reference materials,	the learner will diagram . ? traditional functional relationship between: 1. Client 2. Subcontractor 3. Architect 4. Tradesmen 5. General Contractor using arrows to show the flow of authority starting with the client.	An acceptable response will show the correct sequence of all given members.
	2. Without the use of reference materials,	the learner will state the functions and relationships to the architect (whether employed by or commissioned) of the following specialists: 1. Specification writer 2. Consulting engineer 3. Landscape architect 4. Artist 5. Hardware specialist	An acceptable response shall have 8 out of 10 points of information requested substantially correct.
	3. Without the use of reference materials,	the learner will state the educational preparation normally expected of each of the following: 1. Architect 2. Engineer 3. Surveyor 4. General Contractor 5. Tradesman (carpenter, electrician, etc.)	6 out of 10 responses to be correct.

(Continued)

Topic	Conditions	Performance	Criteria
		Also state how each acquires professional status (license through state examination, union recognition, etc.)	
	4. Given examples of a plan tracing, a blueline print, a sepia, a blueprint, a mylar "chronoflex", and a reversed plan tracing,	the learner will identify each and state a particular advantage or use of each.	5 out of 10 responses to be correct.
	5. Without the use of reference materials,	the learner will demonstrate the ability to select the appropriate reference and locate required data in a written test covering the essential content and organization of the principal architectural references.	Minimum comprehension level 80 . Examples of questions are: 1. How is an index arranged and where is it located? 2. How does a table of contents differ from an index? 3. In what three ways are products listed in Sweet's catalogs? 4. What is an appropriate reference for detailing a bowling alley? 5. What is an appropriate source of information for planning a restaurant dining room?
	6. Without the use of reference materials,	the learner will identify codes applicable to architectural construction in the local geographical area. Include the level of government involved (township, city, state) and the types of construction regulated (residential, public, etc.),	citing at least two codes.

Topic	Conditions	Performance	Criteria
	7. Without the use of reference materials,	the learner will explain how zoning operates in the local area.	Must include: 1. Identification of the government level controlling land use 2. Description of both parts of zoning regulations 3. Identification of the regional coordinating land planning body 4. The approach to getting a variance or change in zoning (3 out of 5 points of information)
	8. Without the use of reference materials,	the learner will demonstrate an understanding of the content and organization of building specifications by means of an objective test containing items similar to the following: 1. Name ten items usually covered in the general conditions. 2. Assuming typical building conditions, who is the author of the general conditions? 3. Give another name commonly used for the supplementary conditions. 4. What is the specific relationship of the supplementary conditions to the general conditions? 5. Give an example of a site condition frequently discussed in the supplementary conditions. (Continued)	Minimum comprehension level 60%.

Topic	Conditions	Performance	Criteria
		6. Explain or give examples of open and closed specifications. 7. Explain or give examples of prescription and performance specifications.	
	9. Without the use of reference materials,	the learner will give the purpose and the person(s) affected by each of the following construction documents: 1. Addenda 2. Bid Bond 3. Certificate of Payment 4. Change Order 5. Agreement 6. Lien 7. Performance Bond 8. Proposal 9. Payment Bond 10. Certificate of Completion	12 of 20 responses to be correct.
	10. Given a set of drawings for a "recently constructed" building and its completed cost, exclusive of land,	the learner will calculate an approximate cost by developing cost per square foot or by proportion for a similar building proposed for construction but having somewhat different area.	See Introductory Comments for acceptability of calculated answers.
	11. Given preliminary drawings or sketches of a small building,	the learner will calculate the cubage	in accordance with the procedure prescribed by the American Institute of Architects.
	12. Without the use of reference materials,	the learner will calculate the number of board feet in the following lumber list: 6 Pcs 1 x 12 - 16' 12 Pcs 2 x 4 - 8' 4 Pcs 2 x 10 - 10'	See Introductory Comments for acceptability of calculated answers.

Topic	Conditions	Performance	Criteria
	13. Without the use of reference materials,	the learner will calculate the amount of concrete to be ordered for 180 lineal feet of concrete footing 10" high and 18" wide.	An acceptable answer will be within one yard of the exact calculated quantity.
	14. Without references to tables,	the learner will calculate the number of 8" x 8" x 16" concrete masonry units required to lay up a wall 8'-8" high by 24'-0" long.	See Introductory Comments for acceptability of calculated answers.
	15. Without the use of reference materials,	the learner will develop a unit cost, excluding overhead, for a square foot of 4" concrete slab on prepared base using the following material costs and labor rates: Ready-mix Concrete, 3000 PSI $24.50/C.Y. Reinforcing Mesh 6 x 6 - #8, 5' x 150' roll 27.90/roll "Visqueen" Vapor Barrier, 4 mil, 1200 SF roll 10.80/roll Plastic curing spray, material and labor .02/SF Cement finisher 8.65/Hr Unskilled labor 4.12/Hr Cement finishing requires 1-1/4 hours of skilled labor and 1 hour of unskilled labor per square.	See Introductory Comments for acceptability of calculated answers.
	16. Without the use of reference materials,	the learner will demonstrate the ability to use either a slide rule or calculator in basic arithmetic operations.	Satisfactory proficiency is considered demonstrated if the student usually: 1. Moves from operation to operation without hesitation. 2. Gets reasonably consistent answers.

Topic	Conditions	Performance	Criteria
	17. Without the use of reference materials,	the learner will convert the following fractions into the forms required: 3/4" = _____ in. (decimal) 1-3/8" = _____ in. (decimal) 1'-2-3/8" = _____ in. (decimal) 4" = _____ ft. (decimal) 1'-7" = _____ ft. (decimal) 0.25" = _____ in.(fraction) 18.33" = _____ in.(fraction) 0.375 ft.= _____ in.(fraction) 6% = _____ (decimal) 5/8 = _____ (percent)	6 out of 10 responses to be correct to 3 significant figures.
Architectural Drafting	1. Without the use of reference materials,	the learner will draw examples of lines appropriate to the following uses on architectural drawings: object (visible), hidden, centerline, dimension, and extension.	Each line shall be of correct relative width and opacity, with sharp terminations· dashes and spaces shall be of correct and consistent length when compared to any standard drafting text.
	2. Given an example of lettering appropriate for notes on architectural working drawings in upper case Gothic (or prevailing local style),	the learner will letter a minimum of 100 characters in three minutes.	Only those characters which are consistently formed and spaced shall be counted.
	3. Given the necessary materials and equipment,	the learner will letter the 26 characters of the alphabet in each of the following forms: Upper case vertical Lower case vertical Upper case sloped Lower case sloped	A maximum of 4 errors per alphabet in essential form is acceptable.

Topic	Conditions	Performance	Criteria
	4. Without references,	the learner will draw the symbols for each of the following materials in section and elevation with line quality suitable for reproduction: concrete, concrete masonry units, ashlar stone, brick (at small scale), plaster or gypsum, finish wood, metal flashing, glass (section at large scale); and the following in section only: earth, structural steel, dimension (framing) lumber, and blanket insulation.	12 out of 20 symbols correct.
	5. Without the use of reference materials,	the learner will draw the symbols for representing doors in plan: 1. Exterior hinged door - frame wall 2. Interior door in metal jamb - masonry wall 3. Exterior door - brick veneer wall 4. Double acting door 5. Sliding pocket door 6. Bipassing sliding closet door 7. Bifold closet door 8. Accordion door 9. Cased or plastered opening 10. Overhead garage door	6 out of 10 symbols according to Architectural Graphic Standards.
	6. Without the use of reference materials,	the learner will draw elevations of the following window types, adding opening symbols where appropriate: 1. Double hung 2. Casement 3. Sliding 4. Fixed 5. Projected	The width of each fixed stile or rail shall be delineated with 2 lines. The width of each movable stile or rail shall be shown with 2 lines, and each muntin shall be indicated with a single line for at least 10 out of 15 elements.

Topic	Conditions	Performance	Criteria
	7. Given a floor plan and a related detail shown on separate sheets having different numbers,	the learner will add the proper referencing symbols,	5 out of 6 symbols to be correct.
	8. Given the following possible scales: 1/8" = 1'-0" 1/4" = 1'-0" 3/4" = 1'-0" 3" = 1'-0" 1" = 20 feet 1" = 100 feet Full Size Double Size	the learner will select the one best suited to each of the views listed below: 1. Floor Plan of Residence 2. Floor Plan of Commercial Building 3. Elevation of Residence 4. Elevation of Commercial Building 5. Complex Floor-to-Wall Intersection 6. Full Seccion 7. Interior Elevation 8. Wall Section 9. Special Wood Moulding 10. Site Plan	At least 6 out of 10 to be correct.
	9. Given an architect's scale,	the learner will demonstrate the method for dividing a floor-to-floor dimension of 4'-11" into 8 equal spaces as required in stair layout,	consistent with selected text.
	10. Given architect's and engineer's scales,	the learner will read and lay out ten given dimensions,	accurate to the least scale division in 6 out of 10 cases.
	11. Given an undimensioned floor plan involving at least one offset in its perimeter,	the learner will add complete conventional dimensioning,	All major partitions shall be located. Strings of dimensions shall be continuous and complete. Each string of dimensions shall add up to the overall. Offsets in dimensions shall be avoided.

(continued)

Topic	Conditions	Performance	Criteria
			Partitions shall be located to centerline or to faces in accordance with local practice, but handled consistently. Dimensions will reflect modular thinking, i.e., multiples of 4". Exterior openings, building offsets, and overall totals shall be located by a set of 3 parallel dimensions lines outside the plan. Spacings between lines shall be equal with generous clearance between building and dimensions. An acceptable drawing will meet a minimum of 5 of the 7 above criteria.
	12. Given a set of preliminary drawings for a small structure,	the learner will list the views and schedules necessary for a complete set of working drawings.	Views selected must clarify all construction without unnecessary duplication.
	13. Given a set of cut-up working drawings,	the learner will arrange the views, details, and schedules on sheets of specified size.	Evaluation as satisfactory or unsatisfactory will be based on: 1. Functional construction sequence 2. Proximity of Related Information 3. Efficient Space Utilization 4. Pleasing Visual Separation

Topic	Conditions	Performance	Criteria
	14. Given preliminary drawings and notes for a small building,	the learner will draw the floor plan for the working drawings.	Evaluation as satisfactory or unsatisfactory will be based on: 1. Drawing content - complete, accurate, and reasonable 2. Note content and placement 3. Spatial arrangement - balanced and uncrowded 4. Line and lettering quality Note that dimensioning is evaluated elsewhere.
	15. Given preliminary drawings and notes for a structure involving several floors,	the learner will draw exterior elevation(s).	Drawing to be evaluated on 1. Accuracy of views 2. Correct representation of hidden portions such as foundation 3. Functional dimensioning 4. View arrangement and use of drawing space 5. Line quality
	16. Given preliminary drawings and notes for a structure,	the learner will draw a wall section both freehand and hard line.	Drawings will be evaluated on feasability of assembly, correct dimensions of materials, weathering considerations (flashing, copings, caulking, etc.), use of correct material symbols, complete vertical dimensioning, and note content and placement.
	17. Given a manufacturer's catalog of metal door jambs and the following construction conditions: wall construction of 4" brick facing on 8" concrete block backup, door to swing out 180 degrees, assume no overhand or canopy protection,	the learner will draw head and jamb details with appropriate titles	drawing to be evaluated on accuracy of views, anchors, lintel construction, weathering considerations, and arrangement of views and titles.

Topic	Conditions	Performance	Criteria
	18. Without the use of reference materials,	the learner will develop a free-hand sketch of the head section of an interior door jamb in a frame partition assuming a 1-3/4" flush door, 1-1/8" rebated wood jamb, gypsum lath and plaster, and traditional pattern wood casing.	An acceptable sketch will show correct profile of jamb. appropriate header, setting clearance, and normal setback of casing.
	19. Given a manufacturer's catalog of commercial projected windows and the following construction notes: assume 4" brick facing and 8" block back-up, lintel angle 3-1/2 x 5 x 3/8" LLV, limestone sill, and marble stool,	the learner will draw head, jamb, and sill details at 3/4" scale, adding appropriate notes.	Drawings will be evaluated on accuracy of material representation, correctness of lintel and stool placement and anchors.
	20. Given a floor-to-floor dimension of 10'-6",	the learner will lay out a stair (do not detail construction but show nosings), show proper dimensioning method for height clearance.	Size of treads and risers shall be within the limits specified by code (as given by instructor) and within 1/8" of the limits calculated by either formula: $R \times T = 75$, or $2R + T - 25$.
	21. Without the use of reference materials,	the learner will sketch in section the essential details of the following three stair constructions: 1. Closed wood stair 2. Closed steel stair with terrazzo tread 3. Unfinished reinforced concrete stair	Each detail must contain a minimum of 3 items of information on materials, size of members, or fasteners.
	22. Given a floor plan and notes involving several types, sizes, and materials of doors,	the learner will develop a door schedule.	Evaluation will be based on organization, spacing of frame and notes, accuracy of entries, and inclusion of related details.

Topic	Conditions	Performance	Criteria
	23. Given a partial plan and related spec notes,	the learner will prepare an interior finish schedule covering 6 rooms and requiring a minimum of 30 entries.	Format shall be of checkoff or written entry type as requested by instructor. An acceptable schedule will contain a maximum of 5 errors or omissions.
	24. Without the use of reference materials,	the learner will spell 100 architectural terms,	a minimum of 70 correctly.
	25. Without the use of reference materials,	the learner will abbreviate 50 architectural terms frequently used in shortened form.	A minimum of 35 consistent with the Architectural Graphic Standards.
	26. Without the use of reference materials,	the learner will identify the terminology for 50 parts of buildings: Examples: Casing, jamb, soffit, counterflashing, pilaster, purlin, escutcheon, lintel.	A minimum of 35 on a building or drawing.
	27. Given a set of abbreviated drawings containing a minimum of 25 specific errors in symbols, dimensioning, technique, and construction,	the learner will identify and correct	a minimum of twenty errors.
	28. Without the use of reference materials,	the learner will demonstrate or describe and explain the use of intermediates, overlays, and standard details for increased drafting efficiency with	4 out of 6 possible points of information correct.
	29. Without the use of reference materials,	the learner will draw the proper indication for a 3/12 pitch as it would appear adjacent to a roof in a wall section or elevation.	Acceptable form will be found in any Architectural text or reference.

Topic	Conditions	Performance	Criteria
	30. Given a table of natural trig functions,	the learner will convert the roof pitch of 5/12 to an angle in degrees, as might be required in setting an adjustable triangle or radial saw	accurate to the nearest half degree.
	31. Given only the outlines of a simple plan and elevation view,	the learner will develop an auxiliary view to show the true size and shape of one sloping roof surface.	The acceptable procedure is found in any basic drafting text.
	32. Given drawings or sketches of a simple structure,	the learner will draw a two point perspective.	An acceptable solution will demonstrate the ability to determine by accurate construction: 1. Location of vanishing points based on plan position 2. The horizontal position of any point located behind the picture plane 3. The vertical position of any point behind the picture plane
	33. Given a room plan and 3 interior elevations, and a station point within the room,	the learner will sketch an interior (one point) perspective.	An acceptable sketch will include: 1. Correctly located vanishing point 2. Properly projected floor and ceiling lines 3. Consistent handling of horizontal and vertical lines parallel to the far wall plane
	34. Without the use of reference materials,	the learner will describe the appearance and state the purpose of: 1. a topographic model 2. a structural model 3. a presentation model	4 out of 6 items to be correct.

Topic	Conditions	Performance	Criteria
Materials And Methods Of Construction	1. Given the following list of physical properties: Ductility, Malleability, Density, Viscosity, Permeability, and Thermal Conductivity,	the learner will name a material which typifies each,	4 out of 6 to be correct.
	2. Without the use of reference materials,	the learner will compare the physical properties of vegetable (such as fiberboards) and mineral products (such as gypsum boards) relative to: 1. Dimensional stability under moisture change 2. Fire resistance 3. Sound transmission resistance 4. Resistance to vermin and rotting 5. Density	4 out of 5 comparisons to be correct.
	3. Given a table of thermal coefficients of expansion,	the learner will calculate the increase in length for a 20 foot length of copper pipe as its temperature changes from room temperature 70° F to 170° F. (Alternative problems would involve the expansion in masonry walls, concrete slabs, or steel beams,	See Introductory Comments for acceptability of calculated answers.
	4. Given examples of metals commonly used in construction,	the learner will identify two pairs which, if used in contact with each other in the presence of moisture, will break down through chemical action,	Responses are acceptable if substantiated by any materials text.
	5. Without the use of reference materials,	the learner will select an appropriate material for each of twenty common construction uses, Examples: FLASHING - Aluminum VAPOR BARRIER - Polyethylene Film WOOD EXPOSED TO MOISTURE - Cedar or Redwood	Materials are acceptable if their use is substantiated by any materials text for 14 out of 20 cases.

Topic	Conditions	Performance	Criteria
	6. Without the use of reference materials,	the learner will sketch each of the following metal products and add the principal dimensions: 1. W 21 x 112 2. S 12 x 31.8 3. L 6 x 10.5 4. [6 x 4 x 1/2 5. 6 x 6 - #10 MESH 6. #6 / DEF	8 out of 12 responses to be in accordance with A.I.S.C. manual.
	7. Without the use of reference materials,	the learner will give an example of how concrete strength can be affected at each stage: selection of materials, proportioning, mixing, transporting, forming, placing, finishing, curing, testing, reinforcing and prestressing.	7 out of 11 examples to be correct.
	8. Using sketches,	the learner will show the actual and "laid up" (nominal) dimensions of the following common masonry units: 1. standard brick 2. Norman brick 3. concrete masonry unit (concrete block)	Actual dimensions must be accurate to within 1/8" of those given in any materials text; nominal dimensions must be exact; 12 out of 18 dimensions.
	9. Without the use of reference materials,	the learner will arrange the following dimension lumber grades in order of decreasing quality (starting with highest quality): standard, economy, construction, utility, and select structural,	One misplaced grade is acceptable.
	10. Without the use of reference materials,	the learner will demonstrate an understanding of stock lumber by listing: 1. 3 stock thicknesses - both actual and nominal 2. 5 stock widths - nominal only 3. 5 most common lengths	10 out of 16 responses to be correct.

Topic	Conditions	Performance	Criteria
	11. Using sketches,	the learner will show the face dimensions of the following finishing materials: composition flooring tile, glazed facing tile, quarry tile, gypsum lath ("Rock-lath"), suspended ceiling lay-in panels, plywood paneling, carpeting,	4 out of 7 to be correct.
	12. Given samples of 20 anchors, fasteners, and connectors used in construction - Examples: Anchor bolt, Annular ring nail, Expansion shield, Hardened masonry nail, Joist hanger, Metal jamb anchor, Self-tapping sheet metal screw, Truss gusset plate, and Split ring connector	the learner will identify,	a minimum of 12.
	13. Without the use of reference materials,	the learner will describe briefly the fireproofing methods appropriate to each of the following: steel beams and girders, heavy timber, wood trim, doors, and windows,	3 out of 5 responses to be correct.
	14. Without the use of reference materials,	the learner will illustrate with sketches how sound transmission differs from reverberation and describe or name materials suitable for controlling each problem. Illustrate a flanking path,	3 out of 5 responses to be correct.
	15. Without the use of reference materials,	the learner will describe, using sketches where appropriate, the following: Pier, Pilaster, Piling, Caisson, Shoring, Retaining Wall (Gravity type), and Test Boring,	4 out of 7 responses to be correct.

Topic	Conditions	Performance	Criteria
	16. Without the use of reference materials,	the learner will describe the following devices related to controlling surface and ground water: Footing drain, Sump, Dampproofing, Membrane, Drywell, Headwall and Swale. Use sketches where helpful,	4 out of 7 responses to be correct.
	17. Without the use of reference materials,	the learner will describe using sketches, or demonstrate using any convenient props, the following erection procedures: Tilt-up construction, Lift slab, Stick building, Concrete pumping and Slip form,	3 out of 5 responses.
	18. Without the use of reference materials,	the learner will sketch or describe the typical product by each of the following processes, and give an advantage and a disadvantage of each process: Panelization, "Unicom", and Modular (sectional) Housing,	5 out of 9 responses to be correct.
	19. Without the use of reference materials,	the learner will sketch and note the characteristic features of the following constructions: 1. Western (Platform) Framing 2. Balloon Framing 3. Brick Veneer 4. Masonry Bearing Wall ("Ordinary") Construction 5. Plank and Beam 6. Heavy Timber 7. Curtain Wall 8. Trussed Roof 9. Rigid Bent 10. Reinforced Concrete Framed	7 out of 10 to be correct.

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Topic	Conditions	Performance	Criteria
	20. Without the use of reference materials,	the learner will place a list of ten construction operations in the sequence in which normally performed: Examples: Plastering Masonry Steel Erection Staking Survey Finish Carpentry Forming and Pouring Concrete Painting Floor Coverings Excavating Rough-in of Mechanical Trades	7 out of 10 to be correct.
	21. Without the use of reference materials,	the learner will sketch typical connections of steel framing at each of the following points: 1. Open web joist to beam 2. Beam to wall 3. Beam to girder 4. Girder to column 5. Column to base plate and footing	3 out of 5 responses will show the essential fastening correctly.
	22. Given a roof framing plan and wall section showing beams supporting a roof deck,	the learner will demonstrate the procedure for determining the load on one of the beams,	The learner will determine the load per square foot and the area supported.
	23. Without the use of reference materials,	the learner will demonstrate the accepted form for engineering calculation,	A complete response will include in correct order 4 out of 5 required items.
	24. Given the usual architectural references, and preliminary drawings of a light frame structure,	the learner will determine: 1. Size of the floor joists 2. Size of the ceiling joists 3. Size of the rafters Assume framing is of standard grade Western Hemlock, and is spaced 16" o.c.,	for 2 out of 3 cases.

Topic	Conditions	Performance	Criteria
	25. Given the usual architectural references,	the learner will determine the lintel sizes for: 1. 6 1/2 foot opening in frame exterior wall, 5/12 pitch trussed 2. 6 foot opening in 4" brick facing (assume triangular loading applies) 3. 8 foot opening in 8" concrete block wall	For 2 out of 3 cases.
	26. Given the usual architectural references,	the learner will select open web steel joists for a clear span of 34 foot, with joists spaced at 4 foot centers and carrying an 80 PSF combined live and dead load,	Selection must be lightest construction adequate for load.
	27. Given the usual architectural references,	the learner will select the most economical wide flange shape to carry a uniformly distributed load of 38,000 lbs. over a span of 20 feet,	The most economical and second most economical shape and both acceptable.
	28. Given the usual architectural references,	the learner will select the smallest standard weight pipe column capable of supporting 40,000 pounds if the distance between concrete floor and beam supported is 12 feet,	According to A.I.S.C. Manual.
	29. Without the use of reference materials,	the learner will illustrate the typical placement of the reinforcing steel in the following concrete members. Include stirrups and ties. 1. Continuous reinforced concrete beam 2. Square reinforced concrete column 3. Spread concrete column footing	2 out of 3 cases to be correct.

Topic	Conditions	Performance	Criteria
	30. Given the normally available drafting equipment, but without references,	the learner will determine the size of concrete footing required to support a 12" thick foundation wall with a total load of 7,200 pounds per lineal foot. Assume a sandy-clay soil having an allowable bearing value of 2 tons per square foot. Determine: 1. Required footing width 2. Required footing depth using the 2-for-1 rule 3. Required footing depth using the 60° drawing construction	for 2 out of 3 cases.
Mechanical And Electrical Building Systems	1. Given the usual architectural references, and a desired indoor temperature of 75° F,	the learner will determine for this area: 1. The winter design temperature 2. The temperature difference used in heating system design 3. The summer design temperature 4. The temperature difference used in cooling system design 5. The number of degree-days	3 out of 5 cases to be correct.
	2. Given a full section of a simple structure,	the learner will show the proper location for insulation and vapor barriers,	for 4 out of 6 cases.
	3. Given a set of preliminary sketches or drawings and the usual architectural references,	the learner will determine the optimum amounts and locations for ventilating an attic and crawl space,	for 3 out of 4 cases.
	4. Given the usual architectural references,	the learner will determine the heat loss through the following surfaces, assuming a temperature difference of 85° F: 1. A 4' x 8' fixed window - single glass	for 2 out of 3 cases.

Topic	Conditions	Performance	Criteria
		2. A 12' x 8' wall of 8" concrete block - no insulation 3. A 12' x 8' wall of light frame construction - 3 1/2" insulation,	
	5. Without the use of reference materials,	the learner will list factors affecting the cooling load of a building,	a minimum of 5 of the approximately 10 factors.
	6. Without the use of reference materials,	the learner will demonstrate an understanding of the terminology and functions of the major parts of forced air and "wet heat" systems by completing the following chart of analagous parts as in the example given:	With 3 out of 5 responses correct
	7. Given a catalog of exhaust fans and a room 20' long, 12' wide, and 10' high,	the learner will select the smallest fan,	Meeting a code requirement of 6 air changes per hour.
	8. Given the usual architectural references,	the learner will determine the number of plumbing fixtures required of each type, for an elementary school having an enrollment of 300 girls and 250 boys,	4 out of 6 responses correct.

Example	FORCED AIR	HYDRONIC
1.	furnace	
2.		pipe
3.	damper	
4.		booster pump
5.	register	

Topic	Conditions	Performance	Criteria
	9. Given preliminary or working drawings of a small one floor structure involving approximately 5 fixtures,	the learner will draw a plumbing isometric, sizing each part of the system,	An acceptable drawing will have a maximum of one system layout error and three errors or ommissions in sizing.
	10. Without the use of reference materials,	the learner will draw a partial plumbing isometric illustrating how several floors of fixtures are connected to a common stack and vent,	The isometric is acceptable if it will function as drawn.
	11. Without the use of reference materials,	the learner will demonstrate an understanding of the functions of the various plumbing devices by matching those at right with the corresponding "problem" at left, Examples: C 1. Water Hammer A. Vent A 2. Trap Siphonage B. Flashing ___ 3. C. Air Chamber	7 out of 10 matched correctly.
	12. Given working drawings or sketches of a small structure and the usual architectural references,	the learner will size the gutters, conductors, and storm sewer,	2 out of 3 sized correctly.
	13. Without the use of reference materials,	the learner will draw the symbols for the 10 following common electrical fixtures, outlets, and equipment: Ceiling fixture, Wall fixture, Fluorescent fixture, Duplex outlet, Special outlet, Floor outlet, Thermostat Wall switch, 3-way switch, Motor,	6 out of 10 drawn correctly.
	14. Given drawings or sketches of a small structure,	the learner will draw the electrical layout,	Evaluation will be based on: 1. Correct use of symbols 2. Spacing and location of outlets

Topic	Condition	Performance	Criteria
			3. Proper use of lines connecting switch symbols to fixture connected 2 out of 3 drawn correctly.
	15. Given drawings, photographs, or a mock-up of a service entrance and distribution system,	the learner will identify the following parts: Branch Circuit, Bus Bar, Circuit Breaker, Distribution Cabinet, Entrance Ell, Mast (or entrance cable), Meter Socket, Service Disconnect, Service Drop and Weather Head,	6 out of 10 identified correctly.
Site Considerations	1. Given examples of carelessly completed measurements and calculations,	the learner will identify examples of mistakes, cumulative errors, and compensating errors,	7 out of 10 identified correctly.
	2. Given two points 300 feet apart and having elevations of 618.4 and 623.7,	the learner will calculate the elevation of a point located on a straight line between them at a distance of 64 feet from the lower point by interpolation,	See Introductory Comments for acceptability of calculated answers.
	3. Without the use of reference materials,	the learner will demonstrate the ability to calculate the length of an arc, such as a curved portion of road, or a building member with a given radius and included angle,	See Introductory Comments for acceptability of calculated answers.
	4. Given a set of grid elevations for a hilly plot having a ditch or creek,	the learner will sketch in the contour lines,	An acceptable solution will indicate the ability to locate lines by "eyeball interpolation", demonstrate an awareness of the various patterns produced by features such as streams or knolls and will show appropriate lin weights.

Topic	Conditions	Performance	Criteria
	5. Given survey notes of an irregularly shaped parcel,	the learner will prepare a plot plan,	An acceptable solution will be consistent in form with established practice, boundary lengths and angles will be accurate to 2 significant figures, and the area will be calculated or determined by planimeter within 2 significant figures.
	6. Without the use of reference materials,	the learner will estimate the distance between given points by pacing,	An acceptable value will be within 10% plus or minus of the instructor taped distance.
	7. Given two points on gently sloping ground, a hundred foot tape and pins, and a partner at the zero end,	the learner will measure the distance between the points,	The learner will observe correct procedures for: 1. Maintaining a straight line 2. Holding tape level and using plumb bob 3. Steadying tape against leg 4. Placing pins at right angle to tape line 5. Using audible signals effectively 6. Using safe procedures 7. Care and cleaning of equipment 4 out of 7 criteria to be met.
	8. Given a level or combination (builder's) level,	the learner will measure the difference in elevation between two assigned points approximately 100 feet apart,	accurate to within 0.02 feet of the class mean.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Automotive Technology

U.S.O.E. Code Number: 16.0104

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Transmissions	1. Given representative manual shift and automatic transmissions, tools, equipment and manuals as required,	the learner will diagnose, disassemble, inspect and reassemble subject transmission	according to manufacturer's specifications; the transmission will operate properly and within the allocated time established by flat rate schedules plus 25%.
	2. Given a set of questions and/or problems related to clutches, manual shift and automatic transmissions diagnosis service, and operating principles,	the learner will demonstrate his understanding of these transmissions and clutches by answering or solving such questions or problems	at least 70% according to textbook or manufacturer's specifications within an appropriate, specified period of time.
Air Conditioning	1. Provided with an air conditioning unit, tools, equipment and manuals,	the learner will do a performance test, discharge, evacuate and recharge the unit,	according to manufacturer's specifications; the unit is operating properly and within the time established by flat rate schedules plus 25%.
	2. Given a set of problems and/or questions related to the construction, operation, diagnosis and service for an automotive air conditioner,	the learner will demonstrate his understanding and comprehension of that system by correctly answering the problems or questions	with 70% accuracy within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
Diagnosis	1. Given a set of questions and/or problems related to the diagnosis or service of automotive engine and chassis systems,	the learner will answer such questions and/or problems	according to textbooks, manufacturer's specifications or related technical bulletins; at least 70% are solved correctly within an appropriate, specified period of time.
	2. Given an automobile, test equipment, specifications, appropriate hand tools and manuals,	the learner will perform certain specified diagnostic tests on the engine, fuel, electrical and ignition systems and safety related components such as brakes, steering and alignment	according to the manufacturer of the vehicle or test equipment maker; such tasks will be completed within the time established by flat rate schedules plus 25%.
Engines	1. Given a typical automotive engine, appropriate tools, equipment and manuals,	the learner will disassemble, inspect, repair as necessary, reassemble and operate the engine	according to manufacturer's specifications; the engine operates correctly during a running test, and the task shall be completed according to flat rate schedules plus 25%.
	2. Given a set of questions and/or problems related to the construction, operation and service necessary to the automotive engine and its associated systems such as lubrication, cooling, ignition, fuel and exhaust,	the learner will answer correctly those questions or problems	with 70% accuracy according to textbooks, shop manuals and manufacturer's specifications within an appropriate, specified period of time.
Ignition System	1. Given a set of questions, diagrams or actual ignition components,	the learner will demonstrate his understanding and comprehension of how the ignition system operates	according to the manufacturer of such ignition system components; a score of 70% or better is achieved and/or the tasks assigned are properly completed within an appropriate, specified period of time.
	2. Given appropriate tools, equipment, and manuals and vehicles,	the learner will perform a diagnosis or render service to the ignition system of the automobile	according to manufacturer's specifications and within the time allowed in the flat rate manual for such operations plus 25%.

Topic	Conditions	Performance	Criteria
Electrical System	1. Given a vehicle or individual components of the electrical system, specifically -- battery, cranking motor, generator, regulator and certain other selected devices along with the necessary tools, equipment and manuals,	the learner will diagnose, disassemble, inspect and test these devices	according to manufacturer's specifications; providing proper operation within the established flat rate schedules plus 25%.
	2. Given a set of questions and/or problems related to the theory of electricity and the operating principles of specific electrical devices,	the learner will demonstrate his understanding and comprehension of the operational theory, construction, and service necessary by being able to answer all such questions and/or problems,	according to information provided by the manufacturer of such equipment with an accuracy of at least 70% within an appropriate, specified period of time.
Chassis Units	1. Given chassis components or a vehicle on which certain specified operations can be performed in areas to include brakes, steering, alignment, balancing wheels, tire service, suspension, drive-line and rear axle, and provided with all necessary tools, equipment and manuals,	the learner will perform specific disassembly, service and inspection, diagnosis and repair operations	with 100% accuracy on the components or vehicle provided according to manufacturer's specifications and within the allocated time established by flat rate schedules plus 25%.
	2. Given a set of questions and/or problems which deal with the operation, construction, service, diagnosis and repair of such chassis units as brakes, steering, alignment, wheel balance, tire service, suspension, drive-line and rear axle,	the learner will answer correctly	at least 70% of such questions according to bulletins, textbooks, shop manuals, and manufacturer's specifications within an appropriate, specified period of time.
Fuel and Emissions	1. Given a set of questions and/or problems related to fuels, fuel pumps, carburetion, carburetors and emission controls,	the learner will answer correctly such questions and/or problems	at least 70% according to manufacturer's specifications, textbooks and technical bulletins within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
	2. Given a vehicle or components of the fuel system, appropriate tools, equipment, and manuals,	the learner will disassemble, inspect, diagnose, adjust or repair those components or the vehicle's emission control devices and fuel system components as directed	according to manufacturer's specifications with 100% accuracy and within the time established by flat rate schedules plus 25%.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Environmental Control Technology

U.S.O.E. Code Number: 16.0110

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Organization - Administration - Safety - Customer Relations	1. Given a blank purchase order, invoice or sales slip, a box with tags, each having a stock number and cost and sales tax chart,	the learner will write the stock numbers of the five items drawn from the box on the purchase order, find the cost of the five items, find the sales tax of the five items, and figure the total cost,	it will be completed within an appropriate, specified period of time, will be clearly read and will be 100% correct.
	2. Given a blank service order form and a sample problem indicating major repair components required to repair an air conditioning, heating, refrigeration unit or system on a number of tags in a box,	the learner will draw five tags, record the parts, the numbers and from supplier catalogs, record pricing information and total the order,	within an appropriate, specified period of time with all entries being 100% correct.
	3. Given four types of jobs on which an air conditioning, heating or refrigeration serviceman might be called, including specific types of service or repairs which must be performed, a list of serviceman's tools and instruments and equipment,	the learner will list the necessary tools, equipment and instruments required for accomplishing the repairs or service on each type of job,	within an appropriate, specified period of time and with 100% correctness.

Topic	Conditions	Performance	Criteria
	4. Given five different situations requiring safety precautions including five of the following: eye protection, hearing protection, foot protection, lifting, climbing, rigging, moving heavy, bulky objects, driving a van-type truck, using hand and power tools, electrical shock, electrical safety, chemical safety, mechanical guards, rotating machinery safety, personal clothing safety, head safety, and further given the safety equipment lists and pictures of the equipment required by each situation,	the learner will identify the proper equipment necessary to handle each situation, and indicate through answering ten questions on each type of equipment, the proper methods for utilizing such equipment,	within an appropriate, specified period of time, with 100% accuracy.
	5. Given five customer-serviceman situations from the list previously reviewed below, with 2 to 5 possible responses for each as to the serviceman reaction and course of action,	the learner will select the correct response from the group,	Situations included: selling comfort, convenience and equipment, building customer confidence, relieving customer fears, opening service call, closing the service call, respecting the customer's opinions, keeping personal opinions to yourself, comments on an untidy house, housekeeping habits, service equipment handling in a customer's residence, customer having a right to complain, customer's pets, customer's children, entering the premises, personal habits, public relations, explaining a billing, and instructing the customer on equipment operation and maintenance. The written responses will be at least 95% correct.

Topic	Conditions	Performance	Criteria
Installing - Testing - Operating	1. Given a gas, forced air furnace, 85,000 to 100,000 btuh input, up-flow, down-flow or horizontal, a set of the installation instructions furnished by the manufacturer, all equipment needed for installation including thermostat, a set of standard serviceman's tools and instruments, any rigging devices necessary to move the equipment to be installed, the transitional sheet metal pieces required to connect furnace into an existing residential duct system, a copy of the operating and service instructions from the manufacturer,	the learner will install piping, sheetmetal work, electrical connections and actual furnace; he will further test it, upon initial start-up and adjust all components,	the furnace will operate within 100% of the manufacturer's specifications within an appropriate, specified period of time, and will meet local and state codes.
	2. Given an oil, forced air furnace, 100,000 to 115,000 btuh, up-flow, down-flow, or horizontal, a set of installation, operating and maintenance instructions, all equipment needed for installation including thermostat and furnace, all materials required for installation including sheetmetal pieces required to join the furnace to an existing residential duct system, piping required to connect the furnace to an existing oil fuel supply system and electrical equipment necessary to connect the furnace to a residential main distribution panel, a set of standard serviceman's tools and instruments, any rigging devices necessary to move the equipment to be installed,	the learner will install piping, sheetmetal work and make electrical connections and install the actual furnace; the learner will further test the furnace and connections, will start it, and adjust all components,	the furnace will operate within 100% of the manufacturer's specifications and be acceptable according to local and state codes, and all within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
	3. Given a gas-fired hot water, or steam boiler of 85,000 to 115,000 btuh, a set of installation, operating and maintenance instructions, all equipment needed to install the boilers, including thermostat, controls, and the furnace, a standard set of serviceman's tools and instruments, any rigging devices necessary to move the boiler, all materials required to connect the furnace to an existing hydronic or steam system in a residence, including piping and mechanical connections, materials to make electrical connections to an existing panel such as found in a residence,	the learner will install the boiler including all mechanical and electrical connections, test the boiler and connections, make an initial start-up, adjusting all system components and the boiler,	the boiler will operate within 100% of the manufacturer's specifications, it will meet state and local codes, and all within an appropriate, specified period of time.
	4. Given an electric, forced air furnace, 65,000 to 85,000 btuh, up-flow, down-flow or horizontal flow, a set of installation, service and operating instructions, all equipment needed for installation including thermostats and the furnace, all materials required for installation including sheetmetal pieces required to connect the furnace into an existing residential duct system, electrical materials necessary to connect the furnace into an existing main residential distribution panel (electrical), the set of standard serviceman's tools and instruments, any rigging devices necessary to moving the furnace into pisition,	the learner will install the furnace by making mechanical and electrical connections and further will test the furnace and connections, will start it and adjust all components,	the furnace will operate within 100% of the manufacturer's specifications, will meet state and local codes and all within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
	5. Given a 1-1/2 to 3-ton split system air-cooled add-on residential air conditioning unit, an existing gas, oil or electrical furnace installed in an existing residential heating system which may be operated, a set of installation, service and operating instructions, all equipment needed for installation including: thermostat modification items, fan relay and the air conditioning unit, the set of standard serviceman's tools and instruments, any rigging devices necessary to move the air conditioning unit, materials necessary to installation including sheetmetal transition pieces, tubing, piping and electrical materials necessary to connect the unit to an existing main residential electrical distribution panel, materials necessary to construct a slab (if required),	the learner will install the air conditioning unit,	it will operate within 100% of the manufacturer's specifications and will meet state and local codes, within an appropriate, specified period of time.
	6. Given a domestic refrigerator, two-temperature, two-evaporator, all-accessory unit including ice-maker, the standard serviceman's tools and instruments, the manufacturer's specifications, installation and service and operating instructions, an appropriate installation space, 110 volt power receptacle, necessary rigging equipment to move the unit,	the learner will install the unit, start it, inspect it and operate it through two complete cycles, adjusting all components and accessories,	the unit will operate within 100% of the manufacturer's specifications, will meet state and local codes, and all within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
	7. Given a window air conditioning unit, 12,000 to 18,000 btuh, with multi-speed blower and all installation accessories, a residential window appropriate for air conditioning unit installation, the standard serviceman's tools and instruments, the manufacturer's installation instructions, specifications, service and operating instructions, electrical materials for connecting electrical service to the unit from the main residential electrical distribution panel, necessary rigging equipment to move the unit and to place it in the window and hold it while it is secured,	the learner will install the air conditioning unit according to the manufacturer's instructions, test, initially start and operate it, making adjustments to bring it within specifications	the unit will operate within 100% of the manufacturer's specifications, will meet state and local codes, and all within an appropriate, specified period of time.
Maintaining - Troubleshooting Repairing	1. Given a gas or oil furnace (forced air), with installed split system residential air conditioning, with duct system as found in a residence, the standard set of serviceman's tools and instruments, manufacturer's specifications and operating instructions,	the learner will perform a planned service check of the entire system, testing adjusting, operating and replacing worn or non-functioning components, taking efficiency ratings, checking combustion, etc.,	the unit will function within 95% of the manufacturer's specifications, within local and state codes, and all within an appropriate, specified period of time.
	2. Given a gas or oil or electric steam or hydronic heating system including boiler, chiller (with hot water), a piping distribution system as found in a residence, with all accessories, in operating condition, the standard set of serviceman's tools and instruments, manufacturer's specifications and operating instructions,	the learner will perform a planned service check of the system; testing, adjusting, operating and replacing worn or non-functioning parts,	the system and components will operate within 95% of the manufacturer's specifications, within local and state codes, and all within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
	3. Given any one of the following systems or major components of the systems listed below, the standard serviceman's tools and instruments, the manufacturer's instructions, specifications and operating instructions, an ample selection of new and replacement parts to include those which might need replacing on the equipment supplied, Heating Equipment A. Equipment which may be used for the above objective: Oil, gas, or electric forced air systems, or steam or hydronic system. B. Major components which must be replaced or repaired (minimum of one of these): Oil Burner, Main Gas Valve, Heat Exchanger, Main Gas Burner, Hydronic Circulator, Steam System Condensate Pump, Steam Boiler, Water Level Gage and Low Water Cut-off, Electric Heating Element or other. C. Minor components which must be replaced or repaired: Fan and Limit Control, Primary Control-Oil, Thermostat, Control Transformer, Fan Relay, Contactor, Fan Motor, Filter, Altitude Gage, Steam Pressure Gage, Pressure Control, Zone Damper or Valve Motors, Sequencers, Limit Capacitors, Fan Bearings or other,	the learner will check and test the unit-system supplied, diagnose and analyze the equipment for major and minor equipment/component problems, and repair or replace any major or minor components found to be defective, re-check, test and adjust the system, start-up the system, and perform a planned service check,	the system or unit will operate within 95% of the manufacturer's specifications, within local and state codes, and all within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
	Cooling Equipment: A. Equipment which may be used for the above objective: Domestic Refrigerator, Window Air Conditioning System, installed in one of the furnaces noted in Item "A" under Heating Equipment, Terminal Package Air Conditioning System, in operating condition, forced air, Water-Cooled Air Conditioning System, either separate or installed in one of the Heating Systems noted in item "A" above. B. Major components which must be replaced or repaired (minimum of one of these): Compressor, Condenser, Evaporator, or Metering Device or other. C. Minor components which must be repaired or replaced: (minimum of one of these): Contactor, Fan Relay, Limit Switch, High-Low Cutout, Flow Sight Glass, Dryer, Thermostat, Defrost Control, Multiple Switch, Overloads, Wiring, Damaged Tubing, Leak in System, Water Flow Control Valves, Capacitor, Starting Relay, Defrost and Door or Divider Heaters, Condenser Fan Motor, or other. NOTE: In the administration of the above objective, should the		

Topic	Conditions	Performance	Criteria
	learner be a "cooling" or "heating" only learner, selections will be taken from either Heating or Cooling as appropriate. Where the learner is completing air conditioning or is an all-call serviceman trainee, he will have elements from both sections.		
	4. Given any one of the cooling or heating systems specified in Objective 3, a problem with one of the minor components also specified in Objective 3, the standard serviceman's tools and instruments, manufacturer's specifications and instructions, an ample supply of new and replacement parts, NOTE: The system on which the learner performs the above objective procedures will have a minimum of four non-functional problems and at least one partial functional problem.	the learner will troubleshoot, analyze, diagnose the problem with the system, fix the component, adjust, replace the component, recheck the system and get it operating,	within 95% of the manufacturer's specifications, within 45 minutes, so the system will operate within local and state codes.
Estimation Application	1. Given the specifications and plans for a residence or individual room in the residence or the specifications for a small office or other commercial building, the necessary charts and tables for calculating heat loads, air mixtures, air velocities, evaporator and condensing coil capacities, and other application data on three manufacturer's equipment, including ... ting units and distribution systems,	the learner will calculate the heat load for the conditioned spaces, wiring and duct sizes, and select condensing units and evaporator and heating units, including steam and hydronic distribution system sizing, indicate proper air velocities and balance conditions,	they will agree with the answer for the problem as provided for each of the above plans and specifications (calculated by instructor or other qualified engineer), within 80% of total heat load and total cooling tonnage, and heating applied.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Machine and Tool Design

U.S.O.E. Code Number: 16.011302

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Design a Drill Jig	1. Given a part print of a machined part that requires holes to be drilled and reamed, and a routing sheet,	the learner: a. identify operations that have been completed b. draw necessary views of part in red phathom lines c. determine the locating surfaces to properly position the part d. select and draw drill bushings, locating devices, clamping devices, and main jig body in proper positions e. place ballons, leaders and detail numbers in position f. construct stock list and title block	the learner may draw the part in its existing condition in agreement with the routing sheet, the jig could be detailed with 100% accuracy, and the holes would be drilled and reamed in the proper position based upon the original part print.
Design a Fixture	1. Given a part print and a routing sheet for a part that requires machining,	the learner will: a. identify operations that have been completed b. draw necessary views of part in red phathom lines c. determine the locating surface to properly position the part (Continued)	the part is drawn in its existing condition in agreement with the routing sheet, the fixture could be detailed with 100% accuracy and the machining operation would be performed in the proper place according to original part print requirements.

Topic	Conditions	Performance	Criteria
		d. select and draw: locating devices, clamping devices, proper size positioning keys and hold down slots, and main fixture body e. place ballons, leaders and detail numbers in position f. construct stock list and title block	
Design a Progressive Die	1. Given a print of a part to have at least two of the following operations performed upon it: piercing, forming, blanking or cutting off, notching, embossing, trimming, etc.,	the learner will: a. select the proper press size, determine stock strip layout and sequence of operations b. select steels, die shoes, stops, strippers and necessary components c. place ballons, leaders and detail numbers in position d. construct stock list and title block	the press tonnage is adequate, the greatest number of parts are produced at least cost, and the final operation could result in a part with 100% accuracy of original print.
Design of Component Parts	1. Given a design problem consisting of at least 10 components,	the learner will list and explain which of the components should be of cast, welded or machine construction	7 of the 10 components could perform satisfactorily and be of minimal cost.
Design a Weldment	1. Given a specific component part to be drawn as a welded construction,	the learner will design, select the material, and draw the weldment	necessary dimensions, weld specifications, joint construction and machining required are included.
Design a Casting	1. Given a specific component part to be drawn as a casting,	the learner will design and draw the casting	dimensions, gussets, fillets, draft angle, rounds and machining required are included.
Steel Selection and Specification	1. Given 10 problems in the design of details that requires heat treatment and the functions of those details,	the learner will select the proper steel, heat treating process and specify hardness	7 of the 10 problems selected are able to function properly and be of the least cost.

Topic	Conditions	Performance	Criteria
Make Detail Drawings From A Layout	1. Given a layout drawing, reference catalogs and technical handbooks,	the learner will make a complete detail drawing of each detail, except unaltered, purchased or standard details,	the view selection describes the object; the mating parts are dimensioned for assembly fits; and the machinist would not have to make calculations.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Dental Assistant (Post Secondary)

U.S.O.E. Code Number: 16.0398

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Patient Education	1. Given a patient and a health history,	the learner will provide oral health instruction,	dietary considerations, oral hygiene and organisms of the oral cavity and/or other uncommon oral conditions are evaluated and discussed according to the needs of the patient as determined by the history data.
	2. Given a patient and the 8 types of radiographs,	the learner will list and explain the uses for each type of radiograph to the patient,	with 100% accuracy for all 8 types.
Bacteriology	1. Given a patient, necessary reference materials, equipment and supplies on oral cytological sampling,	the learner will prepare an oral sample,	he/she correctly prepares the slide, collects the sample, and fixes the slide so the sample may be properly evaluated.
Sterilization	1. Given any contaminated instrument or article,	the learner will complete the proper sterilization and disinfection procedures by operating and maintaining the necessary equipment, including ultra-sonic cleaner, cold disinfection, autoclave, dry heat oven, hot oil sterilizer, hot crystals, alcohol torch and/or bunsen burner, hot water,	the instruments and articles are without contamination according to: proper cleaning, proper timing, proper temperature or completely immersed in solution and properly maintaining procedures during removal and dispensing of the equipment.

Topic	Conditions	Performance	Criteria
Basic Science	1. Given a typodont,	the learner will name, number, explain position in arch, and list all functions of primary and permanent teeth,	with 100% accuracy.
	2. Given a list of primary and permanent teeth and without reference material,	the learner will list the eruption dates of each,	to within $\pm$ 6 months of actual standardized times.
	3. Given a patient, typodont and/or a model,	the learner will identify all surfaces and landmarks of the primary and permanent teeth,	with 100% accuracy.
	4. Given the terms: enamel, dentin cementum, periodontal structures and pulp of primary and permanent teeth,	the learner will identify, explain the function of each and list the structure of each,	with 100% accuracy.
	5. Given 4 classifications of occlusion,	the learner will identify and explain,	4 classes with 100% accuracy.
Laboratory Procedure	1. Given the necessary equipment,	the learner will operate and maintain the lab equipment, including: 1. Lathe 2. Vibrators 3. Model trimmers 4. Lab engines 5. Bunsen burners 6. Alcohol torch (blow) 7. Casting machine 8. Articulators 9. Casting and investing equipment 10. Compound heaters,	the equipment requires minimal repair and is used safely so no harm comes to the learner or anyone in the area.
	2. Given the necessary materials and equipment,	the learner will construct: 1. Acrylic trays 2. Base plate 3. Wax rims	they are functionally correct according to the study model or articulator used.

Topic	Conditions	Performance	Criteria
		4. Wax pattern for casting 5. Temporary restorations	
	3. Given necessary information and forms,	the learner will correctly fill out lab prescriptions for dental prosthodontics,	all necessary information is on form and legible, with 100% accuracy.
	4. Given a damaged prosthetic appliance and necessary materials and equipment,	the learner will repair it,	it is in operating condition (functional) and is esthetrially acceptable to the patient.
	5. Given the necessary equipment and materials,	the learner will select, measure, mix the correct gypsum product appropriate to any given procedure,	the anatomy is exactly duplicated, without air bubbles or voids and the surface texture is uniform.
	6. Given a study cast and proper materials and equipment,	the learner will trim the cast in the proper sequence of operations,	according to a checklist, with 100% accuracy.
Chairside Procedures	1. Given a syringe, needle and a local anesthetic carpule,	the learner will prepare the syringe,	it is ready for an injection, in working condition, and sterile.
	2. Given an assortment of needles and 3 types of syringes,	the learner will identify and explain the uses,	of the needles and the 3 types of syringes, with 100% accuracy.
	3. Given a patient history,	the learner will list and explain to a patient, pre and post operative instructions,	that would be appropriate to the particular history involved.
	4. Given the materials,	the learner will accurately measure and mix restorative treatment and impression materials, including: 1. Amalgam 2. Cements 3. Reversible and irreversible impression materials 4. Periodontal dressing 5. Composites	each is prepared with 100% accuracy, thereby eliminating the repeat of a mixture process.

Topic	Conditions	Performance	Criteria
	5. Given the proper instruments and equipment,	the learner will prepare tray, set-ups for treatment of all dental procedures, including: 1. Oral surgery 2. General dentistry 3. Periodontics 4. Endodontics 5. Prosthodontics 6. Orthodontics 7. Pedodontics	with 100% accuracy.
	6. Given any instrument,	the learner will transfer any of the instruments,	in one of the two methods of transfer, with 100% accuracy.
	7. Given the necessary equipment,	the learner will: 1. Seat and prepare the patient 2. Position chair properly for a given procedure. 3. Position light properly according to the chair position. 4. Prepare unit for appropriate operating procedure.	the operative procedures may begin without further adjustments.
	8. Given the necessary equipment,	the learner will operate and maintain the dental chair and unit, including handpieces,	the unit is functional at all times.
	9. Given the necessary equipment with a patient,	the learner will use and place the following: 1. Saliva ejector 2. Evacuator tip 3. Air/water syringe	the operative area is assessable, clean and dry for optimum treatment and comfort for the patient.
	10. Given an office manual in the specialty of dentistry and a patient,	the learner will instruct the patient for best dental health (i.e., endodontics, prosthodontics, orthodontics, periodontics, etc.),	with 100% accuracy for the particular specialty.

Topic	Conditions	Performance	Criteria
Oral Pathology	1. Given the following terms: a. Developmental anomalies b. Enamel hypoplasia c. Mottled enamel d. Anodontia e. Cleft lip and cleft palate	the learner will define and explain,	with 100% accuracy.
	2. Given colored slides or colored illustration or patient,	the learner will recognize and name common intra-oral and extra-oral conditions, normal and common abnormalities,	with 80% accuracy.
Radiology	1. Given a monitor or a film badge,	the learner will practice radiological health measures so as not to be overexposed to roentgen for a period of time,	as determined by the company from where film badge was obtained.
	2. Given equipment and a patient,	the learner will expose, process, and mount a complete series of intra-oral radiographs,	of diagnostic quality, with 100% accuracy.
	3. Given equipment and a patient,	the learner will load a film holder, expose and process extra-oral film,	the films are of diagnostic quality, with 100% accuracy.
	4. Given films or illustrations,	the learner will identify anatomical landmarks,	they can state the correct packet placement.
	5. Given darkroom equipment,	the learner will properly maintain the darkroom facilities,	tanks, counters and film racks are cleaned, solutions are changed and replenished at necessary times.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Computer Programmer

U.S.O.E. Code Number: 16.0401

Remarks: It is assumed that an institution must offer at least one programming language from the following list of languages:

a. Cobol
b. Fortran
c. PL/1
d. RPG
e. Assembler Language (Choice dependent on hardware available)

If more than one programming language is offered at an institution, only one language must meet the minimum requirements, as set forth in the performance objectives, for that language. This will be designated as the major language. If all languages taught meet the minimum requirements, no major language need be designated.

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Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
General Data Processing Concepts	1. Given separate descriptions of the four major data processing methods, (Manual, Mechanical, Electromechanical and Electronic),	the learner will match each description with its proper title.	with 100% accuracy
	2. Given the title "Data Processing Cycle",	the learner will state or write the 3 major steps of this cycle	with 100% accuracy
	3. Given a list of processes or applications common to business or industry,	the learner will specify which processes would normally be considered as Data Processing applications and those that would not fall into this category,	with a minimum of 70% correct responses.

Topic	Conditions	Performance	Criteria
	4. Given a 96-column card, a Hollerith coded card and 6 randomly chosen alphabetic or numeric characters,	the learner will: a. State or write the name of each card correctly, b. indicate the coding punch patterns of the 3 alphabetic or numeric characters required to properly encode these characters in both types of cards,	all with 83% accuracy
	5. Given a 7-track and a 9-track tape layout form with the tracks indicated by name or abbreviation along with 6 randomly chosen alphabetic or numeric characters,	the learner will specify the bit configurations required to encode the 3 alphabetic or numeric characters on both types of magnetic tape,	with 83% accuracy
	6. Given 3 decimal numbers, each of which is not to exceed 512 in magnitude, and without the aid of conversion tables or reference materials,	the learner will manually convert these decimal numbers to their binary equivalents and write the result beside the decimal number,	with 67% accuracy
	7. Given 3 binary numbers, each of which is not to exceed decimal 512 in magnitude, and without the aid of conversion tables or reference materials,	the learner will manually convert these binary numbers to their decimal equivalents and write the result beside the binary number.	with 67% accuracy
	8. Given schematic diagrams of 2 Binary Coded Decimal (BCD) and 2 Extended Binary Coded Decimal (EBCDIC) memory locations bit positions properly labeled along with 4 randomly chosen alphabetic or numeric characters,	the learner will: a. Specify the name of each type of memory location correctly, b. Properly encode 2 randomly chosen alphabetic or numeric characters for each location type (by shading bits 'on' conditions and leaving bits in the 'off' condition unshaded).	all with 75% accuracy

Topic	Conditions	Performance	Criteria
	9. Given the title, "Stored Program Concept", and a series of 4 one-sentence definitions,	the learner will select the definition,	one correct only
	10. Given a choice of card reader types (photoelectric or electrical contract), along with a series of 4 descriptions,	the learner will choose a type and select the description for that type of card reader,	one correct only
	11. Given a choice of printer types (chain or drum) along with a series of 4 descriptions containing only one description of each type,	the learner will choose a type and select the description of that type of printer,	one correct only
	12. Given a series of statements referring to Input/Output devices,	the learner will select those that are applicable to magnetic tape drives,	with at least 70% accuracy
	13. Given a series of statements referring to Input/Output devices,	the learner will select those statements that are applicable to magnetic disk devices,	with at least 70% accuracy
	14. Given the ten titles: Magnetic Core Storage Data Retrieval Data Processing Input Output Storage/Memory Source Document Least Significant Digit Most Significant Digit Bits along with a list of corresponding definitions,	the learner will match the titles with the definitions,	with at least 80% accuracy

Topic	Conditions	Performance	Criteria
	15. Given the eleven titles: Addresses Debugging Documenting Field Record File Header Label Trailer Label Looping Template Desk Checking along with a list of corresponding definitions,	the learner will correctly match titles with the definitions,	9 of the 11
	16. Given a list of characteristics and attributes of both blocked and unblocked records,	the learner will specify to which category of record the attribute or characteristic belongs,	with at least 80% accuracy
	17. Given a properly functioning card punch, a source document containing data to be encoded into a punch card, directions indicating fields and columns into which data is to be recorded and a supply of unpunched cards,	the learner will insert a card into the machine and correctly punch the data into the card,	as prescribed by the punch card instructions, with accuracy verified.
	18. Given a list of characteristics and attributes of file maintenance and accessing methods,	the learner will specify those characteristics and attributes that may be properly assigned to sequential files,	with at least 70% accuracy
	19. Given the ten titles: Unit Record Twelve-edge Nine-edge Face Corner Cut	the learner will match the titles with the proper definitions,	with at least 90% accuracy

Topic	Conditions	Performance	Criteria
	Column Field High-order Low-order Row along with a list of corresponding definitions,		
	20. Given the ten titles: Skipping Duplication Shifting Hopper Stacker Punch Station Read Station Main Line Switch Print Mechanism Card Bed along with a list of corresponding definitions,	the learner will match the titles with the proper definitions.	with at least 80% accuracy
	21. Given the terms: Machine Verification Manual Verification Batch Total Verification along with a list of (6) definitions containing only one correct definition for each term,	the learner will select the correct definition,	for each method of verification
	22. Given the ten titles: Selection X-Punch, Control Punch or Overpunch Multi-Field Sorting Merging Matching Sequence Checking	the learner will match the titles with the proper definition	with at least 80% accuracy

Topic	Conditions	Performance	Criteria
	Reproducing (Copying) Collating Sequence along with a list of corresponding definitions,		
	23. Given the eleven titles: Detail Printing Group Printing Summarizing Skipping Spacing Page Overflow Control Breaks (Sub Totals) Carriage (Vertical Format) Tape Counter (Accumulator) Print Editing CPU along with a list of corresponding definitions,	the learner will match the titles with the proper definitions,	with at least 80% accuracy
	24. Given the following titles: Time Sharing Teleprocessing Remote Job Entry Batch On Line	the learner will select from a list of characteristics, those which apply to each title,	with 80% accuracy
	25. Given a list of characteristics and attributes of both multi-programming and multi-processing,	the learner will specify in which category the attribute or characteristic belongs,	with 80% accuracy
	26. Given a list of characteristics and attributes of word and character machines,	the learner will specify in which category the attributes or characteristics belongs,	with 80% accuracy
	27. Given a list of characteristics and attributes of both high-level languages and assembler languages,	the learner will specify to which category or language level the attributes or characteristic belongs,	with at least 80% accuracy

Topic	Conditions	Performance	Criteria
	28. Given a list of characteristics and attributes of utility programs,	the learner will specify the characteristics and attributes that may be properly assigned to utility programs,	with at least 70% accuracy
	29. Given a list of characteristics and attributes of file maintenance and accessing methods,	the learner will specify the characteristics and attributes that may properly be assigned to index-sequential files,	with at least 70% accuracy
	30. Given a list of characteristics and attributes of file maintenance and accessing methods,	the learner will specify the characteristics and attributes that may be properly assigned to randomly accessed files,	with at least 70% accuracy
	31. Given a list of the five titles: K (Kilo) Zero Suppression Group Indication Negative Card Fields Buffering along with a list of correct definitions of these terms and expressions,	the learner will correctly match each term with its proper definition,	all terms
	32. Given an extended-entry or a limited-entry decision table with 3 conditions and 3 sets of answers to these conditions,	the learner will indicate the correct logical action to be taken as a result of each set of 3 answers,	with at least 67% accuracy
Flowcharting	1. Given a set of ANSI Systems Flowchart symbols,	the learner will name each symbol,	with 85% accuracy
	2. Given the five basic ANSI program Flowchart symbols,	the learner will name each symbol,	with 100% accuracy
	3. Given examples of data processing systems drawn with standard ANSI symbols,	the learner will write descriptions of input, processing and output,	with 80% accuracy

Topic	Conditions	Performance	Criteria
	4. Given a list of flowcharting terms,	the learner will define the terms,	with 80% accuracy
	5. Given both detailed program flowcharts and system flowcharts,	the learner will identify,	each type
	6. Given a set of mixed formulas, word description process charts, flowcharts and decision tables,	the learner will identify each type	with 80% accuracy
	7. Given a set of simple straight line program flowchart problems and an ANSI flowchart template,	the learner will draw flowcharts using proper ANSI symbols,	with 80% accuracy
	8. Given a set of flowchart problems involving branching and an ANSI flowchart template,	the learner will draw flowchart showing conditional and unconditional branches using proper symbols,	with 80% accuracy
	9. Given a set of flowchart problems involving loops of varying complexity and an ANSI flowchart templates,	the learner will draw flowcharts using proper symbols,	with 80% accuracy
	10. Given a set of problems and an ANSI flowchart template,	the learner will draw flowcharts showing open and closed subroutines using proper symbols,	with 80% accuracy
	11. Given a set of problems and an ANSI flowchart template,	the learner will draw flowcharts showing incrementing counters using proper symbols,	with 80% accuracy
	12. Given a set of problems involving initializing and closing routines and an ANSI flowchart template,	the learner will draw flowcharts using proper ANSI symbols,	with 80% accuracy

Topic	Conditions	Performance	Criteria
Assembly Language	1. Given a list of instruction types 'Input/Output, Arithmetic, Logic, Data transfer, and other types of instructions, depending on the Assembly Language),	the learner will complete a matching test,	with 80% accuracy
	2. Given a list of assembly control statements, (Start End, and depending on the Assembly Language, any other type of control statements), and a list of uses for each statement,	the learner will specify the use of each statement,	with 80% accuracy
	3. Given a list of imperative instructions, such as MVI, MVC, MCW, MCE, LCA, etc., OPEN, CLOSE, READ, WRITE, BRANCH, ARITHMETIC,	the learner will state the use of each imperative instruction,	with 80% accuracy
	4. Given a detail flowchart and the source program	the learner will select the macro instructions and state the reason why each macro instruction was used,	with 80% accuracy
	5. Given a coding sheet with the Input/Output routines and the linkage coded,	the learner will specify the following: a. Beginning of the I/O routine b. If applicable, a base register c. First executable instruction exclusive of I/O d. Register used to link the input routine, if applicable, e. Indicate input label/output label (tag). f. Indicate end-of-file label (tag)	with 80% accuracy

Topic	Conditions	Performance	Criteria
	6. Given a problem definition including the following: Input/Output operations, Move and Branch instructions, defining areas (DS, DCW, etc.), START and END statements, Read and Write with Macros, if applicable,	the learner will flowchart, code, assemble and test the program,	to produce error-free output
	7. Given a problem definition involving comparing and branching,	the learner will prepare a detail flowchart, code, assemble and test the program,	to provide error-free output
	8. Given an Assembly Language reference and a problem definition requiring programmed switches and 3 levels of totals along with an output report format and an input record layout,	the learner will flowchart, code, assemble and test the program,	to provide error-free output
	9. Given a problem involving addition, subtraction, multiplication, division and editing,	the learner will code, assemble and test the program,	to provide error-free output
	10. Given an Assembly Language reference and a problem definition requiring the use of: (a) a table; (b) totals; (c) heading and overflow routine,	the learner will flowchart, code, assemble and test the program,	to provide error-free output
	11. Given an Assembly Language reference, a problem definition requiring sequential file updating, a system flowchart, a master file, transaction file and report layouts,	the learner will flowchart, code, assemble and test the program,	to produce error-free output

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Topic	Conditions	Performance	Criteria
	12. Given an Assembly Language reference, a problem requiring non-sequential file updating, a system flowchart, a master file, transaction file, and report layouts,	the learner will flowchart, code, assemble and test the program,	to produce error-free output
COBOL	1. Given a general form COBOL coding statement, using brackets, braces, italics, etc.,	the learner will identify reserved words, programmer-supplied names, required and optional entries,	with 90% accuracy
	2. Given a list of Characters, Symbols and Literals,	the learner will specify whether a given item is a valid name, character, symbol, numeric or alphameric literal,	with 90% accuracy
	3. Given a list of programming statements and clauses,	the learner will identify to which COBOL division the entry belongs,	with 90% accuracy
	4. Given COBOL statements,	the learner will speficy which entries must start at the "A" margin, which entries must start at the "B" margin and beyond, and which items must appear on a eparate line,	with 100% accuracy
	5. Given a COBOL reference and a problem statement,	the learner will write an Identification Division,	with no error
	6. Given a COBOL reference and the specifics of a computer relative to size of memory and model number,	the learner will write the Configuration Section,	with no errors
	7. Given a COBOL reference and a list of peripherals needed for a given problem;	the learner will write an Input/Output Section.	with no errors

Topic	Conditions	Performance	Criteria
	8. Given: A. COBOL reference B. Record layout forms (two input and one output file),	the learner will write the required File Description	with no errors
	9. Given: A. COBOL reference B. Record layout form(s) containing numeric, aplhameric, group and elementary items,	the learner will write Record Descriptions,	with no errors
	10. Given: A. COBOL reference B. Printer Spacing chart containing fields with and without editing,	the learner will write Record Descriptions,	with no errors
	11. Given: A. COBOL reference B. A completed printer spacing chart containing Headings and detail lines with field size indicated,	the learner will write a Working Storage Section	with no errors
	12. Given a correctly coded Procedure Division,	the learner will: (a) Identify statements, their verbs and operands; (b) Identify sentences, paragraphs, and sections; (c) State rules for forming statements, sentences paragraphs, sections and divisions,	with 90% accuracy
	13. Given: A. COBOL reference B. Correctly coded Environment and Data Divisions with a minimum of one input and one output file C. A program flowchart,	the learner will code the opening, Read, Write, and Closing Procedures using OPEN, READ, WRITE, CLOSE and STOP verbs,	with 80% accuracy

Topic	Conditions	Performance	Criteria
	14. Given a series of COBOL statements and definitions of functions,	the learner will match the same,	with 80% accuracy
	15. Given: A. COBOL reference B. A list containing a variety of move statements,	the learner will specify (a) whether the statements are Group Elementary, Alphameric, Numeric, or Numeric Edited; and (b) the contents of the receiving fields after execution.	with 80% accuracy
	16. Given a list of arithmetic statements with the size and initial values of the sending and receiving fields,	the learner will determine the numeric results of the statements,	with 80% accuracy
	17. Given a flowchart and/or decision table,	the learner will convert decision table or flowchart by coding single, compound, or nested IF statements, which include relation tests, sign tests, etc.,	with 80% accuracy
	18. Given a COBOL reference and coding examples which use various options of the Perform verb,	the learner will determine if a PERFORM THRU option would logically reach the implied or explicit EXIT and determine which statement would be executed upon completion of the PERFORM procedure,	with 80% accuracy
	19. Given a COBOL reference, coding forms, information regarding the peripherals of a computer, and situations requiring the use of ACCEPT and DISPLAY verbs,	the learner will code the necessary entries in the Environment, Data and Procedure Divisions,	with no syntactical errors
	20. Given a COBOL reference and a problem which requires the use of a two-dimensional array,	the learner will code the problem	with no syntactical errors

Topic	Conditions	Performance	Criteria
	21. Given a COBOL reference and a problem which requires the use of multiple input formats,	the learner will code a single FD and the necessary level 01 entries for the Data Division using REDEFINES.	with 100% accuracy
	22. Given a COBOL reference and problem definition, which includes the random access of an indexed-sequential file,	the learner will flowchart, code, compile and test.	an error-free program
	23. Given a COBOL reference and a problem including control breaks and totals,	the learner will flowchart, code, compile and test,	an error-free program
	24. Given a COBOL reference and a problem definition, which includes a table lookup procedure,	the learner will flowchart, code, compile and test,	an error-free program
	25. Given a COBOL reference and a problem definition, which includes file maintenance, such as additions, changes, and deletion of records,	the learner will flowchart, code, compile and test,	an error-free program
Fortran	1. Given a list of fixed (Integer) and Floating (Real) constants and variables containing invalid and valid entries,	the learner will: (a) identify each valid entry as being a constant or variable and by mode of arithmetic and (b) will state why each invalid entry is incorrect	with 80% accuracy
	2. Given a list of variable names,	the learner will demonstrate, by coding, how the mode of the names can be changed with type statements,	with 80% accuracy
	3. Given a list of DATA statements containing valid and invalid entries,	the learner will (a) identify each valid entry and (b) will state why each invalid entry is incorrect,	with 80% accuracy

Topic	Conditions	Performance	Criteria
	4. Given information describing a single, a double, and a triple dimension array for either Integer or Real numbers along with FORTRAN coding sheets,	the learner will make the FORTRAN coding entries to describe either an INTEGER or REAL array for each,	each entry must be correctly written
	5. Given a record (or records) Format containing fields with the following types of information, constants (real and integer), alphanumeric and blank and with the INPUT device code provided and FORTRAN coding sheets,	the learner will code a READ and FORMAT statement(s) using the device code and will assign variable names with the proper mode indications,	each entry must be correctly written
	6. Given a record (or records) containing fields that are to be entered into an array and with the INPUT device code provided and FORTRAN coding sheet	the learner will code a READ and FORMAT statement(s) to read the array,	each entry must be correctly written
	7. Given the following output format layouts: A. A line containing all constant information B. A line containing all variable information (including INTEGER, REAL, and ALPHANUMERIC fields) C. A line containing both variable and constant information and carriage control characters for a specific machine, and FORTRAN coding sheets,	the learner will (a) make the coding entries necessary for each of the lines and (b) code the entries to show vertical form control for (1) top of page and (2) single and double spacing,	each entry must be correctly written
	8. Given FORTRAN coding sheets and a list of mathematical expression(s) which require	the learner will make the entries necessary to code the expression in a FORTRAN arithmetic statement.	there must be 80% of the list coded correctly

Topic	Conditions	Performance	Criteria
	the use of adding, subtracting, multiplying, dividing and exponentiation and which requires the use of parentheses,		
	9. Given FORTRAN coding sheets and a list of arithmetic statements containing valid and invalid entries,	the learner should (a) identify each entry as to being valid or invalid and (b) show correct coding for the invalid statements,	this will be done with 80% of the list identified and coded correctly
	10. Given FORTRAN coding sheets and a problem(s) requiring the use of conditional branching	the learner will code the statement(s) using the following: A. GO TO B. Computed GO TO C. IF (arithmetic and logical) the same problem may be used for each of the above conditional statements.	each entry must be coded correctly
	11. Given FORTRAN coding sheets and a problem(s) requiring looping through a series of statements (a) fixed and (b) a variable number of times,	the learner will code, compile and test the program	to produce error-free output
	12. Given FORTRAN coding sheets and a problem(s) requiring at least one nested DO loop,	the learner will code, compile and test the program,	to produce error-free output
	13. Given FORTRAN coding sheets and a problem(s) requiring the use of each of the statements PAUSE, STOP, and END,	the learner will compile and test the program,	to produce error-free output
	14. Given FORTRAN coding sheets, reference material of the student's choosing, and a problem which will generate a	the learner will code, compile and test the program	to produce error-free output

Topic	Conditions	Performance	Criteria
	value requiring the use of a DOUBLE PRECISION type statement,		
	15. Given FORTRAN coding sheets, reference materials of the student's choosing, a set of data to be processed as a single dimension array, and a problem statement which will include the following: A routine that indexes each of the variables (such as run a total of the number) and a routine that selects one item from the list (such as largest variable, smallest variable, and a variable that matches an argument),	the learner will code, compile and test the program	to produce error-free output
	16. Given FORTRAN coding sheets, reference materials of the student's choosing, and a problem statement requiring the use of a function and a subroutine,	the learner will code, compile and test the program,	to produce error-free output
PL/1	1. Given a sample printout, a program flowchart, and a description of the problem,	the learner will list the types of PL/1 statements that are used and arrange the statements in an acceptable sequence as determined by the program flowchart and the operating system.	the statement identification and sequencing will be done with 90% accuracy
	2. Given a printout of a simple illustrative problem using one or more files, one or more structures, identifiers and arithmetic statements,	the learner will label the elements of the procedures, describe the use of identifiers or conditions, the OPEN, READ, WRITE, GO TO and CLOSE statements,	with 90% accuracy

Topic	Conditions	Performance	Criteria
	3. Given a list of the character set symbols and a list of situations requiring the use of logical or comparison operators,	the learner will use the logical and comparison operators to code PL/1 statements for each situation that contains no syntactical errors and is logically correct.	the statements will be coded with 90% accuracy
	4. Given a list of possible identifiers,	the learner will select the correct identifiers and list the rule which is violated for wrong identifiers,	with 80% accuracy
	5. Given a number of arithmetic problems and the appropriate PL/1 reference materials,	the learner will write PL/1 statements which will produce valid answers to the problems,	with 80% accuracy
	6. Given a PL/1 reference, a series of DECLARE statements, and undefined (undeclared) variables, the student will describe how the data is stored for each declared field. The fields used will be described as arithmetic decimal fixes, numeric character or character string. The mode, base, scale, and precision of numeric data will also be included as part of the description,	the learner will identify the storage characteristics.	with 90% accuracy
	7. Given the appropriate file declares and structures, without the use of reference materials,	the learner will translate a series of detailed flowcharts which involves several decision points, into PL/1 code.	which contains no syntactical errors.
	8. Given PL/1 reference materials, record layout forms and a set of parameters for each record,	the learner will code the structures, using both elementary and group items,	without syntactical errors

Topic	Conditions	Performance	Criteria
	9. Given a PL/1 reference, problem statements which indicate the input and output devices to be used, and the names of the input and output structures,	the learner will declare the files and code the related OPEN, CLOSE, READ, and WRITE statements.	without syntactical errors
	10. Given a PL/1 reference, record layouts for sequential disk or tape files, the blocking factors and structure names,	the learner will declare the files and code the required OPEN, CLOSE, READ, or WRITE statements,	without syntactical errors
	11. Given a PL/1 reference and the PL/1 character set,	the learner will code PL/1 statements that use the separators and special characters,	without syntactical errors
	12. Given a PL/1 reference, a problem involving the use of a sequential file for both input and output and the record layouts,	the learner will prepare a detailed flowchart, code, compile and test the program,	to produce error-free output
	13. Given a PL/1 reference, a problem involving a sequential input file and a printed report,	the learner will prepare a print layout, code, compile and test the program	to produce error-free output
	14. Given a PL/1 reference, a problem involving a sequential input file and a printed report which requires editing and vertical space control,	the learner will complete a print layout form, code, compile and test the program,	to produce error-free output that is printed according to the specifications provided in the problem
	15. Given a PL/1 reference, a problem statement which requires the use of a card input file and a printed report,	the learner will code, compile and test the program	using GET and PUT statements rather than READ or WRITE, to produce error-free output
	16. Given a PL/1 reference and a problem statement which requires the use of a two-dimensional array,	the learner will prepare a program flowchart, code, compile and test the program,	to produce error-free output

Topic	Conditions	Performance	Criteria
	17. Given a PL/1 reference and a problem statement which requires the use of a two-dimensional array and a nested DO loop,	the learner will prepare a program flowchart, code, compile and test the program,	to produce error-free output
	18. Given a PL/1 reference and a problem statement which requires the creation of an Indexed-Sequential disk file,	the learner will prepare the program flowchart, and code, compile and test the program,	to produce error-free output
	19. Given a PL/1 reference and a problem statement which requires a random update of an indexed-sequential file, utilizing DO loops and complex IF statements,	the learner will code, compile and test the program	to produce error-free output
	20. Given a PL/1 reference and problem statements which require the use of a subroutine and one or more functions,	the learner will prepare a detailed flowchart, code, compile and test the program,	to produce error-free output
	21. Given a PL/1 reference and a problem statement which requires the use of complex IF statements, DO loops, a one-dimensional array, one or more functions and a subroutine,	the learner will prepare the program flowchart, code, compile and test the program,	to obtain error-free output
RPG	1. Given an RPG reference, RPG forms, a printer spacing chart, and a record layout,	the learner will: A. List the areas of general application suitable to the RPG language B. Describe the functions of each RPG form, the printer spacing chart, the multiple card layout form and a record layout form.	with 80% accuracy

Topic	Conditions	Performance	Criteria
	2. Given an RPG reference book or manual and a problem definition requiring a simple listing from card input,	the learner will write the logic steps followed by the RPG generator in executing the problem,	responses should be 80% correct
	3. Given: A. A problem definition B. A printer spacing chart C. An RPG reference	the learner will fill in a printer spacing chart,	in accordance with the problem definition, using valid RPG names. This activity must be 100% correct when finished
	4. Given: A. A problem definition B. A previously prepared printer spacing chart C. RPG forms and reference	the learner will make all the necessary entries on each form using the printer spacing chart as a reference	the entries must be 100% correct.
	5. Given: A. A problem definition for a report with one total and one line of headings on the first page and overflow B. Coding forms and reference materials,	the learner will make the appropriate entries on each specification form to accomplish the requirements of the problem,	the output must be 100% correct
	6. Given: A. A problem definition using some of the following items; Numeric literals, half-adjust, resulting indicators, field indicators, mathematical operators, COMP, SETOF, SKIP, OR, AND, and editing, B. Coding forms and reference materials,	the learner will code, compile	to produce error-free output
	7. Given: A. A problem definition requiring one level of totals, a final total, branching and a record count	the learner will code, compile and test the program	to produce error-free output

Topic	Conditions	Performance	Criteria
	B. Coding forms and reference materials,		
	8. Given: A. A list of situations requiring the use of Z-ADD, SETON, MOVE ZONE and TEST ZONE operations, EXCPT, and MVR B. Coding forms and reference materials,	the learner will enter the coding statements required for each situation	with 80% accuracy
	9. Given: A. A problem definition requiring 3 levels of totals and a final total, an input date, page totals, page numbers, packed tape output B. Coding forms and reference materials,	the learner will code, compile and test the program	to produce error-free output
	10. Given a problem definition involving multiple input records, ordered records, field indicators, UPDATE,	the learner will code, compile and program test,	to produce error-free output
	11. Given: A. A problem definition involving table look-up B. Coding forms and reference materials,	the learner will code, compile and test the program	to produce error-free output
	12. Given: A. A problem definition involving sequential disk processing B. Coding forms and reference materials,	the learner will code, compile and test the program	to produce error-free output

Topic	Conditions	Performance	Criteria
	13. Given a [illegible] of situations involving processing disk files by means of chaining or Record Address Files,	the learner will make the entries on each specification form as required	with 80% accuracy

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Air Conditioning

U.S.O.E. Code Number: 17.0100

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Terms	1. Given 25 basic refrigeration and air conditioning terms,	the learner will define each term and illustrate its application in the field of refrigeration and/or air conditioning,	to 90% accuracy within 30 minutes.
Hermetic Compressor	1. Given a refrigerator box, compressor, hand tools, tubing, solder and soldering equipment,	the learner will install a hermetic compressor in a refrigerator making necessary connections,	the system, when evacuated and charged will maintain the temperature specified by manufacturer in 5 hours.
Dehydration	1. Given a refrigerator with access valves, a gauge manifold set, hand tools and vacuum pump,	the learner will evacuate the system,	the system is dehydrated and ready for charging.
Charging Systems	1. Given a refrigerator, a set of gauges, a charging cylinder with refrigerant and the necessary hand tools,	the learner will charge the system	the system will attain and maintain a 0° F freezer temperature with head pressure in the limits as set by the manufacturer within 60 minutes.
Soldering	1. Given tubing, soldering equipment, solder, tube bender, cutter and flaring tools,	the learner will measure, cut, ream, flare, swage and fit, soft solder, silver solder,	the connected tubing is free of leaks and/or restrictions in 60 minutes.

Topic	Conditions	Performance	Criteria
Hermetic Motors	1. Given a split phase hermetic motor and ohmeter,	the learner will identify each; the start, run and common terminals and test whether or not the windings are grounded or open,	within 15 minutes.
Refrigeration Components	1. Given a list of component parts of a basic refrigeration system,	the learner will identify each and explain the function of each part,	to 90% accuracy in 30 minutes.
Servicing	1. Given a gauge manifold set with hoses,	the learner will demonstrate his knowledge of the various parts and passages and their uses and purposes in servicing a refrigeration system,	in 20 minutes.
Hand Tools	1. Given a list of hand tools and/or basic equipment,	the learner will demonstrate and/or explain the safe operating procedures and practices,	the learner can work without injury or accident and utilize the tools for which they were intended.
Safety Procedures	1. Given glasses, goggles, gloves, and/or face shields,	the learner will determine the safety requirements for the particular job, wear the appropriate protective clothing and/or devices and proceed with due caution,	the job is done in a safe fashion and the learner does not sustain harm or injury in any way.
Wiring	1. Given a hot wire relay, wire thermostat, hermetic compressor, wiring diagram, and power supply cord,	the learner will wire the above components,	they will function according to the wiring diagram in less than 30 minutes.
Gauges	1. Given a pressure gauge and a compound gauge,	the learner will read pressure above and below atmospheric pressure and convert these gauge pressures to absolute pressure readings,	with 90% accuracy in 10 minutes.

Topic	Conditions	Performance	Criteria
Electrical Terms	1. Given 15 basic electrical terms,	the learner will define each term and/or illustrate its application in the area of electrical work,	with 90% accuracy in 30 minutes.
Symbols and Schematics	1. Given 20 basic symbols used in electrical schematics for refrigeration and air conditioning equipment,	the learner will identify the name, use, classification of each symbol,	with 90% accuracy in 30 minutes.
Series and Parallel Circuits	1. Given examples of several series and parallel circuits,	the learner will identify each type of circuit and explain what happens to voltage and circuit in each according to Ohm's Law,	to 90% accuracy in 20 minutes.
Motor Starting Capacitor	1. Given a motor starting capacitor,	the learner will identify, test for open or short, and explain or demonstrate its connection in a circuit,	when installed it will give added starting torque when starting a motor in 15 minutes.
Schematics	1. Given a basic domestic refrigerator schematic,	the learner will trace the circuits, identify the parts and describe the operation of the circuit,	the learner can troubleshoot and repair from the operational explanation in the diagram in 1 hour.
Dual Voltages	1. Given a dual voltage motor,	the learner will change from low to high voltage connections,	the motor can be connected on either applicable voltage and not exceed normal running amperages in 20 minutes.
Magnetic Starters	1. Given a magnetic starter,	the learner will wire from a power source to a motor and connect the control circuit to the coil,	when energized, the motor will run and be controlled by the starter and its control circuit in 60 minutes.
Meters	1. Given a ohm meter, ammeter, and voltmeter,	the learner will demonstrate the use of each in testing circuits and controls and understand the basic function of each,	in 30 minutes as outlined by the manufacturer.

Topic	Conditions	Performance	Criteria
Psychrometric Chart	1. Given a sling psychrometric chart,	the learner will take wet and dry bulb readings and determine from the chart the conditions of the air,	with 100% accuracy in 20 minutes.
Air Velocity	1. Given a velometer, duct system, ruler, pencil and paper,	the learner will measure the velocity of the air, the size of the duct opening and calculate the cubic feet per minute being delivered from the duct opening,	to ± 10 percent in 20 minutes.
Gas Fired Furnace	1. Given a gas-fired furnace, various hand tools, matches, and pipe wrenches,	the learner will breed the gas line on a newly installed unit to start the burner and adjust the air for proper flame,	there is good combustion, the pilot remains lit, and the unit will produce heat to start the blower in 60 minutes.
Blower Motor	1. Given a blower motor on a furnace, wiring diagram and the necessary hand tools,	the learner will reverse the rotation of the blower motor,	it runs in the proper direction for the fan to move the air and does not exceed allowable current draw in 30 minutes.
Parts Replacement	1. Given a gas-fired furnace,	the learner will locate name, test for proper operation, and replace the limit switch, thermocouple, and gas valve,	the reinstalled unit will function properly in the operation of the furnace in 60 minutes.
Welding	1. Given oxygen and acetylene tanks, regulators, hoses, necessary wrenches, blowpipe and tips,	the learner will connect the oxy-acetylene outfit,	it is ready for welding or brazing with no leaks in any connections in 15 minutes.
Thermo-Expansion Valves	1. Given a refrigeration system with thermo-expansion valve, necessary tools and thermometer,	the learner will adjust super heat according to a given temperature,	± 20% in 40 minutes.
Low Pressure Adjustment	1. Given a refrigeration system, necessary hand tools, thermometer and gauges,	the learner will adjust a low pressure cut out according to a given pressure setting,	the system will maintain the required temperatures and will not short cycle in 60 minutes.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Heating

U.S.O.E. Code Number: 17.0102

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Hand tools	1. Given a selection of hand tools commonly used by a technician in the trade or industry,	the learner will name and select the most appropriate tools for a given operation,	with 90% accuracy.
Mathematics	1. Given practical problems involving area, volume, length, velocity, pressure, and cost that are related to employer requirements,	the learner will solve the problems, estimate cost, order materials, convert units according to basic math formulas, charts, tables, catalogues,	maintain 85% accuracy.
Relative Humidity	1. Given a sling psychrometer and a psychrometric chart,	the learner will read the wet and dry bulb temperature and determine the relative humidity of a given room according to instructions furnished by the manufacturer,	within 5% of the average of the three readings taken in 15 minutes.
Thermostats	1. Given a missing or defective thermostat to control a heating system, a selection of thermostats, tools, reference materials and meter,	the learner will select the proper thermostat for the system, install and perform the required adjustments as recommended by the manufacturer's service or installation manual,	in one hour.

Topic	Conditions	Performance	Criteria
Meters	1. Given a volt meter, ohm meter, and ammeter and available heating or air conditioning equipment and service manuals or rating plates,	the learner will select correct meter and scale in order to measure the values and compare them to those specified by the manufacturer,	within 90% accuracy in 30 minutes.
Warm Air Furnace	1. Given a warm air furnace with a blower motor, appropriate supplies, meters, motors and tools,	the learner will remove and replace the motor and check for proper performance according to normal field procedures and manufacturer's rating plates,	within 30 minutes and 90% accuracy.
Blower Assembly	1. Given a squirrel cage blower assembly and a selection of parts and tools, lubricant and cleaning agents,	the learner will perform all necessary maintenance to blower assembly and diagnose and repair any defects common to this type of equipment,	according to manufacturer's specifications.
Pilot Tubing	1. Given a defective 1/4" pilot tubing on a gas furnace, necessary tubing, tools and fittings,	the learner will replace and fasten the tubing,	in compliance with local codes within a reasonable length of time.
Threading	1. Given the necessary hand pipe threading tools and supplies,	the learner will measure, cut, thread and ream to produce a male pipe thread as required for the job at hand that will properly fit to a standard manufactured threaded fitting,	in not more than 15 minutes.
Soldering	1. Given copper tubing, fitting, solder, flux, tools and supplies, a piping diagram,	the learner will select the proper materials and tools and solder the tubing and fittings together,	the joints are leakproof according to prescribed manufacturer's rules and local codes.
Heat Loss	1. Given a floor plan, tables or manuals with heat loss factors and necessary information or work sheets,	the learner will calculate the heat loss of the structure, room by room, to obtain the total estimated heat loss as well as	to 80% accuracy.

Topic	Conditions	Performance	Criteria
		making energy saving suggestions about the results according to industry standards or locally accepted methods, allowing four hours per 1,000 sq. ft. of floor area,	
Burner Adjustment	1. Given a natural gas burner, necessary tools, charts, parts, instruments and a manometer or gas meter,	the learner will adjust the gas flow rate, primary and secondary air so the burner will operate efficiently at the prescribed input rating according to the American Gas Association recommendations and/or local codes,	within 15 minutes and maintain 95% accuracy as observed by a qualified instructor.
Oil Burner Adjustment	1. Given a #2 fuel oil burner, appropriate tools, nozzles, gages and manuals,	the learner will change or adjust the air, oil and ignitions so the proper combustion takes place according to National Fuel Oil Institute, American Petroleum Industry standards or local codes	within 15 minutes and 90% accuracy.
Combustion Testing	1. Given a draft gage, smoke tester, CO_2 analyzer, thermometer, and necessary accessories or related instruments, and an operating gas or oil furnace or boiler,	the learner will complete a combustion efficiency test and record all data accurately according to the equipment manufacturer's specifications,	within 1 hour and be 90% accurate in the reading.
Maintenance	1. Given a gas or oil fired furnace, tools, instruments, parts, and repair manuals,	the learner will inspect, adjust, replace and maintain the filters, controls belts, motors, blower, piping, tubing.	according to the repair manual or known industry standards, within a reasonable time to be within the limitations of the local safety codes.

Topic	Conditions	Performance	Criteria
Hot Water or Steam Systems	1. Given a hot water or steam boiler and necessary tools, parts, instruments and manuals,	the learner will identify each system, adjust, replace, maintain and trim the controls, valves, venting devices, gages, pipes and tubing,	according to industry standards and local codes within a reasonable length of time.
Cleats and Fasteners	1. Given the necessary sheet metal equipment, hand tools, accessories and supplies,	the learner will layout, fabricate, and join together or to factory-made fittings by using seams, cleats and fasteners, both rectangular and round duct sections,	according to local sheet metal practices or known standards within a reasonable, specified time.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Appliance Repair

U.S.O.E. Code Number: 17.0200

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Techniques	(See statement included under this title if applicable.)		
WASHER			
Installation	1. Given automatic washer, electrical and plumbing service,	the learner will install washer,	all grounded electrical connections and plumbing connections are complete and the machine is level and there are no leaks, within one hour
Timer Repair	2. Given timer assembly of an automatic washing machine,	the learner will disassemble, repair, replace and reassemble the timer,	the machine functions according to the manufacturer's specifications in two hours
Switch Replacement	3. Given an automatic washer with any type of switch-manual, mercury, pressure, float, centrifugal, thermal or solenoid	the learner will replace the switch,	the machine functions according to the manufacturer's specifications, in one hour
Switch Identification	4. Given 10 different switches used in automatic washers,	the learner will identify and explain the function	of each with 100% accuracy in 30 minutes
Electric l Component Identification	5. Given wiring diagram of an automatic washer,	the learner will identify and locate	any electrical component within one hour

Topic	Conditions	Performance	Criteria
Water System Component Identification	6. Given an automatic washer,	the learner will identify and describe the function	of all components of the water system 100% of the time, in 30 minutes
Water System Repair	7. Given an automatic washer,	the learner will check the water system, locate malfunction, correct or replace components,	the water system functions without stoppage or leakage and at the correct temperature within 3 hours
Mixer Valve Operation	8. Given three types of mixing valves,	the learner will identify and describe the operation and references	of each, in 20 minutes
Gear Case Repair	9. Given an automatic washer and necessary tools,	the learner will remove the superstructure and gear assembly, disassemble the gear case, make a visual check of each part, replace any and all parts which appear worn or defective, reassemble and reinstall in the transmission case,	the machine operates according to manufacturer's specifications in 3 hours
Gear Case Removal and Installation	10. Given an automatic washer,	the learner will remove the superstructure, reassemble the gear case to the superstructure, adjust alignment, replace and adjust belts, adjust the basket drive clutch	the machine operates to manufacturer's specifications, in two hours
Electrical Symbol Identification	11. Given 40 wiring diagram symbols,	the learner will identify	35 correctly in 30 minutes
Timer Sequence Chart	12. Given a timer sequence chart,	the learner will identify various operations and the time sequence required,	for each, 100% of the time
Circuit Tracing	13. Given automatic washer wiring diagram	the learner will trace each circuit, follow the color code and describe the function and cycles of the machine	to 100% accuracy within 30 minutes

Topic	Conditions	Performance	Criteria
Trouble Shooting	14. Given troubleshooting chart, an automatic washer, and VOM meter,	the learner will make voltage checks and interpret the results of his checks and locate the trouble	within three hours.
DRYER			
Installation	1. Given the necessary electrical and/or plumbing and venting services, and an automatic dryer,	the learner will install the dryer, all grounded electrical connections and plumbing connections are complete and the machine is level and there are no gas leaks and no poor electrical or venting connections	within three hours.
Timer Repair	2. Given a timer assembly of an automatic dryer,	the learner will disassemble, repair, and replace and reassemble the timer	the machine functions according to manufacturer's specifications, within two hours.
Switch Replacement	3. Given an automatic dryer with any type of switch; manual, pressure, centrifugal, thermal, solenoid, or relay,	the learner will replace the switch	the machine will function according to manufacturer's specifications, within one hour.
Switch Identification	4. Given (5) different switches used on automatic dryers,	the learner will identify and explain the function of each,	with 100% accuracy, within 30 minutes.
Reading Wiring Diagrams	5. Given the wiring diagram of an automatic dryer,	the learner will identify and locate any electrical component of the system,	within 20 minutes.
Component Function	6. Given any automatic dryer,	the learner will identify and describe the function of the components of the air flow system,	100% of the time, within 10 minutes.

Topic	Conditions	Performance	Criteria
Trouble Shooting and Repairing Drive Systems	7. Given an automatic dryer,	the learner will check the drive system, locate any malfunctions in the system, correct where possible, or replace components if necessary	the drive system will function without stopping and at the correct temperature, within three hours.
Idenfitying Gas Valves	8. Given three types of gas valves,	the learner will identify and describe the operation and references of each.	within 20 minutes.
Removing and Assembling Gas Dryer Burners	9. Given an automatic dryer and the necessary tools,	the learner will remove the burner assembly, disassemble the burner, make a visual check of each part, replace any and all worn or defective parts, reassemble and re-install the burner in the dryer,	the machine operates according to manufacturer's specifications within three hours.
Drum Installation	10. Given an automatic dryer,	the learner will remove the drum, reassemble the drum bearing to the support collar, align drum, replace belts, and adjust drum clearance	the machine operates to manufacturer's specifications in two hours.
Identifying Wiring Diagram Symbols	11. Given 20 wiring diagram symbols,	the learner will identify 15 correctly	within 30 minutes.
Reading Timer Sequence Charts	12. Given a timer sequence chart,	the learner will identify the various operations and the time sequence required for each	100% of the time.
Reading Wiring Diagrams	13. Given a typical automatic dryer wiring diagram,	the learner will trace each circuit, following the color coding, and describe the function and cycle of the machine.	with 100% accuracy, within one hour.
Making Voltage Checks	14. Given a troubleshooting chart, an automatic dryer and a VOM,	the learner will make voltage checks and interpret the results of his checks and locate the trou	according to the chart.

Topic	Conditions	Performance	Criteria
RANGE			
Installation	1. Given a range, gas or electric and the necessary electrical and plumbing equipment,	the learner will install the range,	all grounded electrical connections and plumbing connections are complete and the range is level and there are no gas or electrical leaks, within one hour
Timer Repair	2. Given a timer assembly of a range,	the learner will disassemble, repair or replace the timer,	the machine functions according to the manufacturer's specifications in two hours
Switch Replacement	3. Given a range with any type of switch-manual, pressure, thermal or solenoid and relay	the learner will replace the switch	the machine functions according to the manufacturer's specifications, in one hour
Switch Identification	4. Given 10 different switches used in ranges,	the learner will identify and explain the function of each,	with 100% accuracy in 30 minutes
Electrical Component Identification	5. Given the wiring diagram of a range,	the learner will identify and locate,	any electrical component of the system within one hour
Oven Component Identification	6. Given any range,	the learner will identify and describe the function of the components of the oven,	100% of the time in one hour
Trouble Shooting Oven	7. Given a range,	the learner will check oven, locate a malfunction, correct or replace components,	the oven functions within tolerance and at the correct temperature, within 3 hours
Thermostats	8. Given three types of thermostats,	the learner will identify and describe the operation	of each in 20 minutes
		and references	the range operates according to the specifications of manufacturer in three hours

Topic	Conditions	Performance	Criteria
Timer Replacement	9. Given a range and necessary tools,	the learner will remove the timer assembly, make a visual check, replace any and all parts and reassemble and reinstall,	
Gas Adjust	10. Given a range	the learner will remove the top burner and adjust the gas and air mixture,	the range operates to manufacturer's specifications in 2 hours
Electrical Symbol Identification	11. Given 20 wiring diagram symbols,	the learner will identify	15 correctly within 30 minutes.
Timer Sequence Chart	12. Given a timer sequence chart,	the learner will identify the various operations and the time sequence required for each,	100% of the time
Circuit Analysis	13. Given a typical range wiring diagram,	the learner will trace each circuit, follow the color coding and describe the function of the range,	to 100% accuracy in 30 minutes
Trouble Shooting Range	14. Given a trouble shooting chart, a range, and VOM meter,	the learner will make voltage checks, interpret the results of his checks, locate the trouble,	according to the chart, within three hours

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Body and Fender

U.S.O.E. Code Number: 17.0301

Remarks:

Production Standards. Automobile bodies are built to a visual and operational standard. The openings are not produced to a .010 of an inch but to that visual and operational standard. The doors and trunks will open and close properly and have a good visual appearance. If a car is damaged on one side, the standard to which that side is repaired is that of the other side or that another similar car would look like.

All insurance contracts are written to state that the insurance company will restore the car to the condition it was prior to the loss, which is a production standard. Since there are or can be so many standards, the production standard seems the most consistent and understandable criteria.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objective referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Body Work	1. Given a panel ready for refinishing, cleaning solvent, sanders, sand paper, primers, primer surfacer, thinning solvents, and spray equipment,	the learner will select the correct materials and will use the correct procedure steps to apply the pre-color coats to the panel.	it is ready for the application of the color coat; production standards.
	2. Given a prepared panel in need of a final color coat and sealer,	the learner will use power sanding and/or hand sanding techniques to smooth the surface.	it is free of imperfection and is ready for the final coat; production standards.
	3. Given an auto body,	the learner will remove and replace all bolted exterior	100% accuracy

Topic	Conditions	Performance	Criteria
		parts and will identify those which are welded construction and need cutting to be removed.	
	4. Given a panel that requires a hole to be patched, welding torch, cutting equipment, riveting equipment, and metal for patching,	the learner will cut the opening and rivet and/or weld the patch	it can be final finished..
Finish	1. Given a spray booth, spray equipment and a panel ready for final color finish,	the learner will set up the booth and arrange the work	the area is clean, dust free, and meets finish production standards.
	2. Given a panel which has a final finish applied and is in need of buffing,	the learner will select and use the necessary compounds to polish	the finish has the appropriate degree of luster and is free of imperfections.
Inspection	1. Given a damaged auto body shell,	the learner will identify any shell which is out of alignment to the extent that it would affect vehicle operation or functioning of its moving parts and/or openings	any shell as described will be identified.
	2. Given any auto body,	the learner will identify all the parts of the frame	100% accuracy
Hard Trim	1. Given an auto body, common hand tools, and special trim tools,	the learner will remove and replace hard trim on the auto body,	to production standards
Adjustment	1. Given an auto body in need of alignment and adjustment of its parts,	the learner will adjust doors, hood and rear deck,	they function properly

Topic	Conditions	Performance	Criteria
Wiring	1. Given a car with cut or damaged wires,	the learner will locate and repair the wires,	to return to operating condition.
Parts Identification	1. Given an automobile,	the learner will identify by technical name and location, exterior body parts and panels,	all parts and panels to be named.

Topic	Conditions	Performance	Criteria
	3. Given a car, tool kit, manual, oil drainer, grease gun, bearing repacker, U-joint greasing tools, filter wrench, oil pressure gauge,	the learner will lubricate universal joints,	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	4. Given a car, tool kit, manual, oil drainer, grease gun, bearing repacker, U-joint greasing tools, filter wrench, oil pressure gauge,	the learner will check and service rear axle lubricant	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	5. Given a car, tool kit, manual, oil drainer, grease gun, bearing repacker, U-joint greasing tools, filter wrench, oil pressure gauge,	the learner will repack wheel bearings	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	6. Given a car, tool kit, manual, oil drainer, grease gun, bearing repacker, U-joint greasing tools filter wrench, oil pressure gauge,	the learner will lubricate all grease fittings	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	7. Given a car, tool kit, manual, oil drainer, grease gun, bearing repacker, U-joint greasing tools, filter wrench, oil pressure gauge,	the learner will check and add proper fluids when necessary (crankcase, power steering, master cylinder, automatic transmission)	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	8. Given a car, tool kit, manual, oil drainer, grease gun, bearing repacker, U-joint greasing tools, filter wrench, oil pressure gauge,	the learner will lubricate all hardware,	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy

Topic	Conditions	Performance	Criteria
Cooling System	1. Given a car, tool kit, manual, radiator pressure test kit, belt, tension tool, anit-freeze tester and air-conditioning station,	the learner will pressurize cooling system to check for leaks (radiator hoses, gaskets, soft-plugs and water pumps) and replace if necessary	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	2. Given a car, tool kit, manual, radiator pressure test kit, belt, tension tool, anit-freeze tester and air-conditioning station,	the learner will inspect, adjust and replace all fan belts,	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	3. Given a car, tool kit, manual, radiator pressure test kit, belt, tension tool, anti-freeze tester and air-conditioning station,	the learner will winterize cooling system,	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	4. Given a car, tool kit, manual, radiator pressure test kit, belt, tension tool, anti-freeze tester and air-conditioning station,	the learner will diagnose and repair heating problems	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	5. Given a car, tool kit, manual, radiator pressure test kit, belt, tension tool, anti-freeze tester and air-conditioning station,	the learner will diagnose air-conditioning problems (pump, condenser, expansion valve, vacuum controls) and recharge	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	6. Given a car, tool kit, manual, radiator pressure test kit, belt, tension tool, anti-freeze tester and air conditioning station,	the learner will pump down and recharge air conditioning unit	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	7. Given a car, tool kit, manual, radiator pressure test kit, belt, tension tool, anti-freeze	the learner will troubleshoot and diagnose cooling, heating, and air conditioning systems	according to manufacturer's specifications and according to flat rate time manual

Topic	Conditions	Performance	Criteria
	tester and air conditioning station,		
Exhaust Systems	1. Given a car, tool kit, manual, vacuum gauge, tail pipe expander, tap-die set, exhaust analyzer, power chisel set and oxy-acetylene torch,	the learner will inspect exhaust manifold, gaskets heat riser, exhaust pipe muffler, tail pipe, resonator and hangers and replace or repair if necessary,	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	2. Given a car, tool kit, manual, vacuum gauge, tail pipe expander, tap-die set, exhaust analyzer, power chisel set and oxy-acetylene torch,	the learner will analyze and diagnose exhause emission control systems	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	3. Given a car, tool kit, manual, hydrometer, battery charger, volt-meter, amp-meter, ohm-meter battery cleaning kit, armature turning tool, mica-cutter, growler, A.V.R. diode tool kit, dwell meter, timing light, tachometer, distributor machine, compression tester,	the learner will check specific electrolyte level and recharge battery,	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	4. Given a car, tool kit, manual, hydrometer, battery charger, volt-meter, amp-meter, ohm-meter, battery cleaning kit, armature turning tool, mica-cutter, growler, A.V.R. diode tool kit, dwell meter, timing light, tachometer, distributor machine, compression tester,	the learner will inspect, disassemble, recondition and/or replace generator (brushes, bearings, armature, field winding and pulley)	according to the manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	5. Gi[redacted] car, tool kit, manual, hydrometer, battery charger, volt-meter, amp-meter, ohm-meter, battery cleaning kit,	the learner will inspect, disassemble, recondition and/or replace alternator (stater, rotor, diodes, bearings, brushes, heatsink and pulley)	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy

Topic	Conditions	Performance	Criteria
	armature turning tool, mica-cutter, growler, A.V.R. diode tool kit, dwell meter, timing light, tachometer, distributor machine, compression tester,	sink and pulley)	
	6. Given a car, tool kit, manual, hydrometer, battery charger, volt-meter, amp-meter, ohm-meter, battery cleaning kit, armature turning tool, mica-cutter, growler, A.V.R. diode tool kit, dwell meter, timing light, tachometer, distributor machine, compression tester,	the learner will inspect, dis-assemble, recondition and/or replace starter (brushes, bear-ings, armature, field winding, starter drive, solenoid and neutral switch)	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	7. Given a car, tool kit, manual, hydrometer, battery charger, volt-meter, amp-meter, ohm-meter, battery cleaning kit, armature turning tool, mica-cutter, growler, A.V.R. diode tool kit, dwell meter, timing light, tachometer, distributor machine, compression tester,	the learner will check and/or replace voltage regulator	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	8. Given a car, tool kit, manual, hydrometer, battery charger, volt-meter, amp-meter, ohm-meter, battery cleaning kit, armature turning tool, mica-cutter, growler, A.V.R. diode tool kit, dwell meter, timing light, tachometer, distributor machine, compression tester,	the learner will demonstrate a working knowledge of electrical accessory troubleshooting (clock, radio, wipers, direction lights, running lights, fan, horn and fuses)	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	9. Given a car, tool kit, manual, hydrometer, battery charger, volt-meter, amp-meter, ohm-	the learner will inspect and know when to change spark plugs, wires, points,condenser, distri-	according to manufacturer's specifications and according to flat rate time manual

Topic	Conditions	Performance	Criteria
	meter, battery cleaning kit, armature turning tool, mica-cutter, growler, A.V.R. diode tool kit, dwell meter,, timing light, tachometer, distributor machine, compression tester,	butor, distributor cap, rotor, coil, ballast resistor and ignition switch,	+25% at 100% accuracy
	10. Given a car, tool kit, manual, hydrometer, battery charger, volt-meter, battery cleaning kit, amp-meter, ohm-meter, armature turning tool, mica-cutter, growler, A.V.R. diode tool kit, dwell meter, timing light, tachometer, distributor machine, compression tester,	the learner will adjust spark plugs, points and timing,	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	11. Given a car, tool kit, manual, hydrometer, battery charger, volt-meter, amp-meter, ohm-meter, battery cleaning kit, armature turning tool, mica-cutter, growler, A.V.R. diode tool kit, dwell meter, timing light, tachometer, distributor machine, compression tester,	the learner will troubleshoot and diagnose electrical systems	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
Steering Systems	1. Given a car, tool kit, manual, front end alignment equipment, Pitman fork, two safety stands, pressure gauge, and wheel balance,	the learner will check and replace front end parts (tie rod ends, ball joints, idler arms, gear box, power steering parts)	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	2. Given a car, tool kit, manual, front end alignment equipment, Pitman fork, two safety stands, pressure gauge, and wheel balance,	the learner will inspect and repair steering column	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy

Topic	Conditions	Performance	Criteria
	3. Given a car, tool kit, manual, front end alignment equipment, Pitman fork, two safety stands, pressure gauge, and wheel balance,	the learner will use alignment equipment to check caster, camber, toe-in and toe-out,	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	4. Given a car, tool kit, manual, front end alignment equipment, Pitman fork, two safety stands, pressure gauge and wheel balance,	the learner will check and correct wheel balance (static and dynamic)	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	5. Given a car, tool kit, manual, fron end alignment equipment, Pitman fork, two safety stands, pressure gauge and wheel balance,	the learner will repair a tire	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	6. Given a car, tool kit, manual, front end alignment equipment, Pitman fork, two safety stands, pressure gauge and wheel balance,	the learner will distinguish and recondition various types of front and rear suspension systems,	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	7. Given a car, tool kit, manual, front end alignment equipment, Pitman fork, two safety stands, pressure gauge and wheel balance,	the learner will clean and check seals and bearings,	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	8. Given a car, tool kit, manual, front end alignment equipment, Pitman fork, two safety stands, pressure gauge and wheel balance,	the learner will replace, repack and adjust wheel bearings,	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy

Topic	Conditions	Performance	Criteria
	9. Given a car, tool kit, manual, front end alignment equipment, Pitman fork, two safety stands, pressure gauge and wheel balance,	the learner will inspect and/or replace shock absorbers,	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy
	10. Given a car, tool kit, manual, front end alignment equipment, Pitman fork, two safety stands, pressure gauge and wheel balance,	the learner will distinguish, replace and/or repair leaf and coil springs and torsion bar systems,	according to manufacturer's specifications and according to flat rate time manual +25 at 100% accuracy
	11. Given a car, tool kit, manual, front end alignment equipment, Pitman fork, two safety stands, pressure gauge and wheel balance,	the learner will troubleshoot and diagnose steering systems	according to manufacturer's specifications and according to flat rate time manual +25% at 100% accuracy

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Business Machine Maintenance

U.S.O.E. Code Number: 17.0600

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable)		
Manual Typewriter	1. Given a manual typewriter, tools and repair manual,	the learner will check and/or adjust each adjustment in proper sequence	the machine functions according to factory specifications as listed in repair manual.
	2. Given oil dipping tanks and hand oiling equipment,	the learner will lubricate a manual typewriter	on visual inspection, the machine interior has a thin film of oil with no excessive amount to cause dripping.
	3. Given a manual typewriter, air compressor, dipping tanks and a set of typewriter tools,	the learner will clean a manual typewriter	the interior of the machine is free of all foreign materials upon visual check from top and bottom of machine.
Electric Typewriter	1. Given an electric typewriter and tools,	the learner will check and/or make each adjustment in sequence	the machine functions according to factory specifications as listed in repair manual.
	2. Given an electric typewriter, air compressor, dipping tanks, and a set of typewriter tools,	the learner will clean an electric typewriter	the interior of the machine is free of all foreign materials upon visual check from top and bottom of machine.

Topic	Conditions	Performance	Criteria
	3. Given oil dipping tanks and hand oiling equipment and grease gun,	the learner will lubricate an electric typewriter	on visual inspection, the machine interior has a fine, thin film of oil with no excessive amount to cause dripping or to make contact with any rubber parts.
Adding Machine	1. Given a working manual adding machine, air compressor, dipping tanks, and grease gun,	the learner will clean, lubricate and adjust a manual adding machine	on visual inspection, the machine interior has a fine film of oil with no excessive amount to cause drippings and machine performs accurately.
	2. Given an electric adding machine, air compressor, dipping tanks and a grease gun,	the learner will clean, lubricate and adjust an electric adding machine	on visual inspection, the machine interior has a thin film of oil with no excessive amount to cause dripping and machine runs at specified speed and performs accurately.
Parts Ordering	1. Given a manufacturers catalog and a need for a particular part,	the learner will locate that part and record all necessary information	the part may be ordered.
Parts Repair	1. Given a broken part and the necessary equipment and tools,	the learner will solder, silver solder, and/or glue	to render the part usable.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Vending Machine Repair

U.S.O.E. Code Number: 17.0698

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable)		
Set Up and Install	1. Given mechanics tools, coffee vending machine, service manual, and products to be dispensed,	the learner will unpack a vending machine, load vender with products and check sequence of operation,	the vending machine will give product for correct insertion of money and make change when applicable, within 90 minutes.
	2. Given mechanics tools, cold drink vending machine, service manual and product to be dispensed,	the learner will unpack a vending machine, load vender with products and check sequence of operation,	the vending machine will give product for correct insertion of morey and make change when applicable, within 90 minutes.
	3. Given mechanics tools, snack type vending machine, service manual and product to be dispensed,	the learner will unpack a vending machine, load vender with product and check sequence of operation,	the vending machine will give product for correct insertion of money and make change when applicable, within 60 minutes.
Check Out the Sequence of Operation	1. Given mechanics tools, vending machine with instructor simulated common malfunction and service manual,	the learner will locate the malfunction and describe the appropriate procedure to correct the operation,	of each vendor component affecting the sequence of operation by simulating malfunctions in otherwise operational vending machines.

Topic	Conditions	Performance	Criteria
Cycle Timer Assembly	1. Given mechanics tools, vending machine and service manual,	the learner will repair the cycle timer assembly, and make cycle timer cam adjustments,	according to manufacturer's specifications.
Schematic Diagrams	1. Given mechanics tools, schematic diagram and vending machine with instructor simulated malfunction,	the learner will read vending machine schematic diagram and find that component and/or color coded wire inside vendor that is improperly wired and correct it,	any improper w :ing.
Operating Unit	1. Given mechanics tools, vending machine and service manual,	the learner will repair the operating unit or product delivery assembly of a vending machine, install assembly and check product delivery,	according to manufacturer's specifications.
Coin Mechanism	1. Given mechanics tools, vending machine, service manual, and cleaner,	the learner will remove from the vending machine the coin mechanism for proper cleaning, adjusting or repairing of components,	the coin mechanism is re-installed in vendor and coin tested for operation, within 45 minutes.
Cup Dispenser Mechanism	1. Given mechanics tools, service manual, cold or hot drink cups, and vending machine,	the learner will completely disassemble cup dispenser and reassemble, install, load with cups and make adjustments for dispensing,	the cup mechanism functions during vend, within 60 minutes.
Water System	1. Given mechanics tools, vending machine, and service manual,	the learner will diagnose the problem in a cold drink or coffee vendor and correct the malfunction,	the water system functions during vend.
Carbonation System	1. Given mechanics tools, vending machine, and service manual,	the learner will locate and repair any component in the carbonation system, excluding the refrigeration unit,	the carbonation system functions properly during vending.

Topic	Conditions	Performance	Criteria
Selector Assembly	1. Given mechanics tools, vending machine and service manual,	the learner will repair the selector assembly,	the selector assembly is able to make all possible selections, within 60 minutes.
Coffee Brewer Mechanism	1. Given mechanics tools, vending machine and service manual,	the learner will remove the brewer mechanism from a coffee vendor, repair, replace mechanism inside vendor and operate brewer, making adjustments,	as necessary for proper operation, within 60 minutes.
Product Cannisters	1. Given mechanics tools, vending machine, service manual and products for dispensing,	the learner will repair coffee, cream, sugar, tea, soup and chocolate cannisters of a coffee vendor and replace cannisters inside coffee vendor,	cannisters with ingredients will dispense appropriate gram throw per cup size.
Hot Water Tank Assembly	1. Given mechanics tools, vending machine, service manual and delime chemical,	the learner will remove the hot water tank assembly for deliming, repair and replace assembly inside coffee vendor,	unit operates properly with product dispensing.
Syrup Assembly	1. Given mechanics tools, vending machine, service manual and syrup,	the learner will remove (if necessary) and repair syrup pump assembly and adjust c.c. throw for each pump assembly,	according to manufacturer's specifications, within 60 minutes.
Refrigeration Unit	1. Given mechanics tools, vending machine and service manual,	the learner will evacuate refrigerant, repair and/or replace refrigeration components, charge refrigeration unit and adjust,	to manufacturer's specifications.
Preventive Maintenance	1. Given mechanics tools, vending machine and service manual,	the learner will do preventive maintenance which consists of preventing major troubles,	by performing minor maintenance at specified intervals, according to manufacturer's specifications.

Topic	Conditions	Performance	Criteria
Volt Ohm Meter	1. Given mechanics tools, vending machine, service manual, and volt ohm meter,	the learner will make measurements of voltage, amperage and resistance readings of a vending machine,	these readings can be used to determine manufacturer's specification for operation.
Re-Ordering	1. Given mechanics tools, vending machine, service manual and parts catalog,	the learner will disassemble and assemble the equipment to aid in locating or identifying components,	to supply manufacturer's specifications for re-ordering so that the machine is operable when re-assembled.
Sanitary Conditions	1. Given mechanics tools, vending machine, service manual, lint free cloths or disposable paper towels, brushes and detergent sanitizer acceptable to the local health authority,	the learner will follow directions provided by the sanitizer manufacturer for proper chemical concentration to clean vendor,	to maintain sanitary conditions and dependable operation according to manufacturer's specifications.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Commercial Art Occupations

U.S.O.E. Code Number: 17.0700

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Lettering	1. Given the necessary layout and inking tools, illustration board and type style (Roman, Gothic, Sans serif, etc.),	the learner will produce inked lettering,	suitable for reproduction.
	2. Given a pencil, felt tip pen and ink, layout paper and headline specifications,	the learner will letter a headline,	using a given type face to layout specifications in each of the three media.
	3. Given a transfer type,	the learner will space letters, center lines of type and transfer down type,	without cracking and with accurate letter and word spacing.
Paste-Up and Keylining	1. Given copy for a one-color ad, paste-up materials, paste-up board and size specifications,	the learner will position the copy,	according to the layout so it is clean, accurate and marked for reproduction.
	2. Given copy for a multi-color ad, (not to include process color), paste-up materials, paste-up board, acetate overlay sheets and size specifications,	the learner will position the copy,	according to the layout with each color in register on an overlay sheet so that it is clean, accurate and marked for reproduction.

Topic	Conditions	Performance	Criteria
	3. Given ad size and specifications as to photograph or color panel location and area,	the learner will keyline with ink this given area,	keeping the area clean, accurate and marked for reproduction.
	4. Given the headliner typesetter and necessary supplies,	the learner will adjust the machine and set any style type available,	with the type accurately word spaced, letter spaced and exposed.
	5. Given a glossy photo and the necessary materials and equipment,	the learner will silhouette subject matter out of the background of the photo,	all background is eliminated and subject matter is intact.
	6. Given a piece of art,	the learner will slip-sheet it together with hot press illustration board,	leaving the designated margin.
Layout Design	1. Given a printed magazine ad, layout pad and layout tools,	the learner will re-design the printed ad,	using different placement, headline type face and logo design.
	2. Given the necessary materials and equipment, a rough ad layout (including type specifications and ad size), and the market,	the learner will prepare a comprehensive layout,	which is neat, clean, original and relative to the market.
	3. Given a product, package shape and material,	the learner will design a package,	it has visual balance and color coordination and demonstrates a knowledge of consumer tastes by use of visuals and drawing styles usually associated with a specified consumer group.
	4. Given the necessary materials and equipment,	the learner will make dummies and/or mock-ups for brochures, pamphlets, books, etc.,	they accurately represent the format and layout of the finished product.

Topic	Conditions	Performance	Criteria
	5. Given a chisel point pencil and/or a mechanical inking pen,	the learner will produce single and double-line copy blocks,	with simulated tone value of body type face, and represents common margin line-ups and lead-in subheads.
Finished Art Preparation	1. Given finished art and parchment tissue,	the learner will mount the tissue on the art work,	as to protect it from damage.
	2. Given finished art, board, and necessary tools,	the learner will cut an appropriate window,	it has smooth, sharp and clean edges and the art work is securely fastened and that desired image is visible.
Airbrush	1. Given an airbrush and simple objects,	the learner will set-up and render basic geometrical shapes,	that retain the essential characteristics of the original.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Construction and Maintenance

U.S.O.E. Code Number: 17.1000

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Footings	1. Given a shovel and foundation plan	the learner will crumb out and square up all trenches for foundation walls and footing or hole for basement,	to dimensions and depth indicated on foundation plan
	2. Given footings previously set, shovel, concrete and screed,	the learner will pour footings and screed,	level with the top of the footing forms
Flat Concrete Floors, Porches, Sidewalks, Etc.	1. Given blueprint and compacter,	the learner will prepare base,	the concrete may be poured over it with not more than 1 inch variation in thickness
	2. Given lumber, saw, hammer, nails, blueprint,	the learner will make and set forms,	of the proper length, depth, width; and be properly placed as per blueprint,
	3. Given pipe, lumber, nails, hammer saw,	the learner will set screeds where necessary	level with forms or grade
	4. Given reinforcing wire and necessary tools,	the learner will place it between forms,	when the concrete is poured over it, the concrete will be properly reinforced to comply with blueprint

Topic	Conditions	Performance	Criteria
	5. Given concrete and necessary tools,	the learner will pour concrete screed and float,	when finished there are no low or high spots and top is level or flat between forms
Forced Air Heating	1. Given blueprint and saw,	the learner will locate and cut openings	according to the blueprint and to trade standards
	2. Given runs, hanger nails, hammer, and tinsnips,	the learner will hang runs (both hot and cold),	when furnace is working, warm or cold air travels in the appropriate run and job is done to trade standards.
	3. Given flue,	the learner will connect furnace to chimney so when furnace is completely installed, furnace	will vent properly
Plumbing	1. Given blueprint	the learner will identify and locate all drain openings,	as per blueprint
	2. Given saw, drill, pipe and pipe fittings,	the learner will cut all openings for waste and will also rough in these lines	as per blueprint
	3. Given blueprint and hot water heater,	the learner will set water heater in appropriate place,	as per blueprint
	4. Given blueprint, torch, solder, saw, drill, pipe, nails, hammer,	the learner will locate, cut in, and rough in all water lines as per blueprint,	there will be no leaks
	5. Given pipe, torch, solder, pipe cutter, saw, drill,	the learner will locate and install all outside silcocks	as per blueprint and with no leaks
	6. Given pipe, pipe fittings, pipe cutters,	the learner will (if necessary) install hook-up with shutoff valves for water softener,	as per blueprint with no leaks.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Commercial Photography

U.S.O.E. Code Number: 17.0900

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable)		
Black and White Photography	1. Given an adjustable camera,	the learner will identify the function and four basic parts of a camera: 1. Lens 2. Shutter 3. Body 4. Film Holder	with 100% accuracy.
	2. Given an adjustable camera,	the learner will use the: 1. Lens 2. Shutter 3. Body 4. Film Holder	the film makes a normal negative that prints on No. 2 paper.
	3. Given any type of black-and-white film,	the learner will correctly expose and print it on No. 2 paper	within an appropriate, specified period of time.
	4. Given 7 different types of lighting,	the learner will properly identify the proper application	of at least 5 of the 7 types.
	5. Given yellow, green, red, orange, polarizing, and UV filters,	the learner will select the correct filter for a variety of photographic problems	at least 8 out of 10 times, as provided by the student-made normal-contrast negative.
	6. Given an adjustable camera and a specific photographic problem,	the learner will expose the film through each stop and select the correct negative	8 out of 10 times.

Topic	Conditions	Performance	Criteria
	7. Given the f stop, ASA rating, and shutter speed,	the learner will adjust the camera	to achieve a resultant 0:00-2:00 print on a No. 2 paper.
	8. Given a wide angle, a normal, or telephoto lens,	the learner will select the correct lens for the photographic conditions	8 out of 10 times.
	9. Given a number of cameras and a specific photographic problem,	the learner will select the best camera for solving the problem	8 out of 10 times.
	10. Given a common camera,	the learner will unload and care for the film	without fogging or damage.
	11. Given a developing tank,	the learner will load the film into the tank	without damaging or fogging the film.
	12. Given a photographic chemical,	the learner will mix it	according to the manufacturer's required procedures every time.
	13. Given exposed film,	the learner will develop, stop, fix, and wash the film	according to the manufacturer's detailed instructions every time.
	14. Given a roll of washed film,	the learner will air or machine dry it	without water spots, curling or scratching.
	15. Given a negative,	the learner will identify, spot and store his negatives	in an appropriate container and file without damaging the film.
	16. Given appropriate judging material (gray scale, densitiometer, etc.),	the learner will judge the density of the negative	he can detect the maximum shadow area and the maximum high light area within 5%.
	17. Given appropriate proofing equipment (contact printer, enlarger, etc.) and the appropriate paper,	the learner will make proofs of his negatives	he can detect the maximum shadow area and the maximum high light area within 10%.

Topic	Conditions	Performance	Criteria
	18. Given the processed proofing paper after washing,	the learner will air or machine dry it	without staining, scratching, wrinkling, or curling.
	19. Given the proofs of the negatives,	the learner will select the appropriate negative to enlarge	according to composition clarity, and meets with the instructor's approval.
	20. Given an enlarger, a normal negative (i.e., density 0.0-2.0), enlarging paper, and processing chemicals,	the learner will use the test print and will produce an acceptable print	in two attempts.
	21. Given a set of polycontrast filters and one normal and three abnormal negatives,	the learner will select and use the correct filter to go with the appropriate negative	with an accuracy of 75%.
	22. Given a spot burning tool,	the learner will spot burn in those over-exposed film areas and bring it up to the acceptable density range	the spot-burn is non-detectable.
	23. Given a dodging tool,	the learner will hold back enough light	a given area will not be over-exposed within the acceptable density range so the dodging is non-detectable.
	24. Given a diffusion disk, a negative, an enlarger, and a piece of photographic paper,	the learner will use the enlarger and equipment to produce a diffused print	with 80% accuracy.
	25. Given a negative, cropping tools, and proofs,	the learner will proportion a well-balanced print	according to size, balance, composition.
	26. Given a vignetter, an enlarger, a negative, and a piece of paper,	the learner will use the enlarger and equipment to produce a vignetted print	that is cropped so well that it enhances the aesthetic value.
	27. Given a print with 10 areas deficient in density and a spotting set,	the learner will find and spot all of the areas	corrections cannot be detected by the eye alone.

Topic	Conditions	Performance	Criteria
	28. Given a negative with 6 flaws, a retouching glass, and tools,	the learner will identify flaws and proper methods of touch-up	for all flaws identified and touch-up methods appropriate for each particular flaw.
	29. Given four different kinds of projection printing papers that have been exposed,	the learner will select the appropriate developer	with an accuracy of 75%.
	30. Given four different surfaces of developed and washed prints to dry,	the learner will select the proper drying method and dry them correctly	according to the manufacturer's recommendations.
	31. Given an 11" x 14" board and 8" x 10" black and white R.C. print, tissue and a mounting press,	the learner will proportion and mount the print on the board	there are no wrinkles or smudges.
	32. Given photographic tools, equipment and chemicals,	the learner will use them	according to all existing safety standards as determined by appropriate safety laws and manufacturer's instructions.
	33. Given the necessary materials and equipment,	the learner will produce an 8 x 10 black-and-white print	utilizing all the specific criteria of the foregoing objectives.
Color Photography	1. Given visible spectra and color wheels,	the learner will use four additive colors to form the four subtractive colors and use the subtractive colors to reform the four additives	with an accuracy of 100%.
	2. Given a set of color correction filters and three photographic situations of different types of light sources and a roll of Kodacolor X or similar film,	the learner will select the proper filter to correctly expose the film	the resultant negative can be printed with only two corrective changes from standard filtration pack.

Topic	Conditions	Performance	Criteria
	3. Given a properly exposed color negative film,	the learner will develop the film using standard tank development	according to manufacturer's specifications.
	4. Given two reversal films,	the learner will identify each	with 100% accuracy.
	5. Given an exposed roll of reversal film, chemicals, and equipment,	the learner will develop the film	according to manufacturer's instructions.
	6. Gi[illegible]olor negative, appropr[illegible] paper, enlarger, and color filters,	the learner will print the negative	according to manufacturer's specifications.
	7. Given an exposed print, chemicals, and necessary equipment,	the learner will develop the print	according to manufacturer's specifications.
	8. Given a color print and the necessary materials,	the learner will mount the print	with a ± 1/32" accuracy.
Sales	1. Given simulated sales situations,	the learner will role play an appropriate sales technique(s)	consistent with charts, models, or other illustrations of appropriate sales techniques.
	2. Given 25 change making problems,	the learner will make change	with 100% accuracy.
	3. Given a cash register,	the learner will operate it	with all operations necessary to perform a sales transaction.
Motion Picture	1. Given a motion picture camera and manufacturer's instructions,	the learner will operate the camera	according to the camera manufacturer's instructions.
Architectural Photography	1. Given an architectural setting, camera, and roll of black and white film,	the learner will photograph 20 exposures	50% can be printed.
Aerial Photography	1. Given an aerial setting, camera, and roll of black and white film,	the learner will photograph 20 exposures	50% can be printed.

Topic	Conditions	Performance	Criteria
X-Ray Photography	1. Given four different X-ray negatives: a. Medical b. Industrial c. Artistic d. Dental	the learner will identify the use of each	according to standard usage.
Instructional Materials Center	1. Without the use of reference materials,	the learner will describe the operations of an instructional resource center	to include: library, films, slides, transparencies, visual aids, mounting, and laminating.
Micro-Reproduction	1. Given mixed samples of micro-film, microfische film, cards and printed samples,	the learner will identify each by type	with 80% accuracy.

Topic	Conditions	Performance	Criteria
Wiring	1. Given blueprint, hammer, nails drill,	the learner will locate and set service box in a convenient place within the house,	according to blueprint
	2. Given blueprint, hammer, nails, screwdriver, switches, receptacles, overhead units, vent fans,	the learner will locate and install all of the preceding and will install all special outlets for appliances (stove, etc.)	as per code and blueprint
	3. Given wire, drill,	the learner will string wire to all boxes, switches, etc.	all units are connected to the right circuit
Carpentry			
Construction Component Identification	1. Given samples of asphalt shingles, cedar shingles and rolled roofing,	the learner will be able to identify each material	100% accuracy
	2. Given six different samples of material generally accepted as exterior covering,	the learner will identify each material,	100% accuracy
	3. Given four different samples of materials generally accepted as insulation,	the learner will identify each material	100% accuracy
	4. Given three different samples of materials generally accepted as used in interior wall finishing,	the learner will identify each material	100% accuracy
	5. Given illustrations of six common window styles,	the learner will identify each style	with 100% accuracy
	6. Given illustrations of four common door types,	the learner will identify each type,	with 100% accuracy
	7. Given two different examples of underlayment materials,	the learner will identify each material as to its use	with 100% accuracy

Topic	Conditions	Performance	Criteria
	8. Given samples of different fasteners and adhesives used in carpentry,	the learner will identify each and explain when and where they could be used best,	identification and explanation to be correct
	9. Given samples of the different sizes of lumber used in carpentry and an appropriate problem,	the learner will identify and compare each,	to select correctly for the given use
	10. Given illustrations and/or samples of six different kinds of moldings and trim,	the learner will identify all of them correctly and to select the most appropriate size and type,	to best fit the job
	11. Given illustrations of four styles of roofs,	the learner will identify the styles	each correctly
	12. Given a drawing with all framing members,	the learner will identify the members,	by naming each correctly
Construction Tools Usage	1. Given those hand tools common to the carpentry trade that are used for cutting and the appropriate materials,	the learner will perform the cutting operations that are necessary to the carpentry trade,	to a level generally consistent with trade standards
	2. Given power tools and/or machines common to the carpentry trade and appropriate materials,	the learner will operate this equipment	in a safe manner and proficiently enough to be accepted by the trades
	3. Given illustrations of and/or hand and power tools that are used in carpentry,	the learner will identify these tools	with 90% accuracy
Construction Techniques	1. Given measuring and layout tools and/or instruments common to the carpentry trade and appropriate materials,	the learner will measure, lay out and check construction materials,	generally consistent with trade standards
	2. Given those tools and materials necessary for rough and finish carpentry assembly,	the learner will complete the designated project,	it will meet the plans and/or specifications of the building

Topic	Conditions	Performance	Criteria
	3. Given those tools and materials necessary for rough and finish carpentry application,	the learner will apply and/or install the appropriate material,	to meet plans and/or specifications so that it is generally consistent with trade standards.
	4. Given a set of blueprints and a series of problems,	the learner will read and interpret the measurements,	exactly as stated on the prints
Masonry	1. Given samples of Common, Norman, Roman and Fire Brick,	the learner will identify	each
	2. Given a wall and bricks,	the learner will lay a "dry-run" course of brick and adjust bricks to make head joints of uniform widths, and bond to conform to openings,	head joints should be uniform in appearance 1/4 to 5/8 inch in width,no cut brick of less than 2 inches in length.
	3. Given a mason's spacing rule and a pre-determined height for a brick wall,	the learner will compute the number of courses of brick and the height of each course,	mortar joints shall be as near 1/2 inch as accurate spacing will allow
	4. Given a 1" x 2" x 8", a mason's spacing rule and a size of brick,	the learner will lay out a story pole for brick laying,	spacing must be uniform unless variation is required by window openings; horizontal mortar joints shall be 3/8 to 5/8 inch.
	5. Given a brick, a brick chisel and a hammer,	the learner will cut brick to a specified length,	cut shall be accurate plus or minus 1/4" on the face of the brick; the back side of the brick shall not be longer than the face.
Painting & Decorating			
Painting	1. Given an unprepared wall,	the learner will list the necessary steps and proper tools needed to ready the wall for painting on an objective test,	with 80% accuracy

Topic	Conditions	Performance	Criteria
	2. Given a hypothetical surface to be painted (e.g. an outside surface, a kitchen wall, a table),	the learner will list the different types of paint available that would be an appropriate cover for the surface	with 80% accuracy expected
	3. Given a prepared surface, paint, necessary tools and materials,	the learner will paint with both latex and oil base paint,	no brush marks or roller laps shall appear nor previous color show through; there should be no paint drips on floor or wall
	4. Given paint, a brush and an unpainted surface upon which a curved or straight line has been penciled,	the learner will paint exactly to a curved or straight line,	no strokes of the brush overlap the line
	5. Given illustrations or actual tools from the tool room,	the learner will identify the tools and equipment utilized in the painting and decorating trades,	with 80% accuracy

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Carpentry

U.S.O.E. Code Number: 17.1001

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Construction Component Identification	1. Given samples of asphalt shingles and rolled roofing,	the learner will identify each material,	with 100% accuracy
	2. Given six different samples of material generally accepted as exterior covering	the learner will identify each material,	with 100% accuracy
	3. Given four different samples of materials generally accepted as insulation,	the learner will identify each material,	with 100% accuracy
	4. Given three different samples of materials generally accepted for use in interior wall finishing	the learner will identify each material,	with 100% accuracy
	5. Given illustrations of six common window styles,	the learner will identify each style,	with 100% accuracy
	6. Given illustrations of four common door types,	the learner will identify each type,	with 100% accuracy
	7. Given two different examples of underlayment materials,	the learner will identify each material as to its use,	with 100% accuracy

Topic	Conditions	Performance	Criteria
	8. Given samples of different fasteners and adhesives used in carpentry,	the learner will identify each and explain when and where they could be used best,	identification and explanation to be correct
	9. Given samples of the different sizes of lumber used in carpentry and an appropriate problem,	the learner will identify and compare each,	to select correctly for the given use.
	10. Given illustrations and/or samples of six different kinds of moldings and trim,	the learner will identify all of them correctly and to select the most appropriate size and type	to best fit the job
	11. Given illustrations of four styles of roofs,	the learner will identify	the style of each correctly
	12. Given a drawing with all framing members,	the learner will identify the members,	by naming each correctly
Construction Tool Usage	1. Given those hand tools common to the carpentry trade that are used for cutting and the appropriate materials,	the learner will perform the cutting operations that are necessary to the carpentry trade,	to a level generally consistent with trade standards
	2. Given power tools and/or machines common to the carpentry trade and appropriate materials,	the learner will operate this equipment,	in a safe manner and proficiently enough to be accepted by trades
	3. Given illustrations of and/or hand and power tools that are used in carpentry,	the learner will identify these tools,	with 90% accuracy
Construction Techniques	1. Given measuring and layout tools, and/or instruments common to the carpentry trade and appropriate materials,	the learner will measure, lay out and check construction materials,	generally consistent with trade standards

Topic	Conditions	Performance	Criteria
	2. Given those tools and materials necessary for rough and finish carpentry assembly,	the learner will complete the designated project,	it will meet with the plans and/or specifications of the building
	3. Given those tools and materials necessary for rough and finish carpentry application,	the learner will apply and/or install the appropriate material	to meet plans and/or specifications and is generally consistent with trade standards
	4. Given a set of blueprints and a series of problems,	the learner will read and interpret the measurements,	exactly as stated on the prints

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Masonry

U.S.O.E. Code Number: 17.1004

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Identification	1. Given the following basic tools of a mason: trowel, level, line, line holders, brick hammer, brick chisel joint tool, joint raker, tuck pointer,	the learner will identify each,	with 100% accuracy
	2. Given samples of Common, Norman Roman and Fire brick,	the learner will identify	each
	3. Given illustrations of the following methods of finishing mortar joints: concave, V-joint, flush joint, weather joint, and raked joint,	the learner will identify	each
Layout	1. Given a builder's level or a transit level, a story pole or 6-foot ruler and a reference point,	the learner will establish grades with grade points,	accurate plus or minus 1/4"
	2. Given a wall and bricks	the learner will lay a "dry-run" course of brick and adjust bricks to make head joints of uniform widths and bond to conform to openings,	head joints should be uniform in appearance 1/4 to 5/8" in width, no cut brick of less than 2 inches in length.

Topic	Conditions	Performance	Criteria
	3. Given a 1" x 2" x 8", a mason's spacing rule and a size of brick,	the learner will lay out a story pole for brick laying	spacing must be uniform unless variation is required by window openings; horizontal mortar joints shall be 3/8 to 5/8 inch.
Laying of Block and/or Brick	1. Given a mortar box, a shovel, mortar hoe or a mixer, sand, masonry cement and water,	the learner will mix mortar for brick or block	mortar proportions shall be in accordance with accepted industry standards; the water content should be the maximum consistent with good workability
	2. Given a mason's trowel, a 4-foot level, a joint tool, mortar and concrete block,	the learner will lay up a corner	corner must be plumb, plus or minus 1/8" in 4 feet, mortar joints 3/8 to 1/2" in width; blocks level and in line.
	3. Given brick, mortar, trowel, nylon line, line holders and corners or leads already laid up,	the learner will lay bricks to a taut line,	brick shall not touch the line and shall not vary from the line more than 1/8"; head joints shall be uniform in appearance and positioned in a vertical line.
	4. Given a brick, a brick chisel, and a hammer,	the learner will cut brick to a specified length,	cut shall be accurate plus or minus 1/4" on the face of the brick; the back side of the brick shall not be longer than the face

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Painting and Decorating

U.S.O.E. Code Number: 17.1005

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Painting	1. Given an unprepared wall,	the learner will prepare the wall for painting,	all joints, cracks, and nail holes are filled with proper substitutes; nails are set and filled; and entire wall is sanded smooth. (Learner will be evaluated after first coat of paint is applied when anything they have neglected to correct will be magnified).
	2. Given a hypothetical surface to be painted (e.g. an outside surface, a kitchen wall, a table),	the learner will list the different types of paint available that would be an appropriate cover for the surface,	with 80% accuracy expected.
	3. Given a prepared wall or ceiling paint brush and a roller,	the learner will paint the surface,	it is completely covered and no marks from roller are visible.
	4. Given a prepared surface, paint, necessary tools and materials,	the learner will paint with both latex and oil base paint,	no brush marks or roller laps shall appear, nor previous color show through; there should be no paint drips on floor or wall.

Topic	Conditions	Performance	Criteria
	5. Given paint, a brush and an unpainted surface upon which a curved or straight line has been penciled,	the learner will paint exactly to a curved or straight line,	no strokes of the brush overlap the line.
	6. Given an object to paint, necessary paint, and a spray gun,	the learner will clean, assemble and operate the spray gun,	according to manufacturer's operating and cleaning instructions.
	7. When finished with a painting project, and given water or turpentine,	the learner will clean his paint brush or roller and pan thoroughly,	no paint is left on the tools.
Refinishing	1. Given a surface to be refinished and the necessary tools,	the learner will refinish any surface by sanding, removing old finish, sealing and staining,	according to the steps listed in the locally approved resource materials.
Wallpapering	1. Given any papered wall and necessary equipment,	the learner will remove all of the wallpaper (with a steamer and by the soak-off method),	no damage has been done to the plaster.
	2. Given any room measurement,	the learner will calculate the amount of wallpaper necessary,	to the nearest one roll; calculations should be completed within two minutes.
	3. Given various types of wallpaper, (i.e. vinyl, pre-pasted, tc.),	the learner will identify each type,	with 80% accuracy.
	4. Given paste powder, water and a mixing pan,	the learner will prepare wallpaper paste by mixing and stirring with finger,	it is smooth and of the desired consistency.
	5. Given wall size, wallpaper with or without pattern match, and necessary tools,	the learner will measure, cut, and number wallpaper strips,	with 100% accuracy so that strips are matched and cut to fit with minimum amount of waste.

Topic	Conditions	Performance	Criteria
	6. Given a prepared wall or ceiling, necessary tools, and required amount of wallpaper,	the learner will hand both pasted and pre-pasted wallpaper,	with a minimum of 90% accuracy; so that all joints are butted and rolled; top and bottom corners are cut evenly; pattern is level and plumb, and there are no air bubbles.
	7. Given a papering job with a pattern to match and an accurate level,	the learner will use the level to determine whether the paper is level and plumb,	determination to be accurate.
Safety	1. When it is necessary to use a type of ladder in order to reach a surface to be worked on,	the learner will work with and on stepladders, extension planks, or scaffolds,	they have taken all necessary safety precautions according to the local standards and OSHA standards.
	2. In all working situations,	the learner will employ all proper safety precautions,	according to OSHA standards.
	3. Given illustrations or actual tools from the tool room,	the learner will identify the tools and equipment utilized in the painting and decorating trades,	with 80% accuracy.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Custodial Services

U.S.O.E. Code Number: 17.1100

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Floor Cleaning	1. Given an automatic floor machine, tile or terrazzo floor, soap solution, brushes or stripping pads, rinse bucket, mop and wringer,	the learner will operate the machine,	the floor is clean and free of all dust, dirt and marks,
Vacuuming	1. Given a tank or an upright vacuum sweeper, a carpeted floor,	the learner will adjust the vacuum for carpet, clean the carpet of all foreign matter and clean and empty the sweeper,	the sweeper is clean and ready for operation
Carpet Shampooing	1. Given a carpeted surface, a carpet shampoo machine,	the learner will shampoo the carpet according to the specified procedure,	the carpet fabric is clean and free of dirt and restored to full color and texture
Stripping Floor	1. Given a floor buffer, a tile or terrazzo floor, stripping pads, cleaning solution, mop, bucket with wringer, wet-dry vacuum,	the learner will wash, scrub, clean, rinse and dry the floor,	the floor is ready for floor finish
Floor Finishing	1. Given a floor ready for floor finish, clean mop, bucket with wringer, floor finish material,	the learner will apply the finish according to the manufacturer's specifications,	the floor is uniformly finished

Topic	Conditions	Performance	Criteria
Buffing and Polishing	1. Given a buffer, floor spray, buffing pads, an area ready for buffing,	the learner will select the proper pad, buff the area	the finish is uniformly polished
Spot Cleaning Carpet	1. Given a carpet with a soiled area, vacuum, spot remover,	the learner will select the proper material, following manufacturer's specifications and procedures and clean the soiled area,	there are no visible signs of soiled area.
Cleaning and Adjusting Equipment	1. Given a scrubber, buffer, shampooer, upright tank type vacuum,	the learner will maintain, clean and adjust the equipment,	the equipment is in operating condition
Surface Cleaning	1. Given formica, glass, ceramic tile, porcelain, stainless steel, walls and wood surfaces, cleaning agents,	the learner will select, mix and apply the proper cleaning agent according to the manufacturer's specifications to clean any surface,	the surface is free from dirt and is uniformly clean
General Cleaning	1. Given a building to be cleaned of foreign material and necessary tools,	the learner will pick up, sweep, collect, remove and ready the material for disposal,	the building is clean and ready for its functional activity
Cleaning Schedule	1. Given a daily cleaning schedule,	the learner will perform the prescribed cleaning function,	according to the schedule within the time allotted
Cleaning Light Fixtures	1. Given a step ladder, 10 qt. pail, sponge, dry cloths and all purpose cleaner,	the learner will clean and dry a complete florescent or incadescent light,	the fixtures contain no dust or dirt
Replacement of Light Fixtures	1. Given a step ladder or scaffold, new incadescent or florescent lamps, screwdriver, adjustable wrench,	the learner will replace old or burned out florescent or incandescent lamps with new bulbs,	they are in operating condition
Building Security	1. Given a building requiring securing,	the learner will lock and secure all openings such as doors and windows in a systematical manner,	the building is completely locked and secured

Topic	Conditions	Performance	Criteria
Record Keeping	1. Given purchase orders, receivers shippers, inventory sheets, equipment and material specifications,	the learner will record, file and maintain complete inventory of all materials, supplies and equipment used in the building,	the inventory is accurate and neat at all times
Lawn Cutting	1. Given a lawn in need of cutting, a power mower,	the learner will operate the power mower in a safe manner and will cut the lawn at a uniform height,	the lawn will have a neat appearance
Lawn Trimming	1. Given a lawn with grass overlapping the sidewalks and an edger, wheelbarrow, broom and shovel,	the learner will edge the lawn around the sidewalk and driveway,	the edges are neat and straight and no cutting debris is left in the area
Lawn Watering	1. Given a lawn to be watered and watering equipment,	the learner will properly water a lawn according to a schedule fitting the season,	the lawn remains green and healthy in appearance
Fertilizing the Lawn	1. Given a lawn that is in need of fertilizing, a spreader and appropriate fertilizer,	the learner will fertilize a lawn according to directions furnished on the fertilizer container	the lawn is healthy and pleasing in appearance at all times
Seeding a Lawn	1. Given a lawn area that has been properly prepared for seeding, a spreader and grass seed,	the learner will seed the area so that the seed is evenly spread over the area and kept watered,	as necessary to maintain new growth
Weed Control	1. Given a weedy lawn, a spreader, and weed killer,	the learner will apply weed killer according to directions on the container,	the lawn will recover from its weedy condition in a reasonable amount of time
Exterior Grounds Cleaning	1. Given a broom, containers, shovel, sidewalk, parking lot, entrance ways,	the learner will remove all objectional material from these areas,	the area is safe and neat in appearance at all times and seasons of the year.
Electrical Service	1. Given a section of a building with interrupted electrical service,	the learner will locate the circuit breaker or fuse box and be able to reset the circuit or replace the fuse,	the electrical service is restored to the area

Topic	Conditions	Performance	Criteria
Disinfecting the Area	1. Given a restroom, mop and handle, bucket with wringer, germicidal disinfectant cleaner,	the learner will disinfect a restroom floor area by wet mopping,	the floor area is mopped with a disinfectant to eliminate bacteria
Fixture Cleaning	1. Given chrome cleaner, clean rag, all purpose cleaner and pail,	the learner will clean heaters, drinking fountains, lockers and kitchen hardware,	the fixtures are clean and free of dirt or stains
Window Cleaning	1. Given a pail, window spray, sponge, cloths, chamie, squeegee, and all purpose cleaner,	the learner will wash and clean the windows,	the dirt, smudges and streaks are removed from the window
Florescent Repair	1. Given a scaffold or step ladder, wire cutters and strippers, wire nuts, pliars, screwdrivers and correct ballast,	the learner will remove and replace old ballast and reassemble the lamp,	the fixture is repaired for safe operation and operates to manufacturer's specifications
Electrical Replacement	1. Given tools, electrical outlets, and switches,	the learner will replace common light switches and outlets in a safe manner,	the outlets and switches will provide electrical service
Snow and Ice Removal	1. Given sidewalks covered with snow and ice, a snow shovel, power snow equipment and chemical compound and ice scrapper,	the learner will operate the power equipment in a safe manner and remove snow and ice,	all the snow and ice are removed and where ice still exists, sand and/or chemicals have been spread on it so traffic is safe to walk on it.
General Fixture Cleaning	1. Given all purpose cleaner, wiping cloths, doors and general hardware, kick plates,	the learner will remove finger prints and marks,	the plates, knobs and doors are clean and shining
Faucet Repair	1. Given proper hand tools and washer units and vee,	the learner will replace the filter, replace and adjust vee belts and lubricate and clean the units,	the faucet will operate properly and will not leak

Topic	Conditions	Performance	Criteria
Air Handling Units	1. Given proper air filters, air handling units and vee,	the learner will replace the filter, replace and adjust vee belts and lubricate and clean the units,	the units operate properly and the air is filtered
Stairway Cleaning	1. Given a non-carpeted stairway, counter brush, dust pan, dust mop,	the learner will use the proper procedure to dry clean the stairway,	the stairway is free of dirt and dust.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Diesel Mechanics

U.S.O.E. Code Number: 17.1200

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Trouble Shooting	1. Given a 2-stroke cycle or 4-stroke cycle diesel engine that will not start or is hard starting, hand tools and manufacturer's instruction manual,	the learner will detect and analyze the problem and correct the troubles or casualties that have occurred,	the job will be completed within time limits and the engine will run smoothly in accordance with engine specifications.
Tune-up	1. Given a diesel power piece of equipment, necessary tools and equipment, and manufacturer's service manual,	the learner will completely tune a diesel engine to include checking injector action, timing the injectors or fuel injection pump, servicing the air cleaner, checking and adjusting fan belt tension, checking the coolant levels, checking and adjusting fuel governor settings,	the engine starts quickly and the task is completed according to manufacturer's specifications.
Engine Replacement	1. Given any on-or-off road diesel equipment, all necessary tools and equipment and manufacturer's manual,	the learner will remove and replace the engine,	the job will be completed according to manufacturer's specifications.
Engine Overhaul	1. Given a diesel on-or-off road equipment, hand tools, and manufacturer's manual,	the learner will remove, inspect, and replace the intake and exhaust manifolds,	the job will be completed in accordance with engine specifications.

Topic	Conditions	Performance	Criteria
	2. Given a diesel engine block assembly on overhaul stand, hand tools and manufacturer's service manual,	the learner will disassemble the engine, clean and inspect the parts, recondition for wear and reassemble the engine block,	according to engine specifications.
	3. Given a diesel engine, cylinder head, necessary hand and special tools and manufacturer's service manual,	the learner will disassemble, clean, inspect parts, recondition and assemble,	according to engine specifications.
	4. Given a diesel engine, hand tools and manufacturer's service manual,	the learner will adjust the valve lash,	according to engine specifications.
	5. Given a diesel engine with a faulty oil pump, hand tools, and manufacturer's service manual,	the learner will remove and replace the oil pump assembly, disassemble, check parts for wear and complete indicated repairs,	the job is in accordance with engine specifications.
	6. Given a diesel engine equipped with a turbocharger, hand and special tools and engine shop manual,	the learner will remove and replace a turbocharger, completely disassemble and check for wear or damaged areas and make necessary repairs,	the job is completed in accordance with engine specifications.
Fuel Systems	1. Given a diesel engine in a piece of equipment, hand tools, manufacturer's service manual,	the learner will remove and replace the fuel tank, lines and rilters, check the system for leaks and damage and repair same,	the job will be completed in accordance with engine specifications.
	2. Given a diesel engine, hand tools and manufacturer's service manual,	the learner will remove and replace fuel transfer pump completely disassemble and make necessary repairs,	the job is completed in accordance with engine specifications.
	3. Given a diesel engine, hand tools and manufacturer's service manual,	the learner will make all external injection pump adjustments and throttle linkage and all external adjustments,	the engine runs smoothly and in accordance with engine specifications.

Topic	Conditions	Performance	Criteria
Multi-Plunger and Distributor	1. Given a diesel engine, hand tools and manufacturer's service manual,	the learner will remove and replace the fuel transfer pump, fuel injection pump and the complete sets of fuel injector nozzles (or) capsules, making all necessary adjustments to speed and timing, tests and inspections	the job is completed within the time limits and the engine runs smoothly in accordance with engine specifications.
Engine Electrical System	1. Given battery, hand tools, hydrometer, battery charger and shop manual,	the learner will determine the state of the charge, determine condition of battery, recharge and service the battery,	the engine will start under battery power in accordance with factory specifications.
	2. Given an engine equipped with a generator or alternator, hand tools, manufacturer's service manual and special equipment,	the learner will remove and replace the generator or alternator disassemble, inspect, replace or repair all necessary parts and reassemble the generator or alternator,	the generator or alternator maintains output in accordance with manufacturer's specifications.
Engine Cooling System	1. Given a diesel engine, hand tools, and manufacturer's service manual,	the learner will remove and replace the water pump assembly, inspect and make necessary repairs,	in accordance with engine specifications.
	2. Given a vehicle with engine installed, hand tools and manufacturer's service manual,	the learner will remove and replace the radiator assembly and check the complete unit for leaks, (all repairs on radiator should be performed by a qualified radiator repairman),	the job is completed in accordance with engine specifications.
	3. Given an engine, hand tools, and manufacturer's service manual,	the learner will remove and replace the thermostat and test for proper operation,	in accordance with engine specifications.
	4. Given an engine with an oil cooler and/or an after cooler and necessary tools and equipment,	the learner will remove and replace the cooler, disassemble inspect and recondition for leaks or damage,	to manufacturer's specifications.

Topic	Conditions	Performance	Criteria
Engine Air Systems	1. Given a diesel engine with a blower, hand tools, and manufacturer's instruction manual,	the learner will remove the blower and accessories, disassemble, inspect and recondition the parts for wear, reassemble and take clearance readings, make all necessary adjustments and timing of blower rotors and replace on engine,	the engine will run smoothly in accordance with engine specifications.
Engine "Speed Governing"	1. Given an engine with mechanical governor problems, hand tools, and manufacturer's instruction manual,	the learner will remove and replace the governor, including disassembly, inspection reassembly and adjusting,	the engine runs at the specified idle and high idle set by the manufacturer.
Oxy-Acetylene Equipment	1. Given an oxy-acetylene welder, a burning or welding operation and shop oxy-acetylene manual,	the learner will properly open and set oxygen and acetylene regulators, check for leaks in hoses or connections, make necessary welding or burning repairs and secure the equipment,	in accordance with all safety precautions and standard shop practices.
Starting Systems	1. Given a diesel engine with an electrical, hydraulic, or pneumatic starting system, and all necessary tools and equipment,	the learner will trouble-shoot and make all necessary repairs to the engine starting system.	according to manufacturer's specifications.
	2. Given a diesel engine with a cold weather starting system, necessary tools and equipment,	the learner will trouble-shoot problems and make all necessary repairs,	to return the system to manufacturer's specifications.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Drafting Occupations

U.S.O.E. Code Number: 17.1300

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Measurement	1. Given 10 objects to be measured and appropriate measuring tools,	the learner will measure each of them using the following systems: Fractional, Decimal, and Metric	eight of the ten measured, with each system, is to a tolerance of Fractional ± 1/32, Decimal ± .001, Metric ± 1 mm.
	2. Given proper drafting equipment,	the learner will divide any given line into a given number of segments	all segments are equal to ± 1/32" in 5 minutes.
Lettering	1. Given proper drafting equipment,	the learner will letter the complete alphabet and numbers	5 times within 30 minutes and all letters are neat and legible.
Identification	1. Given 10 thread notes (i.e., 3/8"-16 NC-2A-LH) and without reference material,	the learner will identify all items in the note	8 out of 10 notes are accurate
	2. Given 10 standard fasteners (i.e., square bolt, hex head bolt, set screw, woodruff key, etc.) and without reference material,	the learner will identify and explain	the use of 7 out of 10 fasteners.
	3. Given a drawing of a casting or forging with proper finish symbols,	the learner will identify the finished surfaces	with 100% accuracy.

Topic	Conditions	Performance	Criteria
Sketching	1. Given proper drafting equipment, a 2 or 3-view drawing of an object, and an isometric grid or box grid,	the learner will make an isometric sketch of the drawing	it is proportional.
Section Views	1. Given proper drafting equipment and a dimensioned pictorial view,	the learner will draw any 4 of the 7 views listed: 1. Half section 2. Revolved section 3. Offset section 4. Full section 5. Removed section 6. Broken out section 7. Aligned view	the drawing of the interior is ± 1/32" on all dimensions.
Symbols, Line Forms, Terms, and Calculations	1. Given a Machinery's Handbook, 4 classes of basic hole systems and 4 nominal size dimensions,	the learner will calculate the limits for hole and shaft tolerance for hole and shaft, and limits between mating parts	for all 4 sizes and classes; 6 out of 10 times.
	2. Given a list of 50 symbols, line forms, terms and abbreviations,	the learner will identify and/or explain the use of	30 of the 50 items.
Auxiliary Views	1. Given proper drafting equipment and a drawing of an object or an actual object that has holes or notches and is bent at an odd angle,	the learner will draw the auxiliary view	all drawn parts are ± 1/32" and the object is true size and shape.
Assembly Drawing	1. Given proper drafting equipment and a dimensioned pictorial drawing or a set of detail drawings with 3 or more parts,	the learner will draw an assembly drawing and a working drawing, all dimensions and any special notes	all dimensions are ± 1/32", finish marks correctly located, notes of any special problems listed, and the bill of materials has the correct number of actual items needed to assemble the part, etc.

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Topic	Conditions	Performance	Criteria
Development	1. Given proper drafting equipment,	the learner will develop the following: right prism, right cylinder, right pyramid, right cone, and a stretch-out view of a square to square transition piece	for 3 of the 5 and all of the dimensions are ± 1/32"/
Geometric Construction	1. Given the proper drafting equipment and a drawn circle no less than 2" in diameter,	the learner will inscribe a square, inscribe and circumscribe a hexagon and an octagon	all sides are equal and there is good tangency.
	2. Given proper drafting equipment,	the learner will draw an equilateral triangle and inscribe a circle	in 15 minutes; all sides are equal and there is good tangency.
	3. Given proper drafting equipment,	the learner will draw two lines parallel to a given line and draw a perpendicular from a point on a line to a point off the line	all lines are parallel and the perpendicular line measures 90° to the given line.
Detail Drawing	1. Given proper drafting equipment and a dimensioned pictorial view of a tailstock clamp or equivalent object,	the learner will draw the necessary views and properly dimension and note it	all dimensions are accurate to ± 1/32".

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Electrical Occupations

U.S.O.E. Code Number: 17.1400

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Electrical Fundamentals	1. Given at least thirty standard electrical symbols, such as resistors, capacitors, inductors, etc.,	the learner will identify them correctly	with an accuracy of 75% within an appropriate specified period of time.
	2. Given at least 15 Ohm's Law problems (five of each type, i.e., resistors, current and voltage),	the learner will solve for the unknown value of resistance, current, or voltage	with an accuracy of 75% within an appropriate, specified period of time.
	3. Given at least 10 problems of Watt's Law,	the learner will compute the wattage of all the resistive loads on the list using the three forms of Watt's Law	with an accuracy of 75% within an appropriate, specified period of time.
	4. Given five small appliances and a wattmeter,	the learner will measure and record tne five different loads	within a tolerance of ± 5%, within an appropriate, specified period of time.
	5. Given three linear resistive devices connected in series to 120 volt, 60 Hertz, AC supply, a VTVM or VOM,	the learner will calculate and verify each of the following: (1) Individual voltage drops and total voltage drop (2) Current through each device and total current (3) Individual resistance of each device and total resistance.	calculated value to be within 10% of the measured value and within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
	6. Given three linear resistive devices connected in parallel to a 120 volt, 60 Hertz, AC supply, a VOM or VTVM,	the learner will calculate and verify each of the following: (1) Individual voltage drops and total voltage drop. (2) Current through each device and total current. (3) Individual device resistances and total resistance.	calculated value to be within 10% of the measured value and within an appropriate, specified period of time.
Electrical Construction Wiring	1. Without the use of reference materials,	the learner will define in 75 words or less the purpose of the National Electrical Code	in terms generally consistent with the stated purpose of the National Electrical Code.
	2. Without the use of reference materials,	the learner will describe in 75 words or less the purpose of Underwriters Laboratories, explain how they are funded and what it means to have equipment "Listed by UL"	generally consistent with available source materials.
	3. Given a list of electrical symbols for architectural plans (American National Standards) and given actual associated materials of construction or pictures of same,	the learner will identify these symbols and associate them with the actual materials of construction or with pictures	with 90% accuracy.
	4. Given samples of at least 12 different types of conductors,	the learner will identify and describe and explain their use	8 out of the 12 and cite at least two applications and two limitations of each wire or cable.
	5. Given a comprehensive variety of overcurrent protection devices for branch circuits and mains, including fuses - Edison base, Type S and adapters for same, one time cartridge fuses and renewable link	the learner will install overcurrent devices and detect tripped or defective overcurrent devices and replace or reset the devices	without error.

Topic	Conditions	Performance	Criteria
	cartridge fuses and thermal magnetic circuit breakers, and given sufficient time and tools to install, reset or replace overcurrent devices,		
	6. Given the necessary equipment and materials,	the learner will ground a duplex receptacle and its box with a copper grounding wire and ground a service entrance box to a nearby water pipe or approved grounding rod	to satisfy local code requirements and within an appropriate, specified period of time.
	7. Given an actual or simulated outside residential shell, and given service entrance cable, a weatherhead, a KWHM hub and waterproof fittings, a service entrance panel (with main breaker), the grounding conductor and grounding clamp, and a sufficient supply of S.E. clamps and S.E. connectors, and a set of electrician hand tools and a cable cutter (the power company has previously spotted the installation site),	the learner will install a 100 amp service entrance and ground it to the city water system and the service panel will have 240 volts line to line and 120 volts from either line to ground	to meet all local electrical code requirements.
	8. Given a 100 ampere service panel, a 15 ampere (120 volt) circuit breaker, a roll of #14-2 wire non-metallic cable with grounding conductor, a single pole switch and box, a light fixture and an octagon box with hanger, and all necessary hand tools including 1/2" electric drill and an open stud situation,	the learner will install a 15 amp lighting circuit to control the light from one location (normally at the entrance)	the switch must turn the light on and off every time it snaps; and the entire circuit must meet all local code requirements, within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
	9. Given a new construction or controlled lab situation, two 3-way switches, two device boxes, a lamp and lamp holder, an octagon box, cable and hand tools,	the learner will wire two 3-way switches to control a light from two different points	this light will be able to be controlled by either switch, regardless of the position of the other switch in the pair; must meet all local code requirements; and within an appropriate, specified period of time.
	10. Given one 4-way switch, two 3-way switches, three device boxes, cable, a lamp holder, an octagon box and hand tools in an actual new construction or controlled lab situation,	the learner will wire the 4-way and two 3-way switches to control a light from three different parts	this light will be controlled by any one of the switches, regardless of the position of the other switches; must meet all local code requirements; and within an appropriate, specified period of time.
	11. Given a 100 ampere service panel, a 15 ampere (120 volt) circuit breaker, a roll of #14-2 non-metallic cable with grounding conductor and six duplex receptacles with ground, outlet boxes and all necessary tools, including a 1/2" electric drill and an open stud situation,	the learner will install at least two receptacles properly spaced on a 15 ampere circuit, and the receptacles must provide 120 volts constantly unless the circuit breaker trips under load or if it is turned off	must meet all local code requirements; and be within an appropriate, specified period of time.
	12. Given a duplex receptacle with ground and a recessed clock-hanger, octagon box, cable and hand tools in [illegible]ual new construction or a controlled lab situation,	the learner will install this receptacle so that an electric clock will fit flush against the surface of the finished wall and provide a constant 120 volts	must meet all local code requirements; and be within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
	13. Given a 100 amp service entrance, two 20 A circuit breakers, a roll of 12-3 copper cable with ground, four 20 A duplex receptacles and four device boxes and hand tools,	the learner will wire the duplex receptacles so that all of the top outlets are fed off of one breaker (red wire) and all of the bottom outlets are fed off another breaker (black wire), and all outlets share a common return (white wire)	must meet all local code requirements; and be within an appropriate, specified period of time.
	14. Under actual new construction conditions, or in a controlled lab situation, given a door-bell, transformer, bell wire connectors, switches and hand tools,	the learner will install a door-bell circuit which can be controlled from two locations (front and back doors)	must meet all local code requirements; and be within an appropriate, specified period of time.
	15. Under actual new construction or in a controlled lab situation, and given cable and a receptacle,	the learner will install a 220 volt, 30 or 50 amp outlet for a range, water heater or clothes dryer,	must meet all local code requirements; and be within an appropriate, specified period of time.
	16. Given the necessary tools and materials,	the learner will make installations, including installation of the ground fault circuit interrupters, including the following applications: garages, porches, patios, picnic and swimming pool areas, cornice lighting and installation of electrical outlets in damp areas	must meet all local code requirements; and within an appropriate, specified period of time.
	17. Given the necessary tools and materials,	the learner will install outlets for air conditioners and exhaust fans with their associated humidistats and heat sensors	must meet all local code requirements; and within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
	18. Given 1/2" E.M.T. or rigid conduit, two surface mount "handy" boxes, pipe cutter and reamer, locknuts and bushings, 1/2" conduit bender, at least two 20 amp duplex receptacles, black and white THHN wire, a fish tape, hand tools including drill and fasteners,	the learner will install a 20 amp circuit to feed the duplex receptacles (the conduit must have at least two 90° bends and at least four offset bends)	to fit and without kinking the conduit; must meet all local code requirements and be within an appropriate, specified period of time.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Electrician Industrial [redacted]

U.S.O.E. Code Number: 17.1401

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Electrical Circuits	1. Given several color coded resistors,	the learner will state the value and tolerance of each resistor	the results are at least 80% consistent with the coded values, with a time limit of 1 minute per resistor.
Ohms Law	1. Given a group of 15 Ohms law problems involving voltage, current and resistance with two of three values known,	the learner will calculate the results	12 of the 15 problems will be solved correctly within a 20 minute time limit.
DC Circuits	1. Given a basic DC series circuit schematic diagram containing voltage and resistance values,	the learner will calculate circuit current and component voltage drops across circuit components	the measured values are within 10% of the calculated values, with a time of 15 minutes per diagram.
Parallel Circuits	1. Given a basic DC parallel circuit schematic diagram containing voltage and resistance values,	the learner will calculate total circuit current	the measured value is within 10% of the calculated value within a time limit of 15 minutes per diagram.
DC Series - Parallel Circuits	1. Given a basic DC Series-Parallel circuits containing voltage and resistance values,	the learner will calculate total circuit current	the measured value is within 10% of the calculated value within a time limit of 15 minutes per diagram.

Topic	Conditions	Performance	Criteria
DC Circuit Analysis	1. Given a DC power supply, measuring equipment, and a circuit with known values for resistors,	the learner will measure the currents and voltage drops	the results obtained are within 10% of the calculated values. The learner is able to explain the difference between the calculated and measured values (if any), and the task is completed within a time limit of 15 minutes.
DC Circuit Voltage Analysis	1. Given a 6 volt bulb, 1.5 volt batteries, and necessary equipment,	the learner will connect the sources	the bulb operates at its nominal voltage, and the task is completed within a time limit of 10 minutes.
DC Voltage Divider Circuit	1. Given a DC voltage source with known EMF, and a voltage divider of known resistance,	the learner will calculate the terminal voltage for 3 loads	within 10% of the measured values, with a time limit of 15 minutes.
Electrical Energy and Power	1. Given electrical energy and power formulas, voltage and current requirements for several devices,	the learner will calculate the power dissipated in watts in each device	the measured values will be within 10% of the calculated values, with a time limit of 2 minutes per device.
DC Circuit Resistor Power Dissipation	1. Given a DC power supply, measuring equipment, and a circuit with known values of resistors,	the learner will calculate the power dissipated in this resistive circuit	the results obtained are within 10% of the measured values, with a time limit of 15 minutes.
Electrical Conductors	1. Given several commonly used electrical conductors, the National Electrical Code Book,	the learner will determine the maximum current carrying capability of each	the results obtained are within 10% of the measured values, with a time limit of 15 minutes.
Conductor Resistance	1. Given conductors of known cross sectional area, and the formula for wire resistance,	the learner will determine the resistance of a determined length of wire	the results obtained are within 90% of the measured value, within a time limit of 10 minutes.
Voltage Loss on Conductors	1. Given the formula for voltage drop on conductors, wire size, circular mil area of wire, applied voltage, load specifications, and length of conductors required	the learner will calculate the voltage drop on the conductors	the results obtained are within 90% of the measured value, with a time limit of 10 minutes.

Topic	Conditions	Performance	Criteria
Magnetic Properties	1. Given a drawing of a permanent magnetic,	the learner will draw the lines of flux from one pole to the other, and label the direction of flux	it will conform to the standard textbook illustration, within a time limit of 10 minutes.
Generation of Electromotive Force	1. Given a basic illustration of a single loop AC and DC generator,	the learner will orally describe the principles of operation of each	the functional status of the motor is known, and is in agreement with acceptable textbook standards, within a time limit of 10 minutes.
Direct Current Motor Principles	1. Given a basic illustration of a direct current motor,	the learner will orally describe the principles of operation	the functional status of the motor is known, and is in agreement with acceptable textbook standards, within a time limit of 10 minutes.
Generators	1. Given a pencil and paper,	the learner will write out and sketch the principles of generator operation	the results will agree with textbook, illustrations, within a time limit of 10 minutes.
Electric Motors	1. Given a pencil and paper,	the learner will write out and sketch the principles of motor operation	the results will agree with textbook motor standards, within a time limit of 10 minutes.
Shop Safety	1. Given various situations where a dangerous electrical condition exists,	the learner will state what precautions must be observed to prevent electrocution	his responses agree with basic electrical safety publications, within a time limit of 10 minutes.
High Voltage Safety	1. Given a high voltage circuit,	the learner will state what safety precautions must be observed while working on this circuit	his responses agree with established safety procedures, within a time limit of 5 minutes.
Electrical Shock Treatment	1. Given a situation where a person has suffered an electrical shock,	the learner will state orally what first aid procedures should be performed	they are in agreement with current first aid publications, within a time limit of 5 minutes.

Topic	Conditions	Performance	Criteria
Portable Electric Power Tool Safety	1. Given a situation where a person is operating portable electric power tools,	the learner will state orally what precautions must be observed to prevent electrical shock	the job will be in agreement with power tool safety regulations, within a time limit of 10 minutes.
Basic Bell Circuits	1. Given no use of references,	the learner will sketch a basic bell circuit	the sketched circuit will be compatible with a reference circuit, within a time limit of 10 minutes.
General Lighting Switches	1. Given a pencil and paper,	the learner will sketch the wiring symbols for single pole, three-way, four-way, and double pole single throw switches	100% accuracy is achieved within a time limit of 10 minutes.
Switch Circuit Diagrams	1. Given a pencil and paper,	the learner will sketch the wiring diagrams for single pole, three-way, and four-way switch circuits	100% accuracy is achieved, within a time limit of 10 minutes.
Electrical Wiring Methods	1. Given the six methods of electrical wiring,	the learner will orally describe where each method is used	5 out of 6 methods are correct, within a time limit of 5 minutes.
Electrical Wiring Materials	1. Given the following electrical materials: non-metalic sheathed cable, flexible armored cable, flexible armored conduit, rigid conduit, EMT (thin-wall), and surface metal raceway,	the learner will orally describe the characteristics of each type	90% accuracy is achieved, within a time limit of 15 minutes.
Remote Control of Lighting Circuits	1. Given a wiring diagram of a lighting circuit remote control system,	the learner will orally describe its sequence of operation	his responses agree with the manufacturer's specifications, within a time limit of 10 minutes.
Alternating Current Principles	1. Given the peak value of a sinusoidal waveshape,	the learner will calculate the average and effective voltage or current	the results are within 90% of actual values, within a 10 minute time period.

Topic	Conditions	Performance	Criteria
Inductance and Inductive Reactance	1. Given a value of inductance, the frequency of an applied voltage,	the learner will calculate the inductive reactance of the coil	the results will be within 90% of the actual value, within a time limit of 10 minutes.
Capacitance and Capacitive Reactance	1. Given a value of capacitance, the frequency of an applied voltage,	the learner will calculate the capacitive reactance of the capacitor	the results are within 90% of the actual value, within a time limit of 10 minutes.
RL Series Circuits	1. Given a circuit containing a known value of resistance, inductance and frequency,	the learner will calculate the circuit impedance	the results are within 90% of the actual value, within a time limit of 10 minutes.
RLC Series Circuit	1. Given a series circuit containing a known value of resistance capacitance, inductance and frequency,	the learner will calculate the circuit impedance	the results are within 90% of the actual value, within a time limit of 10 minutes.
RL Parallel	1. Given a parallel circuit containing a known value of resistance, inductance and frequency,	the learner will calculate the circuit impedance	the results are within 90% of the actual value, within a time limit of 10 minutes.
AC Power Factor and Power Factor Correction	1. Given an AC circuit containing resistance, reactance, and frequency,	the learner will calculate the circuit power factor and make required corrections	the results obtained are within 90% of the actual values, within a time limit of 15 minutes.
AC RLC Parallel Circuits	1. Given a parallel circuit containing a known value of resistance, inductance, capacitance, and frequency,	the learner will calculate the circuit impedance	the results are within 90% of the actual value, within a time limit of 10 minutes.
Single Phase Three Wire Service Entrance	1. Given a typical single phase three wire service entrance requirement, using any reference,	the learner will prepare a summary of the required devices and wiring requirements	the completed summary is in agreement with the current National Electrical Code Book, within a time limit of one hour.
Three Phase Three Wire Service Entrance	1. Given a typical three phase three wire service entrance requirement, not greater than 100 amperes, using any reference,	the learner will prepare a summary of the required connections	the completed summary is in agreement with the current National Electrical Code Book, within a time limit of one hour.

Topic	Conditions	Performance	Criteria
Fluorescent Lighting	1. Given circuit diagrams of preheat and instant-start fluorescent lamps,	the learner will orally identify the difference between the two types, and explain basic circuit operation	his explanation is in agreement with the manufacturer's specifications and current textbooks, with a time limit of 15 minutes.
DC Generator Excition	1. Using any reference,	the learner will orally describe the different methods of field excition of DC generators, the advantages and disadvantages of each method	his responses are in agreement with standard textbooks, within a time limit of 10 minutes.
Compound Wound DC Generator	1. Using any reference,	the learner will orally describe the different types of compound wound DC generator windings, where each would be used, and their limitations	his responses are in agreement with standard textbooks, within a time limit of 15 minutes.
The DC Shunt Motor	1. Using any reference,	the learner will orally describe the characteristics of a shunt wound motor	the response will agree with standard accepted shunt motor terminology, within a time limit of 10 minutes.
The DC Series Motor	1. Using any reference,	the learner will orally describe the characteristics of a series motor	the response will agree with standard accepted series motor terminology, within a time limit of 10 minutes.
The DC Compound Motor	1. Using any reference,	the learner will orally describe the different types of compound wound DC motor windings, where each would be used, and their limitations	his response is in agreement with accepted compound motor terminology, within a time limit of 15 minutes.
Manual Starting Rheostats	1. Given a schematic diagram of a 3 and 4 terminal starting rheostat,	the learner will describe its theory of operation	the response will be in agreement with the manufacturer's specifications, within a time limit of 10 minutes.

Topic	Conditions	Performance	Criteria
Manual Speed Controllers	1. Given a schematic diagram of a manual speed controller,	the learner will describe orally the sequence of operations	his response will be in agreement with the manufacturer's specifications, within a time limit of 10 minutes.
Special Starting Rheostats and Controllers	1. Given 2 schematic diagrams of special starting rheostats and controllers,	the learner will describe orally the sequence of operations and special requirements	they will be in agreement with the manufacturer's specifications, within a time limit of 10 minutes.
Principles of Automatic Motor Control	1. Given a basic schematic diagram of an automatic motor controller,	the learner will describe orally its theory of operation and advantages	his response will be in agreement with the manufacturer's specifications, within a time limit of 10 minutes.
The Counter EMF Motor Controller	1. Given a basic schematic diagram of the counter EMF motor controller,	the learner will describe its theory and sequence of operations	his response will be in agreement with the manufacturer's specifications, within a time limit of 10 minutes.
The Voltage Drop Acceleration Controller	1. Given a basic schematic diagram of the voltage drop acceleration controller,	the learner will orally describe its theory of operation	his response will be in agreement with the manufacturer's specifications, within a time limit of 10 minutes.
The Series Lockout Relay Acceleration Controller	1. Given a basic schematic diagram of the series lockout relay acceleration controller,	the learner will orally describe its theory of operation, advantages and disadvantages as controllers,	his responses will agree with the manufacturer's specifications, within a time limit of 10 minutes.
Dynamic Breaking with Motor Reversal Control	1. Given a basic schematic diagram of dynamic breaking motor reversal control,	the learner will orally describe the theory of operation	his response will be in agreement with the manufacturer's specifications, within a time limit of 10 minutes.
Polyphase Circuits	1. Using any reference,	the learner will orally describe the different types of polyphase circuits	his response will agree with the standard textbook description, within a time limit of 10 minutes.

Topic	Conditions	Performance	Criteria
The Three Phase Wye Connection	1. Given a schematic diagram of a three phase wye transformer connection, and values of applied voltage,	the learner will calculate the voltages between the various terminals	his response will be in agreement with the measured values, within a time limit of 15 minutes.
The Three Phase Delta Connection	1. Given a schematic diagram of a three phase delta transformer connection, and values of applied voltage,	the learner will calculate the voltages between the various terminals	his responses will be in agreement with the measured values, within a time limit of 15 minutes.
Basic Principles of Transformers	1. Given the sketch of a basic loop transformer,	the learner will describe orally the basic principles of "Lenz's Law" as it pertains to transformer action, voltage and current ratios, and primary to secondary winding turns ratio	his response will be in agreement with the standard textbook, within a time limit of 15 minutes.
Single Phase Transformers	1. Given the electrical schematic diagrams of single phase transformers,	the learner will describe orally the different types of single phase transformer connections, their input and output voltages	his response will be in agreement with the measured values of an actual transformer, within a time limit of 15 minutes.
Single Phase Transformers Connected in Delta	1. Given the electrical schematic diagram sketch of single phase transformer windings only,	the learner will complete the drawings, connecting them in delta	the results will agree with the correct wiring diagram, within a time limit of 10 minutes.
Single Phase Transformers Connected in Wye	1. Given the electrical schematic diagram sketch of a single phase transformer winding only,	the learner will complete the drawing, connecting them in wye	the results will agree with the correct arrangement, within a time limit of 10 minutes.
Wye and Delta Connections of Single Phase Transformers	1. Given the electrical schematic diagram sketch of single phase transformers winding only,	the learner will complete the drawings, connecting them in wye-delta	the results will agree with the correct wiring diagram, within a time limit of 10 minutes.

Topic	Conditions	Performance	Criteria
Instrument Transformers	1. Using any reference,	the learner will orally describe the operation of instrument current and potential transformers, also mechanical safety precautions	the results will be in agreement with the manufacturer's specifications, within a time limit of 10 minutes.
Code Requirements for Transformer Installations	1. With the use of the National Electrical Code Book,	the learner will orally discuss the sections of the electrical code that refers to transformers and transformer installations,	his responses will be in agreement with the National Electrical Code, within a time limit of 30 minutes.
Physical and Electrical Characteristics of Three Phase Alternators	1. Using any reference,	the learner will orally discuss the principles involved in the operation of alternators of the revolving field type	his statements will be in agreement with the electrical specifications for alternators, within a time limit of 30 minutes.
Parallel Operation of Three Phase Alternators	1. Given a schematic diagram of parallel three-phase alternators,	the learner will orally discuss the facts involved in paralleling alternators, and describe the sequence of operations required to parallel alternators	the results will agree with the actual methods, within a time limit of 20 minutes.
The Three-Phase Squirrel-Cage Induction Motor	1. Given a three-phase squirrel-cage induction motor,	the learner will orally describe the essential points on the construction, and basic principles of operation of a three-phase squirrel-cage induction motor	the response will be in agreement with the manufacturer's specifications, within a time limit of 10 minutes.
Starting Three-Phase Squirrel-Cage Induction Motor	1. Given a copy of the National Electrical Code, and a schematic wiring diagram of the three-phase squirrel-cage induction motor,	the learner will orally discuss the connections for "across-the-line" motor switches, and electrical code requirements on starting and running	the results will be in agreement with the electrical code, within a time limit of 20 minutes.
The Starting Compensator	1. Given the elementary wiring diagram of a starting compensator,	the learner will orally describe the connections and operation of starting compensators used with three-phase AC motors,	his response will be in agreement with the manufacturer's specifications, within a time limit of 15 minutes.

Topic	Conditions	Performance	Criteria
The Three-Phase Wound-Rotor	1. Given the elementary wiring diagram of a three-phase wound-rotor induction motor,	the learner will orally describe the principles of operation, construction details	the results will be in agreement with the manufacturer's specifications, within a time limit of 15 minutes.
Manual Speed Controllers for Wound-Rotor Induction Motors	1. Given the elementary wiring diagram of manual speed controllers used with three-phase wound-rotor induction motors,	the learner will orally explain the connections and operation of each type	his response will be in agreement with the manufacturer's specifications, within a time limit of 15 minutes for each type controller.
The Three-Phase Synchronous Motor	1. Given the elementary wiring diagram of a three-phase synchronous motor,	the learner will orally explain the construction details and principles of operation	the response will be in agreement with the manufacturer's specifications, within a time limit of 15 minutes.
Controllers for Three-Phase Motors	1. Given the elementary line wiring diagrams for jogging, plugging dynamic breaking, definite time acceleration, and wye-delta motor starting,	the learner will orally describe the operating principles of each type	the response will be in agreement with the manufacturer's specifications, within a time limit of 15 minutes per controller.
Electric Motor Maintenance	1. Given the maintenance manuals for three-phase motors, and any other reference,	the learner will orally describe the common problems incidental to motor maintenance, and principle testing techniques,	the response will be in agreement with the maintenance manuals and manufacturer's specifications, within a time limit of 30 minutes.
Selsyn Units	1. Given the electrical wiring diagram of a selsyn transmitter and receiver,	the learner will orally explain the principles involved in the operation of a selsyn system, and its commercial application	his response is in agreement with the manufacturer's specifications, within a time limit of 15 minutes.
Single-Phase Induction Motors	1. Given the wiring diagrams of the single-phase induction motor,	the learner will orally explain the basic principles of operation of the split-phase and capacitor induction motor	his response will be in agreement with the manufacturer's specifications, within a time limit of 15 minutes.

Topic	Conditions	Performance	Criteria
Alternating Current Series Motors	1. Given the wiring diagram of the AC series motor,	the learner will orally explain the basic principles of operation and construction	his response will be in agreement with the manufacturer's specifications, within a time limit of 15 minutes.
Electrical Symbols	1. Given a list of symbols adapted by the United States of America Standards Institute (USASI),	the learner will answer in writing the meaning of each symbol,	8 out of 10 symbols will be in agreement with the USASI, within a time limit of 30 minutes.
Installing Switch Boxes	1. Given a standard residential type switch box, size 2" x 3", and a copy of the National Electrical Code Book,	the learner will install the box on a 2" x 4" studing, making allowance for finished wall	the completed job will be in agreement with the National Electrical Code, within a time limit of 30 minutes.
Installing Receptacle Boxes	1. Given a standard residential type receptacle box, size 4" x 1-1/2" octagonal, and a copy of the National Electrical Code Book (NEC),	the learner will install the box on a standard ceiling joist, making allowance for finished ceiling	the completed job will be in agreement with the NEC, within a time limit of 30 minutes.
Determining the Number of General Lighting Circuits for Residential Dwellings	1. Given the outside dimensions for a residential dwelling, and a copy of the NEC,	the learner will calculate the minimum number of general lighting circuits required for that dwelling	the completed job will be in agreement with the NEC, within a time limit of 20 minutes.
Determining the Number of Small Appliance Circuits Required for Residential Dwellings	1. Given the specifications for a dwelling, and a copy of the NEC,	the learner will calculate the correct number of small appliance circuits required, the correct wire size to use,	the results will be in agreement with the specifications, and the NEC, within a time limit of 20 minutes.
Installing Two-Wire With Ground Type NM Cable 9/74	1. Given a copy of the NEC, and a standard receptacle box installed on a 2" x 4" studing,	the learner will locate the correct article covering non-metalic sheathed cable, and install a section of NM cable between the receptacle box and a point 5 feet up the studing	it will be in agreement with the NEC, within a time limit of 20 minutes.

Topic	Conditions	Performance	Criteria
Lighting Switches	1. Given a copy of the NEC,	the learner will locate the proper section in the code book, and state orally the classifications of lighting switches, ratings of switches, and general uses of switches	his response is in agreement with the NEC, within a time limit of 15 minutes.
Installing Service Entrance Breaker Panels	1. Given a copy of the NEC,	the learner will locate and orally state the pertinent regulations covering installation of service entrance breaker panels for dwellings	his response will be in agreement with the NEC, within a time limit of 15 minutes.
Ground Fault Interrupters	1. Using any reference,	the learner will orally describe the basic operating characteristics of ground fault interrupters	his response will be in agreement with the manufacturer's specifications of a typical GFI, within a time limit of 15 minutes.
Installation of Electrical Metalic Tubing (EMT)	1. Given a length of 1/2" EMT, a bending tool, a conduit receptacle box mounted on a 2" x 4" studing, and assorted fittings,	the learner will form a section of EMT, and connect it between the box and a point 5 feet above the box	the completed job to be in compliance with the NEC, and local code requirements, within a time period of 30 minutes.
Television, Telephone, and Signal System Requirements	1. Using any reference,	the learner will discuss orally the basic requirements of television, telephone, and signal system requirements	his response will be in agreement with the NEC, and local codes, within a time limit of 15 minutes.

ERIC

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Electronics Occupations

U.S.O.E. Code Number: 17.1500

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Instrument Usage	1. Given a VOM and a VTVM meter,	the learner will read all calibration marks, use all functions and range switches and select the proper scales to measure voltage, current and resistance,	with 100% accuracy.
Basic AC - DC Theory	1. Given 10 resistors, a measuring device, and without reference material,	the learner will identify the values and measure the actual resistance and state whether the resistors are in tolerance,	for 9 of the 10 resistors.
	2. Given the concepts of Ohm's Law, electrical symbols and a series circuit,	the learner will construct a series of electrical circuits to confirm the direct relationship of voltage and current and the inverse relationship of current and resistance,	with 100% accuracy.
	3. Given any two known factors of Ohm's Law,	the learner will solve for the one unknown,	with 100% accuracy.
	4. Given a combination of fifty values of voltage, current or resistance,	the learner will write and assign scientific notations or assign proper prefix,	for 45 of the 50 values.

Topic	Conditions	Performance	Criteria
	5. Given Ohm's Law for power, P = E x I,	the learner will solve for watts, volts, amps, or ohms in any given series circuit,	with 100% accuracy.
	6. Given Ohm's Law and appropriate power formulas,	the learner will: 1. calculate wattage from horsepower. 2. calculate kilowatt-hours and the cost of energy used in the area. 3. measure and calculate the power loss due to external and internal resistances	two out of three calculations are 100% accurate.
	7. Given an open circuit or a short in a series circuit,	the learner will calculate resistance, voltage, current and power in the open circuit and the short in a series circuit,	with 100% accuracy.
	8. Given a typical series circuit,	the learner will list advantages and disadvantages of the circuit,	at least one advantage and disadvantage.
	9. Given the term "loading" and without reference material,	the learner will define the term,	he gives one practical example of "loading" in home and electronic circuits.
	10. Given the formulas for series and parallel resistance circuits,	the learner will solve for the unknown in any given problem to,	± 10% of the actual mathematical value.
	11. Given a potentiometer and necessary test equipment,	the learner will connect it in a given circuit,	current is limited and a voltage divider circuit is developed.
	12. Given a voltage divider and bleeder resistance formula,	the learner will design and construct a voltage divider,	it can be safely operated with fixed loads.
	13. Given a drawing of basic meter movement,	the learner will explain how to convert the basic movement into a two-range voltmeter and a two-[illegible] ammeter,	with 100% accuracy.

Topic	Conditions	Performance	Criteria
	14. Given a bridge circuit diagram and components,	the learner will describe two practical applications of bridge circuits,	with 100% accuracy.
	15. Given two types of chemical voltage cells,	the learner will give an application of and describe the difference between primary and secondary cells,	for each with 100% accuracy.
	16. Given several dry cells,	the learner will connect the cells in combination,	voltage is increased and current capacity is raised.
	17. Given the formulas RMS =.707 Ep, and Epeak - peak equals 2Epeak,	the learner will calculate the other two values if one is known,	with 100% accuracy.
	18. Given the terms: a. Frequency b. Period c. Wavelength d. Average value e. Non-sinusoidal	the learner will describe each	with 100% accuracy.
	19. Given a capacitor,	the learner will list three factors which affect capacity and how each factor can change its capacitance,	with 100% accuracy.
	20. Given five capacitors,	the learner will list the type, rating, value, voltage rating, and one application of each,	with 100% accuracy.
	21. Given a capacitor, and resistor with an AC source,	the learner will list how a capacitor charges and discharges based on the following factor: RC time constant (T = RC),	with 100% accuracy.
	22. Given 10 problems and the formulas for total series or parallel capacitance and total series or parallel capacitance reactance and simple capacitive reactance,	the learner will calculate capacitance and capacitive reactance problems using the formulas: a. $X_{ct} = X_{c1} + X_{c2}$ . . . b. $\frac{1}{Xct} = \frac{1}{Xc_1} + \frac{1}{Xc_2}$ . . .	7 of the 10 problems are solved.

Topic	Conditions	Performance	Criteria
		c. $C_t = C_1 + C_2 \ldots$ d. $\frac{1}{C_t} = \frac{1}{C_1} + \frac{1}{C_2} \ldots$ e. $Xc = \frac{1}{2 \cdot fc}$	
	23. Given a series RC and RL circuit and a parallel RC and RL circuit,	the learner will list one practical example of each,	with 100% accuracy.
	24. Given the following terms: a. Lenz's Law b. Self-inductance c. Mutual inductance d. Inductive reactance $X_L = 2\pi FL$ e. 90° lagging phase angle f. Effective DC	the learner will write one statement for each,	based on the concept of inductance, with 100% accuracy.
	25. Given an inductor,	the learner will list three practical applications of that inductor,	with 100% accuracy.
	26. Given two inductors, first in series then in parallel,	the learner will explain a method of measuring the inductance and inductive reactance of two inductors in series and in parallel to verify the formulas: a. $L_T = L_1 + L_2$ b. $\frac{1}{L_T} = \frac{1}{L_1} + \frac{1}{L_2}$ c. $X_{LT} = X_{LT} + X_{L2}$ d. $\frac{1}{X_{LT}} \; \frac{1}{X_{L1}} \; \frac{1}{X_{L2}}$	with 100% accuracy.

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Topic	Conditions	Performance	Criteria
	27. Given a resonant series RLC circuit and another one parallel RLC circuit,	the learner will list two examples of each,	with 100% accuracy.
	28. Given the following terms: a. Wave trap b. Pi filter c. L-filter d. T-filter e. Cutoff frequency	the learner will define the terms and list a practical example of each,	with 100% accuracy.
	29. Given a diode, triod, tetrode, and pentode,	the learner will identify the elements and purpose of each and the use of the tube,	with 100% accuracy.
	30. Given two circuit values (1 capitance, 1 inductance),	the learner will solve for resonance frequency,	using appropriate formula.
	31. Given the formula $BW=\frac{F}{Q}$	the learner will explain the relationship and importance of three variables and give at least three practical applications of tuned circuits,	consistent with selected resources.
Instrument Usage and Basic AC - DC Theory	1. Given the necessary equipment,	the learner will construct a series circuit and measure and record voltages, current, and resistances to confirm the three basic concepts of series circuits	measured and calculated values of voltage, current and resistances are compared to determine percentage error with 100% accuracy.
	2. Given an oscilloscope and 5 RMS and peak to peak values,	the learner will accurately measure the given voltages,	within $\pm$ 10% accuracy for each of the 5 values.
	3. Given an oscilloscope and sine wave generator,	the learner will measure three frequencies using lissajous patterns,	with 100% accuracy.
	4. Given two capacitors and the necessary test equipment,	the learner will determine the total opposition and capacitance of series or parallel capacitance	at two frequencies with 100% accuracy.

Topic	Conditions	Performance	Criteria
	5. Given the necessary test equipment, a resistor, capacitor and inductor,	the learner will connect in series and then in parallel, vary the frequency and measure, listing the following: a. $Z = \sqrt{R^2 + (X_L - X_C)^2}$ b. The point of resonance c. The power factor and phase angle of the circuit	all measurements will be within a frequency of $\pm$ 50% of actual measurements.
Power Supplies	1. Given a rated DC power supply under a loaded condition,	the learner will determine if the unit supply is functioning,	within manufacturer's specifications.
	2. Given the terms: a. Gaseous diode b. Cold cathode tube c. Zener diode and VR tubes d. Thyratron e. Triode f. Silicon, germanium, selenium and copper oxide rectifiers,	the learner will list and describe,	one characteristic and one application of each.
	3. Given the necessary test equipment, half wave and full wave power supply, and formulas for calculating voltages for half wave and full wave,	the learner will compare and explain the differences between his calculated values and his actual measured values,	with 100% accuracy.
	4. Given the following power circuits: a. Half wave power supplies with capacitor filter b. Full wave power supplies with pi filter c. Voltage doublers d. Regulated power supplies e. Variable power supplies	the learner will draw the schematic diagrams and list an advantage and disadvantage,	of each of the circuits.

Topic	Conditions	Performance	Criteria
	5. Given the formula and necessary power supply: $\% \text{ reg} = \frac{V_{nL}-V_{fl}}{V_{fl}} \times 100$	the learner will measure and determine the percent regulation of a given power supply,	with 100% accuracy.
	6. Given the following terms: a. % regulation b. Peak inverse voltage c. Surge current d. Bleeder resistor e. Zener point f. Swinging choke	the learner will explain the terms,	4 out of 6 being 100% accurate.
Magnetic Theory	1. Without the use of reference materials,	the learner will list,	three practical applications of the use of magnetism in industry today.
	2. Given a magnetic circuit,	the learner will list three factors and demonstrate one in the laboratory illustrating the increase or decrease of strength of a magnetic field,	with 100% accuracy for the current used.
Soldering	1. Given an unbared wire of any type,	the learner will prepare the wire for soldering or attaching to a solderless connector by removing all insulation,	a metal to metal contact may be made without reducing the strength of the connector.
	2. Given two wires or a wire and a terminal,	the learner will connect the pieces with the proper hand tools and solder and solderless connectors,	to have an electrically sound and mechanically strong contact of a size no greater than is required to accomplish the connection.
	3. Given a soldered connection,	the learner will clean the connection,	of all excess solder and wire to reduce possibilities of shorts.

Topic	Conditions	Performance	Criteria
	4. Given a solid state device to be soldered,	the learner will solder with the aid of some type of heat sink,	no damage will occur to a PN junction or other sensitive ohmic connections.
	5. Given a PC board,	the learner will desolder the connections with a wick or vacuum device,	leaving the foil clean of solder so another component may be placed in the holes of the removed component.
	6. Given a soldered connection to be made on a high voltage circuit,	the learner will make the connection,	the effect of corona discharge is minimized.
Audio Repair	1. Given an audio problem, the necessary tools and test equipment,	the learner will troubleshoot to locate the problem, repair, align and adjust the audio circuit for minimum distortion and maximum volume,	according to manufacturer's specifications.
Radio Repair	1. Given an AM radio with a defective detector stage, the necessary tools and equipment,	the learner will troubleshoot and repair the circuit,	with 100% accuracy.
	2. Given an AM radio with a defective IF stage, the necessary tools and equipment,	the learner will troubleshoot, repair, align the stage, and adjust the circuit for maximum sensitivity and maximum selectivity,	according to manufacturer's specifications.
	3. Given an AM radio needing an IF alignment, necessary tools and test equipment,	the learner will align the radio,	for the best sensitivity and best selectivity, observing for put-puts and hum.
	4. Given an AM radio with a defective power supply, the necessary tools and test equipment,	the learner will troubleshoot and repair the set,	according to manufacturer's specifications, checking for hum (AC) and maximum DC.

Topic	Conditions	Performance	Criteria
Solid State Theory	1. Given the terms: a. Donor and acceptor - doping b. Barrier potential c. Forward and reverse bias d. Forward and reverse resistance e. Semi-conductor f. Electron vs hole flow	the learner will explain the flow of current through a solid state device, based on the terms,	with 100% accuracy.
	2. Given the following terms: a. Unijunction transistor b. F E T c. L E D d. Silicon Controlled Rectifier e. Tunnel diode	the learner will describe the operation and give an application and characteristic,	of 3 of the 5 terms.
Basic Amplifiers	1. Given a triode and necessary equipment,	the learner will calculate amplification, DC and AC plate resistance, transconductance, plate dissipation, saturation and cut-off,	of the triode with 100% accuracy.
	2. Given the necessary test equipment and four different amplifier circuits (A, AB, B and C),	the learner will identify each using biasing, plate dissipation, and efficiency in the input and output waveforms,	3 of the 4 circuits are identified with 100% accuracy.
	3. Given the following terms: a. Input and output impedance b. Voltage gain c. Power gain d. Phase shift e. Current gain (Beta) f. Biasing - pnp vs npn g. Load line	the learner will list the characteristics of three common configurations of transistor circuits,	for 5 of the 7 terms.
	4. Given four biasing circuits and without reference material,	the learner will describe types of biasing used in vacuum tubes and solid state circuits,	for 3 of the 4 circuits.

Topic	Conditions	Performance	Criteria
	5. Given a decibel gain formula for an audio amplifier,	the learner will calculate power gain for the amplifier,	with 100% accuracy.
	6. Given the following terms: a. Decoupling circuit b. Phase inverter c. Distortion d. Frequency response e. Push - pull f. Complimentary symmetry g. Hum h. Feedback	the learner will define,	6 of the 8 terms, with 100% accuracy.
Transformers	1. Given the formula $Zp=ZsxTR^2$	the learner will calculate impedance matching transformer ratios for maximum power output,	with 100% accuracy.
	2. Given two transformers,	the learner will connect electrical polarity of the given transformers; transformers must be connected first in series then in parallel to verify polarity and voltage output,	with 100% accuracy.
	3. Given the terms: a. Open delta b. Autotransformer c. Voltage instrument transformer d. Current instrument transformer	the learner will give a brief description of the transformer connections listing any advantage or special applications,	of 3 of the 4 transformer connections.
	4. Given a voltage or current which cannot be measured with ordinary meters,	the learner will calculate the turns ratio needed for any given instrument transformer,	with 100% accuracy.
Radio Frequency Amplifiers 9/74	1. Given a radio frequency amplifying circuit,	the learner will list three construction principles to minimize interference,	with 100% accuracy.

Topic	Conditions	Performance	Criteria
	2. Given the terms: a. Bypass capacitors b. Radio frequency chokes c. Tuned circuits d. Decoupling circuit e. Grid leak and cathode bias f. Shunt and series feed g. Coupling circuits h. Parasitic choke i. Neutralizing circuit j. Link coupling	the learner will define	7 of the 10 terms with 100% accuracy.
DC Motors	1. Given the terms: a. Series b. Shunt c. Compound D.C. motors and without reference materials,	the learner will explain,	one application of each.
	2. Given any D.C. motor,	the learner will change armature or field connections,	to reverse the direction of the motor.
	3. Given a D.C. motor,	the learner will list and explain	two methods for controlling the speed of the motor.
AC Motors	1. Given a diagram or other visual aide,	the learner will explain the principles causing rotation of an A.C. induction motor,	with 100% accuracy.
	2. Given the following terms: a. Split-phase b. Repulsion induction c. Universal d. Shaded pole	the learner will explain each in terms of starting, connection of windings and practical application,	with 100% accuracy.
Relays	1. Given a faulty mechanical relay,	the learner will replace or repair any contact, coil, or other replaceable parts,	proper troubleshooting and repair procedures are followed and the relay is functioning properly.

Topic	Conditions	Performance	Criteria
Logic Circuits	1. Given a schematic or logic diagram of the following circuits: a. AND b. OR c. NAND d. NOR e. Inverter f. Flip-Flop g. Memory circuit h. Counter i. Adder j. Shift Register	the learner will identify and explain the function,	of 7 of the 10 circuits, with 100% accuracy.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Indust 'al Electronics

U.S.O.E. Code Number: 17.1502

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Schematic Diagram	1. Given a schematic diagram of a multi-stage amplifier,	the learner will identify classes of operation used, such as: A, A_1B_1, A_2B_2 and C, etc., coupling methods between stages, feedback used, single-ended and push-pull stage voltage and power amplification stages	with 75% accuracy.
Audio Amplifier	1. Given a defective audio amplifier,	the learner will select the necessary test equipment and use proper troubleshooting techniques to locate and repair the defect	the aplifier is operable withi, a pre-determined period of time appropriate for the defect.
Oscillator Circuits	1. Given an examination,	the learner will identify and distinguish between the Armstrong, Hartley, and Colpitts oscillator circuits	with 75% accuracy.
Principles of AM Radio Transmission and Reception	1. Given an examination on AM Radio Transmission and reception,	the learner will complete the examination pertaining to the principles of radio transmission and reception,	to 75% accuracy.

Topic	Conditions	Performance	Criteria
Block Diagrams	1. Given the necessary equipment and information,	the learner will draw a block diagram of superheterodyne receiver and describe the function of each block	with 75% accuracy.
Superheterodyne Receiver	1. Given a non-functioning superheterodyne receiver, a schematic diagram, appropriate test equipment using appropriate trouble-shooting techniques,	the learner will repair the receiver in the time appropriate for the class of receiver	the receiver is operable.
Block Diagram	1. Given the necessary information and material,	the learner will draw a block diagram of a black and white television receiver and explain the function of each block	with 75% accuracy.
Circuits	1. Given an examination,	the learner will identify the characteristics and distinguish astable, monostable, bistable (flip-flop) multi-vibrators circuits	with 75% accuracy.
Digitals	1. Given the necessary information and material,	the learner will draw a logic symbol, the truth table, then write the equation for a 4-input, AN, OR, NOR, NAND gate	to 75% accuracy.
Binary Tables	1. Given the necessary materials,	the learner will make a table showing the comparative number of the decimal and binary number system (up to 15 digits)	with not more than 2 errors.
Binary Addition	1. Given 4 binary addition math problems,	the learner will compute the correct answers	to 100% accuracy.
Digital Display Systems	1. Given the necessary information and material,	the learner will list a minimum of 3 digital display systems and describe one basic characteristic of each system	to 75% accuracy.

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Topic	Conditions	Performance	Criteria
Diode	1. Given a PN junction diode and a VOM,	the learner will evaluate the condition of the diode by determining the forward-reverse resistance ratio	the results are within 10% of the manufacturer's specifications.
Rectifiers	1. Given a teacher-developed examination,	the learner will identify and describe the characteristics of a half-wave rectifier, full-wave rectifier, and bridge-wave rectifier	to 90% accuracy.
Power Supplies	1. Given the components specification and a schematic diagram,	the learner will construct, test, and troubleshoot the following power supplies: half-wave, full-wave, bridge rectifier, voltage doubler	the results are within 10% of the stated specifications.
Circuits	1. Given three circuits,	the learner will identify the circuit and the characteristics of the common base, common-emitter, common-collector, transistor amplifier configuration	with an accuracy of 75%.
Emitter Amplifier	1. Given a schematic diagram, components and specifications,	the learner will construct a common emitter amplifier employing single battery bias obtaining the following data: current gain, voltage gain, and DC operating voltages	within 20% of specifications.
Transistors	1. Given 10 functional transistors, a basic diagram and a VOM,	the learner will determine if they are NPN or PNP type	to 100% accuracy.
Transistorized Circuits	1. Given a schematic diagram of two transistorized circuits,	the learner will identify a minimum of 2 methods of bias stabilization	to 100% accuracy.
Semi-Conductors	1. Given a semi-conductor, data book and a transistor,	the learner will look up and record the basic diagram to package maximum voltage current ratings typical gain and frequency limitations,	to 100% accuracy.

Topic	Conditions	Performance	Criteria
Semi-Conductor Devices	1. Given an examination,	the learner will identify, describe and list typical applications of special purposes semi-conductor devices, including FTE's, UJT's, SCR's, tunnel diodes, and zener diode	to 100% accuracy.
Electrical Circuit	1. Given a schematic diagram and the components,	the learner will wire a functional electrical circuit	to 100% accuracy of the diagram.
Splices	1. Given commonly used samples of wire or cable,	the learner will stripe the insulation, and make terminations or splices, and insulate them	they conform with correctly prepared examples
Electrical Circuits	1. Given commonly used electronic components,	the learner will select the correct tools and fabricate an electrical circuit using proper construction practices, lead dressing and soldering techniques	it conforms to a correctly prepared example.
Tools	1. Given a variety of tools or pictures,	the learner will name and select the proper hand tool for specific job application	to 80% accuracy.
Electrical Measurement	1. Given a simple electrical circuit,	the learner will measure voltage circuit and/or resistance by selecting the proper instrument and range, connecting the meter correctly with due precaution reporting	within 10% of the indicated value, within 30 seconds of the meter connection.
Ohm's Law	1. Given 5 problems involving Ohm's law,	the learner will solve these problems and power equations pertaining to series, parallel, and series parallel circuits	to 75% accuracy.
Continuity Tester	1. Given a continuity tester,	the learner will check or confirm any of the following conditions: closed circuit, grounded circuit, open circuit	to 100% accuracy.

Topic	Conditions	Performance	Criteria
Valves	1. Given a sinewave of a specific valve,	the learner will compute the effective valve RMS average valve peak valve and peak-to-peak	to 75% accuracy.
Oscilloscope	1. Given a general purpose oscilloscope and varying voltages,	the learner will calibrate the oscilloscope and report the peak-to-peak voltage measurements	to 75% accuracy.
Coils	1. Given several coils,	the learner will predict their influence upon AC circuits of various frequencies as determined by the inductive reactance at varying frequencies	to 75% accuracy.
Capacitors	1. Given six capacitors,	the learner will predict their influence on alternating current as determined by the capacitive reactance at various frequencies	with 75% accuracy.
Impedance	1. Given simple RL, RC, or RCL Series circuits,	the learner will determine the impedance	with 75% accuracy.
Distribution System	1. Given an example of voltage distribution system,	the learner will differentiate between the application and characteristics of simple phase three-wire, three-phase 3-wire three-phase 4-wire systems	to 75% accuracy.
Transformers	1. Given a transformer, a VOM, and a source of alternating current,	the learner will determine its turns-ratio	to 75% accuracy.
Batteries	1. Given a list of batteries,	the learner will describe the distinguishing characteristics, uses, and maintenance practices of each type	to 75% accuracy.
Power Source	1. Given multiple power sources,	the learner will connect multiple power sources to obtain maximum current and/or voltage	to 75% accuracy.

Topic	Conditions	Performance	Criteria
Electrical Safety Rules	1. Given examination on electrical safety rules,	the learner will complete the test	to 100% accuracy.
Electro-Magnetism	1. Given a test on electro-magnetism,	the learner will demonstrate his knowledge of electro-magnetism by citing any examples and explaining the principles of operation of that device, including the applicable laws of magnetism and current flow,	to 100% accuracy.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Radio and Television

U.S.O.E. Code Number: 17.1503

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title).		
Cooperative Education Technique	(See statement included under this title if applicable).		
Power Supply - Solid State and Tube Type	1. Given an AM-FM receiver with a defect in the power supply circuitry and common test equipment including: 1. V.O.M. 2. Tube Checker 3. Signal generator	the learner will test problems in an AM-FM receiver that pertain to power supply problems	with 75% accuracy.
	2. Given an AM-FM receiver, essential hand tools, replacement parts, and test equipment,	the learner will repair defects in radio power supply circuits	with 100% accuracy.
	3. Given an AM-FM receiver and its specifications,	the learner will check the radio receiver power supply for proper operation	using factory specifications in checking the receiver.
IF & RF Sections, Solid State and Tube Type	1. Given an AM-FM receiver with a defect in the IF & RF sections,	the learner will diagnose problems in a radio receiver that pertains to IF & RF sections problems	with 75% accuracy.
	2. Given an AM-FM receiver, essential hand tools, replacement parts, and test equipment,	the learner will repair defects in radio IF & RF sections	with 100% accuracy.

Topic	Conditions	Performance	Criteria
	3. Given an AM-FM receiver and its specifications,	the learner will check the radio receiver's IF & RF sections for proper operation	using factory specifications in checking the receiver.
Audio Solid State and Tube Type	1. Given an AM-FM receiver with a defect in the audio circuitry,	the learner will diagnose problems in an AM-FM receiver that pertain to audio problems	with 75% accuracy.
	2. Given an AM-FM radio, essential hand tools, replacement parts, and test equipment,	the learner will repair defects in AM-FM radio audio circuits	with 100% accuracy.
	3. Given an AM-FM radio and its specifications,	the learner will check the AM-FM radio's audio circuit for proper operation	using factory specifications in checking the radio.
AM Oscillators Solid State and Tube Type	1. Given an AM receiver with a defect in the oscillator circuitry,	the learner will diagnose problems in a radio receiver that pertain to oscillator problems	with 75% accuracy.
	2. Given an AM receiver, essential hand tools, replacement parts, and test equipment,	the learner will repair defects in the radio oscillator circuits	with 100% accuracy.
	3. Given an AM receiver and its specifications,	the learner will check the radio receiver oscillators for proper operation,	using factory specifications in checking the receiver.
FM Oscillators Solid State and Tube Type	1. Given an FM receiver with a defect in the oscillator circuit,	the learner will diagnose problems in an FM receiver pertaining to oscillator defects	with 75% accuracy.
	2. Given an FM receiver, essential hand tools, replacement parts, and test equipment,	the learner will repair defects in FM oscillator circuits	with 100% accuracy.
	3. Given an FM receiver and its specifications,	the learner will check the FM receiver oscillator for proper operation	using factory specifications in checking the receiver.

Topic	Conditions	Performance	Criteria
FM Detection	1. Given an FM receiver with a defect in the detection circuitry,	the learner will diagnose problems in the FM receiver that pertain to ratio and discrimination detection	with 75% accuracy.
	2. Given an FM receiver, hand tools, replacement parts, and test equipment,	the learner will repair defects in FM receiver detection circuits	with 100% accuracy.
	3. Given an FM receiver and its specifications,	the learner will check the FM receiver detection circuit for proper operation	using factory specifications in checking the receiver.
Vertical Sweep Solid State and Tube Type	1. Given a television receiver with a defect in the vertical sweep circuit and common test equipment including: 1. B & K Analyst or equivalent 2. Test jigs 3. VOM 4. VTVM	the learner will diagnose problems in TV receivers that pertain to vertical sweep	with 75% accuracy.
	2. Given a television receiver, hand tools, replacement parts, and test equipment,	the learner will repair defects in television vertical sweep circuits	with 100% accuracy.
	3. Given a television receiver and its specifications,	the learner will check the television receiver vertical sweep circuit for proper operation	using factory specifications in checking the receiver.
Horizontal Sweep	1. Given a television receiver with a defect in the horizontal sweep circuitry,	the learner will diagnose the problem in a TV receiver that pertains to horizontal sweep problem	with 75% accuracy.
	2. Given a television receiver, essential hand tools, replacement parts, and test equipment,	the learner will repair defects in television horizontal sweep circuits,	with 100% accuracy.

Topic	Conditions	Performance	Criteria
	3. Given a television receiver and its specifications,	the learner will check the television receiver horizontal sweep for proper operation	using factory specifications in checking the receiver.
SYNC Circuits	1. Given a television receiver with a defect in the sync circuit,	the learner will diagnose problems in a TV receiver that pertains to sync problems	with 75% accuracy.
	2. Given a television receiver, essential hand tools, replacement parts, and test equipment,	the learner will repair defects in television sync circuits	with 100% accuracy.
	3. Given a television receiver and its specifications,	the learner will check the television receiver sync circuits for proper operation	using factory specifications in checking the receiver.
AGC and Noise Gate	1. Given a television receiver with a defect in the AGC circuitry,	the learner will diagnose the problem in a TV receiver that pertain to AGC and noise gate	with 60% accuracy.
	2. Given a television receiver, essential hand tools, replacement parts, and test equipment,	the learner will repair defects in television AGC and noise gate	with 100% accuracy.
	3. Given a television receiver and its specifications,	the learner will check the television receiver AGC and noise gate operation	using factory specifications in checking the receiver.
Color Oscillators - Solid State and Tube Type	1. Given a television receiver with a defect in the color oscillator circuitry,	the learner will diagnose the problem in a TV receiver that pertains to color oscillator problems	with 75% accuracy.
	2. Given a television receiver, essential hand tools, a replacement part, and test equipment,	the learner will repair defects in television color oscillator circuits	with 100% accuracy.
	3. Given a television receiver and its specifications,	the learner will check the television for proper operations	using factory specifications in checking the receiver.

Topic	Conditions	Performance	Criteria
Color Phase Detection	1. Given a television receiver with a defect in the color phase circuit,	the learner will diagnose problems in the television receiver that pertains to color phase detection problems	with 75% accuracy.
	2. Given a color television receiver with a defect in color phase detection circuitry,	the learner will repair defects in color phase detection circuitry	with 100% accuracy.
	3. Given a color receiver and its specifications,	the learner will check the color receiver color phase detection circuit for proper operation	using factory specifications in checking the receiver.
Burst Amp	1. Given a color receiver with a defect in the burst amplifier circuit,	the learner will diagnose problems in the color receiver that pertain to burst amplifier problems	with 75% accuracy.
	2. Given a color receiver, essential hand tools, replacement part and test equipment,	the learner will repair defects in burst amplifier circuits	with 100% accuracy.
	3. Given a color receiver and its specifications,	the learner will check the television burst amplifier's proper operations	using factory specifications in checking the receiver.
Regulation High Voltage	1. Given a television receiver with a defect in the regulation high-voltage circuitry,	the learner will diagnose the problem in a TV receiver that pertains to regulation high-voltage problems	with 75% accuracy.
	2. Given a TV receiver, essential hand tools, replacement parts, and test equipment,	the learner will repair defects in TV regulation high-voltage circuits,	with 100% accuracy.
	3. Given a TV receiver and its specifications,	the learner will check the television receiver regulation high-voltage for proper operation	using factory specifications in checking the receiver.

U.S.O.E. Code Number: 17.1503

Topic	Conditions	Performance	Criteria
Picture Tube and Associated Circuit Black and White and Color	1. Given a black and white or a color TV,	the learner will check the picture tube for proper operation	with 75% accuracy.
	2. Given a color TV receiver with a malfunction in the picture tube section, essential hand tools, replacement parts, and bench test equipment,	the learner will repair the malfunction in the picture tube section	with 100% accuracy.
	3. Given a color TV receiver with a defective picture tube section,	the learner will diagnose and identify the malfunction in the picture tube section	with 75% accuracy.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Radio-TV Broadcasting

U.S.O.E. Code Number: 17.1598

Remarks: In attempting to arrive at a measurement which could be applied to performance objectives in a highly creative area such as broadcast programming and production, the Committee agreed on the concept "broadcastable program" as a method of measurement. A "broadcastable program" is a radio or television program entity which: (1) meets the technical standards of the broadcast industry; (2) complies with the rules and regulations set forth by the Federal Communications Commission and, (3) is acceptable in terms of content and technique of presentation as established by broadcast station management. We feel it is necessary to define a "broadcastable program" in these admittedly vague terms because the final definition does, in fact, rest with the management of any individual broadcast organization.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Broadcast Performance	1. In a television studio, in a television program consisting of a live commercial, a newscast, and an interview,	the learner will perform as talent in a program,	that could be broadcast.
	2. In a television production situation with unedited copy and student-prepared visuals,	the learner will write, edit, and deliver a 10-minute television news program,	which contains at least two stories using learner-prepared visuals and which is an acceptable program for broadcast.
	3. In a radio production situation, with unedited copy and unedited audio tape of a news event, under specified time restrictions,	the learner will write, edit and deliver a five minute radio news program,	including at least two actuality stories pre-taped and edited by the learner, which could be broadcast.

Topic	Conditions	Performance	Criteria
Production	1. In a television studio situation containing 2 cameras, 2 studio talents, 1 film insert, 35mm slides and live studio cards, under specified time restrictions,	the learner will individually perform each of the following: light a set; operate a camera; act as a floor director; operate a production switcher; set up microphones, and direct a television production,	each function could serve as an integral part of a broadcastable program.
	2. In a radio control room, under specified time restrictions and with an edited commercial pretaped by the learner,	the learner will serve as talent and simultaneously operate an audio control board, turntables, tape machines, and microphones,	a broadcastable radio program is produced that includes each of the following elements: a record program; a newscast; and a live insert by another talent.
Technical Principles	1. Given the requirements to set up a television studio and control room,	the learner will identify each component and explain component functions and inter-relationships	a broadcastable program can be produced.
	2. Given the requirements to set up a radio studio and control room,	the learner will identify each component and explain component functions and inter-relationships	a broadcastable program can be produced.
	3. Given the Federal Communication Commission Third Class Radio/ Telephone Operator's License Examination with Broadcast Endorsement,	the learner will complete and pass the examination,	with at least the minimum score presently accepted by the F.C.C.
History and Regulation	1. Given a teacher-made test on the history, development, F.C.C. program regulations and responsibilities of broadcasting,	the learner will complete the test,	with a minimum score of 70%.

Topic	Conditions	Performance	Criteria
Broadcast Organization	1. Given the major departments in both a radio station and a television station,	the learner will describe the responsibilities and interrelationships of the departments within the radio station and the television station and construct an organization chart and identify the major responsibilities of each person/position and department,	the organization could function as a broadcast entity.
Film Production	1. Given 100 feet of motion picture film and a motion picture camera,	the learner will film an event and edit the film,	a one-minute broadcastable program component is produced.
Sales	1. Given a teacher-made test on the principles and techniques of broadcast time sales,	the learner will complete the test,	with a minimum score of at least 70%.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Graphic Arts Occupations

U.S.O.E. Code Number: 17.1900

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Hand Composition	1. Given a line gauge,	the learner will measure all common type sizes from 6 point to 72 point, including quads and spaces,	with 80% accuracy.
	2. Given copy and written instructions,	the learner will set a hand composition project involving the justification of lines flush left and flush right, centering and line spacing,	a) copy, word, line, and letter spacing is 100% accurate and, b) the form will "lift"
	3. Using his own project	the learner will obtain a proof for the purpose of proofreading and making necessary corrections,	the proof must be clear enough to permit the learner to find and correct the errors.
	4. Given a form from the learner's own handcomposition project,	the learner will distribute the type,	all type is in the proper compartment.
Type Styles	1. Given samples of major type classifications: a) Sans Serif/Gothic b) Roman c) Text d) Script	the learner will identify them	with 100% accuracy.

Topic	Conditions	Performance	Criteria
Platen Press Operation	1. Given a form and lock-up materials,	the learner will remove a tied form from a galley and lock-up the form using the method necessary for the particular form and the press being used,	the form is positioned correctly and will fit.
	2. Given a locked-up form,	the learner will prepare the platen press and complete the run	the image is positioned correctly with even inking and even impression.
Cold Type Composition	1. Given five examples of cold type composition,	the learner will measure line lengths, point sizes, and line spacing using a printer's line gauge,	with 100% accuracy.
	2. Given a production job,	the learner will set up and operate the cold type composition unit he/she is training on,	quality copy is produced as determined by the requirements of the job.
Key-Line	1. Given copy and a proportional scale,	the learner will determine the percentage of reproduction needed,	the copy fits the keyline.
	2. Given illustration board, layout and necessary equipment,	the learner will make up a basic keyline	suitable for camera-ready art.
Process Photography	1. Without the use of reference materials,	the learner will differentiate between line and halftone copy,	with 100% accuracy.
	2. Without the use of reference materials,	the learner will explain why a process camera has different "f" stops,	in agreement with available resource materials (textbook, manufacturer's manual, etc.).
	3. Given camera-ready copy,	the learner will set the percentage scales on the process camera,	with 100% accuracy.
	4. Given a process camera,	the learner will set the exposure lamps for the desired angle and distance to the copyboard,	the finished negative is useable.

Topic	Conditions	Performance	Criteria
	5. Given the necessary materials,	the learner will set up the development sink and mix the chemicals as per the requirements of the solutions used in the darkroom,	the developed film is useable.
	6. Given a piece of unexposed ortho-chromatic film under safe light conditions,	the learner will determine the emulsion and base side of the film,	with 100% accuracy.
	7. Given a piece of unexposed panchromatic film in total darkness,	the learner will determine the emulsion and base side of the film,	with 100% accuracy.
	8. Given a piece of film,	the learner will position the film on the filmboard,	all image area on the copy appears on the developed film negative.
	9. Given samples of halftones and screen tints,	the learner will distinguish between the two types,	with 100% accuracy.
	10. Given continuous tone copy,	the learner will determine the main, flash and bump exposures to be used and the length of exposure for reproducing a halftone negative,	the resulting negative can be used to reproduce the same tonal range as the original copy.
	11. Given film, negative and exposure frame,	the learner will expose and develop the film,	the film positive is useable.
	12. Given a film negative or positive and contact paper,	the learner will determine the exposure and develop a contact silverprint,	the silverprint is useable for proofing.
Offset	1. Given chemicals,	the learner will mix the fountain solution,	per the manufacturer's ratio.
	2. Given five paper carton labels,	the learner will interpret the figures on the label, determining substance, weight and grain direction,	with 100% accuracy.

Topic	Conditions	Performance	Criteria
	3. Given a production job,	the learner will set up an offset press and run a single and/or multiple-color job,	as per the requirements of the job ticket, producing quality press sheets from the given original stock in the desired quantity.
	4. Given an offset press,	the learner will make and/or check four pressure settings: A. Water form roller(s) to plate cylinder B. Ink form roller(s) to plate cylinder C. Plate to blanket cylinder pressure. D. Blanket to impression cylinder pressure,	all pressure adjustments will be according to the manufacturer's specifications.
	5. Given the necessary materials,	the learner in presswork will wash up the press,	all cylinders, rollers and fountain are free of ink.
Stripping	1. Given samples of a halftone negative, a line negative and a percentage screen tint,	the learner will identify each sample,	with 100% accuracy.
	2. Given the layout for single page printing and the required negative(s) and either ruled or blank masking sheets,	the learner will strip the flat for an offset press,	with a placement and squareness accuracy of 1/64".
	3. Given two halftones and a masking sheet,	the learner will outline one and strip both into a masking sheet	the result could be used to make a plate.
	4. Given job ticket instructions, one line negative and halftone negatives,	the learner will strip these together,	with a squareness and placement accuracy of ± 1/16".
	5. Given negatives and a folder dummy and a job ticket,	the learner will strip the pages,	100% correctly and with a squareness and placement of ± 1/16".

Topic	Conditions	Performance	Criteria
	6. Given the required negatives and job ticket,	the learner will strip a multiple burn flat,	all burns are correctly registered together.
	7. Given the required negatives and job ticket,	the learner will strip a multi-colored flat,	all colors register.
Platemaking	1. Given a flat and job ticket,	the learner will select and process an offset plate.	it is useable on the press.
Paper	1. Given samples of 15 standard papers including: Mimeo Bond, Duplicator Bond, Regular Offset, Coated Enamel, Cover, Supphite Bond, Cotton Content Bond, Gummed Label, Index Bristol, Text, Onionskin, Safety Paper, Carbonless Paper, Ledger, Pressure Sensitive Label,	the learner will correctly identify,	12 out of the 15.
	2. Given a sheet of paper,	the learner will determine the grain,	by using three tests, with 100% accuracy.
Bindery			
Paper Cutter	1. Given a job ticket and stock,	the learner will cut the stock,	to within 1/64".
Collator	2. Given a job ticket and materials,	the learner will set up a collating sequence,	the pages in the finished product are in correct order.
Stitcher	3. Given a job ticket and materials,	the learner will set and operate the stitcher for both side and saddle stitching,	correctly for the thickness of the material being stitched.
Paper Folder	4. Given a job ticket and materials,	the learner will set up and operate the folding machine,	per specifications of the job.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Lithography, Photography and Platemaking

U.S.O.E. Code Number: 17.1903

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Camera	1. Given equipment, supplies, and materials for camera reproduction,	the learner will produce line negatives at any size within the camera's capacity,	without pinholes or over-developing to the point of filling in of fine lines and/or grid on the Stougger 10-step gray scale, within 20 minutes.
	2. Given equipment, supplies, and materials for camera reproduction, including continuous tone prints of density range of not less than .84,	the learner will produce half-tone negatives at any size within the camera's capacity,	with a 10% shadow dot and a 90% highlight dot, within 30 minutes.
Contact Printing	1. Given equipment, supplies, and materials for contact printing,	the learner will contact to film and to paper,	maintaining size and quality of the original within 15 minutes.
Stripping	1. Given equipment, supplies, materials, and press specifications for stripping,	the learner will correctly position, mount, and opaque single color combination line and half-tone negatives on a single masking sheet for a specified press,	within a tolerance of $\pm$ 1/16" vertical on a 20" span, vertical, horizontal, and parallel register within 30 minutes.

Topic	Conditions	Performance	Criteria
	2. Given equipment, supplies, materials and press specifications for stripping,	the learner will correctly position, mount, and opaque single color multi-forms on one flat for a specified press,	with all forms being equal distance and square to each other (for guillotine cutting at bindery) with the total time not to exceed 5 minutes per form.
	3. Given equipment, supplies, materials and press specifications for stripping,	the learner will correctly position, mount, and opaque (a) line negatives, (b) half-tone negatives (c) screen tints, (d) reverses and overprints on multiple flats to make a single color plate,	in register as specified on given keyline and overlays on three flats with no more than one piece of film per flat within 45 minutes, including a proof (brownline of silverprint).
Plating (Pre-Sensitized)	1. Given equipment, supplies, materials, exposure and development specifications, and a single flat for platemaking,	the learner will make a lithographic plate from one flat,	correctly exposed to manufacturer's specifications and developed for reproduction equal to the negative and gummed for storage or immediate use. Operation time not to exceed 15 minutes.
	2. Given equipment, supplies, materials, exposure and development specifications, and multiple flats for platemaking,	the learner will make a lithographic plate from multiple flats,	correctly exposed to manufacturer's specifications, in register and developed equal to the negatives and gummed for storage or immediate use. Production time not to exceed 3 times the total exposing time.
	3. Given equipment, supplies, materials, exposure and development specifications, and multiple flats for platemaking,	the learner will make a lithographic plate from multiple flats,	correctly exposed to manufacturer's specifications, in register and developed equal to the negatives and gummed for storage or immediate use. Production time not to exceed 3 times the total exposing time.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Machine Shop

U.S.O.E. Code Number: 17.2302

Remarks: Standard Criteria: Included in each performance objective which lists "Standard Criteria" are the following standards of performance unless otherwise indicated.

1. The task is to be done in a manner which will not endanger the learner or others and will not cause damage to equipment or facilities.
2. Each task which requires the learner to produce a machined part should be completed within 200% of the time required to produce the part as determined by locally acceptable industrial standards.
3. Each machining operation is to be produced within the tolerances as specified in the Machinery's Handbook, by Oberg and Jones, Industrial Press Inc., New York, N.Y., or the equivalent.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable)		
Lathe	1. Given an engine lathe,	the learner will identify the headstock, tailstock, saddle, cross slide, compound rest, tool post, apron, apron hand wheel, clutch knob, half nut lever, tailstock spindle, spindle, 3-jaw chuck, start and stop button, gear box levers, thread dial, lead screw, taper attachment,	with 100% accuracy
	2. Given a tool blank,	the learner will grind a tool bit,	it will cut the material and fit the operation for which it would be designed; standard criteria.

Topic	Conditions	Performance	Criteria
	3. Given a piece of stock, outside micrometer, and lathe equipped to do O.D. turning,	the learner will machine	to a tolerance of ± .001; standard criteria.
	4. Given a piece of stock and a combination drill and countersink,	the learner will face and center drill,	1/2 to 2/3 up the countersink: standard criteria.
	5. Given a lathe with the necessary tools to facilitate installation,	the learner will mount the chuck securely,	standard criteria.
	6. Given a lathe chuck with 2-piece reversible jaws,	the learner will clean and reverse the jaws,	standard criteria.
	7. Given a lathe with a 4-jaw independent chuck and a shaft,	the learner will indicate the shaft,	within ± .0005 total indicator run-out; standard criteria.
	8. Given a lathe and a piece of stock,	the learner will set up the lathe to turn between centers,	standard criteria.
	9. Given a lathe,	the learner will align the centers,	to ± .0005; standard criteria.
	10. Given a lathe, a piece of stock, and a blueprint,	the learner will drill and ream a hole,	to specifications on the blueprint; standard criteria.
	11. Given a lathe, a work piece, and a blueprint,	the learner will select the proper tap drill size and power tap,	to specifications on the blueprint; standard criteria.
	12. Given a lathe and a work piece,	the learner will cut off the work piece,	standard criteria.
	13. Given a lathe, a piece of stock and a blueprint,	the learner will knurl	to specifications on the blueprint; standard criteria
	14. Given a lathe, a piece of stock and a blueprint,	the learner will cut the external thread	to specifications on the blueprint; standard criteria.

Topic	Conditions	Performance	Criteria
	15. Given a lathe, a piece of stock and a blueprint,	the learner will cut the internal thread,	to specifications on the blueprint; standard criteria
	16. Given a lathe, a piece of stock and a blueprint,	the learner will cut a taper	to specifications on the blueprint; standard criteria
	17. Given a lathe, a piece of stock and a blueprint,	the learner will bore a hole	to specifications on the blueprint; standard criteria
	18. Given a lathe, a piece of stock, and a blueprint,	the learner will turn the O.D. to a shoulder,	to specifications on the blueprint; standard criteria
	19. Given a lathe, a piece of stock and a blueprint,	the learner will bore the I.D. to a shoulder,	to specifications on the blueprint; standard criteria
	20. Given a lathe, a piece of stock and a blueprint,	the learner will form turn	to specifications on the blueprint; standard criteria
	21. Given a lathe, a piece of stock and a blueprint,	the learner will produce the finish	to specifications on the blueprint; standard criteria
	22. Given a lathe, a piece of stock and a blueprint,	the learner will cut grooves to size and depth	to specifications on the blueprint; standard criteria.
Drill Press	1. Given a twist drill,	the learner will identify web, cutting edge, clearance, shank, flutes, tang, margin and point	with 100% accuracy
	2. Given a drill press,	the learner will identify the base, column, table, spindle and head,	with 100% accuracy
	3. Given a designated RPM and feed for a specific drill,	the learner will set the speed and feed of the machine,	with 100% accuracy
	4. Without the use of reference materials,	the learner will name the three ways drills are categorized by size,	with 100% accuracy

Topic	Conditions	Performance	Criteria
	5. Given a drill press, a piece of stock, and a blueprint,	the learner will center drill, drill, counterbore, countersink, spotface, power tap, and ream	to specifications on the blueprint; standard criteria
	6. Given a drill press, a piece of stock, and a blueprint,	the learner will select and use the proper holding devices,	as determined by size, shape, and type of material.
Vertical Milling Machine	1. Given a vertical milling machine,	the learner will identify the table, head spindle, ram, turret, knee, saddle, cross slide handle, longitudinal travel handle, draw bar, forward and reversing switch, RPM controls, feed levers, and collets.	with 100% accuracy
	2. Given a vertical mill,	the learner will tram the head of the milling machine	to a total indicator reading (T.I.R.) of ± .001; standard criteria
	3. Given a vertical milling machine and a milling machine vise,	the learner will mount vise parallel to bed ways,	to a tolerance of ± .001; standard criteria
	4. Given a diagram showing climb, or down milling, and conventional, or up milling,	the learner will identify each	with 100% accuracy
	5. Given a vertical milling machine, a blueprint, a piece of stock and all necessary clamping and cutting devices,	the learner will perform the milling operations,	to specifications on the blueprint; standard criteria.
	6. Given a vertical milling machine, a piece of stock and a blueprint,	the learner will locate the center of the spindle over a reference point and all succeeding points,	within ± .001 of an inch
	7. Given a vertical milling machine, a piece of stock and a blueprint,	the learner will bore and counterbore,	to specifications on the blueprint; standard criteria

Topic	Conditions	Performance	Criteria
	8. Given a vertical milling machine, a piece of stock and a blueprint,	the learner will select and use end mills, fly cutters, shell mills, slitting saws, and key cutters,	to specifications on the blueprint; standard criteria
	9. Given a vertical milling machine, a piece of stock, a blueprint and each of the following: a. rapid index device b. dividing head c. rotary table	the learner will mount each unit and perform the operations,	to specifications on the blueprint; standard criteria
Horizontal Milling Machine	1. Given a horizontal milling machine,	the learner will identify the base, column, knee, saddle, table, spindle, arbor, overarm, and all control mechanisms,	with 100% accuracy
	2. Given a horizontal milling machine and a milling machine vise,	the learner will mount vise parallel to bed ways,	to a tolerance of ± .001; standard criteria
	3. Given a horizontal milling machine, a piece of stock and a blueprint,	the learner will perform the horiz ontal milling operations	to specifications on the blueprint; standard criteria.
O.D. - I.D. Grinders	1. Given a grinder,	the learner will identify the head stock, foot stock, wheel head, coolant system, steady rest, wheel dresser and I.D. attachment.	with 100% accuracy
	2. Given a grinder and a diamond dresser,	the learner will dress the wheel	sharp and true; standard criteria
	3. Given I.D. and O.D. grinders, work piece, and the project blueprint,	the learner will grind the I.D. and O.D. of the work piece,	to a bearing fit holding concentricity as measured with I.D. hole gauges, micrometer and dial indicator.

Topic	Conditions	Performance	Criteria
	4. Given a blueprint and work piece,	the learner will set up an O.D. grinder and grind a taper,	standard criteria
Surface Grinding	1. Given a surface grinder	the learner will identify wheel head, work holding device, down feed hand wheel, cross feed hand wheel, grinding wheel, spindle and traverse table feed wheel,	with 100% accuracy
	2. Given a blueprint specifying type of material,	the learner will select the proper wheel by referring to grinding symbols marked on the wheel to avoid burning the work and give micro finish required,	with 60% accuracy
	3. Given any grinding situation,	the learner will identify a cracked wheel,	100% of the time
	4. Given a surface grinder, work holding device, a blueprint and a work piece,	the learner will set up and grind work piece,	square, parallel, and to size; to specifications on the blueprint; standard criteria
	5. Given a surface grinder, work holding device, a blueprint and a work piece,	the learner will set up and grind work piece,	to angle; to specifications on the blueprint; standard criteria.
	6. Given the grinding machines used in the training situation,	the learner will perform preventive maintenance,	as specified in the operator's manual so the machine is able to run in a safe and precise manner; standard criteria
	7. Given the necessary gauges and samples of stock with any unknown R.M.S.	the learner will properly identify the finish of each sample,	with 75% accuracy; standard criteria
Sawing	1. Given a piece of material, a power saw, and a blueprint,	the learner will select the proper cutting blade and speed and make the necessary straight and/or contour cut (s),	to specifications on the blueprint; standard criteria.

Topic	Conditions	Performance	Criteria
Measurement	1. Given a Vernier caliper,	the learner will:	
		read it	to within .001 of an inch
		make an inside and outside measurement,	to within .001 of an inch
	2. Given a Vernier height gauge,	the learner will:	
		scribe a predetermined height on a piece of stock	to within ± .001 of an inch
		check a predetermined height with a dial indicator	to within ± .0005
		attach a dial indicator and zero in on a base reading, on a surface place,	standard criteria
	3. Given a set of precision gauge blocks,	the learner will select blocks,	to obtain a desired dimension within a time of 10 minutes
Metallurgy	1. Without the use of reference materials,	the learner will define the following terms: carbon content, hardening, tempering, annealing, carburizing, quenching, alloy soaking, hot roll, cold roll, ferrous, non-ferrous, critical temperature,	with no more than three errors

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Sheet Metal

U.S.C.E. Code Number: 17.2305

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Shop Math	1. Given 40 problems of addition, subtraction, multiplication and division using decimals and common fractions,	the learner will solve	30 of the 40 correctly.
Measurement	1. Given 40 problems of linear and angular measurement,	the learner will measure and solve	30 of the 40 correctly.
Hand Tools	1. Given the following hand tools: prick-punch, scratch awl, tinner's hammer, Whitney punch, hand groover, rivet set, aviation snips, straight and combination snips and ruler,	the learner will identify and demonstrate the correct use of each	100% of the time.
Uni-hear	1. Given a unishear and a pattern layout,	the learner will cut out the pattern,	to within 1/8" of the scribed line.
Drilling	1. Given power drill, drill press, drill index and a pattern of holes to be drilled,	the learner will select the proper size drill and drill the holes	to the specifications.
Disc Grinder	1. Given a disc grinder and welded joint or burred edge,	the learner will grind the joint or edge	smooth and flush.

Topic	Conditions	Performance	Criteria
Bending Sheet Metal	1. Given a hand brake, box and pan brake, and bar folder and material to be bent or formed,	the learner will demonstrate the proper procedure for each machine and bend the material to the required line	it meets the specifications.
Squaring Sheet Metal	1. Given a squaring shear or slitting shear,	the learner will set up and square stock to the required dimension	to ± 1/16 of an inch.
Soldering	1. Given all necessary tools and equipment and a seam to solder,	the learner will sweat solder,	the seam or joint is air and water tight.
Fabrication of Radial Pattern	1. Given a basic developed radio-line pattern and the necessary tools and material,	the learner will fabricate the fitting to the pattern	it meets the specifications of the pattern.
Parallel Line Pattern Fabrication	1. Given a basic developed parallel line pattern and the necessary tools and materials,	the learner will fabricate the fitting to the pattern	the fitting meets the specifications of the pattern.
Fabrication of Triangulation Pattern	1. Given a basic developed triangulation pattern, the necessary tools and materials,	the learner will fabricate the fitting to the pattern	the fitting meets the specifications of the pattern.
Working Drawing	1. Given a working drawing of sheet metal fabrication,	the learner will read and interpret symbols, terms and measurements	he can fabricate the specified part.
Drawing Techniques	1. Given paper, pencil, compass, triangle, ruler and necessary drawing equipment,	the learner will demonstrate skill in the use of drawing equipment and basic drawing techniques	they are ready for use.
Tinning Coppers	1. Given soldering coppers, sal ammoniac block, file, furnace and solder,	the learner will clean, prepare and tin the copper	they are ready for use.
Sheet Metal Identification	1. Given 5 different kinds of sheet metal,	the learner will identify and describe the uses	of each.

Topic	Conditions	Performance	Criteria
Sheet Metal Fasteners	1. Given samples of common sheet metal fasteners,	the learner will identify and describe the proper application and use	of each.
Radial Line Development	1. Given the requirements to layout basic cones, frustrums or funnels,	the learner will develop the pattern for each using radial line development to the drawing specifications	the fitting made from the pattern will meet the drawing specifications.
Parallel Line Development	1. Given the requirements to layout round pipe, tee, elbows and angles, offsets,	the learner will develop the pattern for each using parallel line development to the drawing specification	the fitting made from the pattern will meet the drawing specifications.
Triangulation Techniques	1. Given the requirements to layout square to square, rectangular to square, square to round, square duct transitions and elbows,	the learner will develop the pattern for each using triangulation techniques to the drawing specifications	the fitting which is made would meet the drawing specifications.
Welding Equipment	1. Given oxy-acetylene welding equipment,	the learner will identify all components to the welding equipment	to 100% accuracy.
Operation of Oxy-Acetylene Welding	1. Given oxy-acetylene equipment,	the learner will assemble gauges on tanks, set adjustments, select proper tip, and shut down the system	it meets all safety standards in 15 minutes.
Butt Welding	1. Given two pieces of 1/8" steel plates, 6" long oxy-acetylene welding equipment,	the learner will butt weld, lap weld or fillet weld the pieces	the weld is uniform in appearance and shows 100% penetration in 15 minutes.
Brazing	1. Given oxy-acetylene welding equipment, two pieces of 1/8" x 6" steel, brazing rod, fluxes,	the learner will braze a butt weld, lap weld or fillet weld	it meets tensile strength tests.
Cutting	1. Given oxy-acetylene systems and a cutting torch with tips, 1/8" steel plate,	the learner will select the proper tips and cut the steel plate along a 6" line	the burn is ± 1/8" of the line in 20 minutes.

Topic	Conditions	Performance	Criteria
Arc Welding	1. Given an arc welding machine, cables, clamps and electrode holder,	the learner will start and stop the machine, set the amperage,	according to the rod and material used.
Identifying Equipment	1. Given arc welding equipment,	the learner will identify all components of the welding equipment	to 100% accuracy in 5 minutes.
Arc Welding	1. Given two pieces of 1/8" steel, 4" wide and 6" long, and arc welding equipment,	the learner will butt weld, lap weld or fillet weld the pieces	it is uniform in appearance and shows 100% penetration in 5 minutes.
Vertical Welding	1. Given two pieces of 1/4" steel, 4" wide and 6" long, and arc welding equipment,	the learner will make a vertical down weld, a vertical up weld and a horizontal weld	the weld is uniform in appearance and has 100% penetration in 15 minutes.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Welding and Cutting

U.S.O.E. Code Number: 17.2306

Remarks:

In each of the following performance objectives, the following information is to be considered a constant although not specifically reiterated in each objective: A. Safe operation, that is, operating all tools and equipment in a manner which will not endanger the safety of the student, others in the area, or materials and equipment, is a criterion for all welding objectives. B. Quality standards should be illustrated locally through the use of master samples. C. Proper tip selection, settings, and adjustments are assumed to exist when operation has been completed satisfactorily.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable,)		
Safe Practices in Cutting and Welding	1. Given the task to weld (either oxy-acetylene or arc), safety glasses, goggles, welding helmet gloves, (leather or cloth) an apron (leather or cloth),	the learner will select the proper safety devices to protect his body and clothing	no danger to his eyes, skin and clothing and according to Michigan Safety Standards and from American Welding Society posted in the welding lab.
Metal Arc Welding	1. Given the necessary materials and equipment	the learner will select the appropriate electrode and weld (metal arc) mild steel	within the limitations indicated below: A. Electrode Utilization 1. E6010 2. E6011 3. E6012

Topic	Conditions	Performance	Criteria
			5. E7018 6. E7024 B. Material Thickness 1. 1/8" Single Pass 2. 3/16" Single Pass 3. 1/4" Single Pass 4. 5/16" Multiple Pass 5. 3/8" Multiple Pass 6. 1/2"-1" Multiple Pass C. Welding Positions 1. Flat 2. Horizontal 3. Vertical 4. Overhead D. Welded Joints 1. Butt Weld 2. Lap Weld 3. 'T' or Inside Corner Weld 4. Outside Corner Weld Performance will be tested for root penetration and through destructive or non-destructive testing.
Set Up and Close Down Oxy-Acetylene Equipment	1. Given tanks of Oxygen and Acetylene, regulators, hoses, torch and the proper tip size, a spark lighter,	the learner will properly set up the welding equipment, light his torch and adjust to the three flames used in welding (carburizing, neutral, oxidizing),	he will close down his torch and equipment safely. He will do this so well that connections, handling of equipment and other safety features will meet 100% the standards s.t by Michigan Department of Safety and American Welding Society (A.W.S.) These standards should be posted in the lab.

Topic	Conditions	Performance	Criteria
Puddle Metal with Oxy-Acetylene Torch	1. Given a complete oxy-acetylene welding unit with "0" tip or equivalent, 1 piece of 14 gauge metal (mild steel), protective safety equipment for welder and one pair of slip joint pliers,	the learner will puddle molten metal by 2 standard methods of puddling: (1) Circular motion, (2) Crescent or half moon.	the learner will visually inspect each weld puddle for uniform width, straightness and penetration on underside of metal. When the learner can demonstrate his ability to carry at least 2 good weld puddles across his practice plate he will be ready for welding with filler rod.
Oxy-Acetylene Welding	1. Given the necessary materials and equipment,	the learner will oxy-acetylene weld mild steel,	within the limitations indicated below: A. Material Thickness 1. 16 ga. (.059") 2. 3/32" 3. 1/8" B. Welded Joints 1. Butt Weld 2. Lap Weld 3. 'T' or Inside Corner Weld 4. Outside Corner Weld C. Welding Positions 1. Flat 2. Horizontal 3. Vertical 4. Overhead Performance will be tested for root penetration and through destructive and non-destructive testing.
Braze Steel, Cast Iron and Other Ferrous Metals (Dissimilar Metal)	1. Given a complete oxy-acetylene welding unit with safety equipment for welder, a supply of clean sheet metal (18 gauge or less), a few small pieces of	the learner will make a braze joint in a lap, to joint, and a vertical butt position using the sheet metal first then any combination of metals given	the bead will be even in width and height. When bent, pulled or broken, good tinning action will be shown. (A good test of ability to braze is to braze

Topic	Conditions	Performance	Criteria
	cast iron, a piece of 1/2" rod (mild steel), brazing rod (uncoated), brazing flux and a slightly oxidizing flame,		the short piece of 1/2" rod (on end) to a piece of thin sheet steel. Place the sheet steel in a vice, strike the 1/2" rod. The rod should pull out a slug of sheet steel if the braze is correctly made.
Fusion Weld Gray Case Iron with an Oxy-Acetylene Torch	1. Given a complete oxy-acetylene welding unit and safety equipment for welder, pieces of scrap cast iron, cast iron welding rod and flux,	the learner will weld gray cast iron,	by preparing the pieces of scrap cast iron the same as for brazing and performing the weld in the flat position with the least possible expenditure of gas and time. The learner must test his work, recognize defects and take the necessary steps to overcome them.
Silver Braze with Silver Brazing Alloys 1145 and Copper - Silver Phosphorus Alloys (Silflo "15")	1. Given the task to silver braze copper to copper, copper to brass, copper to steel and copper to stainless steel and a complete oxy-acetylene welding unit with safety equipment for the welder, silver brazing alloy 1145 (or equivalent) and silver brazing flux. Phosphorus copper "15" (or equivalent) brazing alloy, several pieces of copper and copper tubing, steel tubing, a small piece of stainless steel and a piece of brass,	the learner will: braze copper to copper, copper to brass, copper to steel, copper to stainless steel or any combination of these materials using silver brazing alloy 1145 (or equivalent). The learner will also be able to braze copper tubing to copper tubing without flux, and be able to use Silflo "15" (or equivalent) when appropriate.	strong corosion-free joints with no voids or "islands"; all tubing will be cut and inspected for penetration; may include a destruction test.
Oxy-Acetylene Cutting Skills	1. Given: A) <u>Types of Cutting Torch</u> Equal Pressure Cutting Torch Equal Pressure Cutting Attachment	the learner will cut mild steel: <u>Type of Cuts</u> 1. Straight Line 2. Bevel 3. Irregular Shapes 4. Circular Cuts 5. Holes (various shapes)	cut should be square and slag free.

Topic	Conditions	Performance	Criteria
	B) Material Thickness 1. Range 1/8" - 3/16" 2. Range 1/4" - 3/8" 3. Range 1/2" - 1"		
Metal Properties	1. Without the use of reference materials,	the learner will define the following terms: 1. Tensile Strength 2. Elasticity 3. Yield Point 4. Yield Strength 5. Ductility 6. Brittleness 7. Toughness 8. Hardness	in accordance with the definitions established by the American Society for Metals.
Heat Treating	1. Without the use of reference materials,	the learner will define the following terms: 1. Stress Relieving 2. Annealing 3. Normalizing 4. Quenching 5. Quench Hardening 6. Tempering 7. Case Hardening 8. Carburizing 9. Cyaniding 10. Induction Hardening 11. Flame Hardening	in accordance with the definitions established by the American Society for Metals.
Non-Ferrous Materials	1. Without the use of reference materials and given the non-ferrous materials listed and the tools and equipment normally found in a welding shop,	the learner will identify: 1. Brass 2. Bronze 3. Aluminum 4. Magnesium 5. Copper	correctly identify each

Topic	Conditions	Performance	Criteria
Spark Test	1. Using the acceptable spark test chart, a grinder and the items listed,	the learner will identify these various steels and cast irons: 1. Wrought iron 2. Machine steel 3. Carbon tool steel 4. High speed steel 5. Stainless steel 6. Cast irons	as indicated by the spark test chart.
A.I.S.I. and S.A.E. Steel Coding System	1. With the aid of an appropriate handbook,	the learner will identify the following steels and interpret the code so that he can indicate their major alloys and properties: 1. Carbon Steels (1XXX) 2. Nickel Steels (2XXX) 3. Nickel Chromium (3XXX) 4. Corrosion and Heat Resistant Steel (30XXX) 5. Molybdenum Steels (4XXX) 6. Chromium Steels (5XXX) 7. Chromium Vanadium Steels (6XXX) 8. Tungsten Steel (7XXX) 9. Silicon Manganese (9XXX) 10. Carbon Scale a. Low (1010 - 1030) b. Medium (1030 - 1045) c. High (1045 - 1060)	identify each steel
Measurement and Layout Tools	1. Given a drawing of a weldment basic to the welding and cutting field,	the learner will layout the various details on the appropriate material using the tools listed below: 1. Scriber and/or Soap Stone 2. Dividers 3. Steel Rule or Steel Tape 4. Trammel	as required to the accuracy listed on the drawing

Topic	Conditions	Performance	Criteria
		5. Surface Gage 6. Height Gage 7. Surface Plates 8. Angle Plates 9. Combination Set a. Square Head b. Center Head c. Bevel Protractor 10. Fillet & radius gages 11. Framing Square, etc.	
Print Reading and Technical Drawing	1. Given a drawing of a weldment basic to the welding and cutting fields,	the learner will make sketches or drawings (freehand)	which contain all information necessary for use in fabricating shop, including: 1. Lettering 2. Basic Lines 3. Basic Drafting Tools 4. Geometric Construction 5. Orthographic Projection 6. Basic Auxillary Views 7. Basic Sectioning 8. Basic Dimensioning 9. Detail Drawing 10. Assembly Drawing 11. Tolerances 12. Stock Determination
Welding Symbols	1. Given a drawing of a weldment basic to the welding and cutting fields and the A.W.S. Welding Symbol Chart,	the learner will identify the following: 1. Type of Welds a. Fillet b. Plug c. Slot d. Arc Spot e. Arc Seam	identify each symbol

Topic	Conditions	Performance	Criteria
		2. Type of Joints a. 'U' Groove b. Double 'U' Groove c. 'J' Groove d. Double 'J' Groove e. Square Groove f. 'V' Groove g. Double 'V' Groove h. Bevel Groove i. Double Bevel 3. Location of Welds a. Near Side (Arrow Side) b. Far Side (Other Side) 4. Size of Welds a. Fillet Welds b. Intermittent Fillet Welds c. Plug Welds d. Slot Welds e. Groove Welds 5. Supplementary Data a. Weld-All-Around Symbol b. Field Weld Symbol c. Surface Contour Symbol d. Back or Backing Weld symbol	
Starting the Arc and Running Stringer Beads on Aluminum with Aluminum Filler Rod	1. Given clean aluminum plate 1/8" to 1/4" thick, a minimum of 4" X 6", AC welding machine with high frequency oscillator, Tig Torch and accessories with tungsten electrodes and ceramic cups determined by size of aluminum plate used, 1/8" X 36" X 4043 aluminum filler rod,	the learner will run stringer beads,	first bead 1/2" from edge of plate with enough heat to maintain puddle 1/4" to 3/8" wide; second bead 1/2" from and paralle to the first bead. Run subsequent beads same as second until plate is complete with beads of weld metal. All welds will be visually inspected (inspect uniformity and penetration of beads.

Topic	Conditions	Performance	Criteria
Lap Welds, Butt Welds, Fillet Welds, Outside Corner Welds on Aluminum In Flat Position	1. Given clean aluminum plate 1/8" to 1/4" thick (2) plates for each type of weld 4" X 6" minimum A.C. welding machine with high frequency oscillator, Tig Torch and accessories with tungsten electrodes and ceramic cups determined by size of plate being welded. 1/8" X 36" 4043 5% silicon aluminum filler rod,	the learner will run lap welds, butt welds, outside corner welds, fillet welds on plate used,	all welds to be tested according to ASME or AWS testing. If no ASME or AWS testing is available all welds shall be visually tested and bent against the root in a vise by student to check for proper penetration and strength.
Starting the Arc and Running Stringer Beads on Magnesium Alloy with Magnesium Alloy Filler Rod	1. Given a magnesium alloy sheet 63 thousands AZ-31-14-1+2 & 4" X 6" minimum (2) pieces each type of weld AC welding machine with high frequency oscillator, Tig Torch and accessories with tungsten electrodes and ceramic cups determined by material available,	the learner will run stringer beads on magnesium alloy with magnesium alloy filler rod,	first bead 1/2" from edge of plate with enough heat to maintain puddle 1/4" to 3/8" wide; second bead 1/2" from and parallel to first bead. Run subsequent beads same as second until plate is complete with beads of weld metal. All welds will be visually inspected (inspect uniformity and penetration of beads).
Welding Magnesium Alloys, Butt, Lap, Fillet, Out-Side Corner	1. Given a magnesium alloy sheet 63 thousands AZ-31-14-1+2 & 4" X 6" minimum (2) pieces each type of weld, AC welding machine with high frequency oscillator, Tig Torch and accessories with tungsten electrodes and ceramic cups determined by material available,	the learner will run lap welds, butt welds, outside corner welds, fillet welds on plate used,	all welds to be tested according to ASME or AWS testing. If no ASME or AWS testing is available, welds shall be visually tested and bent against the root in a vise by student to check for proper penetration and strength.

Topic	Conditions	Performance	Criteria
Welding Stainless Steel Butt, Lap, Fillet, Outside Corner Flat Welds	1. Given stainless plate 1/16" to 1/8" thick, 4" X 6" minimum plate, AC DC welding machine, Tig Torch and accessories with tungsten electrodes and ceramic cups determined by material used 1/16" to 1/8" 308 stainless steel filler rod,	the learner will run lap welds, butt welds, fillet welds and outside corner weld on plate used.	all welds to be visually tested for appearance and then bent against the root for penetration.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Cosmetology

U.S.O.E. Code Number: 17.2602

Remarks:

The setting for each of the Cosmetology performance objectives that follow is assumed to be in a School of Cosmetology licensed by the State of Michigan Board of Cosmetology under the standards provided for in Public Act 176 of 1931 as amended and the rules and regulations for schools, students, cosmeticians and cosmetological establishments (subject to approval by the Michigan Department of Public Health).

Each performance objective is assumed to be performed under appropriate conditions to protect the public health and to assure safe conditions by applying the rules of safety as they apply to each subject.

Each performance objective is assumed to include the prior study of theory as it applies to each subject, including chemistry, hygiene, grooming, poise and personality, in sufficient amounts so that the student can pass the state license exam with an average of at least 75% in all subjects. The text referred to in the performance objectives is Standard Textbook of Cosmetology by Milady Publishing Company or its equivalent.

The school and/or student is assumed to have available and to use the appropriate items from the following minimum list of equipment supplies and materials:

Shampoo bowls with spray attachments and strainers
Shampoo chairs
Mannequins
Holders
Hair dryers and chairs
Dresserettes
Styling chairs
Manicur stations
Stools and lamps
Covered waste containers
Heat caps
High frequency units
Infrared lamp
Closed towel cabinet
Canvas blockhead
Facial chairs
Dry sanitizers
Wet sanitizers
Measuring cup
Covered soiled towel containers
Marcel or thermal irons and pressing combs
Hair brushes
Styling combs
Hard rubber combs
Rattail combs
Shampoo or tent combs
Shampoo capes
Complete set of manicure implements
Textbooks
Pincurl clips
4" clips
Assorted rollers
Permanent wave rods
Rubber gloves
Scissors
Razors
Spatulas
Hot and cold running water
Towels
Shampoo soaps
Tissue cotton neck strip
Talcum powder

n completion of this program, students will have the following skills and understandings as measured by teacher-
e objectives referenced tests (ORT's), unless otherwise indicated:

U.S.O.E. Code Number: 17.2602

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Rules and Regulations	1. Given Public Act 176, 1931, (as amended) and the General Rules for Schools, Students, Cosmeticians and Cosmetological Establishments,	the learner will follow all provisions,	there will be no violations.
Anatomy/ Physiology	1. Given an objective test related to the structure and function of cells, tissues, organs and biological systems as they apply to skin, hair and nails,	the learner will achieve,	at least a 75% score.
Hair/Skin/Scalp Analysis	1. Given a live subject for any salon service,	the learner will analyze the hair, skin and scalp (as applicable),	treatable abrasions, disorders, etc., are recognized and treated according to accepted text procedures and Michigan State Board Law.
	2. Given a live subject for any salon service,	the learner will analyze the hair, skin and scalp (as applicable),	non-treatable diseases are recognized and subject is referred to her physician, according to accepted text procedures and Michigan State Board Law.
	3. Given a live subject for any salon service,	the learner will analyze the condition of the hair in relation to its porosity, elasticity texture and density,	all cosmetic preparations are selected accordingly and applied correctly according to manufacturer's directions and accepted text procedures.
	4. Given visual examples of bacteria,	the learner will identify and orally describe pathogenic and non-pathogenic bacteria,	according to a medical text (i.e. Gray's Anatomy) or equivalent reference material with 100% accuracy.
Sanitat[redacted]	1. Given a prescribed work area and necessary cleaning materials and equipment,	the [redacted]rner will maintain the wo[redacted]ea,	the floor and work s[redacted]e will be clean and tools st[redacted]n a safe, sanitary and organi[redacted]anner.

Topic	Conditions	Performance	Criteria
	2. Given chemicals to retard the growth or kill bacteria and the receptacles for mixing,	the learner will: (a) prepare both wet and dry sanitizers using formulas in approved strength to destroy all bacteria, (b) mix a solution weak enough to be used as an antiseptic,	according to accepted textbook procedures and the rules adopted by the Michigan State Board of Cosmetology and approved by the Michigan State Board of Health.
	3. Given a live subject, hi frequency electrodes, a vibrator, steamer, heating cap, electric hair dryer, electric oil heater, air comb, air waver, pressing comb, marcel irons, electric curlers, ultra-violet sanitizer, electric manicure machine, and infra-red bulbs,	the learner will sanitize each piece of equipment,	according to manufacturer's directions and accepted text procedures.
Electricity	1. Given a live subject, hi frequency electrodes, a vibrator, steamer, heating cap, electric hair dryer, electric oil heater, air comb, air waver, pressing comb, marcel irons, electric curlers, ultra-violet sanitizer, electric manicure machine and infra-red bulbs,	the learner will operate each piece of equipment safely as they are applied in these services,	according to manufacturer's instructions for operation and maintenance and without endangering the subject or operator.
Shampooing	1. Given a live subject with soiled hair, all necessary equipment and materials.	the learner will select and apply the proper shampoo using scalp manipulations during the shampoo and thoroughly rinse the scalp with a neutral rinse,	the hair and scalp will be free of all soil and shampoo leaving the scalp and hair in a clean condition
Hair Shaping	1. Given a live subject for a hair-cutting service, directions for the desired cut, all necessary tools and equipment, including implements for cutting, thinning and shaping,	the learner will remove hair using each tool in a skillful and safe manner,	the length and shape achieved is suitable for the desired style and according to the accepted text procedures.

Topic	Conditions	Performance	Criteria
Hair Styling	1. Given a live subject with hair suitable for fingerwaving along with appropriate equipment, materials, waving lotion and supplies,	the learner will manipulate hair into waves with her fingers and comb,	the waves will match and be uniform and will harmonize with the contour of the subject's head and facial features.
	2. Given a live subject with hair prepared to be styled and a picture diagram, along with appropriate equipment, materials and supplies,	the learner will create or copy a hair style,	it will resemble the original pattern and/or be modified to suit the contour of the subject's head and facial features.
Thermal Services	1. Given a live subject with over-curly hair, appropriate equipment, materials and supplies including hair pressing combs, marcel and thermal irons and pressing cream and oil,	the learner will temporarily straighten the hair with the pressing comb,	the hair will have a straight appearance without excessive dryness or evidence of breakage.
		the learner will restyle the hair in waves and/or curls with the marcel or thermal irons,	no ridge marks or fishhook ends result in the finished coiffure.
Scalp Treatments	1. Given a live subject for any scalp treatment, appropriate equipment, materials and supplies,	the learner will apply appropriate scalp preparations and manipulations,	according to accepted text procedures and manufacturer's directions.
Permanent Waving	1. Given a live subject desiring a permanent wave, instructions regarding the type of wave desired and various size rods,	the learner will select the appropriate size rod,	the desired wave width is achieved.
	2. Given a live subject with straight hair for a permanent wave service, all necessary materials and equipment, including waving lotion, neutralizer, permanent wave rods, end papers, processing cap and timer,	the learner will section and wrap the hair using selected rods and end papers, apply permanent wave lotion and take test curls, rinse, neutralize and remove the rods,	an "S" formation is present as described in the accepted text and according to manufacturer's directions.
Chemical Straightening	1. Given a live subject with over-curly hair, appropriate equipment, materials, supplies including chemical relaxer, protective cream and stabilizer,	the learner will apply the appropriate chemical relaxer and manipulative skills,	the hair will be permanently relaxed, leaving it in a straightened condition without excessive dryness or evidence of breakage as described in the accepted text and according to manufacturer's directions.

Topic	Conditions	Performance	Criteria
Hair Coloring	1. Given a live subject for a color service (lightening, coloring, frosting and special effects); accurate customer information regarding history of hair treatment, required equipment, materials and supplies including hair lightening and coloring products, 20 volume peroxide, applicator bottles, brush, bowl, swab, frost caps, crochet hooks and foil, manufacturer's directions and procedures from the accepted text,	the learner will change the color of the subject's hair by removing, adding, or blending the color of the hair,	the desired shade will be achieved (matched to a comparison chart, hair sample, or test strand and suitable to the patron's skin coloring).
	2. Given a live subject for an analine derivitive tint (a coal tar product),	the learner will perform a predisposition test (allergy test) 24 hours prior to a color service	that any allergy or sensitivity is detected based upon the subject's physical reaction to the chemical ingredients and with 100% accuracy.
Manicuring	1. Given a live subject for a preservative or corrective manicure and all necessary tools, equipment, supplies and cosmetic nail preparations,	the learner will prepare for and manicure the subject's hands,	following established procedure in a safe manner; all dead cuticle is removed, the free edge is clean, the shape of the nail conforms to the shape of the fingertips, and the polish applied is even and within the confines of the nail plate.
Facial Treatments	1. Given a live subject for a preservative or corrective facial service with all necessary equipment, materials, supplies, including lotions and cosmetics as listed in textbook,	the learner will prepare, cleanse manipulate and apply cosmetics to the subject's skin,	the facial tissue appears moist and healthy and the selection of makeup is correct for the individual skin tone and coloring.
	2. Given a surface on which superfluous or unwanted hair appears, along with necessary equipment, materials and supplies including razor, shaving cream, tweezers, chemical dipilatories or wax,	the learner will remove unwanted hair temporarily,	according to manufacturer's directions and the hair follicle is not damaged and no skin irritation results.

Topic	Conditions	Performance	Criteria
Shop Accounting	1. Given the necessary materials for a cash accounting system,	the learner will maintain financial records,	the cash balances at the end of a specified accounting period, i.e., day or week.
Appointment Scheduling	1. Given an appointment book and daily work schedule,	he learner will schedule appointments on the telephone or in person with the patron,	with 100% accuracy and as stated in oral or written directions from the instructor or employer.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Waiter/Waitress

U.S.O.E. Code Number: 17.2904

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Sanitation	1. Given one place setting,	the learner will handle table serving equipment sanitarily,	according to the following sanitation standards: a. Silverware will be handled by handles only. b. Glasses will be handled by base or stem only. c. Plates will be handled by bottom and rim only. d. Cups will be handled by the handle only. e. Placemats and napkins are separated by working thumb and forefinger together.
	2. Given 5 or 10 food items in a dining room or kitchen, and necessary utensils used in handling food,	the learner will handle the food items, i.e., ice, butter, pastries, lemon wedges/slices, etc.,	to conform to standard "house rules" when using tongs, scoops, forks, napkins or other appropriate handling utensils.
	3. Given a situation where customer's contact or customer's food contact is made,	the learner will use standards of personal cleanliness when on duty,	according to standards set by the Michigan Restaurant Association and Local County Health Department.

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Topic	Conditions	Performance	Criteria
	4. Given a uniform or apron,	the learner will present a neat and well-groomed appearance,	A. Uniform is clean and free of soil. B. Hair is tied up or off of collar in net or spray net. C. Hands and face are clean 1) no body odor 2) or bad breath D. Make-up has a natural look to it. E. Use very little perfume. F. No jewelry, except watch and ring.
Work Duties in Kitchen	1. Given a waiter/waitress work counter in a kitchen and 7 or more set-up operations to be performed,	the learner will perform the side work duties in the kitchen, i.e., condiments emptied, washed and refilled, set up creamers, butter dished up, make coffee, set up salad dressings, etc.,	all of the operations are performed and the establishment is considered ready to serve and 6 of the 7 operations are performed.
Side Work Duties in the Dining Room	1. Given a waiter/waitress service stand in the dining area and necessary supplies and cleaning equipment,	the learner will perform side work duties, i.e., keep stand filled with necessary supplies, keep tables and chairs cleaned, keep floor clean of debris,	all duties can be performed without interruption and the appearance of the tables, chairs and floor represent a clean establishment.
Answer Phone	1. Given a role playing situation a telephone, a reservation sheet, pen or pencil,	the learner will answer telephone and make reservations,	A. A friendly greeting is understandable and clear to the customer. B. Carefully get all information and repeat it back to make sure information is correct. C. Give a verbal "thank you for calling" at completion of customer's verification that the information was correct.

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Topic	Conditions	Performance	Criteria
Table Setting	1. Given two role playing situations; (1) one of an unseated guest and (2) one of a seated guest,	the learner will demonstrate how to set a table for breakfast, lunch, dinner and banquet (plate, buffet and family style),	A. Forks are placed to left of cover. B. Knives to right of cover with blade towards cover space. C. Spoons (bowls up) to right of knife. D. Glass at tip of knife and slightly to the right. E. Bread and butter plate is 1" above tines of fork. F. Napkin to left of fork, open edge next to plate and table edge or in center of cover space. G. Cup and saucer placed to the right of the spoon with handle of cup convenient for guest to pick up. H. Salt, pepper, sugar, creamer and ashtray are on table I. Napkin, fork, knife, spoon, cup and saucer is placed 1" from edge of table. J. Choice of table setting meets the menu items. K. Table is set in the same manner as served (to the seated guest) as not to inconvenience him. L. Should be done within a period of 5-10 minutes. (1 table of unseated guest--4 covers) (1 table of seated guest--4 covers).

Topic	Conditions	Performance	Criteria
Greet, Seat and Present Menu	1. Given two role playing situations whereby (1) reservation is unnecessary and (2) reservation is necessary for 4 people entering a restaurant,	the learner will greet, seat and present the menu to the guest,	A. A smile and pleasant greeting is given to all guests. B. The guest gives no verbal or observable indication that the table is not satisfactory. C. Chairs are pulled out for ladies first. D. The menu will be handed open from the left side with the left hand. E. This should be done within 3-5 minutes.
Interpret Menu	1. Given 10 different menus,	the learner will interpret the menu so he or she can define, describe and pronounce all food terms,	on 7 of the 10 menus with 100% accuracy.
Taking Guest's Orders	1. Given a situation with a table of four, a guest check pad and pencil,	the learner will approach the table with a greeting and take guest's order,	A. Learner will stand to the left of the customer if possible. B. Learner will take and write the order in sequence, (clockwise), C. Order can be repeated to the customer so he acknowledges his satisfaction.
Turn Order Into Kitchen	1. Having taken four guest's orders,	the learner will correctly turn the orders in to the kitchen,	by calling the order clearly and/or writing the order legibly so the chef or cook can understand or accurately read all items ordered.

Topic	Conditions	Performance	Criteria
Loading, Lifting and Carrying Trays	1. Given a large oval tray and four customer orders,	the learner will load, lift and carry the tray to the tray stand,	the tray is evenly balanced, properly lifted, and there is minimum spillage, breakage or accident.
	2. Given a small round tray and four customer orders.	the learner will load and carry a small tray,	the tray is evenly balanced and there is minimum spillage, breakage or accident.
Serving Order	1. Given a restaurant situation with four guests seated at a table,	the learner will demonstrate ability to serve a meal correctly	A. Guest does not become impatient with delays in the kitchen. B. There is no spillage or accidents. C. Serve the right food to the right guest -- correctly: 1) Place and remove all food from the left of the guest with the left hand. 2) Place and remove all beverages from the right of the guest with the right hand. D. Serve and remove courses promptly. E. Observe guest needs during course of meal.
Present Check	1. Given a situation where service is completed at a table,	the learner will present the guest check to the customer,	A. The customer is not kept waiting for his check more than one or two minutes. B. The guest check is clean, neat, readable, and totaled correctly. C. Learner will say "thank you" and convey that it has been a pleasure to serve them.

Topic	Conditions	Performance	Criteria
Clear Table and Bus	1. Given a situation where a meal for four has been completed,	the learner will clear the table and bus dishes,	there is minimum breakage, dishes are handled quietly, and table is cleared and tub or tray is properly filled. a. Silver at one end of tray or tub. b. Dishes stacked by size and balanced on tray or tub. c. Glasses should not be stacked.
Make Change	1. Given a cash register and a guest check,	the learner will receive payment for a guest check,	according to the following steps: a. Receive the guest check. b. Operate cash register. c. Leave amount received on till. d. Make change correctly. e. Within 20 seconds per guest check.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Refrigeration

U.S.O.E. Code Number: 17.3000

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Condition	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Tool and Instrument Identification	1. Given a list of 10 various refrigeration hand tools and instruments, and without reference material,	the learner will list and explain the proper use and care of each	with 100% accuracy.
	2. Given a properly functioning electrical system on a refrigeration device and the following instruments: volt-wattmeters, ammeter and run time, temperature reading device, compressor analyzer, multi-meter and ohm meter,	the learner will properly connect, read and record measurements for each instrument	with 100% accuracy according to the manufacturer's specifications for each instrument.
Cylinder Identification	1. Given four refrigerant cylinders containing different refrigerants (R-12, R-22, R-500, R-502, etc.), and without reference material,	the learner will identify the contents of the cylinders	by the color, chemical name, and/or chemical formula with 100% accuracy.
Calculations	1. Given 10 different products to be cooled,	the learner will calculate the heat loss and the heat gain of the products	with 100% accuracy (or for 10 of the 10 products selected).

Topic	Conditions	Performance	Criteria
Component Identification	1. Given one household refrigerator or commercial box of the following type: manual, defrost, cycle defrost, automatic defrost,	the learner will identify and explain the function of each component part of the refrigerator circuit and/or the electrical circuit	with 100% accuracy.
	2. Given one of the following refrigeration systems: refrigerator, freezer, or small commercial case,	the learner will identify, explain the function within the system and the physical make-up of the following components: Expansion device, Evaporator, Condensor - air or water, Sight glass, Oil cooler, E.P.R. and head pressure valves, Oil separator, receiver, filter dryer, strainer and heat exchanger	with 100% accuracy for each component.
Refrigeration Circuits Servicing	1. Given a refrigerator with a refrigerant leak and the necessary tools and equipment,	the learner will: 1. find the leak 2. repair it by soldering, epoxy or welding 3. evacuate the system 4. recharge the system	according to manufacturer's specifications for that particular refrigerator and within an appropriate, specified period of time.
	2. Given a diagram of a refrigerator circuit and the 5 basic components, and without reference material,	the learner will label each component and explain its function	with 100% accuracy.
	3. Given an open display refrigeration case and/or a refrigerator with a malfunction in the expansion device,	the learner will properly diagnose and correct the malfunction	according to manufacturer's specifications and within an appropriate, specified period of time.
	4. Given an open display refrigeration case with a refrigeration circuit malfunction such as oil return,	the learner will properly diagnose and correct the malfunction	according to manufacturer's specifications and within an appropriate, specified period of time.

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Topic	Conditions	Performance	Criteria
Electrical Servicing	1. Given a household refrigerator with an automatic defrost circuit malfunction,	the learner will troubleshoot the malfunction and repair and/or replace the defrost circuit	according to manufacturer's specifications and within an appropriate, specified period of time.
	2. Given a household refrigerator with a compressor overload problem,	the learner will troubleshoot the problem and repair or replace the overload	according to manufacturer's specifications and within an appropriate, specified period of time.
	3. Given a refrigeration compressor with a malfunction,	the learner will diagnose the problem and make the proper repairs or replacements	using the correct tools and instruments according to the individual manufacturer's manual.
	4. Given a household refrigerator with an electrical malfunction such as defrost heater on continuously,	the learner will diagnose the proble and make the correct repairs	using the tools and instruments required according to manufacturer's specifications.
	5. Given an open display refrigeration case with an electrical malfunction such as a time clock not switching,	the learner will diagnose and correct the malfunction	according to manufacturer's specifications.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Small Engine Repair

U.S.O.E. Code Number: 17.3100

Remarks:

The following Performance Objectives are written with the understanding that each learner be equipped with basic and common hand tools necessary for Small Engine Repair. Also, the teaching facility is completely equipped with the special tools, jigs, testing facilities, and space necessary to complete the enclosed Performance Objectives.

While not specifically stated in each Performance Objective, it is to be understood that the criteria for performance also includes safe practices which will not endanger the learner or others and will avoid damage to both equipment and facilities.

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Principles of Operation, Assembly, Safety, and Facility Familiarization	1. During the course of laboratory experiences,	the learner will be able to recognize, name and describe the use of equipment related to small engine repair,	as demonstrated by his special proficiency in using such equipment appropriately and correctly
	2. During the course of laboratory experiences,	the learner will correctly utilize parts supply, tool room organization and service manual storage,	by being able to find information and appropriate tools relating to special engine specifications and corrections
	3. Without the use of reference materials,	the learner will properly identify and describe the function of the major small engine components,	at least 90% of engine components should be identified and described generally consistent with selected reference materials.

Topic	Conditions	Performance	Criteria
	4. When required to do so by the nature of the job,	the learner will safely and properly operate oxy-acetylene and electric arc welding equipment,	according to posted safety standards and manufacturer's operating instructions.
	5. Given a two or four cycle engine,	the learner will remove impulse starter safely, replace starter caps and rachets, replace impulse starter springs, and tighten or replace starter clutch,	according to service manual specifications.
	6. Given a two or four cycle engine,	the learner will remove and replace starter, replace recoil springs, replace starter rope,	the starter does start the engine according to service manual.
	7. Given a riding mower or tractor,	the learner will remove and replace transaxle or gear box, adjust clutch and brake linkage and adjust artificial feed in selector,	the transaxle works well with brake and clutch action.
	8. Given a belt driven unit,	the learner will remove and replace drive belt, check alignment, and adjust transmission belt, adjust belt guides, and check drive line train for wear and remove and replace,	the unit runs without creeping and clutch runs belt as it should in clutching or declutching action and drive trains run in line and have proper tension.
	9. Given a transaxle or gear box,	the learner will tear down and check gear box, remove and replace wheel hubs, pull blind bearings and replace, remove axle shafts, use heat to remove and replace frozen differential gears, remove and replace transaxle or gear box,	it will work in all ranges or gears in clutching and declutching action, and according to service manual specifications.

Topic	Conditions	Performance	Criteria
	10. Given a unit having a hydraulic drive train,	the learner will adjust hydraulic drives and gear box parts for proper travel, check hydraulic lines for wear and leak and check fluid level,	the unit performs under load without leaks or seepage of fluid, selector runs through full range smoothly and does not creep when it is in neutral position according to service manual.
	11. Given a two or four cycle engine mounted to a machine that runs,	the learner will remove and replace an engine and align and attach the drive train,	the engine will run drive train to perform task for which the unit was made.
	12. Given a two or four cycle engine with a broken stud,	the learner will drill, tap and remove broken studs,	the broken part is removed and a new part that fits can be replaced.
	13. Given a four cycle engine,	the learner will remove head, check for head warp, attach to block and torque as to service manual,	the engine has full compression without head leaks.
	14. Given a four cycle engine,	the learner will remove crankshaft and tappets, check camshafts for cracks, chipped teeth or worn lobes, mike camshafts axle to check for wear, and install camshaft and time to crankshaft.	the engine runs well according to service manual specification.
	15. Given a four cycle engine,	the learner will remove valves and springer and check valve guides for wear,	according to service manual specifications.
	16. Given a four cycle engine block,	the learner will remove worn valve guides and replace and ream guides to fit,	the engine when put back together, will operate according to service manual specifications.

Topic	Conditions	Performance	Criteria
	17. Given a four cycle engine block,	the learner will remove valves and springs, recut valve seats, check valves for wear on stem, burning or wear on face, and replace valve and set tappet for clearance,	there is no blow by found through valves according to service manual specifications.
	18. Given a two or four cycle engine,	the learner will check rod and rod cap for scarring, replace piston to rod, compress piston rings and install piston, and torque rod cap nuts and bolts,	according to service manual specifications.
	19. Given a two or four cylinder engine,	the learner will hone or deglaze cylinder walls,	the cylinder walls are clean of glaze and varnish, nicks and scratches, according to service manual specifications.
	20. Given two or four cycle engine,	the learner will remove and replace crankshaft, check crankshaft end play, check crankshaft for scars on journal, mike crank at journal and bearing surface to find wear,	according to service manual specifications.
	21. Given a two or four cycle engine,	the learner will remove piston, mike piston, clean ring groover, replace rings, check end gap, and check ring side clearance,	according to service manual specifications.
Ignition Systems	1. Given a two or four cycle engine,	the learner will replace blower shroud, remove flywheel using impact nut or puller, remove and replace points and condenser, set breaker point gap with feeler gauge, and remove and replace coil,	the engine starts quickly and runs well.

Topic	Conditions	Performance	Criteria
	2. Given a two or four cycle engine coil condenser tester,	the learner will check magneto wiring for damage due to rubbing on flywheel, check breaker points for pitting or burnt face, check coil assembly for cracks, tightness and rubbing, etc., test coil and condenser with tester, check breaker cam lobe for dirt, cracks and proper installation, check breaker housing dust cover for fit, distortion, grounding, etc.	the solid ignition is present and engine starts and runs well.
	3. Given a two or four cycle engine, dial indicator, continuity light,	the learner will check service manual for proper ignition timing measurements, remove and replace armature plate assembly, retime armature plate assembly to engine using dial indicator and continuity light, check flywheel to magneto edge gap,	the engine is timed right, according to service manual specifications.
Fuel Systems	1. Given a two or four cycle engine,	the learner will perform normal service of air cleaner, check for clogging and breakdown, check air leaks getting past filter, and see that air cleaner fits and is secure,	the engine runs with air cleaner installed.
	2. Given a float type carburetor,	the learner will replace needle and seat and replace inlet filter	the positive float level is kept according to service manual specifications.
	3. Given a diaphragm type carburetor, diaphragm, welsh plugs,	the learner will remove and replace diaphragm and welsh plugs of carburetor,	the plugs do not leak and the carburetor operates according to service manual.

Topic	Conditions	Performance	Criteria
	4. Given a float or diaphragm carburetor,	the learner will remove and replace choke, throttle, shafts, friction balls, spring and shutters,	the parts work freely and within tolerances set by service manual.
	5. Given a diaphragm or float type carburetor,	the learner will overhaul the carburetor,	the carburetor works and meters fuel, according to service manual specifications.
	6. Given a two or four cycle engine with air vane governor,	the learner will replace carburetor,	the carburetor is mounted right and linkage works smoothly without binding and engine runs well after throttle and governor adjustment according to the service manual for proper linkage hook-up.
	7. Given a four cycle engine with flyweight governor,	the learner will remove and replace inside flyweight governor linkage and adjust the arm for proper working,	the governor controls load while engine is running, according to service manual specifications.
	8. Given a two or four cycle engine (in running order),	the learner will start engine and check working of starting parts, set high and low speed adjustment,	the engine starts and runs within high and low speed limits, according to service manual specifications.
	9. Given a two or four cycle engine,	the learner will check fuel tank lines for wear, leaks, etc., remove and replace fuel tanks, remove and replace fuel lines, remove and replace fuel filters,	the lines are routed right and there are no hazards and engine runs with correct amount of fuel reaching carburetor.
	10. Given a two or four cycle engine, with outside fuel pump,	the learner will remove, rebuild, replace fuel pump, check outside fuel pump to see if it works and clean and service sediment bowls,	the correct supply of fuel reaches the carburetor and there are no fuel or oil leaks.

Topic	Conditions	Performance	Criteria
Electrical Systems	1. Given an engine with battery and volt meter,	the learner will remove battery, check charger for proper output with volt meter, make necessary adjustments and repairs and replace.	the battery operates as designed.
	2. Given a six or twelve volt electrical starting system volt and OHM meter,	the learner will check electrical system and wiring by proper diagram, check the working of starting switches, and check electrical systems by bridging circuits.	the starting electrical systems work well in starting engine according to service manual diagrams and specifications.
	3. Given a two or four cycle engine, having an A/C charging system,	the learner will check A/C charging coil for signs of wear, melting, connection and distortion, remove and check silicone rectifiers with volt/ohm meter, and check charging coils output with volt meter,	the charging system works and has enough voltage output to keep battery charged according to service manual.
	4. Given a two or four cycle engine, having a starter or starter generator, and volt/ohm meter,	the learner will remove starter or starter generator, take it apart and check, replace starter brushes, replace starter Bendix and check working order, put starter back together and test starting or generator system and remove and replace starter belts,	the starter or starter generator system works according to service manual specifications.
	5. Given a tractor, snowmobile, or riding mower, electrical accessories such as cigar lighter, tachometer, volt meter, speedometer, light system, light switches, and gauges and a volt/ohm meter,	the learner will remove and replace tachometer, voltage regulators, cigar lighters, stop light switches, gauges, speedometers, etc., install tachometer, speedometer and other electrical parts when they are not part of the machine and rewire electrical system by using correct wiring diagram.	the parts installed will work well according to service manual and wiring diagram.

Topic	Conditions	Performance	Criteria
	6. Given a dry battery six or twelve volts, electrolyte, hydrometer, battery charger, and volt meter,	the learner will service new dry charged battery, check specific gravity with hydrometer, charge battery with outside source and check the battery with volt meter	the battery is full charged and ready for installation according to service manual specifications
	7. Given a battery, connecting wires, two lights with sockets, miscellaneous hardware, and diagram,	the learner will connect the lights in series,	if one light is removed, the other one will be out according to the diagram.
	8. Given used spark plugs from various engines,	the learner will diagnose defective plugs and repair, clean or replace plugs,	so the engine runs and performs well.
	9. Given engine manual, spark plug guide chart and supply of spark plugs,	the learner will select and install proper plug,	engine runs and performs well.
	10. Given two wiring diagrams,	the learner will select one which is a series circuit,	the series circuit diagram is selected.
	11. Given battery, connecting wire, two lights with sockets, wiring diagram and miscellaneous hardware,	the learner will connect the two light in a parallel circuit following the wiring diagram,	the one light is removed, the other light will remain on.
	12. Given a work sheet containing three wiring diagrams,	the learner will select the wiring diagram which is parallel circuit,	only the diagram which is a parallel circuit is selected.
	13. Given a battery, connecting wire, three lights with sockets, wiring diagrams and miscellaneous hardware,	the learner will construct a series parallel circuits as shown in the wiring diagram,	when the light which is part of the series component is removed, all the lights will go out and if one of the parallel lights is removed, the other two will remain on.

Topic	Conditions	Performance	Criteria
	14. Given a work sheet containing three wiring diagrams,	the learner will select the wiring diagram which is a series parallel circuit,	the only series parallel circuit is selected.
	15. Given a battery, switch, two lights with sockets, wiring diagrams, connecting wire, and miscellaneous hardware,	the learner will wire a circuit as shown in the diagram using a switch to turn the lights on and off.	the switch will turn the lights on and off.
	16. Given a battery, switch, two lights with sockets, wiring diagram, connecting wire, fuse with holder, and miscellaneous hardware,	the learner will construct a circuit as shown in the diagram which will be protected by the fuse.	the circuit wired is the one shown on the diagram
	17. Given a wiring diagram	the learner will circle all the switches and fuses which are indicated on the diagram,	no switch or fuse remains unfound.
	18. Given a battery, fuse with holder, switch, wiring diagram, solenoid, connecting wire, light and socket, and miscellaneous hardware,	the learner will construct a circuit as shown in diagram,	when the switch is turned on, the solenoid operates and the light goes on.
	19. Given a prebuilt circuit with defective switch, pump wire and wiring diagram,	the learner will bypass the switch with the jump wire to operate the circuit,	when the switch is by-passed with the jump wire, the circuit operates.
	20. Given a prebuilt circuit containing a solenoid, jump wire, and wire diagram,	the learner will activate the solenoid using the jump wire,	the solenoid will activate and turn the light on.
	21. Given a prebuilt circuit which contains a defect, test light, and wiring diagram,	the learner will locate the defective area using the test light.	defect in circuit identified

Topic	Conditions	Performance	Criteria
	22. Given a prebuilt circuit, wiring diagram, vom with instruction manual,	the learner will measure the voltage at the points indicated on the wiring diagram,	the voltage obtained agrees with the one given on the wiring diagram ± 1 volt.
	23. Given prebuilt circuit, wiring diagram and VOM with manual,	the learner will measure the current in the circuit.	the value obtained agrees with the value given on the wiring diagram ± 5 mil. amps.
	24. Given VOM with manual, work board containing wires and loads, and a work sheet,	the learner will measure the resistance of the items on the board,	the values the learner obtains will agree with the one on the work sheet ± 3.
	25. Given a prebuilt defective circuit, VOM jump wire, test light, VTVM, wiring diagram, and continuity tester,	the learner will locate the defective component and repair,	the circuit functions as designed.
	26. Given a power source, lamps and sockets, clips leads and an ammeter,	the learner will assemble a circuit with an ammeter in it and read the current in the circuit,	the meter readings agree within 10% of the stated results.
	27. Given a diagram of a circuit,	the learner will connect a parallel circuit and measure the circuit values of resistance, voltage and amperage,	the connected circuit and its value agree within 10% of the given circuit and its value.
	28. Given a voltage tester and a live circuit,	the learner will determine the amount of voltage present on a live receptacle,	in the use of the voltage tester a reading of the voltage present on the receptacle can be determined in a safe manner.
Lubrication System and Maintenance	1. Given a machine with a two or four cycle engine	the learner will check service manual lubrication specifications, lubricate machine, change oil and service with proper A.P.I. rated lubricant, and change engine and transmission oil filters,	no oil or lube leakage is found when unit is running, according to service manual specifications

Topic	Conditions	Performance	Criteria
	2. Given a four cycle engine,	the learner will check oil pump, dipper and slinger,	and make a correct determination as to whether they work according to service manual specifications.
	3. Given a four cycle engine block, oil seal, socket set, oil seal drive set, rubber mallet torque wrench and brass hammer,	the learner will remove and replace engine base sump and remove and replace oil seals,	the oil seal does not leak, according to service manual specifications.
Measuring and Testing Devices	1. Given 0-1" micrometers present at ten readings,	the learner will state	at least nine readings to the nearest .001" within 20 minutes
	2. Given inside micrometer, a vernier micrometer, ten objects (used in small engines)	the learner will measure	five objects to the nearest .001" within 20 minutes.
	3. Given a vernier caliper and 5 objects used in the occupation,	the learner will measure,	the five objects to the nearest .001" within 15 minutes.
	4. Given dial indicator made to measure inside surface of cylinder and three cylinders,	the learner will measure the irregularity of the surface of the cylinders,	to the nearest .001" with 100% accuracy in 15 minutes.
	5. Given a dial indicator which can measure "run out", five round objects and a fixture for rotating the object,	the learner will measure the"run out"of the five objects,	to the nearest .001" within 20 minutes.
	6. Given metric equipment for the above 5 performance objectives,	the learner will duplicate the measurement,	within an appropriate,specified period of time.
	7. Given a 12 inch rule marked off in inches and in 1/2, 1/4, 1/8, 1/16 inches and 10 objects used in the operation,	the learner will measure,	at least 9 of the objects to the nearest 1/16 inch, within 25 minutes.

Topic	Conditions	Performance	Criteria
	8. Given a metric ruler marked off in centimeters and five objects,	the learner will measure,	the five objects to the nearest centimeter within 10 minutes
	9. Given six problems on interchanging units in the metric system and a conversion chart,	the learner will solve	at least five problems within 15 minutes.
Sales, Management and Shop Operation	1. Given four sales slips having the total price of purchase and the percent of discount,	the learner will find the amount of the discount and final sales charge,	all four problems to be solved correctly within 8 minutes.
	2. Given a box with tags, each with a stock number and cost written on each, a discount given in percent, and a blank purchase order or blank sales slip,	the learner will select 5 tags from the box, figure the discount, find the charge after the discount is taken, find sales tax and find final cost of bill,	the learner will do this without error within 5 minutes and the sales slip can be read clearly
835	3. Given three problems on finding total cost with at least two discounts,	the learner will solve all three problems,	correctly, within ten minutes.
	4. Given two problems each with labor charge per hour, number of hours, cost of up to ten items, tax chart and a percent discount on parts or labor,	the learner will find final cost of bill,	both problems are solved correctly within 15 minutes.
	5. Given a blank purchase order, invoice or sales slip, a box with tags, each having a stock number and cost, and sales tax chart.	the learner will write the stock numbers of five items drawn from the box on the purchase order, write the costs on the purchase order, find cost of the five items, find sales tax on the tax chart, and figure total cost,	within five minutes and the purchase order can be clearly read and is correct.

Topic	Conditions	Performance	Criteria
	6. Given three problems on making out a bill or charge form, sales form or charge form, box of tags showing part number and cost, sales tax chart and cost of gas, oil, etc.	the learner will complete all three sales slips,	the sales slip can be read clearly and has the correct total within 15 minutes.
	7. Given three problems on finding the total cost of labor and a bill form,	the learner will solve all three problems and enter labor charge on a bill.	correctly within 6 minutes.
	8. Given the total number of hours labor and cost per hour for labor, the cost of each of ten parts needed for the job, and tax table,	the learner will find the exact cost of the job and fill out a work order with the cost of each part, tax, labor charge and total cost of the job.	within ten minutes.
	9. Given three problems on finding the total cost of labor,	the learner will solve all three problems,	within six minutes, the learner can correctly enter the labor charge on the bill.
	10. Given the total number of hours and cost of hour of labor to do the job and the cost of each of ten parts needed for the job,	the learner will find the total cost of the job,	within 8 minutes, so a service order can be filled out correctly for the cost of labor, cost of parts, tax and total cost for the job.
	11. Given three problems on finding hours for labor to the nearest 10th of an hour, charge for labor, and rate of pay per hour,	the learner will solve all three problems,	to the exact amount of payment due.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Shoe Repair

U.S.O.E. Code Number: 17.3402

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title)		
Cooperative Education Technique	(See statement included under this title if applicable)		
	1. Given 25 items used in the shoe repair industry,	the learner will identify	20 correctly
	2. Given repaired shoes,	the learner will inspect, package, and prepare the shoes	for final pick up or delivery to the customer
	3. Given any shoe	the learner will identify the type of construction used in the manufacturing process	he can determine the repair needs and methods for that shoe
	4. Given 15 basic hand tools used in modern shoe repair	the learner will identify and demonstrate	the proper use of each
	5. Given a curve needle stitching machine, T-wrench, screwdriver, and material,	the learner will adjust the channel knife, length of stitch and tension, and sew the material	the material is securely attached and meets original manufacturer's specifications.
	6. Given a curve needle stitching machine and a T-wrench,	the learner will replace broken needles or awls and make necessary adjustments	the machine is ready for operation
	7. Given a patching machine, a shoe in need of repair,	the learner will select the proper patching material, adjust the length of the stitch, select proper needle, adjust the tension of the thread and repair the shoe	to its original shape

Topic	Conditions	Performance	Criteria
	8. Given a patching machine, a zipper or goring and a shoe in need of either,	the learner will replace the zipper or goring on the shoe	to be usable for wear
	9. Given a jack and the proper hand tools,	the learner will inspect for repair, prepare the shoe and select the materials needed,	the shoe is ready for the machine repair department
	10. Given an auto soler, a shoe in need of heels,	the learner will select the right countersink anvil and length of nail, nail the heel	the heel will be attached as originally manufactured
	11. Given a heel wheel, a heel block,	the learner will set up and select the proper jig and anvil,	to attach the heel block to the shoe.
	12. Given a skiving, cutting machine,	the learner will trim the surplus material from the sole,	the new sole is ready for the stitcher.
	13. Given a skiving, cutting machine	the learner will select the length of skive, split the leather at the joint,	the joint will bond and finish to the same thickness as the sole
	14. Given a shoe finisher,	the learner will trim, sand, ink, burnish, polish and iron out the shoe	to its original shape and appearance

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Upholstering

U.S.O.E. Code Number: 17.3500

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Tool Use	1. Given the basic tools used in the upholstery industry,	the learner will identify and demonstrate the use of each tool for its intended purposes,	100% of the time.
Webbing	1. Given a seat framd and webbing tools,	the learner will layout, measure, fasten and stretch the webbing,	the webbing provides a foundation for the spring and other materials.
Coil Springing	1. Given a seat that has been webbed, tie-down string, anchor nails, clinching tools and spring,	the learner will layout for the number of springs, place anchor nails, clinch springs and tie down the coil spring,	the springs are in correct position and provide the required support for the seat.
No-Sag Springing	1. Given a seat that has been webbed, no-sag spring and necessary tools,	the learner will install the no-sag springs according to the standard procedures,	the seat provides proper support.
Burlap Covering	1. Given a chair in need of covering and burlap material,	the learner will apply the burlap covering over the arm , back and seat,	the filling and finished materials can be applied.
Applying Filling	1. Given a chair in need of covering, filling materials and muslin,	the learner will apply the filling and muslin to the back, arms and seat,	the finished fabric can be applied and the furniture will be comfortable and have a good appearance.

Topic	Conditions	Performance	Criteria
Cutting Covered Material Size	1. Given cover material, measuring tools and/or patterns,	the learner will cut the fabric to size by measurement or pattern	the pattern of the fabric matches and that when the material is cut it can be joined and fastened to cover the piece of furniture.
Covering With Finished Fabric	1. Given a chair ready for finished fabric, finished fabric and tools,	the learner will center the cover	it is straight in all directions and the pattern of the fabric matches, fasten the finished fabric to the chair so that the chair is covered and satisfactory to the customer.
Cushions	1. Given a piece of recovered furniture requiring cushions and necessary materials,	the learner will mark a paper pattern for the cushion, cut the material according to the pattern, add the proper width, boxing and welt and sew the cushion,	the cushion is properly constructed, fits the furniture and meets the customer's satisfaction.
Identifying Upholstery Materials	1. Given 10 different kinds of upholstering materials,	the learner will identify and describe the characteristics of each material,	he can assist the customer in selection of the proper material for the furniture.
Cost Estimating	1. Given a piece of furniture in need of recovering,	the learner will measure the furniture, determine the amount of and cost of the materials needed to cover the furniture, estimate the labor cost and overhead charges,	the customer can be given an accurate cost estimate for the job.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Woodworking

U.S.O.E. Code Number: 17.3600

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Employability Skills	(See performance objectives included under this title.)		
Cooperative Education Technique	(See statement included under this title if applicable.)		
Safety	1. Given all of the necessary woodworking tools and equipment,	the learner will operate and maintain the tools and equipment,	no serious injury or accident occurs to the learner or anyone in his immediate work area.
Wood Lathe	1. Given necessary tools, at least a 36" wood turning lathe, materials, measuring devices, and a blueprint(s) requiring beads, grooves, radiuses, cove cuts, Vee grooves, shoulder cuts, and/or a boring operation,	the learner will select the appropriate turning chisels, set up and operate the wood lathe to produce the object on the blueprint(s),	± 1/32" or to the specifications on the blueprint, whichever is more exact; no mill marks or sanding marks; within an appropriate, specified period of time.
Shaper	1. Given necessary tools, single spindle shaper, materials, measuring devices, jigs and a blueprint(s), cutters, collars,	the learner will select appropriate cutter and collars, set up and operate the shaper,	within an appropriate, specified period of time; to dimensions of cutters and collars as selected.
Mortiser	1. Given the necessary tools, an upright hollow chisel mortiser, materials, measuring devices, and a blueprint(s) requiring a mortise(s),	the learner will set stops for longitudinal travel, vertical adjustment, depth of cut, stock, hold-down clamps, select appropriate chisel size and operate the mortiser to cut a mortise(s) as indicated on the blueprint(s),	within an appropriate, specified period of time; to size shown on blueprint.

Topic	Conditions	Performance	Criteria
Planer	1. Given the necessary tools, at least a 16" planer, materials, measuring devices, and a blueprint(s) requiring a planing operation,	the learner will set up and operate the planer to plane the stock,	to exact dimensions and within an appropriate, specified period of time.
Jointer	1. Given the necessary tools, at least an 8" wide bed jointer, materials, measuring devices, a blueprint(s) indicating size of materials needed, and oversize stock,	the learner will set up and operate the jointer to surface one face and one edge,	within an appropriate, specified period of time; without any bow, concave or convex cuts; to not less than finish size.
Circular Saw	1. Given the necessary tools, at least a 10" tilting arbor circular saw, materials, measuring devices, the necessary jigs, and a blueprint(s) requiring the cutting of duplicate parts, miter joints, bevels, cross-cutting, ripping, tapers, dado and rabbit joints, tenons, and coves,	the learner will select the appropriate blade and jig, set up and operate the circular saw to produce the object on the blueprint(s),	± 1/32" or to the specifications on the blueprint, whichever is more exact; within an appropriate, specified period of time.
Radial Arm Saw	1. Given the necessary tools, at least a 10" radial-arm saw, materials, measuring devices, and a blueprint(s) requiring the cutting of identical lengths, bevels, mitering, ripping, tapers, dados, grooving and holding operations,	the learner will select the appropriate blade, set up and operate the radial-arm saw to produce the object on the blueprint,	± 1/32" or to the specifications on the blueprint, whichever is more exact within an appropriate, specified period of time.
Band Saw	1. Given the necessary tools, at least an 18" band saw, materials, measuring devices, a blueprint requiring cuts not possible to make on a table saw which requires the use of miter gauge or ripping fence and/or outside	the learner will set up and operate the band saw to produce the object on the blueprint(s),	to 1/16" outside dimension; within an appropriate, specified period of time.

Topic	Conditions	Performance	Criteria
	cuts (irregular cuts such as radiuses, circles and angles),		
Belt Sander	1. Given a continuous belt sander and stock which has been cut to approximate size as indicated on a blueprint(s),	the learner will set up and operate the belt sander,	to 1/32" oversized dimensions; within an appropriate, specified period of time.
Stroke Sander	1. Given a hand-stroke belt sander, stock cut to size and a flat bottom block,	the learner will select the appropriate abrasive belt, adjust table to thickness of wood, and operate the stroke sander,	belt selected produces desired finish; within an appropriate, specified period of time.
Drill Press	1. Given the necessary tools, at least 15" floor type drill press, materials, measuring devices, and a blueprint(s) requiring drilling, boring, and/or countersinking,	the learner will select the correct bit, select the correct spindle speed, set up and operate the drill press,	hole location to blueprint specifications or $\pm$ 1/64", whichever is more exact; within an appropriate, specified period of time.
Hand Tools	1. Given a blueprint of a project requiring the use of a hammer, screw driver, hand saw, nail sets, pliers, measuring devices, jack plane, plug cutters, chisels, files, squares, and/or marking gauges,	the learner will select and use the appropriate hand tool,	the hand tool selected is most appropriate for the required task and the area around the cut is not damaged by carelessness.
Working Drawings	1. Given two methods for determining board feet and appropriate reference material,	the learner will design and make a working drawing of a project,	all dimensions are indicated, board feet are calculated to within 1/10 board foot, the working drawing is legible, and the general shape and proportion of the drawing are consistent with the desired product.

Topic	Conditions	Performance	Criteria
Wood Identification	1. Given a selection of unidentified wood samples including at least each of the following: maple, mahogany, walnut, pine, poplar, oak, cherry, butternut, plywood, ash and cedar,	the learner will identify,	8 of the 11 samples used with 100% accuracy.
Wood Selection	1. Given a description of a woodworking project, a selection of woods available,	the learner will select one or more appropriate woods,	based upon workability, appearance, strength, and cost.
Finishes	1. Given a selection of finishing materials, including wood stains, shellac, varnish, paint, and/or sealacell process, necessary materials, a completed woodworking project,	the learner will select and apply finishes,	finish as specified; and/or to produce a desired effect; applied according to manufacturer's specification; uniform, free from runs, and no missed areas or other blemishes.
Wood Fastening and Assembling	1. Given any wood fastening problems, all components for assembling, and an assortment of glues, screws, and nails,	the learner will select an appropriate fastener and assemble the components,	to produce the desired strength; without damaging material to be fastened; to produce the desired appearance; according to the blueprint.

RECOMMENDED MINIMUM VOCATIONAL/TECHNICAL PROGRAM PERFORMANCE OBJECTIVES

Occupational Designation: Employability Skills

U.S.O.E. Code Number: All Vocational/ Technical Programs

Remarks:

These objectives are to be considered an integral part of each individual set of recommended minimum program performance objectives for all vocational and technical programs.

Note: In these objectives the expression, "Without the use of reference materials" is used to indicate that the learner would perform this task during the testing situation without access to reference sources, notes, etc.

EMPLOYABILITY SKILLS
COOPERATIVE EDUCATION
TECHNIQUE

Upon completion of this program, students will have the following skills and understandings as measured by teacher-made objectives referenced tests (ORT's), unless otherwise indicated:

Topic	Conditions	Performance	Criteria
Sources of Employment Opportunities	1. Without the use of reference materials,	the learner will list the prime sources of information concerning opportunities for employment and describe those special procedures, if any, required to effectively utilize their services, information, etc.,	which is (1) consistent with the model, (2) complete with all information as required by the model, and (3) correct, legible and spelled correctly.
Requirements Of The Occupation (Health, Physical etc.)	1. Without the use of reference materials,	the learner will list the significant requirements (health, physical, legal, educational, etc.), if any, of the appropriate occupation,	consistent with available data on the occupation and pertinent local, state, and federal regulations.
Wage Information	1. Without the use of reference materials,	the learner will list the approximate entry wages, general wage range, and significant fringe benefits for the appropriate occupation as well as compare these wages and fringe benefits with other selected occupations,	consistent with available information and based upon local norms.

Topic	Conditions	Performance	Criteria
Non-Wage Information	1. Without the use of reference materials,	the learner will list and describe the significant non-wage characteristics (e.g., shift requirements, union affiliation, apprenticeships, occupational hazards, characteristics of work environment, etc.)	with sufficient detail as to accurately describe those characteristics which are significant to the appropriate occupation.
Employment Opportunities	1. Without the use of reference materials,	the learner will describe the local, regional, and national employment opportunities for the appropriate occupation,	in terms generally consistent with data available from business and industrial sources, governmental agencies, and other selected sources.
Opportunities For Advancement	1. Without the use of reference materials,	the learner will describe the career ladder associated with the appropriate occupational area of training in which he/she is enrolled,	consistent with an authoritatively prepared model which is characteristic of that occupational area.
Decision Making	1. Given a decision making situation (job offer, further training, job termination, etc.) and procedures/skills in decision making,	the learner will compare his/her personal criteria with information about available alternatives and choose among them,	the decision is made by the learner listing and describing the reasons for choosing an alternative or the decision is acted upon.
Resume/Data Sheet	1. Given a topical information outline for completing a resume or data sheet and the necessary personal notes, documents, etc.	the learner will prepare a resume or data sheet,	which is (1) consistent with the outline, (2) all information necessary to complete the resume or data sheet assembled in advance by the learner, (3) with all information entered into each area of the outline as illustrated, and (4) all information correct, legible, and spelled correctly.
Letter Of Application Inquiry 9/74	1. Given a model for a letter of application/inquiry and the necessary personal notes, documents, etc.,	the learner will write a letter of application/inquiry,	which is (1) consistent with the model, (2) complete with all information as required by the model, and (3) correct, legible and spelled correctly.

Topic	Conditions	Performance	Criteria
Evaluation Of Job Offer	1. Without the use of reference materials,	the learner will list his/her personal criteria (financial, social, etc.) which describe a job offer,	which would be acceptable to him/her if offered.
Interpersonal Relationships	1. Given case descriptions of common on-the-job conflict situations: employer-employee, employee-employee, and employee-client/customer/etc.,	the learner will identify the probable cause for the conflict and suggest at least one possible action to relieve the conflict,	for the majority of cases presented and consistent with guidelines, etc., previously made available to the learner.
Continuing Education	1. Without the use of reference materials,	the learner will describe the type(s) and source(s) of related continuing education for the appropriate occupation and/or advancement within the career ladder associated with the occupation,	consistent with authoritative information appropriate for that occupational area.
Terminating A Job	1. Without the use of reference materials,	the learner will describe the procedures and practices for terminating a job,	generally consistent with a model of procedures and practices as provided for the appropriate occupational area which includes: length of notice, method of notification, request for references, etc.

Topic	Conditions	Performance	Criteria
Employment Application	1. Given a sample employment application characteristic of the type common to the appropriate area of employment and the necessary personal notes, documents, etc.,	the learner will complete the employment application,	with (1) all information necessary to complete the application assembled in advance by the learner, (2) all information entered into each area of the application as directed, and (3) all information correct, legible and spelled correctly.
Standards of On-The-Job Dress, Grooming, Etc.	1. Without the use of reference materials,	the learner will describe and/or dress in the attire of the appropriate occupational area including personal grooming, required health and safety equipment, uniforms, etc.,	consistent with legal requirements (if any), appropriate safety considerations, and conventional attire of that occupation.
Interviewing	1. Without the use of reference materials,	the learner will describe and/or demonstrate appropriate characteristics of the job applicant, including: (a) attire, (b) grooming and (c) conduct during interview,	generally consistent with a model of procedures and practices as provided for the appropriate occupational area.
	2. Without the use of reference materials,	the learner will describe and/or demonstrate the interviewing process,	including at least the following: a. Pre-interview: how to set up an interview, what to bring to the interview, etc. b. Interview: typical employer questions and interview topics, significant applicant questions and topics, promptness, etc. c. Post-interview: notification of the outcome of the interview, follow-up correspondence, etc. Each of the above to be generally consistent with a model of procedures and practices as provided for the appropriate occupational area.

Statement

On The

Cooperative Education Technique

An approved vocational/technical program may utilize, at the discretion of the local educational agency, a cooperative education component. As a method of instruction, the cooperative education technique does not have program performance objectives which are separate from those of the approved vocational/technical program (by U.S.O.E. Code Number). An approved program may appropriately develop and implement performance objectives; a method of instruction (co-op, lecture, exploratory work experiences, etc.) does not, however, have planned performance objectives apart from those of the approved program.

Expressed in the terminology of performance-oriented instruction, this goal may be stated as follows:

Goal 1. The learner will demonstrate the achievement of the performance objectives of the approved vocational education program in either the school setting and/or the training station.

For skills and understandings acquired prior to or concurrent with the cooperative vocational education experience through preparatory and/or related instruction:

While employed in an approved training station and subject to the conditions of a training agreement/plan, the learner will demonstrate those skills and understandings acquired in preparatory and/or related instruction to the criteria of the program performance objectives or to the criteria of the cooperating employer. The criteria with the higher standard will be applied in the evaluation of learner achievement.

It is possible that a learner might be involved in cooperatively planned unique learning activities while a cooperative education student. In such cases, it would be desirable to include additional performance objectives specifically developed to cover these unanticipated needs of the learner as a part of the training plan/agreement. Performance objectives so developed would probably have the following characteristics:

1. Few in number
2. Cooperatively developed and agreed to by learner, employer, and school.
3. Highly individualized because of their uniqueness.

In performance-oriented instructional terminology, this goal may be expressed as follows:

Goal 2. The learner will demonstrate the achievement of the performance objectives unique to a particular training station.

For skills and understandings which are not a part of the regular approved vocational program and which originate because of the unique requirements of a particular training station.

Given a deficiency in skills and/or understandings necessary to perform satisfactorily in a particular training station (identified by either the learner, the coordinator, or the employer) the learner will participate in the development of performance objectives to eliminate such deficiencies and will achieve those skills and/or understandings to the criteria mutually agreed upon by the parties to the training agreement.