

DOCUMENT RESUME

ED 397 308

CE 072 193

TITLE Mississippi Curriculum Framework for General Drafting (Program CIP: 48.0101--Drafting, General). Secondary Programs.

INSTITUTION Mississippi Research and Curriculum Unit for Vocational and Technical Education, State College.

SPONS AGENCY Mississippi State Dept. of Education, Jackson. Office of Vocational and Technical Education.

PUB DATE 30 Jul 96

NOTE 81p.; For related documents, see CE 072 162-231.

PUB TYPE Guides - Classroom Use - Teaching Guides (For Teacher) (052)

EDRS PRICE MF01/PC04 Plus Postage.

DESCRIPTORS Academic Education; Air Conditioning; *Architectural Drafting; Behavioral Objectives; Blueprints; Building Plans; Building Trades; Classroom Techniques; Competence; *Competency Based Education; Computer Assisted Design; Core Curriculum; *Drafting; Educational Equipment; Employment Qualifications; Engineering Drawing; Equipment Utilization; Heating; Leadership; Mathematics Skills; Measurement Techniques; Orthographic Projection; Plumbing; Safety; Secondary Education; State Curriculum Guides; Statewide Planning; Student Evaluation; *Trade and Industrial Education; Ventilation

IDENTIFIERS Mississippi; Residential Wiring

ABSTRACT

This document, which reflects Mississippi's statutory requirement that instructional programs be based on core curricula and performance-based assessment, contains outlines of the instructional units required in local instructional management plans and daily lesson plans for two secondary-level courses in drafting: drafting I and II. Presented first are a program description and course outline. Section I contains curriculum frameworks for both courses, and section II contains outlines of the instructional units required in each course. The first course consists of 14 units on the following topics: orientation; leadership/personal development; safety; introduction to drafting; tools and equipment; lettering; geometric constructions; orthographic projections; basic computer-aided design (CAD); dimensioning; threads and fasteners; sectional views; auxiliary views; and pictorial drawings. Topics covered in the 12 units constituting the second course are the following: orientation; safety; advanced leadership; employability skills; architectural drafting; area planning; structural systems and building materials; architectural working drawings; advanced CAD; civil drafting; plumbing/heating, ventilation, and air-conditioning drafting; and residential wiring plans. Each unit includes suggested time on tasks, competencies and objectives, teaching strategies, assessment strategies, and resources. Recommended tools and equipment are listed in section III. Appended are lists of related academic topics and workplace skills for the 21st century and student competency profiles. (MN)

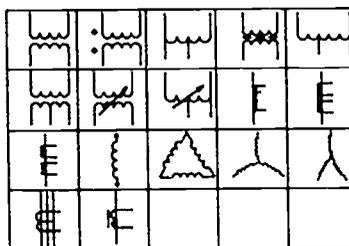
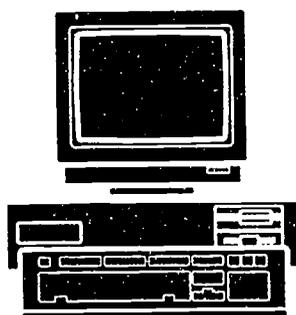
Mississippi Curriculum Framework for General Drafting

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MISSISSIPPI
CURRICULUM FRAMEWORK
FOR
GENERAL DRAFTING

(Program CIP: 48.0101 – Drafting, General)

SECONDARY PROGRAMS

1996

July 30, 1996

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Published by the:

Office of Vocational and Technical
Education
Mississippi Department of Education
Jackson, Mississippi

Research and Curriculum Unit for
Vocational and Technical Education
College of Education
Mississippi State University
Mississippi State, Mississippi

1996

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FOREWORD

The courses in this document reflect the following statutory requirements as found in Section 37-3-49, Mississippi Code of 1972, as amended:

The State Department of Education shall provide an instructional program and establish guidelines and procedures for managing such programs in the public schools as part of the State Program of Educational Accountability and Assessment of Performance. . .

The department shall provide that such program or guidelines . . . are enforced through the performance-based accreditation system.

The local school board must adopt the objectives that will form the core curriculum that will be systematically delivered throughout the district.

Standards for student performance must be established for each core objective in the local program and those standards establish the district's definition of mastery for each objective.

There shall be an annual review of student performance in the instructional program against locally established standards.

Each secondary vocational-technical course consists of a series of instructional units which focus on a common theme. All units have been written using a common format which includes the following components:

- o Unit Number and Title
- o Suggested Time on Task - The number of days of instruction that should be required to teach the competencies and objectives of the unit. For secondary occupational programs, a "day" represents a two-period block of instruction.
- o Competencies and Suggested Objectives
 - A **Competency** represents a general concept of performance that students are expected to master as a requirement for satisfactorily completing a unit. Students will be expected to master all competencies in the curriculum framework in order to satisfactorily complete the course.
 - The **Suggested Objectives** represent the enabling and supporting knowledge and performances that will indicate mastery of the competency.
- o Suggested Teaching Strategies - This section of each unit indicates strategies that can be used to enable students to master each suggested objective. Teachers should feel free to modify or enhance these suggestions based on needs of their students and resources available in order to provide optimum learning experiences for their students.

- Suggested Assessment Strategies - This section indicates strategies that can be used to measure student mastery. Examples of suggested strategies could include classroom discussions, laboratory exercises, and student assignments. Again, teachers should feel free to modify or enhance these suggested assessment strategies based on local needs and resources.
- Suggested Resources - This section indicates some of the primary instructional resources that may be used to teach the competencies and suggested objectives. Again, these resources are suggested and the list may be modified or enhanced based on needs and abilities of students and on available resources.

The following guidelines were used in developing the curriculum framework in this document and should be considered in developing local instructional management plans and daily lesson plans:

- The content of the courses in this document reflects approximately 75 percent of the time allocated to each course. For a one-year course, this means that the content of the existing units of instruction should represent approximately 135 days of instruction. The remaining 25 percent of each course should be developed at the local district level and may reflect:
 - Additional units of instruction within the course related to topics not found in the state framework.
 - Activities which develop a higher level of mastery on the existing competencies and suggested objectives.
 - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed/revised.
 - Activities which implement components of the Mississippi Tech Prep Initiative, including integration of academic and vocational-technical skills and coursework, school-to-career transition activities, and articulation of secondary and postsecondary vocational-technical programs.
 - Individualized learning activities, including work site learning activities, to better prepare individuals in the courses for their chosen occupational area.
- Sequencing of the units of instruction within a course is left to the discretion of the local district. Naturally, foundation units related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other units related to specific skill areas in the course, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

ACKNOWLEDGEMENTS

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PROGRAM DESCRIPTION

GENERAL DRAFTING

(Program CIP: 48.0101 - Drafting, General)

General Drafting is an instructional program designed to teach students to produce workable drawings on the drawing board and with the computer. Upon successful completion of the program, the student will be qualified for an entry level drafting or related position or may pursue postsecondary education.

COURSE OUTLINE
DRAFTING, GENERAL I

<u>Unit No.</u>	<u>Title</u>	<u>No. of Days</u>
Unit 1:	Orientation	2
Unit 2:	Leadership and Personal Development	1
Unit 3:	Safety	1
Unit 4:	Introduction to Drafting	1
Unit 5:	Introduction to Tools and Equipment	1
Unit 6:	Lettering	3
Unit 7:	Geometric Constructions	14
Unit 8:	Orthographic Projections	29
Unit 9:	Basic CAD	27
Unit 10:	Dimensioning	20
Unit 11:	Threads and Fasteners	7
Unit 12:	Sectional Views	10
Unit 13:	Auxiliary Views	5
Unit 14:	Pictorial Drawings	14

DRAFTING, GENERAL II

<u>Unit No.</u>	<u>Title</u>	<u>No. of Days</u>
Unit 1:	Orientation	1
Unit 2:	Safety	1
Unit 3:	Advanced Leadership	1
Unit 4:	Employability Skills	2
Unit 5:	Architectural Drafting	5
Unit 6:	Area Planning	10
Unit 7:	Structural Systems and Building Materials	10
Unit 8:	Architectural Working Drawings	55
Unit 9:	Advanced CAD	40
Unit 10:	Civil Drafting	10
Unit 11:	Plumbing/HVAC Drafting	10
Unit 12:	Residential Wiring Plans	15

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SECTION I:
CURRICULUM FRAMEWORK
FOR
GENERAL DRAFTING

CURRICULUM FRAMEWORK

Course Name: Drafting, General I

Course CIP Code: 48.0101

Course Description: Drafting, General I is the entry level course of the secondary General Drafting program. Students in this course will gain foundation competencies related to orientation, safety, leadership and personal development, and basic drafting and CAD skills. (2-2½ Carnegie units, depending upon time spent in the course)

Competencies and Suggested Objectives:

1. Describe local program and vocational center policies and procedures.
 - a. Describe local program and vocational center policies and procedures including dress code, attendance, academic requirements, discipline, and transportation regulations.
Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6
2. Describe employment opportunities and responsibilities.
 - a. Describe employment opportunities including potential earnings, employee benefits, job availability, places of employment, working conditions, and educational requirements.
 - b. Describe basic employee responsibilities.
Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6
3. State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided students by the Vocational Industrial Clubs of America (VICA).
 - a. State procedures of leadership used in organizational meetings to reach an agreement in an orderly manner.
 - b. Describe the purposes of VICA.
Related Academic Topics (See Appendix A): C5, C6
Workplace Skills (See Appendix B): WP1, WP3, WP6
4. Identify desirable personal behavior and characteristics.
 - a. Identify desirable personality traits when serving the public.
 - b. Identify desirable personality traits when communicating with employees, supervisors, and other employees.
 - c. Identify desirable characteristics of the personal work ethic.
Related Academic Topics (See Appendix A): C4, C5, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6

5. Identify legal requirements for participation in the occupation.
 - a. Describe ways to avoid legal liability problems in the occupation.
Related Academic Topics (See Appendix A): C3, C4, C6
Workplace Skills (See Appendix B): WP4, WP6
6. Describe personal safety rules for working in the drafting industry.
 - a. Identify and apply terms and definitions for safety.
 - b. Identify OSHA inspections and citations.
 - c. Identify accidents including causes and prevention.
 - d. Identify general safety procedures.
 - e. Identify causes of electrical hazards.
 - f. Identify proper methods for moving heavy items.
 - g. Identify and apply emergency first aid, if necessary.
Related Academic Topics (See Appendix A): C1, C4, C5
Workplace Skills (See Appendix B): WP2, WP3
7. Match drafting occupation job titles with qualifications and responsibilities and identify areas of specialization in the drafting profession.
 - a. Match drafting occupation job titles with qualifications and responsibilities.
 - b. Identify areas of specialization in the drafting profession.
Related Academic Topics (See Appendix A): C1, C4, C5, S8
Workplace Skills (See Appendix B): WP2
8. Describe goals of technical drawing including accuracy, acceptable technique, neatness, and speed.
 - a. Describe the goals of technical drawing.
Related Academic Topics (See Appendix A): C1, C4, C5
Workplace Skills (See Appendix B): WP2, WP3
9. Identify and demonstrate drafting tools and identify media.
 - a. Identify drafting tools.
 - b. Operate blueprint machine.
 - c. Match media and reproduction terms.
 - d. Interpret architect, engineering, and metric scale units.
Related Academic Topics (See Appendix A): C1, M1, M4
Workplace Skills (See Appendix B): WP2, WP5
10. Demonstrate the ability to describe the rules of lettering.
 - a. Describe the rules of lettering.
Related Academic Topics: (See Appendix A): C1, C4, C6, M1
Workplace Skills (See Appendix B): WP2
11. Construct uppercase gothic letters and numerals.
 - a. Demonstrate uppercase gothic letters and numerals.
Related Academic Topics: (See Appendix A): C1, C4, C6, M1
Workplace Skills (See Appendix B): WP2

12. Match and identify basic geometric shapes and terms.
- Match geometric terms with their definition.
 - Identify basic geometric shapes.
- Related Academic Topics (See Appendix A): C1, C6, M5, S8*
Workplace Skills (See Appendix B): WP1, WP2, WP6
13. Construct various geometric shapes using constructional techniques.
- Bisect a line and arc.
 - Bisect an angle.
 - Construct a perpendicular line from a point to a line.
 - Divide a line into equal parts.
 - Draw an arc tangent to a straight line and an arc.
 - Draw an arc tangent to two arcs.
 - Construct an octagon.
 - Construct a hexagon.
 - Construct a line parallel to a given line.
- Related Academic Topics (See Appendix A): C1, C6, M5, S8*
Workplace Skills (See Appendix B): WP1, WP2, WP6
14. Match orthographic terms with definitions.
- Match terms of orthographic projections with their definitions.
- Related Academic Topics (See Appendix A): C1, C2, C6, M2, M5*
Workplace Skills (See Appendix B): WP2, WP6
15. Demonstrate the ability to describe principal views possible in orthographic projection.
- Describe principal views in orthographic projection.
- Related Academic Topics (See Appendix A): C1, C2, C6, M2, M5*
Workplace Skills (See Appendix B): WP2, WP6
16. Demonstrate the ability to construct principal views in orthographic projection.
- Construct top view with front and right sides given.
 - Construct front view with top and right sides given.
 - Construct right side with top and front views given.
 - Construct a 3-view drawing from a pictorial.
- Related Academic Topics (See Appendix A): C1, C2, C6, M2, M5*
Workplace Skills (See Appendix B): WP2, WP6
17. Demonstrate the ability to use CAD hardware and software.
- Match CAD hardware/software terms with definitions.
 - Demonstrate care and maintenance of computer software/hardware.
 - Start up/shut down CAD system.
 - Load CAD program and save drawing on hard drive and floppy disk.
 - Operate plotter/printer.
- Related Academic Topics (See Appendix A): C1, C4, C6, M5, S8*
Workplace Skills (See Appendix B): WP2, WP5, WP6
18. Construct orthographic and pictorial drawings on the CAD system.
- Construct an orthographic drawing on the CAD system.
 - Construct a pictorial drawing on the CAD system.

Related Academic Topics (See Appendix A): C1, C4, C6, M5, S8
Workplace Skills (See Appendix B): WP2, WP5, WP6

19. Demonstrate the ability to apply techniques of dimensioning.
 - a. Apply basic line types used in dimensioning.
 - b. Demonstrate use of aligned and unidirectional systems.
 - c. Apply rules for dimensioning techniques.
 - d. Identify and locate finish marks on drawings.
 - e. Explain the purpose for notations on drawings.
 - f. Describe machine processes.

Related Academic Topics (See Appendix A): C1, C2, C4, C6, M5
Workplace Skills (See Appendix B): WP2, WP3

20. Describe and draw threads.
 - a. Describe uses of threads.
 - b. Describe types of thread forms.
 - c. Interpret thread notes.
 - d. Describe methods of thread representation.
 - e. Draw an internal and external thread form.

Related Academic Topics (See Appendix A): C1, C4
Workplace Skills (See Appendix B): WP2, WP6

21. Describe the techniques and types of sectional views.
 - a. Identify types of section views.
 - b. Describe the techniques for developing sectional views.

Related Academic Topics (See Appendix A): C1, C2, C6
Workplace Skills (See Appendix B): WP2, WP6

22. Construct sectional views.
 - a. Construct full sections.
 - b. Construct half sections.

Related Academic Topics (See Appendix A): C1, C2, C6, M1
Workplace Skills (See Appendix B): WP2, WP6

23. Demonstrate the ability to construct primary auxiliary views.
 - a. Discuss the methods of constructing primary auxiliary views.
 - b. Construct a primary auxiliary view.

Related Academic Topics (See Appendix A): C1, C4, C6, M1
Workplace Skills (See Appendix B): WP2, WP6

24. Demonstrate the ability to list and describe the different types of pictorial drawings.

- a. List the different types of pictorial drawings.
- b. Describe the differences in pictorial drawings.

Related Academic Topics (See Appendix A): C1, C4, C6, M1
Workplace Skills (See Appendix B): WP2, WP6

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25. Construct pictorial drawings.
 - a. Construct an isometric drawing.
 - b. Construct an oblique drawing.

Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1
Workplace Skills (See Appendix B): WP2, WP6

CURRICULUM FRAMEWORK

Course Name: Drafting, General II

Course CIP Code: 48.0190

Course Description: Drafting, General II is the exit level course of the secondary General Drafting program. Students in this course will gain foundation competencies related to orientation, safety, leadership and personal development, basic architectural drafting, and CAD skills. The basic architectural drafting section includes floor plans, elevations, foundations, and sections. (2-2 ½ Carnegie units, depending upon time spent in the course)

Competencies and Suggested Objectives:

1. Describe local program and vocational center policies and procedures.
 - a. Describe local program and vocational center policies and procedures including dress code, attendance, academic requirements, discipline, and transportation regulations.
Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6
2. Describe employment opportunities and responsibilities.
 - a. Describe employment opportunities including potential earnings, employee benefits, job availability, places of employment, working conditions, and educational requirements.
 - b. Describe basic employee responsibilities.
Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6
3. Describe personal safety rules for working in the drafting industry.
 - a. Identify and apply terms and definitions for safety.
 - b. Identify OSHA inspections and citations.
 - c. Identify accidents including causes and prevention.
 - d. Identify general safety procedures.
 - e. Identify causes of electrical hazards.
 - f. Identify proper methods for moving heavy items.
 - g. Identify and apply emergency first aid, if necessary.
Related Academic Topics (See Appendix A): C1, C4, C5
Workplace Skills (See Appendix B): WP2, WP3
4. Develop advanced leadership and organizational skills.
 - a. Identify VICA leadership and skills competition activities.
 - b. Identify similarities between VICA leadership skills and workplace leadership skills.
Related Academic Topics (See Appendix A): C5, C6
Workplace Skills (See Appendix B): WP1, WP3, WP6

5. Develop employability skills.
 - a. Prepare a resume containing essential information.
 - b. Complete a job application form.
 - c. Explain procedures for job interviews using correct job etiquette.
 - d. Demonstrate the role of an applicant in a job interview.

Related Academic Topics (See Appendix A): C1, C3, C4, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6
6. Demonstrate the ability to describe the functions and organization of the architectural profession.
 - a. Describe architectural drafting terms.
 - b. Prepare a report on architectural drafting.
 - c. Match job titles with qualifications, responsibilities, and legal requirements for entering the architectural drafting field.

Related Academic Topics (See Appendix A): C1, C4, C5
Workplace Skills (See Appendix B): WP2
7. Demonstrate the ability to produce sketches in planning the three main residential areas.
 - a. Describe requirements for the three main residential areas.
 - b. Sketch rooms including service, living, and sleeping areas, and floor plan.

Related Academic Topics (See Appendix A): C1, C4, C6, M1
Workplace Skills (See Appendix B): WP2, WP6
8. Demonstrate the ability to describe the structural systems and construction materials.
 - a. Define structural systems and building materials terms.
 - b. Identify symbols on plan, elevation, and/or section drawings.

Related Academic Topics (See Appendix A): C1, C2, C4
Workplace Skills (See Appendix B): WP2
9. Demonstrate the skills necessary for producing an architecturally correct floor plan.
 - a. Interpret measurements using architect's scale.
 - b. Construct architectural letters.
 - c. Draw and dimension a floor plan.

Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1, M4, S6
Workplace Skills (See Appendix B): WP2, WP6
10. Demonstrate the ability to produce an architecturally correct foundation plan.
 - a. Draw a foundation plan.

Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1, M4, S6
Workplace Skills (See Appendix B): WP2, WP6
11. Demonstrate the ability to produce an electrical plan.
 - a. Draw an electrical plan.

Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1, M4, S6
Workplace Skills (See Appendix B): WP2, WP6

12. Demonstrate the ability to produce elevation drawings.
 - a. Draw an elevation plan.
Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1, M4, S6
Workplace Skills (See Appendix B): WP2, WP6
13. Demonstrate the ability to draw, dimension, and label an exterior wall section.
 - a. Draw a typical exterior wall section.
 - b. Dimension and label a typical exterior wall section.
Related Academic Topics (See Appendix A): C1, C3, C4, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6
14. Develop a floor plan by utilizing a microcomputer.
 - a. Draw, dimension, and plot a floor plan using a microcomputer.
Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1, M4
Workplace Skills (See Appendix B): WP2, WP6
15. Develop architectural elevations using a microcomputer.
 - a. Draw elevations using a microcomputer.
Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1, M4
Workplace Skills (See Appendix B): WP2, WP6
16. Develop the skills needed to operate a plotter/printer.
 - a. Operate a plotter/printer.
Related Academic Topics (See Appendix A): C1, C4, C6, M1
Workplace Skills (See Appendix B): WP2, WP5, WP6
17. Demonstrate the ability to utilize the basic elements of civil drafting.
 - a. Describe civil drafting terms.
 - b. Match job titles with qualifications, responsibilities, and licensing/bonding requirements.
Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP6
18. Develop a plot/site plan.
 - a. Draw a plot/site plan.
Related Academic Topics (See Appendix A): C1, C4, C6, M1
Workplace Skills (See Appendix B): WP2, WP6
19. Demonstrate the ability to apply information on the plumbing and HVAC profession.
 - a. Describe plumbing and HVAC terms.
 - b. Match job titles with qualifications, responsibilities, and licensing/bonding requirements.
Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP6
20. Demonstrate the ability to draw a basic plumbing plan.
 - a. Draw a basic plumbing schematic for a residential building.
Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP6

21. Demonstrate the ability to draw a basic HVAC plan for a residential building.
 - a. Draw a basic HVAC plan for a residential building.
Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP6
22. Describe a basic residential wiring plan.
 - a. Describe electrical terms.
 - b. Match job titles with qualifications, responsibilities, and licensing/bonding requirements.
Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP6
23. Demonstrate the ability to develop a basic residential wiring plan.
 - a. Draw a basic electrical schematic.
Related Academic Topics (See Appendix A): C1, C4, C6, M1, S6
Workplace Skills (See Appendix B): WP2, WP6

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SECTION II:
CURRICULUM GUIDE
FOR
GENERAL DRAFTING

July 30, 1996

DRAFTING, GENERAL I

**DRAFTING, GENERAL I
UNIT 1: ORIENTATION**

(2 days)

Competencies and Suggested Objectives:

1. Describe local program and vocational center policies and procedures.
 - a. Describe local program and vocational center policies and procedures including dress code, attendance, academic requirements, discipline, and transportation regulations.
Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6
2. Describe employment opportunities and responsibilities.
 - a. Describe employment opportunities including potential earnings, employee benefits, job availability, places of employment, working conditions, and educational requirements.
 - b. Describe basic employee responsibilities.
Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Describe local program and vocational center policies and procedures.*
 - a. *Review and discuss applicable rules and regulations.*
2. *Describe employment opportunities and responsibilities.*
 - a. *Have students survey job opportunities through employer visits, resource person(s), telephone calls, and/or field trip and report to the class.*
 - b. *Have resource person speak to students regarding requirements for jobs, such as punctuality, customer relations, following directions, etc.*

Suggested Assessment Strategies:

1. *Describe local program and vocational center policies and procedures.*
 - a. *Test on applicable rules and regulations.*
2. *Describe employment opportunities and responsibilities.*
 - a. *Oral and written report on employment opportunities.*
 - b. *Oral and written report on employee responsibilities.*

Suggested References:

Local Administrative Policies and Procedures.

DRAFTING, GENERAL I**UNIT 2: LEADERSHIP AND PERSONAL DEVELOPMENT****(1 day)****Competencies and Suggested Objectives:**

1. State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided students by the Vocational Industrial Clubs of America (VICA).
 - a. State procedures of leadership used in organizational meetings to reach an agreement in an orderly manner.
 - b. Describe the purposes of VICA.

Related Academic Topics (See Appendix A): C5, C6
Workplace Skills (See Appendix B): WP1, WP3, WF6
2. Identify desirable personal behavior and characteristics.
 - a. Identify desirable personality traits when serving the public.
 - b. Identify desirable personality traits when communicating with employees, supervisors, and other employees.
 - c. Identify desirable characteristics of the personal work ethic.

Related Academic Topics (See Appendix A): C4, C5, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6
3. Identify legal requirements for participation in the occupation.
 - a. Describe ways to avoid legal liability problems in the occupation.

Related Academic Topics (See Appendix A): C3, C4, C6
Workplace Skills (See Appendix B): WP4, WP6

Suggested Teaching Strategies:

1. *State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided students by VICA.*
 - a. *Allow students to attend a formal meeting to observe "Robert's Rules of Order" in operation. Give a handout on procedures. Encourage classroom discussion on procedures.*
 - b. *Discuss leadership opportunities.*
2. *Identify desirable personal behavior and characteristics.*
 - a. *Conduct a class discussion involving personality traits.*
 - b. *Compare public personality traits versus employee personality traits.*
 - c. *Have students interview someone outside school to identify the application of personal work ethics.*
3. *Identify legal requirements for participation in the occupation.*
 - a. *Discuss with students liabilities that may be incurred while not meeting standards and ethics.*

Suggested Assessment Strategies:

1. *State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided students by VICA.*
 - a. *Oral and/or written review.*
 - b. *Oral and/or written review.*
2. *Identify desirable personal behavior and characteristics.*
 - a. *Have students role play desirable personality traits.*
 - b. *Oral and/or written review.*
 - c. *Oral and/or written review.*
3. *Identify legal requirements for participation in the occupation.*
 - a. *Oral and/or written review.*

Suggested References:

VICA. Official Guide for VICA. Washington, D.C.: Vocational Industrial Clubs of America (VICA).

DRAFTING, GENERAL I
UNIT 3: SAFETY

(1 day)

Competencies and Suggested Objectives:

1. Describe personal safety rules for working in the drafting industry.
 - a. Identify and apply terms and definitions for safety.
 - b. Identify OSHA inspections and citations.
 - c. Identify accidents including causes and prevention.
 - d. Identify general safety procedures.
 - e. Identify causes of electrical hazards.
 - f. Identify proper methods for moving heavy items.
 - g. Identify and apply emergency first aid, if necessary.

Related Academic Topics (See Appendix A): C1, C4, C5
Workplace Skills (See Appendix B): WP2, WP3

Suggested Teaching Strategies:

1. *Describe personal safety rules for working in the drafting industry.*
 - a. *Review and discuss applicable rules and regulations on safety.*
 - b. *Have students review the lab and classroom to indicate any safety violations.*
 - c. *Describe accident procedures including getting help, basic first aid, and accident report form.*
 - d. *Review the school's policy on general safety procedures.*
 - e. *Describe hazards of electrical shock including effects of current, shock avoidance techniques, and shock treatment procedures.*
 - f. *Describe the proper procedure for moving heavy items.*
 - g. *Review steps to follow in an emergency situation.*

Suggested Assessment Strategies:

1. *Describe personal safety rules for working in the drafting industry.*
 - a. *Oral and/or written exercise.*
 - b. *Oral and/or written exercise.*
 - c. *Oral and/or written exercise.*
 - d. *Oral and/or written exercise.*
 - e. *Oral and/or written exercise.*
 - f. *Oral and/or written exercise.*
 - g. *Oral and/or written exercise.*

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Suggested References:

Center Publication, Safety Handbook.
OSHA Regulations.

DRAFTING, GENERAL I
UNIT 4: INTRODUCTION TO DRAFTING

(1 day)

Competencies and Suggested Objectives:

1. Match drafting occupation job titles with qualifications and responsibilities and identify areas of specialization in the drafting profession.
 - a. Match drafting occupation job titles with qualifications and responsibilities.
 - b. Identify areas of specialization in the drafting profession.

Related Academic Topics (See Appendix A): C1, C4, C5, S8
Workplace Skills (See Appendix B): WP2
2. Describe goals of technical drawing including accuracy, acceptable technique, neatness, and speed.
 - a. Describe the goals of technical drawing.

Related Academic Topics (See Appendix A): C1, C4, C5
Workplace Skills (See Appendix B): WP2, WP3

Suggested Teaching Strategies:

1. *Match drafting occupation job titles with qualifications and responsibilities and identify areas of specialization in the drafting profession.*
 - a. *Review and discuss drafting occupation job titles with qualifications and responsibilities.*
 - b. *Have students survey job opportunities through industry visits.*
2. *Describe goals of technical drawing including accuracy, acceptable technique, neatness, and speed.*
 - a. *Review and discuss goals of technical drawing, accuracy, acceptable technique, neatness, and speed.*

Suggested Assessment Strategies:

1. *Match drafting occupation job titles with qualifications and responsibilities and identify areas of specialization in the drafting profession.*
 - a. *Oral/written test.*
 - b. *Oral/written test.*
2. *Describe goals of technical drawing including accuracy, acceptable technique, neatness, and speed.*
 - a. *Oral/written test.*

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Suggested References:

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Spencer, Dygdon. Basic Technical Drawing. New York: Glencoe-McGraw-Hill. 1980.

DRAFTING, GENERAL I
UNIT 5: INTRODUCTION TO TOOLS AND EQUIPMENT

(1 day)

Competencies and Suggested Objectives:

1. Identify and demonstrate drafting tools and identify media.
 - a. Identify drafting tools.
 - b. Operate blueprint machine.
 - c. Match media and reproduction terms.
 - d. Interpret architect, engineering, and metric scale units.

Related Academic Topics (See Appendix A): C1, M1, M4
Workplace Skills (See Appendix B): WP2, WP5

Suggested Teaching Strategies:

1. *Identify and demonstrate drafting tools and identify media.*
 - a. *Review and discussion/demonstration.*
 - b. *Review and discussion/demonstration.*
 - c. *Review and discussion/demonstration.*
 - d. *Review and discussion/demonstration.*

Suggested Assessment Strategies:

1. *Identify and demonstrate drafting tools and identify media.*
 - a. *Oral/written test.*
 - b. *Oral/written test.*
 - c. *Oral/written test.*
 - d. *Oral/written test.*

Suggested References:

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Spencer, Dygdon. Basic Technical Drawing. New York: Glencoe-McGraw-Hill. 1980.

**DRAFTING, GENERAL I
UNIT 6: LETTERING**

(3 days)

Competencies and Suggested Objectives:

1. Demonstrate the ability to describe the rules of lettering.
 - a. Describe the rules of lettering.
Related Academic Topics: (See Appendix A): C1, C4, C6, M1
Workplace Skills (See Appendix B): WP2
2. Construct uppercase gothic letters and numerals.
 - a. Demonstrate uppercase gothic letters and numerals.
Related Academic Topics: (See Appendix A): C1, C4, C6, M1
Workplace Skills (See Appendix B): WP2

Suggested Teaching Strategies:

1. *Demonstrate the ability to describe the rules of lettering.*
 - a. *Review and discuss rules for lettering.*
2. *Construct uppercase gothic letters and numerals.*
 - a. *Demonstrate upper case gothic lettering and numerals.*

Suggested Assessment Strategies:

1. *Demonstrate the ability to describe the rules of lettering.*
 - a. *Oral/written test.*
2. *Construct uppercase gothic letters and numerals.*
 - a. *Oral/written test.*

Suggested References:

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Spencer, Dygdon. Basic Technical Drawing. New York: Glencoe-McGraw-Hill. 1980.

DRAFTING, GENERAL I
UNIT 7: GEOMETRIC CONSTRUCTIONS

(14 days)

Competencies and Suggested Objectives:

1. Match and identify basic geometric shapes and terms.
 - a. Match geometric terms with their definition.
 - b. Identify basic geometric shapes.

Related Academic Topics (See Appendix A): C1, C6, M5, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6
2. Construct various geometric shapes using constructional techniques.
 - a. Bisect a line and arc.
 - b. Bisect an angle.
 - c. Construct a perpendicular line from a point to a line.
 - d. Divide a line into equal parts.
 - e. Draw an arc tangent to a straight line and an arc.
 - f. Draw an arc tangent to two arcs.
 - g. Construct an octagon.
 - h. Construct a hexagon.
 - i. Construct a line parallel to a given line.

Related Academic Topics (See Appendix A): C1, C6, M5, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6

Suggested Teaching Strategies:

1. *Match and identify basic geometric shapes and terms.*
 - a. *Review and discuss geometric terms.*
 - b. *Review and discuss basic geometric shapes.*
2. *Construct various geometric shapes using constructional techniques.*
 - a. *Demonstrate how to bisect a line and arc.*
 - b. *Demonstrate how to bisect an angle.*
 - c. *Construct a perpendicular line from a point to a line.*
 - d. *Demonstrate how to divide a line into equal parts.*
 - e. *Demonstrate how to draw an arc tangent to a straight line and an arc.*
 - f. *Demonstrate how to draw an arc tangent to two arcs.*
 - g. *Demonstrate how to construct an octagon.*
 - h. *Demonstrate how to construct a hexagon.*
 - i. *Demonstrate how to construct a line parallel to a given line.*

Suggested Assessment Strategies:

1. *Match and identify basic geometric shapes and terms.*
 - a. *Oral/written test.*
 - b. *Oral/written test.*
2. *Construct various geometric shapes using constructional techniques.*
 - a. *Application.*
 - b. *Application.*
 - c. *Application.*
 - d. *Application.*
 - e. *Application.*
 - f. *Application.*
 - g. *Application.*
 - h. *Application.*
 - i. *Application.*

Suggested References:

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Spencer, Dygdon. Basic Technical Drawing. New York: Glencoe-McGraw-Hill. 1980.

DRAFTING, GENERAL I
UNIT 8: ORTHOGRAPHIC PROJECTIONS

(29 days)

Competencies and Suggested Objectives:

1. Match orthographic terms with definitions.
 - a. Match terms of orthographic projections with their definitions.
Related Academic Topics (See Appendix A): C1, C2, C6, M2, M5
Workplace Skills (See Appendix B): WP2, WP6
2. Demonstrate the ability to describe principal views possible in orthographic projection.
 - a. Describe principal views in orthographic projection.
Related Academic Topics (See Appendix A): C1, C2, C6, M2, M5
Workplace Skills (See Appendix B): WP2, WP6
3. Demonstrate the ability to construct principal views in orthographic projection.
 - a. Construct top view with front and right sides given.
 - b. Construct front view with top and right sides given.
 - c. Construct right side with top and front views given.
 - d. Construct a 3-view drawing from a pictorial.
Related Academic Topics (See Appendix A): C1, C2, C6, M2, M5
Workplace Skills (See Appendix B): WP2, WP6

Suggested Teaching Strategies:

1. Match orthographic terms with definitions.
 - a. Review and discussion of orthographic terms and definitions.
2. Demonstrate the ability to describe principal views possible in orthographic projection.
 - a. Review and discussion of principal views.
3. Demonstrate the ability to construct principal views in orthographic projection.
 - a. Demonstration.
 - b. Demonstration.
 - c. Demonstration.
 - d. Demonstration

Suggested Assessment Strategies:

1. Match orthographic terms with definitions.
 - a. Oral/written test.
2. Demonstrate the ability to describe principal views possible in orthographic projection.
 - a. Oral/written test.

3. *Demonstrate the ability to construct principal views in orthographic projection.*
 - a. *Application.*
 - b. *Application.*
 - c. *Application.*
 - d. *Application.*

Suggested References:

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Spencer, Dygdon. Basic Technical Drawing. New York: Glencoe-McGraw-Hill. 1980.

DRAFTING, GENERAL I
UNIT 9: BASIC CAD

(27 days)

Competencies and Suggested Objectives:

1. Demonstrate the ability to use CAD hardware and software.
 - a. Match CAD hardware/software terms with definitions.
 - b. Demonstrate care and maintenance of computer software/hardware.
 - c. Start up/shut down CAD system.
 - d. Load CAD program and save drawing on hard drive and floppy disk.
 - e. Operate plotter/printer.

Related Academic Topics (See Appendix A): C1, C4, C6, M5, S8
Workplace Skills (See Appendix B): WP2, WP5, WP6
2. Construct orthographic and pictorial drawings on the CAD system.
 - a. Construct an orthographic drawing on the CAD system.
 - b. Construct a pictorial drawing on the CAD system.

Related Academic Topics (See Appendix A): C1, C4, C6, M5, S8
Workplace Skills (See Appendix B): WP2, WP5, WP6

Suggested Teaching Strategies:

1. *Demonstrate the ability to use CAD hardware and software.*
 - a. *Review/discussion.*
 - b. *Review/discussion.*
 - c. *Demonstration and discussion.*
 - d. *Demonstration and discussion.*
 - e. *Demonstration and discussion.*
2. *Construct orthographic and pictorial drawings on the CAD system.*
 - a. *Demonstration and review.*
 - b. *Demonstration and review.*

Suggested Assessment Strategies:

1. *Demonstrate the ability to use CAD hardware and software.*
 - a. *Oral/written test.*
 - b. *Oral/written test.*
 - c. *Application.*
 - d. *Application.*
 - e. *Application.*
2. *Construct orthographic and pictorial drawings on the CAD system.*
 - a. *Application.*
 - b. *Application.*

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Suggested References:

Duelm. Computer Aided Drafting. Fundamentals and Applications. South Holland, IL: Goodheart-Wilcox. 1992.

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Merickel. Stepping into CAD. Thousand Oaks, CA: New Riders Publishing Co. 1986.

Spencer, Dygdon. Basic Technical Drawing. New York: Glencoe-McGraw-Hill. 1980.

DRAFTING, GENERAL I
UNIT 10: DIMENSIONING

(20 days)

Competencies and Suggested Objectives:

1. Demonstrate the ability to apply techniques of dimensioning.
 - a. Apply basic line types used in dimensioning.
 - b. Demonstrate use of aligned and unidirectional systems.
 - c. Apply rules for dimensioning techniques.
 - d. Identify and locate finish marks on drawings.
 - e. Explain the purpose for notations on drawings.
 - f. Describe machine processes.

Related Academic Topics (See Appendix A): C1, C2, C4, C6, M5
Workplace Skills (See Appendix B): WP2, WP3

Suggested Teaching Strategies:

1. *Demonstrate the ability to apply techniques of dimensioning.*
 - a. *Discussion and demonstration.*
 - b. *Discussion and demonstration.*
 - c. *Discussion and demonstration*
 - d. *Discussion and demonstration.*
 - e. *Discussion and explanation.*
 - f. *Discussion and explanation.*

Suggested Assessment Strategies:

1. *Demonstrate the ability to apply techniques of dimensioning.*
 - a. *Application.*
 - b. *Application.*
 - c. *Application.*
 - d. *Oral/written test.*
 - e. *Oral/written test.*
 - f. *Oral/written test.*

Suggested References:

Duelm. Computer Aided Drafting, Fundamentals and Applications. South Holland, IL: Goodheart-Wilcox. 1992.

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

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Merickel. Stepping into CAD. Thousand Oaks, CA: New Riders Publishing Co.
1986.

Spencer, Dygdon. Basic Technical Drawing. New York: Glencoe-McGraw-Hill.
1980.

DRAFTING, GENERAL I
UNIT 11: THREADS AND FASTENERS

(7 days)

Competencies and Suggested Objectives:

1. Describe and draw threads.
 - a. Describe uses of threads.
 - b. Describe types of thread forms.
 - c. Interpret thread notes.
 - d. Describe methods of thread representation.
 - e. Draw an internal and external thread form.

Related Academic Topics (See Appendix A): C1, C4
Workplace Skills (See Appendix B): WP2, WP6

Suggested Teaching Strategies:

1. *Describe and draw threads.*
 - a. *Discussion and review.*
 - b. *Discussion and explanation.*
 - c. *Discussion and explanation.*
 - d. *Discussion and explanation.*
 - e. *Demonstration and explanation.*

Suggested Assessment Strategies:

1. *Describe and draw threads.*
 - a. *Oral/written test.*
 - b. *Oral/written test*
 - c. *Oral/written test.*
 - d. *Oral/written test.*
 - e. *Application.*

Suggested References:

Spencer, Dygdon. Basic Technical Drawing. New York: Glencoe-McGraw-Hill, 1980.

DRAFTING, GENERAL I
UNIT 12: SECTIONAL VIEWS

(10 days)

Competencies and Suggested Objectives:

1. Describe the techniques and types of sectional views.
 - a. Identify types of section views.
 - b. Describe the techniques for developing sectional views.

Related Academic Topics (See Appendix A): C1, C2, C6
Workplace Skills (See Appendix B): WP2, WP6
2. Construct sectional views.
 - a. Construct full sections.
 - b. Construct half sections.

Related Academic Topics (See Appendix A): C1, C2, C6, M1
Workplace Skills (See Appendix B): WP2, WP6

Suggested Teaching Strategies:

1. *Describe the techniques and types of sectional views.*
 - a. *Discussion and explanation.*
 - b. *Discussion.*
2. *Construct sectional views.*
 - a. *Demonstration and discussion.*
 - b. *Demonstration and discussion.*

Suggested Assessment Strategies:

1. *Describe the techniques and types of sectional views.*
 - a. *Oral/written test.*
 - b. *Oral/written test.*
2. *Construct sectional views.*
 - a. *Application.*
 - b. *Application.*

Suggested References:

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Spencer, Dygdon. Basic Technical Drawing. New York: Glencoe-McGraw-Hill. 1980.

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DRAFTING, GENERAL I
UNIT 13: AUXILIARY VIEWS

(5 days)

Competencies and Suggested Objectives:

1. Demonstrate the ability to construct primary auxiliary views.
 - a. Discuss the methods of constructing primary auxiliary views.
 - b. Construct a primary auxiliary view.

Related Academic Topics: (See Appendix A): C1, C4, C6, M1
Workplace Skills (See Appendix B): WP2, WP6

Suggested Teaching Strategies:

1. *Demonstrate the ability to construct primary auxiliary views.*
 - a. *Explain and discuss.*
 - b. *Demonstration.*

Suggested Assessment Strategies:

1. *Demonstrate the ability to construct primary auxiliary views.*
 - a. *Written/oral test.*
 - b. *Application.*

Suggested References:

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Spencer, Dygdon. Basic Technical Drawing. New York: Glencoe-McGraw-Hill. 1980.

DRAFTING, GENERAL I
UNIT 14: PICTORIAL DRAWINGS

(14 days)

Competencies and Suggested Objectives:

1. Demonstrate the ability to list and describe the different types of pictorial drawings.
 - a. List the different types of pictorial drawings.
 - b. Describe the differences in pictorial drawings.

Related Academic Topics (See Appendix A): C1, C4, C6, M1
Workplace Skills (See Appendix B): WP2, WP6
2. Construct pictorial drawings.
 - a. Construct an isometric drawing.
 - b. Construct an oblique drawing.

Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1
Workplace Skills (See Appendix B): WP2, WP6

Suggested Teaching Strategies:

1. *Demonstrate the ability to list and describe the different types of pictorial drawings.*
 - a. *Explain and discuss.*
 - b. *Explain and discuss.*
2. *Construct pictorial drawings.*
 - a. *Demonstrate and explain.*
 - b. *Demonstrate and explain.*

Suggested Assessment Strategies:

1. *Demonstrate the ability to list and describe the different types of pictorial drawings.*
 - a. *Oral/written test.*
 - b. *Oral/written test.*
2. *Construct pictorial drawings.*
 - a. *Application.*
 - b. *Application.*

Suggested References:

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Spencer, Dygdon. Basic Technical Drawing. New York: Glencoe-McGraw-Hill. 1980.

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DRAFTING, GENERAL II

DRAFTING, GENERAL II
UNIT 1: ORIENTATION

(1 day)

Competencies and Suggested Objectives:

1. Describe local program and vocational center policies and procedures.
 - a. Describe local program and vocational center policies and procedures including dress code, attendance, academic requirements, discipline, and transportation regulations.
Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6
2. Describe employment opportunities and responsibilities.
 - a. Describe employment opportunities including potential earnings, employee benefits, job availability, places of employment, working conditions, and educational requirements.
 - b. Describe basic employee responsibilities.
Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Describe local program and vocational center policies and procedures.*
 - a. *Review and discuss applicable rules and regulations.*
2. *Describe employment opportunities and responsibilities.*
 - a. *Have students survey job opportunities through employer visits, resource person(s), telephone calls, and/or field trip and report to the class.*
 - b. *Have resource person speak to students regarding requirements for jobs, such as punctuality, customer relations, following directions, etc.*

Suggested Assessment Strategies:

1. *Describe local program and vocational center policies and procedures.*
 - a. *Test on applicable rules and regulations.*
2. *Describe employment opportunities and responsibilities.*
 - a. *Oral and written report on employment opportunities.*
 - b. *Oral and written report on employee responsibilities.*

Suggested References:

Local Administrative Policies and Procedures.

DRAFTING, GENERAL II
UNIT 2: SAFETY

(1 day)

Competencies and Suggested Objectives:

1. Describe personal safety rules for working in the drafting industry.
 - a. Identify and apply terms and definitions for safety.
 - b. Identify OSHA inspections and citations.
 - c. Identify accidents including causes and prevention.
 - d. Identify general safety procedures.
 - e. Identify causes of electrical hazards.
 - f. Identify proper methods for moving heavy items.
 - g. Identify and apply emergency first aid, if necessary.

Related Academic Topics (See Appendix A): C1, C4, C5
Workplace Skills (See Appendix B): WP2, WP3

Suggested Teaching Strategies:

1. *Describe personal safety rules for working in the drafting industry.*
 - a. *Review and discuss applicable rules and regulations on safety.*
 - b. *Have students review the lab and classroom to indicate any safety violations.*
 - c. *Describe accident procedures including getting help, basic first aid, and accident report form.*
 - d. *Review the school's policy on general safety procedures.*
 - e. *Describe hazards of electrical shock including effects of current, shock avoidance techniques, and shock treatment procedures.*
 - f. *Describe the proper procedure for moving heavy items.*
 - g. *Review steps to follow in an emergency situation.*

Suggested Assessment Strategies:

1. *Describe personal safety rules for working in the drafting industry.*
 - a. *Oral and/or written exercise.*
 - b. *Oral and/or written exercise.*
 - c. *Oral and/or written exercise.*
 - d. *Oral and/or written exercise.*
 - e. *Oral and/or written exercise.*
 - f. *Oral and/or written exercise.*
 - g. *Oral and/or written exercise.*

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Suggested References:

Center Publication, Safety Handbook.
OSHA Regulations.

DRAFTING, GENERAL II
UNIT 3: ADVANCED LEADERSHIP

(1 day)

Competencies and Suggested Objectives:

1. Develop advanced leadership and organizational skills.
 - a. Identify VICA leadership and skills competition activities.
 - b. Identify similarities between VICA leadership skills and workplace leadership skills.

Related Academic Topics (See Appendix A): C5, C6
Workplace Skills (See Appendix B): WP1, WP3, WP6

Suggested Teaching Strategies:

1. *Develop advanced leadership and organizational skills.*
 - a. *Introduce VICA Professional Development Program (PDP). Give handouts on applicable skills competitions. Conduct first organizational meeting.*
 - b. *Invite guest speakers from industry and State VICA officers to discuss leadership skills.*

Suggested Assessment Strategies:

1. *Develop advanced leadership and organizational skills.*
 - a. *Observe VICA organizational skills.*
 - b. *Oral/written report.*

Suggested References:

VICA. Official Guide for VICA. Washington, DC: Vocational Clubs of America (VICA).

DRAFTING, GENERAL II
UNIT 4: EMPLOYABILITY SKILLS

(2 days)

Competencies and Suggested Objectives:

1. Develop employability skills.
 - a. Prepare a resume containing essential information.
 - b. Complete a job application form.
 - c. Explain procedures for job interviews using correct job etiquette.
 - d. Demonstrate the role of an applicant in a job interview.

Related Academic Topics (See Appendix A): C1, C3, C4, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Develop employability skills.*
 - a. *Assist guidance counselor in presenting resume writing.*
 - b. *Assist guidance counselor or industry personnel manager in showing how to complete a job application form.*
 - c. *Assist guidance counselor or industry personnel manager in demonstrating proper procedures for job interview.*
 - d. *Have students role play job interviews with instructor, counselor, and/or personnel manager.*

Suggested Assessment Strategies:

1. *Develop employability skills.*
 - a. *Evaluate student resume.*
 - b. *Evaluate student job application.*
 - c. *Oral/written exercise.*
 - d. *Demonstration.*

Suggested References:

Textbooks; information from Mississippi Employment Security Commission; information from counselor and/or from personnel managers.

DRAFTING, GENERAL II
UNIT 5: ARCHITECTURAL DRAFTING

(5 days)

Competencies and Suggested Objectives:

1. Demonstrate the ability to describe the functions and organization of the architectural profession.
 - a. Describe architectural drafting terms.
 - b. Prepare a report on architectural drafting.
 - c. Match job titles with qualifications, responsibilities, and legal requirements for entering the architectural drafting field.

Related Academic Topics (See Appendix A): C1, C4, C5
Workplace Skills (See Appendix B): WP2

Suggested Teaching Strategies:

1. *Demonstrate the ability to describe the functions and organization of the architectural profession.*
 - a. *Lecture and discussion on terms.*
 - b. *Assist students in selecting and writing a report.*
 - c. *Discussion and/or guest speaker.*

Suggested Assessment Strategies:

1. *Demonstrate the ability to describe the functions and organization of the architectural profession.*
 - a. *Written/oral test.*
 - b. *Written report.*
 - c. *Written/oral test.*

Suggested References:

Kicklighter, C.E. Architecture: Residential Drawing and Design. South Holland, IL: Goodheart-Wilcox. 1990.

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Wallach, P.I. and Helper, D.E. Architecture: Drafting and Design (5th ed.). New York: Gregg Division, McGraw-Hill. 1987.

DRAFTING, GENERAL II
UNIT 6: AREA PLANNING

(10 days)

Competencies and Suggested Objectives:

1. Demonstrate the ability to produce sketches in planning the three main residential areas.
 - a. Describe requirements for the three main residential areas.
 - b. Sketch rooms including service, living, and sleeping areas, and floor plan.

Related Academic Topics (See Appendix A): C1, C4, C6, M1
Workplace Skills (See Appendix B): WP2, WP6

Suggested Teaching Strategies:

1. *Demonstrate the ability to produce sketches in planning the three main residential areas.*
 - a. *Explain and discuss.*
 - b. *Assign sketching problem.*

Suggested Assessment Strategies:

1. *Demonstrate the ability to produce sketches in planning the three main residential areas.*
 - a. *Oral test.*
 - b. *Evaluation of sketches.*

Suggested References:

Kicklighter, C.E. Architecture: Residential Drawing and Design. South Holland, IL: Goodheart-Wilcox. 1990.

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Wallach, P.I. and Helper, D.E. Architecture: Drafting and Design (5th ed.). New York: Gregg Division, McGraw-Hill. 1987.

DRAFTING, GENERAL II

UNIT 7: STRUCTURAL SYSTEMS AND BUILDING MATERIALS

(10 days)

Competencies and Suggested Objectives:

1. Demonstrate the ability to describe the structural systems and construction materials.
 - a. Define structural systems and building materials terms.
 - b. Identify symbols on plan, elevation, and/or section drawings.

Related Academic Topics (See Appendix A): C1, C2, C4
Workplace Skills (See Appendix B): WP2

Suggested Teaching Strategies:

1. *Demonstrate the ability to describe the structural systems and construction materials.*
 - a. *Explain and discuss. Handout with terms and definitions.*
 - b. *Handout on symbols and discuss.*

Suggested Assessment Strategies:

1. *Demonstrate the ability to describe the structural systems and construction materials*
 - a. *Written test.*
 - b. *Written test.*

Suggested References:

Kicklighter, C.E. Architecture: Residential Drawing and Design. South Holland, IL: Goodheart-Wilcox. 1990.

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Wallach, P.I. and Helper, D.E. Architecture: Drafting and Design (5th ed.). New York: Gregg Division, McGraw-Hill. 1987.

DRAFTING, GENERAL II
UNIT 8: ARCHITECTURAL WORKING DRAWINGS

(55 days)

Competencies and Suggested Objectives:

1. Demonstrate the skills necessary for producing an architecturally correct floor plan.
 - a. Interpret measurements using architect's scale.
 - b. Construct architectural letters.
 - c. Draw and dimension a floor plan.

Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1, M4, S6
Workplace Skills (See Appendix B): WP2, WP6
2. Demonstrate the ability to produce an architecturally correct foundation plan.
 - a. Draw a foundation plan.

Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1, M4, S6
Workplace Skills (See Appendix B): WP2, WP6
3. Demonstrate the ability to produce an electrical plan.
 - a. Draw an electrical plan.

Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1, M4, S6
Workplace Skills (See Appendix B): WP2, WP6
4. Demonstrate the ability to produce elevation drawings.
 - a. Draw an elevation plan.

Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1, M4, S6
Workplace Skills (See Appendix B): WP2, WP6
5. Demonstrate the ability to draw, dimension, and label an exterior wall section.
 - a. Draw a typical exterior wall section.
 - b. Dimension and label a typical exterior wall section.

Related Academic Topics (See Appendix A): C1, C3, C4, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Demonstrate the skills necessary for producing an architecturally correct floor plan.*
 - a. *Demonstration, explanation, and discussion.*
 - b. *Handout on letters and discussion.*
 - c. *Handout on floor plan, explanation of steps, and discussion.*
2. *Demonstrate the ability to produce an architecturally correct foundation plan.*
 - a. *Demonstration, discussion, and explanation.*
3. *Demonstrate the ability to produce an electrical plan.*
 - a. *Demonstration, discussion, and explanation.*
4. *Demonstrate the ability to produce elevation drawings.*
 - a. *Demonstration, discussion, and explanation.*

5. *Demonstrate the ability to draw, dimension, and label an exterior wall section.*
 - a. *Demonstration, discussion, and explanation.*

Suggested Assessment Strategies:

1. *Demonstrate the skills necessary for producing an architecturally correct floor plan.*
 - a. *Written test.*
 - b. *Assignment of problem; discussion and review of plan.*
 - c. *Grade final product/observation.*
2. *Demonstrate the ability to produce an architecturally correct foundation plan.*
 - a. *Application and observation.*
3. *Demonstrate the ability to produce an electrical plan.*
 - a. *Demonstration and observation.*
4. *Demonstrate the ability to produce elevation drawings.*
 - a. *Demonstration and observation.*
5. *Demonstrate the ability to draw, dimension, and label an exterior wall section.*
 - a. *Demonstration and observation.*

Suggested References:

Kicklighter, C.E. Architecture: Residential Drawing and Design. South Holland, IL: Goodheart-Wilcox. 1990.

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Wallach, P.I. and Helper, D.E. Architecture: Drafting and Design (5th ed.). New York: Gregg Division, McGraw-Hill. 1987.

**DRAFTING, GENERAL II
UNIT 9: ADVANCED CAD**

(40 days)

Competencies and Suggested Objectives:

1. Develop a floor plan by utilizing a microcomputer.
 - a. Draw, dimension, and plot a floor plan using a microcomputer.
Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1, M4
Workplace Skills (See Appendix B): WP2, WP6
2. Develop architectural elevations using a microcomputer.
 - a. Draw elevations using a microcomputer.
Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1, M4
Workplace Skills (See Appendix B): WP2, WP6
3. Develop the skills needed to operate a plotter/printer.
 - a. Operate a plotter/printer.
Related Academic Topics (See Appendix A): C1, C4, C6, M1
Workplace Skills (See Appendix B): WP2, WP5, WP6

Suggested Teaching Strategies:

1. *Develop a floor plan by utilizing a microcomputer.*
 - a. *Lecture and demonstration.*
2. *Develop architectural elevations using a microcomputer.*
 - a. *Lecture and demonstration.*
3. *Develop the skills needed to operate a plotter/printer.*
 - a. *Lecture and demonstration.*

Suggested Assessment Strategies:

1. *Develop a floor plan by utilizing a microcomputer.*
 - a. *Application, observation, and evaluation.*
2. *Develop architectural elevations using a microcomputer.*
 - a. *Application, observation, and evaluation.*
3. *Develop the skills needed to operate a plotter/printer.*
 - a. *Application, observation, and evaluation.*

Suggested References:

Duelm B.L. Computer Aided Drafting: Fundamentals and Applications (2nd ed.). South Holland, IL: Goodheart-Wilcox. 1992.

Kicklighter, C.E. Architecture: Residential Drawing and Design. South Holland, IL: Goodheart-Wilcox. 1990.

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Madsen, D.A. and Fitzagibbon, E.H. Architectural Autocad. South Holland, IL:
Goodheart-Wilcox. 1991.

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Merickel, M. Stepping into CAD. Thousand Oaks, CA: New Riders Publishing.
1986.

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**DRAFTING, GENERAL II
UNIT 10: CIVIL DRAFTING**

(10 days)

Competencies and Suggested Objectives:

1. Demonstrate the ability to utilize the basic elements of civil drafting.
 - a. Describe civil drafting terms.
 - b. Match job titles with qualifications, responsibilities, and licensing/bonding requirements.
Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP6
2. Develop a plot/site plan.
 - a. Draw a plot/site plan.
Related Academic Topics (See Appendix A): C1, C4, C6, M1
Workplace Skills (See Appendix B): WP2, WP6

Suggested Teaching Strategies:

1. *Demonstrate the ability to utilize the basic elements of civil drafting.*
 - a. *Handouts and discussion.*
 - b. *Explanation and discussion.*
2. *Develop a plot/site plan.*
 - a. *Provide necessary data and discuss the key elements.*

Suggested Assessment Strategies:

1. *Demonstrate the ability to utilize the basic elements of civil drafting.*
 - a. *Written/oral test.*
 - b. *Written test.*
2. *Develop a plot/site plan.*
 - a. *Application.*

Suggested References:

Duelm B.L. Computer Aided Drafting: Fundamentals and Applications (2nd ed.). South Holland, IL: Goodheart-Wilcox. 1992.

Kicklighter, C.E. Architecture: Residential Drawing and Design. South Holland, IL: Goodheart-Wilcox. 1990.

Madsen, D.A. and Fitzagibbon, E.H. Architectural Autocad. South Holland, IL: Goodheart-Wilcox. 1991.

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MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

Merickel, M. Stepping into CAD. Thousand Oaks, CA: New Riders Publishing. 1986.

Steele. R.C. Modern Topographic Drawing. Houston, TX: Gulf Publishing Co. 1980.

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DRAFTING, GENERAL II
UNIT 11: PLUMBING/HVAC DRAFTING

(10 days)

Competencies and Suggested Objectives:

1. Demonstrate the ability to apply information on the plumbing and HVAC profession.
 - a. Describe plumbing and HVAC terms.
 - b. Match job titles with qualifications, responsibilities, and licensing/bonding requirements.

Related Academic Topics (See Appendix A): C1, C4, C6

Workplace Skills (See Appendix B): WP2, WP6

2. Demonstrate the ability to draw a basic plumbing plan.
 - a. Draw a basic plumbing schematic for a residential building.

Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP6
3. Demonstrate the ability to draw a basic HVAC plan for a residential building.
 - a. Draw a basic HVAC plan for a residential building.

Related Academic Topics (See Appendix A): C1, C4, C6
Workplace Skills (See Appendix B): WP2, WP6

Suggested Teaching Strategies:

1. *Demonstrate the ability to apply information on the plumbing and HVAC profession.*
 - a. *Handouts and discussion. Guest speaker.*
 - b. *Handouts and explanation. Guest speaker.*
2. *Demonstrate the ability to draw a basic plumbing plan.*
 - a. *Discussion and demonstration. Handout of a plan.*
3. *Demonstrate the ability to draw a basic HVAC plan for a residential building.*
 - a. *Handouts and discussion. Demonstration.*

Suggested Assessment Strategies:

1. *Demonstrate the ability to apply information on the plumbing and HVAC profession.*
 - a. *Written/oral test.*
 - b. *Written/oral test.*
2. *Demonstrate the ability to draw a basic plumbing plan.*
 - a. *Application and evaluate plan.*
3. *Demonstrate the ability to draw a basic HVAC plan for a residential building.*
 - a. *Application and evaluate plan.*

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Suggested References:

Duelm B.L. Computer Aided Drafting: Fundamentals and Applications (2nd ed.). South Holland, IL: Goodheart-Wilcox. 1992.

Kicklighter, C.E. Architecture: Residential Drawing and Design. South Holland, IL: Goodheart-Wilcox. 1990.

Madsen, D.A. and Fitzagibbon, E.H. Architectural Autocad. South Holland, IL: Goodheart-Wilcox. 1991.

MAVCC. Basic Drafting. Stillwater, OK: MAVCC. 1990.

DRAFTING, GENERAL II
UNIT 12: RESIDENTIAL WIRING PLANS

(15 days)

Competencies and Suggested Objectives:

1. Describe a basic residential wiring plan.
 - a. Describe electrical terms.
 - b. Match job titles with qualifications, responsibilities, and licensing/bonding requirements.

Related Academic Topics (See Appendix A): C1, C4, C6

Workplace Skills (See Appendix B): WP2, WP6

2. Demonstrate the ability to develop a basic residential wiring plan.
 - a. Draw a basic electrical schematic.

Related Academic Topics (See Appendix A): C1, C4, C6, M1, S6

Workplace Skills (See Appendix B): WP2, WP6

Suggested Teaching Strategies:

1. *Describe a basic residential wiring plan.*
 - a. *Discuss and explain.*
 - b. *Handouts and discussion. Guest speaker.*
2. *Demonstrate the ability to develop a basic residential wiring plan.*
 - a. *Pass out a sample and discuss.*

Suggested Assessment Strategies:

1. *Describe a basic residential wiring plan.*
 - a. *Written/oral test.*
 - b. *Application. Assign a basic floor plan to place schematics.*
2. *Demonstrate the ability to develop a basic residential wiring plan.*
 - a. *Application. Assign a basic floor plan to place schematics.*

Suggested References:

Duelm B.L. Computer Aided Drafting: Fundamentals and Applications (2nd ed.). South Holland, IL: Goodheart-Wilcox. 1992.

Kicklighter, C.E. Architecture: Residential Drawing and Design. South Holland, IL: Goodheart-Wilcox. 1990.

Madsen, D.A. and Fitzagibbon, E.H. Architectural Autocad. South Holland, IL: Goodheart-Wilcox. 1991.

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SECTION III:
RECOMMENDED TOOLS AND EQUIPMENT

RECOMMENDED TOOLS AND EQUIPMENT
FOR GENERAL DRAFTING

1. 30/60 triangle(1 per student)
2. 45/90 triangle (1 per student)
3. Architectural scale (1 per student)
4. 6-inch bow compass/dividers set (1 per student)
5. Drafting pencil (1 per student)
6. Metric scale (1 per student)
7. Erasing shield (1 per student)
8. Brush (1 per student)
9. French curve (1 per student)
10. Architectural floor plan $\frac{1}{4}$ " template (1 per student)
11. Circle template (1 per student)
12. Ellipse template (1 per student)
13. Adjustable triangle (6 per student)
14. 30/60 18" triangle (2 per student)
15. 45/90 18" triangle (2 per student)
16. $\frac{1}{8}$ " Architectural floor plan template (2 per student)
17. Large circle template (2 per student)
18. Drafting table (20 per program)
19. Parallel bars and/or V-track machines (50/50 split) (20 per program)
20. Stools (20 per program)
21. Light table (1 per program)
22. Paper cutter (1 per program)
23. Blueprint machine (1 per program)
24. Flat paper files cabinet (30 drawers) (1 per program)
25. Plotter (1 per program)
26. File cabinet (1 per program)
27. Instructor desk/chair (1 per program)
28. CAD station (10 per program)
29. Storage cabinets (2 per program)
30. Printer (1 per 2 stations)

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APPENDIX A:
RELATED ACADEMIC TOPICS

APPENDIX A

RELATED ACADEMIC TOPICS FOR COMMUNICATIONS

- C1 Interpret written material.
- C2 Interpret visual materials (maps, charts, graphs, tables, etc.).
- C3 Listen, comprehend, and take appropriate actions.
- C4 Access, organize, and evaluate information.
- C5 Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
- C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.

EXPANDED TOPICS FOR COMMUNICATIONS

TOPIC C1: Interpret written material.

- C1.01 Read and follow complex written directions.
- C1.02 Recognize common words and meanings associated with a variety of occupations.
- C1.03 Adjust reading strategy to purpose and type of reading.
- C1.04 Use sections of books and reference sources to obtain information.
- C1.05 Compare information from multiple sources and check validity.
- C1.06 Interpret items and abbreviations used in multiple forms.
- C1.07 Interpret short notes, memos, and letters.
- C1.08 Comprehend technical words and concepts.
- C1.09 Use various reading techniques depending on purpose for reading.
- C1.10 Find, read, understand, and use information from printed matter or electronic sources.

TOPIC C2: Interpret visual materials (maps, charts, graphs, tables, etc.).

- C2.01 Use visuals in written and in oral presentations.
- C2.02 Recognize visual cues to meaning (layout, typography, etc.).
- C2.03 Interpret and apply information using visual materials.

TOPIC C3: Listen, comprehend, and take appropriate action.

- C3.01 Identify and evaluate orally-presented messages according to purpose.
- C3.02 Recognize barriers to effective listening.
- C3.03 Recognize how voice inflection changes meaning.
- C3.04 Identify speaker signals requiring a response and respond accordingly.
- C3.05 Listen attentively and take accurate notes.
- C3.06 Use telephone to receive information.

C3.07 Analyze and distinguish information from formal and informal oral presentations.

TOPIC C4: Access, organize, and evaluate information.

C4.01 Distinguish fact from opinion.

C4.02 Use various print and non-print sources for specialized information.

C4.03 Interpret and distinguish between literal and figurative meaning.

C4.04 Interpret written or oral communication in relation to context and writer's point of view.

C4.05 Use relevant sources to gather information for written or oral communication.

TOPIC C5: Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.

C5.01 Select appropriate words for communication needs.

C5.02 Use reading, writing, listening, and speaking skills to solve problems.

C5.03 Compose inquiries and requests.

C5.04 Write persuasive letters and memos.

C5.05 Edit written reports, letters, memos, and short notes for clarity, correct grammar, and effective sentences.

C5.06 Write logical and understandable statements, phrases, or sentences for filling out forms, for correspondence or reports.

C5.07 Write directions or summaries of processes, mechanisms, events, or concepts.

C5.08 Select and use appropriate formats for presenting reports.

C5.09 Convey information to audiences in writing.

C5.10 Compose technical reports and correspondence that meet accepted standards for written communications.

TOPIC C6: Communicate ideas and information using oral and written forms for a variety of audiences and purposes.

C6.01 Give complex oral instructions.

C6.02 Describe a business or industrial process/mechanism.

C6.03 Participate effectively in group discussions and decision making.

C6.04 Produce effective oral messages utilizing different media.

C6.05 Explore ideas orally with partners.

C6.06 Participate in conversations by volunteering information when appropriate and asking relevant questions when appropriate.

C6.07 Restate or paraphrase a conversation to confirm one's own understanding.

C6.08 Gather and provide information utilizing different media.

- C6.09 Prepare and deliver persuasive, descriptive, and demonstrative oral presentations.

RELATED ACADEMIC TOPICS FOR MATHEMATICS

- M1 Relate number relationships, number systems, and number theory.
- M2 Explore patterns and functions.
- M3 Explore algebraic concepts and processes.
- M4 Explore the concepts of measurement.
- M5 Explore the geometry of one-, two-, and three-dimensions.
- M6 Explore concepts of statistics and probability in real world situations.
- M7 Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

EXPANDED TOPICS FOR MATHEMATICS

TOPIC M1: Relate number relationships, number systems, and number theory.

- M1.01 Understand, represent, and use numbers in a variety of equivalent forms (integer, fraction, decimal, percent, exponential, and scientific notation) in real world and mathematical problem situations.
- M1.02 Develop number sense for whole numbers, fractions, decimals, integers, and rational numbers.
- M1.03 Understand and apply ratios, proportions, and percents in a wide variety of situations.
- M1.04 Investigate relationships among fractions, decimals, and percents.
- M1.05 Compute with whole numbers, fractions, decimals, integers, and rational numbers.
- M1.06 Develop, analyze, and explain procedures for computation and techniques for estimations.
- M1.07 Select and use an appropriate method for computing from among mental arithmetic, paper-and-pencil, calculator, and computer methods.
- M1.08 Use computation, estimation, and proportions to solve problems.
- M1.09 Use estimation to check the reasonableness of results.

TOPIC M2: Explore patterns and functions.

- M2.01 Describe, extend, analyze, and create a wide variety of patterns.
- M2.02 Describe and represent relationships with tables, graphs, and rules.
- M2.03 Analyze functional relationships to explain how a change in one quantity results in a change in another.
- M2.04 Use patterns and functions to represent and solve problems.
- M2.05 Explore problems and describe results using graphical, numerical, physical, algebraic, and verbal mathematical models or representations.

- M2.06 Use a mathematical idea to further their understanding of other mathematical ideas.
- M2.07 Apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as art, music, and business.

TOPIC M3: Explore algebraic concepts and processes.

- M3.01 Represent situations and explore the interrelationships of number patterns with tables, graphs, verbal rules, and equations.
- M3.02 Analyze tables and graphs to identify properties and relationships and to interpret expressions and equations.
- M3.03 Apply algebraic methods to solve a variety of real world and mathematical problems.

TOPIC M4: Explore the concepts of measurement.

- M4.01 Estimate, make, and use measurements to describe and compare phenomena.
- M4.02 Select appropriate units and tools to measure to the degree of accuracy required in a particular situation.
- M4.03 Extend understanding of the concepts of perimeter, area, volume, angle measure, capacity, and weight and mass.
- M4.04 Understand and apply reasoning processes, with special attention to spatial reasoning and reasoning with proportions and graphs.

TOPIC M5: Explore the geometry of one-, two-, and three-dimensions.

- M5.01 Identify, describe, compare, and classify geometric figures.
- M5.02 Visualize and represent geometric figures with special attention to developing spatial sense.
- M5.03 Explore transformations of geometric figures.
- M5.04 Understand and apply geometric properties and relationships.
- M5.05 Classify figures in terms of congruence and similarity and apply these relationships.

TOPIC M6: Explore the concepts of statistics and probability in real world situations.

- M6.01 Systematically collect, organize, and describe data.
- M6.02 Construct, read, and interpret tables, charts, and graphs.
- M6.03 Develop an appreciation for statistical methods as powerful means for decision making.
- M6.04 Make predictions that are based on exponential or theoretical probabilities.

M6.05 Develop an appreciation for the pervasive use of probability in the real world.

TOPIC M7: Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

- M7.01 Use computers and/or calculators to process information for all mathematical situations.
- M7.02 Use problem-solving approaches to investigate and understand mathematical content.
- M7.03 Formulate problems from situations within and outside mathematics.
- M7.04 Generalize solutions and strategies to new problem situations.

RELATED ACADEMIC TOPICS FOR SCIENCE

- S1 Explain the Anatomy and Physiology of the human body.
- S2 Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.
- S3 Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.
- S4 Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.
- S5 Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.
- S6 Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
- S7 Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance, population genetics, the structure and function of DNA, and current applications of DNA technology.
- S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

EXPANDED TOPICS FOR SCIENCE

TOPIC S1: Explain the Anatomy and Physiology of the human body.

- S1.01 Recognize common terminology and meanings.
- S1.02 Explore the relationship of the cell to more complex systems within the body.

- S1.03 Summarize the functional anatomy of all the major body systems.
- S1.04 Relate the physiology of the major body systems to its corresponding anatomy.
- S1.05 Compare and contrast disease transmission and treatment within each organ system.
- S1.06 Explore the usage of medical technology as related to human organs and organ systems.
- S1.07 Explain the chemical composition of body tissue.

TOPIC S2: Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.

- S2.01 Identify the major types and structures of plants, viruses, monera, algae protista, and fungi.
- S2.02 Explain sexual and asexual reproduction.
- S2.03 Describe the ecological importance of plants as related to the environment.
- S2.04 Analyze the physical chemical and behavioral process of a plant.

TOPIC S3: Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.

- S3.01 Explain the morphology, anatomy, and physiology of animals.
- S3.02 Describe the characteristics, behaviors, and habitats of selected animals.

TOPIC S4: Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.

- S4.01 Examine minerals and their identification, products of the rock cycle, byproducts of weathering, and the effects of erosion.
- S4.02 Relate the Hydrologic Cycle to include groundwater its zones, movement, and composition; surface water systems, deposits, and runoff.
- S4.03 Consider the effects of weather and climate on the environment.
- S4.04 Examine the composition of seawater; wave, tides, and currents; organisms, environment, and production of food; energy, food and mineral resources of the oceans.

TOPIC S5: Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.

- S5.01 Examine the science of chemistry to include the nature of matter, symbols, formulas and nomenclature, and chemical equations.

- S5.02 Identify chemical reactions including precipitation, acids-bases, and reduction-oxidation.
- S5.03 Explore the fundamentals of chemical bonding and principles of equilibrium.
- S5.04 Relate the behavior of gases.
- S5.05 Investigate the structure, reactions, and uses of organic compounds; and investigate nuclear chemistry and radiochemistry.

TOPIC S6: Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.

- S6.01 Examine fundamentals of motion of physical bodies and physical dynamics.
- S6.02 Explore the concepts and relationships among work, power, and energy.
- S6.03 Explore principles, characteristics, and properties of electricity, magnetism, light energy, thermal energy, and wave energy.
- S6.04 Identify principles of modern physics related to nuclear physics.

TOPIC S7: Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance; population genetics, the structure and function of DNA, and current applications of DNA technology.

- S7.01 Examine principles, techniques, and patterns of traits and inheritance in organisms.
- S7.02 Apply the concept of population genetics to both microbial and multicellular organism.
- S7.03 Identify the structure and function of DNA and the uses of DNA technology in science, industry, and society.

TOPIC S8: Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

- S8.01 Apply the components of scientific processes and methods in classroom and laboratory investigations.
- S8.02 Observe and practice safe procedures in the classroom and laboratory.
- S8.03 Demonstrate proper use and care for scientific equipment.
- S8.04 Investigate science careers, and advances in technology.
- S8.05 Communicate results of scientific investigations in oral, written, and graphic form.

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APPENDIX B:
WORKPLACE SKILLS

APPENDIX B
WORKPLACE SKILLS FOR THE 21ST CENTURY

- WP1 Allocates resources (time, money, materials and facilities, and human resources).
- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP4 Applies systems concept including basic understanding, monitoring and correction system performance, and designing and improving systems.
- WP5 Selects, applies, and maintains/troubleshoots technology.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.

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APPENDIX C:
STUDENT COMPETENCY PROFILE

STUDENT COMPETENCY PROFILE FOR DRAFTING, GENERAL I

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each course. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the program.

In the blank before each competency, place the date on which the student mastered the competency.

Unit 1: Orientation

- _____ 1. Describe local program and vocational center policies and procedures.
- _____ 2. Describe employment opportunities and responsibilities.

Unit 2: Leadership and Personal Development

- _____ 1. State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided students by the Vocational Industrial Clubs of America (VICA).
- _____ 2. Identify desirable personal behavior and characteristics.
- _____ 3. Identify legal requirements for participation in the occupation.

Unit 3: Safety

- _____ 1. Describe personal safety rules for working in the drafting industry.

Unit 4: Introduction to Drafting

- _____ 1. Match drafting occupation job titles with qualifications and responsibilities and identify areas of specialization in the drafting profession.
- _____ 2. Describe goals of technical drawing including accuracy, acceptable technique, neatness, and speed.

Unit 5: Introduction to Tools and Equipment

- _____ 1. Identify and demonstrate drafting tools and identify media.

Unit 6: Lettering

- _____ 1. Demonstrate the ability to describe the rules of lettering.
- _____ 2. Construct uppercase gothic letters and numerals.

Unit 7: Geometric Constructions

- _____ 1. Match and identify basic geometric shapes and terms.
- _____ 2. Construct various geometric shapes using constructional techniques.

Unit 8: Orthographic Projections

- _____ 1. Match orthographic terms with definitions.
- _____ 2. Demonstrate the ability to describe principal views possible in orthographic projection.
- _____ 3. Demonstrate the ability to construct principal views in orthographic projection.

Unit 9: Basic CAD

- _____ 1. Demonstrate the ability to use CAD hardware and software.
- _____ 2. Construct orthographic and pictorial drawings on the CAD system.

Unit 10: Dimensioning

- _____ 1. Demonstrate the ability to apply techniques of dimensioning.

Unit 11: Threads and Fasteners

- _____ 1. Describe and draw threads.

Unit 12: Sectional Views

- _____ 1. Describe the techniques and types of sectional views.
- _____ 2. Construct sectional views.

Unit 13: Auxiliary Views

- _____ 1. Demonstrate the ability to construct primary auxiliary views.

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Unit 14: Pictorial Drawings

- _____ 1. Demonstrate the ability to list and describe the different types of pictorial drawings.
- _____ 2. Construct pictorial drawings.

STUDENT COMPETENCY PROFILE FOR DRAFTING, GENERAL II

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each course. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the program.

In the blank before each competency, place the date on which the student mastered the competency.

Unit 1: Orientation

- _____ 1. Describe local program and vocational center policies and procedures.
- _____ 2. Describe employment opportunities and responsibilities.

Unit 2: Safety

- _____ 1. Describe personal safety rules for working in the drafting industry.

Unit 3: Advanced Leadership

- _____ 1. Develop advanced leadership and organizational skills.

Unit 4: Employability Skills

- _____ 1. Develop employability skills.

Unit 5: Architectural Drafting

- _____ 1. Demonstrate the ability to describe the functions and organization of the architectural profession.

Unit 6: Area Planning

- _____ 1. Demonstrate the ability to produce sketches in planning the three main residential areas.

Unit 7: Structural Systems and Building Materials

- _____ 1. Demonstrate the ability to describe the structural systems and construction materials.

Unit 8: Architectural Working Drawings

- _____ 1. Demonstrate the skills necessary for producing an architecturally correct floor plan.
- _____ 2. Demonstrate the ability to produce an architecturally correct foundation plan.
- _____ 3. Demonstrate the ability to produce an electrical plan.
- _____ 4. Demonstrate the ability to produce elevation drawings.
- _____ 5. Demonstrate the ability to draw, dimension, and label an exterior wall section.

Unit 9: Advanced CAD

- _____ 1. Develop a floor plan by utilizing a microcomputer.
- _____ 2. Develop architectural elevations using a microcomputer.
- _____ 3. Develop the skills needed to operate a plotter/printer.

Unit 10: Civil Drafting

- _____ 1. Demonstrate the ability to utilize the basic elements of civil drafting.
- _____ 2. Develop a plot/site plan.

Unit 11: Plumbing/HVAC Drafting

- _____ 1. Demonstrate the ability to apply information on the plumbing and HVAC profession.
- _____ 2. Demonstrate the ability to draw a basic plumbing plan.
- _____ 3. Demonstrate the ability to draw a basic HVAC plan for a residential building.

Unit 12: Residential Wiring Plans

- _____ 1. Describe a basic residential wiring plan.
- _____ 2. Demonstrate the ability to develop a basic residential wiring plan.