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ABSTRACT

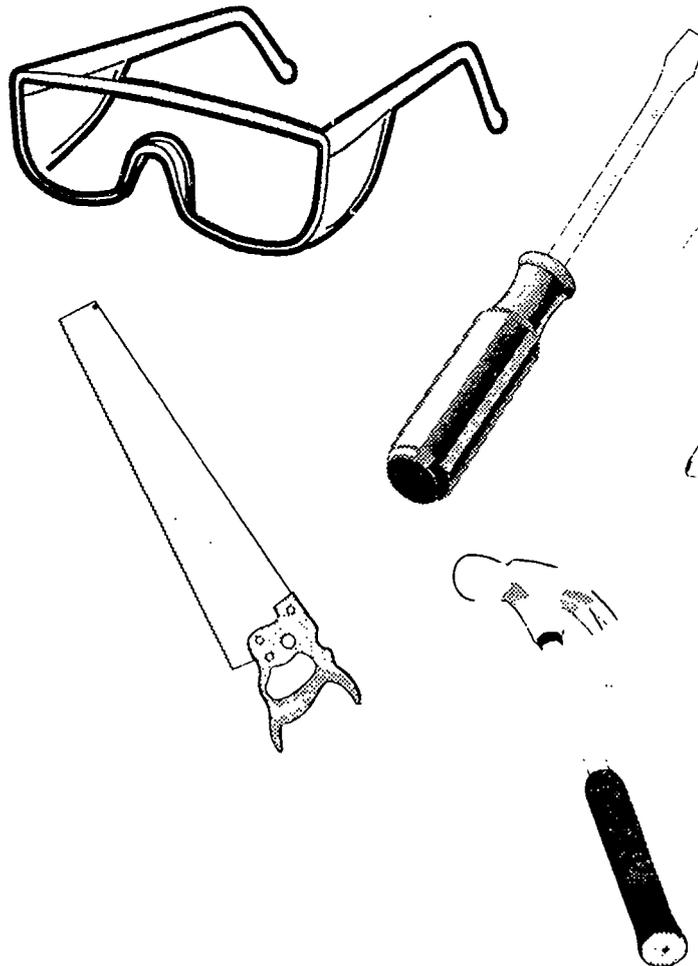
This document, which is intended for use by community and junior colleges throughout Mississippi, contains curriculum frameworks for certificate of residential carpentry and residential carpentry technology programs. Presented in the introductory section are program descriptions and suggested course sequences for both programs. Section I lists baseline competencies for each program. Section II consists of course outlines for each course in the residential carpentry technology course sequence (foundations, framing I, advanced blueprint reading, framing II, roofing, exterior finishing, interior finishing and cabinet making, principles of multifamily and light commercial construction, advanced cabinet making, advanced interior finishing, special problem in residential carpentry technology, and work-based learning in residential carpentry technology; and the related vocational-technical course sequence (fundamentals of drafting, construction materials, and cost estimating). Each course outline contains some/all of the following: course name and abbreviation; course classification; course description; prerequisites; and competencies and suggested objectives. 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 for both courses. (MN)

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# Mississippi Curriculum Framework for Residential Carpentry Technology

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CE 072 191

**Postsecondary Vocational and Technical Education 1996**

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July 30, 1996

MISSISSIPPI  
CURRICULUM FRAMEWORK  
FOR  
RESIDENTIAL CARPENTRY TECHNOLOGY  
(PROGRAM CIP: 46.0201 - Carpenter)

POSTSECONDARY PROGRAMS

1996

July 30, 1996

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## FOREWORD

In order to survive in today's global economy, businesses and industries have had to adopt new practices and procedures. Total quality management, statistical process control, participatory management, and other concepts of high performance work organizations are practices by which successful companies survive. Employers now expect their employees to be able to read, write, and communicate effectively; solve problems and make decisions; and interact with the technologies that are prevalent in today's workplace. Vocational-technical education programs must also adopt these practices in order to provide graduates who can enter and advance in the changing work world.

The curriculum framework in this document reflects these changes in the workplace and a number of other factors that impact on local vocational-technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U. S. Departments of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

Each postsecondary program of instruction consists of a program description and a suggested sequence of courses which focus on the development of occupational competencies. Each vocational-technical course in this sequence has been written using a common format which includes the following components:

- Course Name - A common name that will be used by all community/junior colleges in reporting students.
- Course Abbreviation - A common abbreviation that will be used by all community/junior colleges in reporting students.
- Classification - Courses may be classified as:
  - Vocational-technical core - A required vocational-technical course for all students.
  - Vocational-technical elective - An elective vocational-technical course.
  - Related academic course - An academic course which provides academic skills and knowledge directly related to the program area.
  - Academic core - An academic course which is required as part of the requirements for an Associate degree.

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- Description - A short narrative which includes the major purpose(s) of the course and the recommended number of hours of lecture and laboratory activities to be conducted each week during a regular semester.
- Prerequisites - A listing of any prerequisite courses that must be taken prior to or on enrollment in the course.
- Competencies and Suggested Objectives - A listing of the competencies (major concepts and performances) and of the suggested student objectives that will enable students to demonstrate mastery of these competencies.

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75 percent of the time allocated to each course. For example, in a four semester hour course consisting of 30 hours lecture and 120 hours of laboratory activities, approximately 22 hours of lecture and 90 hours of lab should be taken by the competencies and suggested objectives identified in the course framework. The remaining 25 percent of each course should be developed at the local district level and may reflect:
  - Additional competencies and objectives within the course related to topics not found in the State framework, including activities related to specific needs of industries in the community college district.
  - 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 worksite learning activities, to better prepare individuals in the courses for their chosen occupational area.
- Sequencing of the course within a program is left to the discretion of the local district. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

- o Programs that offer an Associate of Applied Science degree must include a minimum 15 semester credit hour academic core. Specific courses to be taken within this core are to be determined by the local district. Minimum academic core courses are as follows:
  - 3 semester credit hours Math/Science Elective
  - 3 semester credit hours Written Communications Elective
  - 3 semester credit hours Oral Communications Elective
  - 3 semester credit hours Humanities/Fine Arts Elective
  - 3 semester credit hours Social/Behavioral Science Elective

It is recommended that courses in the academic core be spaced out over the entire length of the program, so that students complete some academic and vocational-technical courses each semester. Each community/junior college has the discretion to select the actual courses that are required to meet this academic core requirement.
- o In instances where secondary programs are directly related to community and junior college programs, competencies and suggested objectives from the high school programs are listed as Baseline Competencies. These competencies and objectives reflect skills and knowledge that are directly related to the community and junior college vocational-technical program. In adopting the curriculum framework, each community and junior college is asked to give assurances that:
  - students who can demonstrate mastery of the Baseline Competencies do not receive duplicate instruction, and
  - students who cannot demonstrate mastery of this content will be given the opportunity to do so.
- o The roles of the Baseline Competencies are to:
  - Assist community/junior college personnel in developing articulation agreements with high schools, and
  - Ensure that all community and junior college courses provide a higher level of instruction than their secondary counterparts
- o The Baseline Competencies may be taught as special "Introduction" courses for 3-6 semester hours of institutional credit which will not count toward Associate degree requirements. Community and junior colleges may choose to integrate the Baseline Competencies into ongoing courses in lieu of offering the "Introduction" courses or may offer the competencies through special projects or individualized instruction methods.
- o Technical elective courses have been included to allow community colleges and students to customize programs to meet the needs of industries and employers in their area.

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## RESIDENTIAL CARPENTRY TECHNOLOGY

### PROGRAM DESCRIPTION

Residential Carpentry Technology is an instructional program designed to prepare students for entry level into the residential carpentry trade. The residential carpentry program offers learning experiences in blueprint reading, estimating, building, installing, and repairing structural units.

The Associate of Applied Science (AAS) degree in Residential Carpentry may be awarded to a student who successfully completes the two years or 64 semester credit hours of required courses. Included in the requirements are 15 semester credit hours of academic courses.

SUGGESTED COURSE SEQUENCE FOR  
ONE-YEAR CERTIFICATE OF RESIDENTIAL CARPENTRY\*

Baseline Competencies for Residential Carpentry Technology\*\*

FIRST YEAR

6 sch	Foundations (CAT 1116)	5 sch	Framing II (CAT 1225)
6 sch	Framing I (CAT 1216)	3 sch	Roofing (CAT 1125)
3 sch	Advanced Blueprint Reading (CAT 1133)	3 sch	Exterior Finishing (CAT 1513)
<hr/>		6 sch	Interior Finishing and Cabinet Making (CAT 1316)
15 sch		<hr/>	
		17 sch	

- \* Students who lack entry level skills in math, English, science, etc., will be provided related studies.
- \*\* Baseline competencies are taken from the high school Building Trades program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

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**SUGGESTED COURSE SEQUENCE FOR  
TWO-YEAR CERTIFICATE OF RESIDENTIAL CARPENTRY\***

**Baseline Competencies for Residential Carpentry Technology\*\***

**FIRST YEAR**

6 sch	Foundations (CAT 1116)	5 sch	Framing II (CAT 1225)
6 sch	Framing I (CAT 1216)	3 sch	Roofing (CAT 1125)
3 sch	Advanced Blueprint Reading (CAT 1133)	3 sch	Exterior Finishing (CAT 1513)
<hr/>		6 sch	Interior Finishing and Cabinet Making (CAT 1316)
15 sch		<hr/>	
		17 sch	

**SECOND YEAR**

3 sch	Construction Materials (DDT 1213)	3 sch	Principles of Multi-family & Light Commercial Construction (CAT 2113)
3 sch	Fundamentals of Drafting (DDT 1113)	3 sch	Cost Estimating (DDT 2233)
6 sch	Vocational-Technical Electives†	6 sch	Vocational-Technical Electives†
<hr/>		<hr/>	
15 sch		15 sch	

- \* Students who lack entry level skills in math, English, science, etc., will be provided related studies.
- \*\* Baseline competencies are taken from the high school Building Trades program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.
- † Approved Electives:
  - 3 sch Advanced Cabinet Making (CAT 2133)
  - 3 sch Advanced Interior Refinishing (CAT 2313)
  - 1-3 sch Special Project in Residential Carpentry Technology (CAT 291[1-3])
  - 1-6 sch Work-Based Learning in Residential Carpentry Technology (CAT 292[1-6])

## RESIDENTIAL CARPENTRY TECHNOLOGY

## SUGGESTED COURSE SEQUENCE\*

## Baseline Competencies for Residential Carpentry Technology\*\*

## FIRST YEAR

6 sch	Foundations (CAT 1116)	5 sch	Framing II (CAT 1225)
6 sch	Framing I (CAT 1216)	3 sch	Roofing (CAT 1125)
3 sch	Advanced Blueprint Reading (CAT 1133)	3 sch	Exterior Finishing (CAT 1513)
3 sch	Math/Science Elective	6 sch	Interior Finishing and Cabinet Making (CAT 1316)
<hr/>		<hr/>	
18 sch		17 sch	

## SECOND YEAR

3 sch	Written Communications Elective	3 sch	Humanities/Fine Arts Elective
3 sch	Oral Communications Elective	3 sch	Social/Behavioral Elective
3 sch	Construction Materials (DDT 1213)	3 sch	Principles of Multi-family and Light Commercial Construction (CAT 2113)
3 sch	Fundamentals of Drafting (DDT 1113)	3 sch	Cost Estimating (DDT 2243)
3 sch	Vocational-Technical Electives†	2 sch	Vocational-Technical Electives†
<hr/>		<hr/>	
15 sch		14 sch	

\* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

\*\* Baseline competencies are taken from the high school Building Trades program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

## † APPROVED ELECTIVES

Advanced Cabinet Making (CAT 2133)

Advanced Interior Finishing (CAT 2313)

Special Problem in Residential Carpentry Technology [CAT 291(1-3)]

Work-Based Learning in Residential Carpentry Technology [CAT 292(1-6)]

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SECTION I:  
BASELINE COMPETENCIES



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## BASELINE COMPETENCIES FOR RESIDENTIAL CARPENTRY

The following competencies and suggested objectives are taken from the publication *Mississippi Curriculum Framework for Building Trades*. These competencies and objectives represent the baseline which was used to develop the community/junior college Residential Carpentry courses. Students enrolled in postsecondary courses should either (1) have documented mastery of these competencies, or (2) be provided with these competencies before studying the advanced competencies in the Residential Carpentry program.

Baseline competencies may be integrated into existing courses in the curriculum or taught as special "Introduction" courses. The "Introduction" courses may be taught for up to six semester hours of institutional credit and may be divided into two courses. If the Baseline Competencies are to be taught as "Introduction" courses, each course should be at least 3 credit hours. The following course number(s) and description should be used:

**Course Name(s):** Introduction to Residential Carpentry, Introduction to Residential Carpentry I, or Introduction to Residential Carpentry II

**Course Abbreviation(s):** CAT 100(3-6), CAT 1013, CAT 1023

**Classification:** Vocational-Technical Core

**Description:** These courses contain the baseline competencies and suggested objectives from the high school Building Trades curriculum which directly relate to the community college Residential Carpentry program. The courses are designed for students entering the community college who have had no previous training or documented experience in the field. (3-6 semester hours based upon existing skills for each student. May be divided into 2 courses for a maximum total of 6 hours of institutional credit.)

### Competencies and Suggested Objectives:

1. Explain the career opportunities associated with building trades.
  - a. Describe earnings, educational requirements, career ladder, and trade organizations associated with each trade.
  - b. Demonstrate personality traits to apply when serving the public.
  - c. Demonstrate desirable personality traits to apply when communicating with employees, supervisors, and other employees.
  - d. Demonstrate desirable characteristics of the work ethic to apply in building trades.

*Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

2. Describe vocational student organizations associated with building trades.
  - a. Identify the activity programs of Vocational Industrial Clubs of America (VICA), including activities in leadership, membership, degrees, and contests.

*Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

3. Demonstrate job seeking skills to become employed in the building trades.
  - a. Prepare a resume containing essential information.
  - b. Complete a job application form.
  - c. Describe procedures for a job interview.
  - d. Demonstrate the role of an applicant in job interview.

*Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

4. Explain personal and general safety rules for working in building trades.
  - a. Demonstrate personal safety rules for working in a shop/lab and industry.
  - b. Demonstrate general workplace safety rules.
  - c. Demonstrate procedures for safely handling heavy objects.
  - d. Demonstrate safety practices for using climbing devices.
  - e. Describe state eye safety law, including appropriate times for wearing safety glasses.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

5. Apply workplace environmental safety procedures.
  - a. Describe the safe use of fire extinguishers for different classes of fires.
  - b. Identify standard industry Safety Color Code.
  - c. Describe factors to consider in storing and/or disposing of hazardous materials.
  - d. Identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.
  - e. Review a Materials Safety Data Sheet (MSDS).

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S5, S8*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

6. Apply measurement to the building trades.
  - a. Identify measuring tools used in the building trades.
  - b. Read measuring tools to 1/16th inch.
  - c. Apply basic mathematics to building trades.

*Related Academic Topics (See Appendix A): C1, C2, C3, C6, M1, M4, M7, S8*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

7. Apply blueprint reading to the building trades.
  - a. Identify terms and definitions used in reading blueprints and working drawings.
  - b. Identify the basic components of a blueprint.
  - c. Identify the lines used on blueprints.

d. Prepare a building layout.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M2, M3, M7, S8*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6*

8. Utilize hand tools in the building trades.

a. Identify hand tools used in the building trades.

b. Demonstrate the maintenance of hand tools used in the building trades.

c. Demonstrate the safe use of hand tools used in the building trades.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S7, S8*

*Workplace Skills (See Appendix B): WP1, WP2, WP4, WP5, WP6*

9. Utilize power tools in the building trades.

a. Identify power tools used in the building trades.

b. Demonstrate the maintenance of power tools used in the building trades.

c. Demonstrate the safe use of power tools used in the building trades.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S8*

*Workplace Skills (See Appendix B): WP1, WP2, WP4, WP5, WP6*

10. Utilize stationary equipment in the building trades.

a. Identify stationary equipment used in the building trades.

b. Demonstrate the maintenance of stationary equipment used in the building trades.

c. Demonstrate the safe use of stationary equipment used in the building trades.

d. Demonstrate the use of computer equipment and software for blueprint reading and estimation in Building Trades.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S7, S8*

*Workplace Skills (See Appendix B): WP1, WP2, WP4, WP5, WP6*

11. Identify terms and demonstrate safety practices related to carpentry.

a. Identify terms related to carpentry.

b. Demonstrate safety practices related to carpentry.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S8*

*Workplace Skills (See Appendix B): WP2, WP6*

12. Apply procedures to construct a project in carpentry.

a. Select tools and materials for a specific building task in carpentry.

b. Demonstrate procedures to use in storing materials.

c. Perform foundation construction methods.

d. Lay out, cut, and assemble floor and wall framing material.

*Related Academic Topics (See Appendix A): C1, C3, C4, C5, C6, M4, M5, M7, S8*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6*

13. Explain the career opportunities associated with building trades.

a. Describe earnings, educational requirements, career ladder, and trade organizations associated with each trade.

- b. Demonstrate personality traits to apply when serving the public.
- c. Demonstrate desirable personality traits to apply when communicating with employees, supervisors, and other employees.
- d. Demonstrate desirable characteristics of the work ethic to apply in building trades.

*Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

14. Describe vocational student organizations associated with building trades.
- a. Identify the activity programs of Vocational Industrial Clubs of America (VICA), including activities in leadership, membership, degrees, and contests.

*Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

15. Demonstrate job seeking skills to become employed in the building trades.
- a. Prepare a resume containing essential information.
  - b. Complete a job application form.
  - c. Describe procedures for a job interview.
  - d. Demonstrate the role of an applicant in job interview.

*Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

16. Explain personal and general safety rules for working in building trades.
- a. Demonstrate personal safety rules for working in a shop/lab and industry.
  - b. Demonstrate general workplace safety rules.
  - c. Demonstrate procedures for safely handling heavy objects.
  - d. Demonstrate safety practices for using climbing devices.
  - e. Describe state eye safety law, including appropriate times for wearing safety glasses.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

17. Apply workplace environmental safety procedures.
- a. Describe the safe use of fire extinguishers for different classes of fires.
  - b. Identify standard industry Safety Color Code.
  - c. Describe factors to consider in storing and/or disposing of hazardous materials.
  - d. Identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.
  - e. Review a Materials Safety Data Sheet (MSDS).

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S5, S8*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

18. Explain terms and safety related to carpentry.
- a. Identify terms related to carpentry.
  - b. Demonstrate safety practices related to carpentry.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S8*  
*Workplace Skills (See Appendix B): WP2, WP6*

19. Identify building components.
- a. Select materials for a certain job.
  - b. Identify hardware for a specific job.
  - c. Identify different styles of roofs.
  - d. Identify parts of a roof frame.
  - e. Identify parts of a simple roof truss.
  - f. Identify the types of insulation.
  - g. Identify the styles of interior wall finish.
  - h. Identify types of interior trim.
  - i. Identify types of cornices.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M7, S8*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6*

20. Install building components.
- a. Lay out and install ceiling joists.
  - b. Lay out, cut, and assemble parts of a gable roof frame.
  - c. Install exterior sheathing.
  - d. Build a box cornice.
  - e. Install underlayment and asphalt shingles.
  - f. Install a window unit.
  - g. Install an exterior door unit.
  - h. Install interior wall covering.
  - i. Install blanket insulation in walls.
  - j. Install different types of interior wall finish.
  - k. Install interior trim.
  - l. Install ceiling tile.
  - m. Install an interior door unit.
  - n. Install hardware.
  - o. Lay out stair stringer.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M5, M7, S5, S6, S8*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6*

July 30, 1996

SECTION II:  
CURRICULUM GUIDE  
FOR  
RESIDENTIAL CARPENTRY TECHNOLOGY

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RESIDENTIAL CARPENTRY TECHNOLOGY COURSES

**Course Name:** Foundations

**Course Abbreviation:** CAT 1116

**Classification:** Vocational-Technical Core

**Description:** This course includes site selection, site preparation, site layout, building forms, and construction of foundations. (6 sch: 2 hr. lecture, 8 hr. lab)

**Prerequisites:** None

**Competencies and Suggested Objectives:**

1. Explain preparations for building foundations.
  - a. Describe safety as it applies to foundations.
  - b. Define terms associated with foundations.
  - c. Identify types of foundations and foundation materials.
  - d. Locate buildings on building site from plot plan.
  - e. Calculate types, amounts, and costs of materials needed for various foundations.
  - f. Locate doors, walls, and windows from a floor plan.
  - g. Accurately locate and demonstrate proper spacing for anchor bolts from a blueprint.
  - h. Discuss rough-in of electrical, plumbing, and heating, ventilation, and air-conditioning systems.
  - i. Describe soil treatment for termite control.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M7, S5*  
*Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6*
2. Prepare for and build a foundation.
  - a. Locate building on site, determine elevation using builder's leveling devices.
  - b. Set batter boards.
  - c. Build and set forms for a monolithic slab.
  - d. Excavate and/or fill in preparation for pouring slab, including installation of wire mesh, rebar, vapor barrier, and screeds.
  - e. Construct and/or observe a concrete slab foundation being poured.
  - f. Construct and/or observe construction of the footing for a stem wall.
  - g. Construct a conventional foundation to scale, including piers.

*Related Academic Topics (See Appendix A): C2, C4, C5, M3, M4, M5*  
*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

**Course Name:** Framing I

**Course Abbreviation:** CAT 1216

**Classification:** Vocational-Technical Core

**Description:** This course is designed to give the student experience in floor and wall framing. (6 sch: 2 hr. lecture, 8 hr. lab)

**Prerequisites:** None

**Competencies and Suggested Objectives:**

1. Explain terms and materials associated with floor and wall framing.
  - a. Describe safety associated with floor and wall framing.
  - b. Identify terms associated with floor and wall framing.
  - c. Identify types of materials, amounts, and costs associated with floor and wall framing.
  - d. Identify methods of alternative fastening, including strapping, according to local codes.
  - e. Describe assemblies and sequencing necessary for proper installation of floor and wall framing.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M4, M5, M7*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

2. Install floor framing.
  - a. Install termite shield, sill, and beams.
  - b. Install joist headers and joist.
  - c. Install solid or diagonal bridging.
  - d. Install subfloor.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M4, M5*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

3. Install wall framing.
  - a. Install sole plate.
  - b. Lay out and construct a wall section.
  - c. Plumb and align walls and install exterior sheathing.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M4, M5*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

**Course Name:** Advanced Blueprint Reading

**Course Abbreviation:** CAT 1133

**Classification:** Vocational-Technical Core

**Description:** This course includes the elements of residential plans and how to prepare a bill of materials from a set of plans. (3 sch: 2 hr. lecture, 2 hr. lab)

**Prerequisites:** None

**Competencies and Suggested Objectives:**

1. Explain the elements of residential plans.
  - a. Identify the elements commonly included in a set of house plans.
  - b. Demonstrate the use of scale in architectural drawings.
  - c. Recognize architectural symbols.
  - d. Explain the use of building specifications.
  - e. Summarize the concept of modular construction.
  - f. Describe the application of building codes, standards, and permits.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M4, M7*  
*Workplace Skills (See Appendix B): WP2, WP3, WP4, WP6*
2. Prepare a bill of materials from a set of plans using manual procedures and/or computer equipment and software.
  - a. Draw a set of plans to instructor's specifications.
  - b. Figure a bill of materials and cost from plans for a foundation.
  - c. Figure a bill of materials and cost from plans for floor and wall framing.
  - d. Figure a bill of materials and cost from plans for ceiling and roof framing and roof decking.
  - e. Figure a bill of materials and cost from plans for an exterior finish.
  - f. Figure a bill of materials and cost from plans for an interior finish.

*Related Academic Topics (See Appendix A): C1, C2, C4, M2, M3, M4, M5, M7*  
*Workplace Skills (See Appendix B): WP1, WP2, WP6*

**Course Name:** Framing II

**Course Abbreviation:** CAT 1225

**Classification:** Vocational-Technical Core

**Description:** This course will apply the techniques of cutting and assembly of framing materials based on predetermined specifications. (5 sch: 1 hr. lecture, 8 hr. lab)

**Prerequisites:** Framing I (CAT 1216)

**Competencies and Suggested Objectives:**

1. Explain safety features as used in residential carpentry ceiling and roof framing.
  - a. Describe safety requirements associated with residential carpentry ceiling and roof framing.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4*

*Workplace Skills (See Appendix B): WP6*

2. Explain procedures for ceiling joists and roof construction.
  - a. Identify ceiling and roof framing members and their use in house framing.
  - b. Compare different types of roof framing systems and their applications.
  - c. Discuss special fasteners and bracing as required by local codes.
  - d. Identify methods for laying out rafters and ceiling joists, including use of the framing square.
  - e. Identify and calculate the length and cuts for different types of roof framing members, ceiling joists, and decking.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M4, M5, M7*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP6*

3. Fabricate ceiling joists and roof framing components.
  - a. Lay out, cut, and install ceiling joists to instructor's specifications.
  - b. Lay out, cut, and install common, hip, and valley rafters to instructor's specifications.
  - c. Cut and install decking and building paper to instructor's specifications.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M4, M5, M7*  
*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP6*

**Course Name:** Roofing

**Course Abbreviation:** CAT 1413

**Classification:** Vocational-Technical Core

**Description:** Types of roofs, roofing materials and their application. Basic roofing techniques, including material selection, roof styles, cost estimation, and installation procedures. (3 sch: 1 hr. lecture, 4 hr. lab)

**Prerequisites:** None

**Competencies and Suggested Objectives:**

1. Explain roofing materials and applications in roofing.
  - a. Identify types of roofing materials and their characteristics, to include their installation.
  - b. Determine type of material (asphalt, fiberglass, or wood shake shingles).
  - c. Estimate materials and cost for a specific job.
  - d. Describe other types of roof covers (metal/flat asphalt, etc.).

*Related Academic Topics (See Appendix A): C1, C4, M7*

*Workplace Skills (See Appendix B): WP2, WP6*

2. Demonstrate procedures for installing roof.
  - a. Install underlayment, flashing, roofing cements, and roofing nails/fasteners.
  - b. Prepare layout and pop chalk line.
  - c. Install various types of shingles, flashing, gutters, downspouts, and drip edge.

*Related Academic Topics (See Appendix A): C4, C5, M7*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

**Course Name:** Exterior Finishing

**Course Abbreviation:** CAT 1513

**Classification:** Vocational-Technical Core

**Description:** Included are types of trims (moldings, cornices, and door and window trims). Also included are wall covering techniques, styles, installation, and finishing. (3 sch: 1 hr. lecture, 4 hr. lab)

**Prerequisites:** None

**Competencies and Suggested Objectives:**

1. Explain procedures for installing different types of trim.
  - a. Describe different types of cornices.
  - b. Identify different types of molding (door/window trim, crown, etc.).
  - c. Estimate amounts and cost of materials needed for specific jobs.
  - d. Select easy-care materials.
  - e. Describe the installation of other exterior coverings (vinyl, lapsiding, etc.).

*Related Academic Topics (See Appendix A): C1, C2, C4, M7, S5*

*Workplace Skills (See Appendix B): WP1, WP2, WP6*

2. Demonstrate procedures for installing exterior wall covering according to instructor's specifications.
  - a. Cut and install cornice materials.
  - b. Cut and install different types of molding.
  - c. Install commonly used exterior wall coverings, excluding brick.
  - d. Finish (trim) work (caulking, exterior corner treatment, etc.).

*Related Academic Topics (See Appendix A): C4, M4, M5, M7*

*Workplace Skills (See Appendix B): WP1, WP2, WP6*

**Course Name:** Interior Finishing and Cabinet Making

**Course Abbreviation:** CAT 1316

**Classification:** Vocational-Technical Core

**Description:** This course includes experience in all types of interior ceiling, wall covering, trim work, and floor covering including cabinet construction. (6 sch: 2 hr. lecture, 8 hr. lab)

**Prerequisites:** None

**Competencies and Suggested Objectives:**

1. Explain terms and materials associated with interior finishing and cabinet making.
  - a. Identify terms related to interior finishing.
  - b. Identify materials used in interior finishing.
  - c. Identify terms associated with cabinet making and installation.
  - d. Identify types of floor covering.
  - e. Estimate materials and cost for a specific job to include hardware.
2. Demonstrate procedures for installing interior finishing, cabinets, and floor covering.
  - a. Install insulation, including the floor.
  - b. Install ceiling.
  - c. Install wall covering.
  - d. Hang interior doors.
  - e. Install interior trim and hardware.
  - f. Build different types of cabinets to specifications.
  - g. Install cabinets.
  - h. Install counter tops.
  - i. Install floor covering according to instructor's specifications.

*Related Academic Topics (See Appendix A): C1, C4, M7*

*Workplace Skills (See Appendix B): WP1, WP2, WP6*

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, M4, M5, M7*

*Workplace Skills (See Appendix B): WP1, WP2, WP6*

**Course Name:** Principles of Multi-family and Light Commercial Construction

**Course Abbreviation:** CAT 2113

**Classification:** Vocational-Technical Core

**Description:** A course including the fundamentals of multi-family and light commercial construction. Emphasis will be placed on the application of local codes and standards. (3 sch: 2 hr. lecture, 2 hr. lab)

**Prerequisites:** None

**Competencies and Suggested Objectives:**

1. Explain safety precautions associated with multi-family and light commercial construction.
  - a. Describe special safety precautions as relating to multi-family and light commercial construction.
  - b. Describe OSHA standards required for multi-family or light commercial construction.
  - c. Describe applications of local building codes and standards in multi-family and light commercial construction.

*Related Academic Topics (See Appendix A): C1, C3, C4*

*Workplace Skills (See Appendix B): WP2, WP6*

2. Demonstrate procedures used in multi-family and light commercial construction.
  - a. Lay out building site for multi-family or light construction.
  - b. Establish finish floor level for split level construction.
  - c. Observe and report on excavation techniques.
  - d. Observe and report on alternative foundations.
  - e. Observe and report on steel floor, wall, and roof framing for multi-level or light commercial construction.
  - f. Observe and report on special framing and forming procedures to include concrete and/or steel columns, beams, posts, girders, etc.
  - g. Observe and report on sequence of events of multi-family or light commercial construction.
  - h. Observe and report on special roof framing for light commercial construction.
  - i. Calculate stair layout for multi-family and light commercial construction.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M4, M5, M7*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

**Course Name:** Advanced Cabinet Making

**Course Abbreviation:** CAT 2133

**Classification:** Vocational-Technical Elective

**Description:** This course includes principles of building and installation of cabinets, drawers, and shelves. (3 sch: 2 hr. lecture, 2 hr. lab)

**Prerequisites:** Interior Finishing and Cabinet Making (CAT 1316)

**Competencies and Suggested Objectives:**

1. Explain principles of advanced cabinet making.
  - a. Compare the common alternative procedures for building cabinets on the job.
  - b. Lay out and frame a cabinet from drawings.
  - c. Describe the three types of drawer guides, side guide, center guides, and center top guides.
  - d. Describe the material choices for cabinet shelves and doors.
  - e. Select prefabricated cabinets for a specific floor plan.

*Related Academic Topics (See Appendix A): C1, C2, C4, M4, M5, M7*  
*Workplace Skills (See Appendix B): WP1, WP2, WP6*
2. Perform procedures for building and installing cabinets and shelves.
  - a. Perform the steps in cutting and assembling drawers.
  - b. Install a plastic laminate surface.
  - c. Install prefabricated base and wall cabinets.

*Related Academic Topics (See Appendix A): C4, M4, M5, M7*  
*Workplace Skills (See Appendix B): WP1, WP2, WP6*

**Course Name:** Advanced Interior Finishing

**Course Abbreviation:** CAT 2313

**Classification:** Vocational-Technical Elective

**Description:** Included are procedures for advanced ceiling and wall interior finishing and for stair calculation and construction. (3 sch: 2 hr. lecture, 2 hr. lab)

**Prerequisites:** Interior Finishing and Cabinet Making (CAT 1316)

**Competencies and Suggested Objectives:**

1. Explain procedures for advanced ceiling and wall interior finishing.
  - a. Discuss and report on specialized ceilings and ceiling systems.
  - b. Identify materials and compare costs for specialized ceilings (exposed beams, vaulted, cathedral, sky lights, etc.).
  - c. Identify types of wall finishes to include wainscot, raised panel, chair-rail, vinyl covering, and exposed wood.
  - d. Calculate materials and cost for different types of wall finishes according to instructor's specifications.

*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M2, M4, M5, M7*

*Workplace Skills (See Appendix B): WP2, WP3, WP6*

2. Demonstrate procedures for stair calculation and construction.
  - a. Describe types of stairs and their construction.
  - b. Estimate materials and costs for stair construction.
  - c. Calculate amount of materials needed for stringers, treads, and risers according to instructor specifications.
  - d. Construct a staircase according to instructor's specifications.

*Related Academic Topics (See Appendix A): C1, C2, C4, M2, M4, M5, M7*

*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*

**Course Name:** Special Problem in Residential Carpentry Technology

**Course Abbreviation:** CAT 291(1-3)

**Classification:** Vocational-Technical Elective

**Description:** A course to provide students with an opportunity to utilize skills and knowledge gained in other Residential Carpentry Technology courses. The instructor and student work closely together to select a topic and establish criteria for completion of the project. (1-3 sch: 2-6 hr. lab)

**Prerequisites:** Sophomore standing in Residential Carpentry Technology

**Competencies and Suggested Objectives:**

1. Prepare a written agreement.
  - a. Compile a written training agreement in cooperation with the instructor and student which details work schedule and specific tasks/skills to be mastered in the program.  
*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6*  
*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6*
2. Prepare a written report of activities.
  - a. Compile a daily log of activities and tasks.
  - b. Submit weekly reports to the instructor summarizing activities and tasks completed.
  - c. Submit a final report of activities and experiences.  
*Related Academic Topics (See Appendix A): C1, C2, C4, C6*  
*Workplace Skills (See Appendix B): WP1, WP2, WP6*
3. Follow written guidelines for special problems.
  - a. Complete all required activities in the training agreement.
  - b. Adhere to all written and oral instructions for the special problem.  
*Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M7, S8*  
*Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6*

**Course Name:** Work-Based Learning in Residential Carpentry Technology

**Course Abbreviation:** CAT 292(1-6)

**Classification:** Vocational-Technical Elective

**Description:** This course is a cooperative program between industry and education and is designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of one semester hour per 45 industrial contact hours. (1-6 sch: 3-18 hr. externship)

**Prerequisites:** Sophomore standing in Residential Carpentry Technology

**Competencies and Suggested Objectives:**

1. Apply technical skills needed to be a viable member of the work force.
  - a. Prepare a description of technical skills to be developed in the work-based learning program.  
*Related Academic Topics (See Appendix A): C5, C6*  
*Workplace Skills (See Appendix B): WP1*
2. Apply skills developed in other program area courses.
  - a. Perform skills developed in other program area courses in the work-based learning program.  
*Related Academic Topics (See Appendix A): C5, C6*  
*Workplace Skills (See Appendix B): WP5, WP6*
3. Apply human relationship skills.
  - a. Use pro-active human relationship skills in the work-based learning program.  
*Related Academic Topics (See Appendix A): C5, C6*  
*Workplace Skills (See Appendix B): WP3*
4. Apply and practice positive work habits and responsibilities.
  - a. Perform assignments to develop positive work habits and responsibilities.  
*Related Academic Topics (See Appendix A): C5, C6*  
*Workplace Skills (See Appendix B): WP3*
5. Work with instructor and employer to develop written occupational objectives to be accomplished.
  - a. Perform written occupational objectives in the work-based learning program.  
*Related Academic Topics (See Appendix A): C5, C6*  
*Workplace Skills (See Appendix B): WP6*

6. Assess accomplishment of objectives.
  - a. Prepare daily written assessment of accomplishment of objectives.
  - b. Present weekly written reports to instructor in activities performed and objectives accomplished.

*Related Academic Topics (See Appendix A): C5, C6*

*Workplace Skills (See Appendix B): WP6*

7. Utilize a set of written guidelines for the work-based learning program.
  - a. Develop and follow a set of written guidelines for the work-based learning program.

*Related Academic Topics (See Appendix A): C5, C6*

*Workplace Skills (See Appendix B): WP6*

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RELATED VOCATIONAL-TECHNICAL COURSES

**Course Name:** Fundamentals of Drafting

**Course Abbreviation:** DDT 1114

**Classification:** Related Vocational-Technical (From Drafting and Design Technology)

**Description:** Course designed to give drafting majors the background needed for all other drafting courses. (4 sch: 2 hr. lecture, 4 hr. lab)

**Prerequisites:** None

**Competencies and Suggested Objectives:**

1. Discuss classroom procedures and drafting occupations.
  - a. Describe proper classroom/lab procedures.
  - b. Describe the various occupations in drafting and their requirements.

*Related Academic Topics (See Appendix A): C2, C5, C6*  
*Workplace Skills (See Appendix B): WP2, WP5, WP6*
2. Explain and apply safety rules and regulations.
  - a. Describe safety rules for drafting occupations.
  - b. List and discuss hazardous materials found in the drafting area.

*Related Academic Topics (See Appendix A): C2, C5, C6*  
*Workplace Skills (See Appendix B): WP2, WP5, WP6*
3. Demonstrate the ability to apply proper techniques in instrument drawings.
  - a. Demonstrate the ability to scale drawings.
  - b. Construct various angles.
  - c. Recognize and construct the different types of lines.

*Related Academic Topics (See Appendix A): C2, C5, C6*  
*Workplace Skills (See Appendix B): WP2, WP5, WP6*
4. Demonstrate the ability to sketch and develop views of basic shapes.
  - a. Develop a pictorial view from three principal views.
  - b. Develop three principal views from a pictorial view.
  - c. Complete three principal views when lines are missing.

*Related Academic Topics (See Appendix A): C2, C5, C6*  
*Workplace Skills (See Appendix B): WP2, WP5, WP6*
5. Demonstrate the ability to use geometric constructions.
  - a. Construct tangent arcs and lines.
  - b. Divide lines or arcs into equal and/or proportional parts.
  - c. Develop geometric shapes.

*Related Academic Topics (See Appendix A): C2, C5, C6*  
*Workplace Skills (See Appendix B): WP2, WP5, WP6*
6. Demonstrate the ability to construct orthographic projections.
  - a. Construct a top view, with front and right side views given.
  - b. Construct a front view, with top and right side views given.

- c. Construct a right side view, with top and front views given.
- d. Develop a drawing consisting of three principal views.

*Related Academic Topics (See Appendix A): C2, C5, C6*

*Workplace Skills (See Appendix B): WP2, WP5, WP6*

- 7. Demonstrate the ability to dimension objects.
  - a. Recognize lines, symbols, features, and conventions used in dimensioning.
  - b. Recognize and use size and location dimensions.
  - c. Recognize and use general and local notes.
  - d. Dimension a drawing using contour, chain, and baseline dimensioning.
- 8. Demonstrate the ability to construct sectional views.
  - a. Construct full and half sectional views.
  - b. Recognize and construct removed, revolved, offset, and aligned sectional views.

*Related Academic Topics (See Appendix A): C2, C5, C6*

*Workplace Skills (See Appendix B): WP2, WP5, WP6*

**Course Name:** Construction Materials

**Course Abbreviation:** DDT 1213

**Classification:** Related Vocational-Technical (From Drafting and Design Technology)

**Description:** A course designed to familiarize the student with the physical properties of the materials generally used in the erection of a structure, with a brief description of their manufacture. (3 sch: 2 hr. lecture, 2 hr. lab)

**Prerequisites:** None

**Competencies and Suggested Objectives:**

1. Describe the uses of wood components used in construction.
  - a. Identify and describe diseases and lumber defects.
  - b. Calculate board feet of lumber.
  - c. Identify the different types of lumber used in construction and their design factors.

*Related Academic Topics (See Appendix A): C1, C2, C5, C6, M1, M2, M3, S8*  
*Workplace Skills (See Appendix B): WP2, WP5, WP6*

2. Describe concrete characteristics.
  - a. Describe the use of common and special types of concrete.
  - b. Classify aggregates.
  - c. Explain how the design and control of concrete is maintained.
  - d. Describe the psi rating system for concrete.
  - e. Identify and describe common concrete and brick masonry units.
  - f. Explain purposes of concrete additives.

*Related Academic Topics (See Appendix A): C2, C3, C5, C6, M2, M4, S8*  
*Workplace Skills (See Appendix B): WP2, WP5, WP6*

3. Describe the use of bricks in construction.
  - a. Describe different types of bricks.
  - b. Describe the different types of brick bonds.
  - c. Identify and describe the brick pattern bonds.
  - d. Identify and describe the different mortar joints.

*Related Academic Topics (See Appendix A): C2, C3, C5, C6, M3, S8*  
*Workplace Skills (See Appendix B): WP2, WP5, WP6*

4. Describe various cover materials used in construction.
  - a. Identify and describe the different types of exterior wall materials and their specific purposes.
  - b. Identify and describe different types of insulating materials and their special purposes.
  - c. Identify and describe the different types of floor coverings and their special uses.

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- d. Identify and describe the different types of roofing materials.
- e. Identify and describe the different types of finishing materials and their special uses.
- f. Identify and describe different types of protective and decorative coatings and their special uses.

*Related Academic Topics (See Appendix A): C1, C3, C2, C5, C6, M2, S8*

*Workplace Skills (See Appendix B): WP2, WP5, WP6*

**Course Name:** Cost Estimating

**Course Abbreviation:** DDT 2243

**Classification:** Related Vocational-Technical (From Drafting and Design Technology)

**Description:** Preparation of material and labor quantity surveys from actual working drawings and specifications. (3 sch: 1 hr. lecture, 4 hr. lab)

**Prerequisites:** None

**Competencies and Suggested Objectives:**

1. Develop the ability to make a cost estimate of a residential and commercial building.
  - a. Define the different types of estimates and specific purposes of each.
  - b. Prepare estimates of various kinds of foundations.
  - c. Estimate wall frames.
  - d. Estimate ceiling frames.
  - e. Estimate roof frames.
  - f. Estimate exterior finishings.
  - g. Estimate interior finishings.
  - h. Estimate sub-contract items.

*Related Academic Topics (See Appendix A): C2, C3, C5, C6, M2, M3, M5, M7, S8*

*Workplace Skills (See Appendix B): WP2, WP5, WP6*

2. Demonstrate the ability to determine the best construction method.
  - a. List the different types of construction in residential and commercial buildings.
  - b. Select the best method of construction in a residential and commercial buildings.

*Related Academic Topics (See Appendix A): C2, C3, C5, C6, M2, M3, M5, M7, S8*

*Workplace Skills (See Appendix B): WP2, WP5, WP6*

3. Develop the ability to apply the principles of contracts for construction.
  - a. Identify and describe the essential elements of a contract.
  - b. Describe how contracts are terminated.
  - c. Describe different types of construction contracts and their specific purpose.
  - d. List bidding procedures.

*Related Academic Topics (See Appendix A): C2, C3, C5, C6, M2, M3, M5, M7, S8*

*Workplace Skills (See Appendix B): WP2, WP5, WP6*

4. Demonstrate the ability to complete a materials list for a structure.
  - a. Describe the procedures of doing a materials list.
  - b. Explain the purposes for a materials list.
  - c. Complete a materials form for a construction project.

*Related Academic Topics (See Appendix A): C2, C3, C5, C6, M2, M3, M5, M7, S8*

*Workplace Skills (See Appendix B): WP2, WP5, WP6*

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SECTION III:  
RECOMMENDED TOOLS AND EQUIPMENT

RECOMMENDED TOOLS AND EQUIPMENT FOR  
POSTSECONDARY RESIDENTIAL CARPENTRY TECHNOLOGY

1. Air compressor (1)
2. Awl, scratch (2)
3. Bar, ripping (2)
4. Bit, expansion (2)
5. Bit set, auger (¼" - 1") (2)
6. Bit set, forstner (¼" - 3") (2)
7. Brace, wood hand (4)
8. C-clamp, assorted sizes (8)
9. C-clamp, vise grip (4)
10. Cabinet, flammable materials (1)
11. Chalkline (4)
12. Chisel, ripping (1)
13. Chisel set, wood (¼" - 1 ½") (2)
14. Clamp, bar (48") (6)
15. Clamp, bar (72") (6)
16. Computer w/operating software w/multimedia kit (1)
17. Cutter, bolt (1)
18. Dividers, wing (2)
19. Drill, cordless (14.4V) (2)
20. Drill, hammer (½") (1)
21. Drill, portable (½") (1)
22. Drill press (14" w/vise) (1)
23. Drill set, spade (¼" - 1 ½") (1)
24. Drill set, twist (1/16" - ½") (1)
25. Drill, portable (½", right angle) (1)
26. Drill, portable (¾") (2)
27. Dust collection system for shop (1)
28. Extension cord (25' 12/3 conductor) (6)
29. Extinguisher, fire (ABC) (2)
30. Eye protection and sterilization chest (w/20 pr. safety glasses) (1)
31. File, metal double-cut (3)
32. File, wood (flat, assorted sizes) (6)
33. File, wood rasp (half-round) (6)
34. Grinder, pedestal (1)
35. Gun, ramset (1)
36. Hacksaw (1)
37. Half hatchet (1)
38. Hatchet, shingle hammer (2)
39. Hammer, straight claw (6)
40. Hammer, sledge (3)
41. Hammer, curved claw (13 oz.) (2)

42. Hammer, curved claw (16 oz.) (12)
43. Handsaw, rip (1)
44. Handsaw, crosscut (8)
45. Hose, air (50') (2)
46. Jointer (1)
47. Knife, putty (4") (2)
48. Knife, putty (6") (2)
49. Knife, putty (2") (2)
50. Knife, utility (2)
51. Ladder, extension (16') (1)
52. Ladder, step (6') (2)
53. Ladder, step (8') (2)
54. Level, laser transit w/tripod and leveling rod (1)
55. Level, carpenter's aluminum (or wood) (48") (2)
56. Level, carpenter's aluminum (or wood) (24") (2)
57. Mallet, rubber (1)
58. Nailer, pneumatic finish (1)
59. Nailer, pneumatic framer (1)
60. Plane, block (2)
61. Plane, electric block (2)
62. Plane, jack (2)
63. Pliers, channel lock (12") (2)
64. Pliers, diagonal (2)
65. Pliers, lineman's (side cutters) (1)
66. Pliers, needlenose (2)
67. Pliers, slip joint (2)
68. Pliers, vise grip (2)
69. Plumb bob (2)
70. Printer, dot matrix (1)
71. Router, w/bits (3)
72. Rule, folding (6') (12)
73. Safety kit (OSHA approved) (1)
74. Sander, belt (3)
75. Sander, finish w/disc (1)
76. Sander, portable finishing (3)
77. Sander, stationary (w/disk and 6" x 48" belt) (1)
78. Saw, back (2)
79. Saw, band (20") (1)
80. Saw, circular (7 ¼" portable) (4)
81. Saw, coping (2)
82. Saw, hole set (1" - 2 ½" w/arbor) (1)
83. Saw, keyhole (2)
84. Saw, panel (1)
85. Saw, motorized miter (2)

86. Saw, radial arm (1)
87. Saw, reciprocating (1)
88. Saw, saber (3)
89. Saw, table (2)
90. Scaffold kit (Safeway) (5') (2)
91. Screwdriver (Phillips, assorted sizes) (10)
92. Screwdriver set (spiral w/bits) (2)
93. Screwdriver (flat blade, assorted sizes) (10)
94. Set, nail (assorted sizes) (6)
95. Shaper w/accessories and bits (1)
96. Shield, safety (4)
97. Shovel, round point (2)
98. Shovel, square point (2)
99. Snips, aviation (straight) (2)
100. Snips, tin (2)
101. Square, framing w/rafter chart (12)
102. Square, combination (12)
103. Square, speed (6)
104. Square, try (2)
105. T-bevel (2)
106. Table, workbench (4)
107. Tape, fiberglass/steel (100') (2)
108. Tape, steel (25') (12)
109. Vise, woodworking (5") (8)
110. Wheelbarrow (6 cu. ft.) (1)
111. Wrench set, combination (SAE) (1)
112. Wrench, adjustable (12") (1)
113. Wrench, adjustable (10") (1)
114. Wrench, adjustable (8") (1)
115. Wrench set, combination (Metric) (1)
116. Wrench set, sockets w/ratchets and pullhandles (SAE  $\frac{3}{8}$ " drive) (1)
117. Wrench set, sockets w/ratchets and pullhandles (Metric  $\frac{3}{8}$ " drive) (1)

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## RECOMMENDED INSTRUCTIONAL AIDS

1. Calculator (1)
2. Cart, AV (for TV-VCR) (1)
3. TV-VCR (1)
4. Video out (Microcomputer to TV monitor) (1)
5. Estimating Software for Residential Carpentry (1)

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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

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.

## Foundations (CAT 1116)

- \_\_\_\_\_ 1. Explain preparations for building foundations.  
 \_\_\_\_\_ 2. Prepare for and build a foundation.

## Framing I (CAT 1216)

- \_\_\_\_\_ 1. Explain terms and materials associated with floor and wall framing.  
 \_\_\_\_\_ 2. Install floor framing.  
 \_\_\_\_\_ 3. Install wall framing.

## Advanced Blueprint Reading (CAT 1133)

- \_\_\_\_\_ 1. Explain the elements of residential plans.  
 \_\_\_\_\_ 2. Prepare a bill of materials from a set of plans using manual procedures and/or computer equipment and software.

## Framing II (CAT 1225)

- \_\_\_\_\_ 1. Explain safety features as used in residential carpentry ceiling and roof framing.  
 \_\_\_\_\_ 2. Explain procedures for ceiling joists and roof construction.  
 \_\_\_\_\_ 3. Fabricate ceiling joists and roof framing components.

## Roofing (CAT 1413)

- \_\_\_\_\_ 1. Explain roofing materials and applications in roofing.  
 \_\_\_\_\_ 2. Demonstrate procedures for installing roof.

## Exterior Finishing (CAT 1513)

- \_\_\_\_\_ 1. Explain procedures for installing different types of trim.

- \_\_\_\_\_ 2. Demonstrate procedures for installing exterior wall covering according to instructor's specifications.

Interior Finishing and Cabinet Making (CAT 1316)

- \_\_\_\_\_ 1. Explain terms and materials associated with interior finishing and cabinet making.  
\_\_\_\_\_ 2. Demonstrate procedures for installing interior finishing, cabinets, and floor covering.

Principles of Multi-Family and Light Commercial Construction (CAT 2113)

- \_\_\_\_\_ 1. Explain safety precautions associated with multi-family and light commercial construction.  
\_\_\_\_\_ 2. Demonstrate procedures used in multi-family and light commercial construction.

Advanced Cabinet Making (CAT 2133)

- \_\_\_\_\_ 1. Explain principles of advanced cabinet making.  
\_\_\_\_\_ 2. Perform procedures for building and installing cabinets and shelves.

Advanced Interior Finishing (CAT 2313)

- \_\_\_\_\_ 1. Explain procedures for advanced ceiling and wall interior finishing.  
\_\_\_\_\_ 2. Demonstrate procedures for stair calculation and construction.

Special Problem in Residential Carpentry Technology (CAT 291(1-3))

- \_\_\_\_\_ 1. Prepare a written agreement.  
\_\_\_\_\_ 2. Prepare a written report of activities.  
\_\_\_\_\_ 3. Follow written guidelines for special problems.

Work-Based Learning in Residential Carpentry Technology (CAT 292(1-6))

- \_\_\_\_\_ 1. Apply technical skills needed to be a viable member of the work force.  
\_\_\_\_\_ 2. Apply skills developed in other program area courses.  
\_\_\_\_\_ 3. Apply human relationship skills.  
\_\_\_\_\_ 4. Apply and practice positive work habits and responsibilities.

- \_\_\_\_\_ 5. Work with instructor and employer to develop written occupational objectives to be accomplished.
- \_\_\_\_\_ 6. Assess accomplishment of objectives.
- \_\_\_\_\_ 7. Utilize a set of written guidelines for the work-based learning program.