YOSEMITE REGIONAL OCCUPATIONAL PROGRAM

CONSTRUCTION TECHNOLOGY 1-2, 3-4

CBEDS Code: 5501/5502

JOB TITLES	DOT NO.
Construction Worker I	869.664-014
Construction Worker II	869.687-026

Course description:

Construction Technology 1-2. This course is designed to provide in-depth hands on experience in all major facets of the construction trades. This course covers safety; use of hand and power tools; measurement; print reading; estimating; planning and design; construction math; construction materials; finishes and coating; and a wide variety of analytical and construction skills needed to build a house. The student will have attained the skills to be job ready when he/she finishes the course.

Construction Technology 3-4. This course is a continuation of the Construction Technology 1-2 class. It may only be taken with the instructor's approval. The Construction Technology 3-4 class provides the student with an opportunity to act as a "supervisor" since many of the skills needed to construct a building will have already been mastered in Construction Technology 1-2. After completion of this class, the student will have "apprenticeship" skills or will be job ready. Therefore, all construction skills will have been covered, and future employment will solely be determined by the student's skill level attained, and the desire to work.

The contents of these courses can be linked to the Tech Prep and School to Work programs, and can be used to develop career paths for students.

Recommended Prerequisites -

Construction Technology 1-2: Construction/Woodworking Technology 1-2
Construction Technology 2-3: Construction Technology 1-2 and instructor's approval.

DURATION: 2 Semesters/ 360 total hours (for each class)
CREDIT: 10 UNITS
MEETS GRADUATION REQUIREMENTS IN: Practical Arts
REQUIRED FOR GRADUATION: No
MEETS UNIVERSITY OF CALIFORNIA ENTRANCE REQUIREMENTS: No
MEETS CALIFORNIA STATE UNIVERSITY ENTRANCE REQUIREMENTS: No
ARTICULATED WITH POSTSECONDARY INSTITUTIONS: No

INSTRUCTIONAL MATERIALS:

Basic Texts:

Carpentry, Leonard Koel, American Technical Publishing, 1990.
Carpentry & Building Construction. John L. Feirer, Silbert R. Hutchings

Supplementary Texts:

Carpentry, Workbook, Leonard Koel, American Technical Publishing, 1990.
OSHA Safety Manual.
Uniform Building Code.
Modern Carpentry, Willis M. Wagner, Goodheart-Wilcox Publishing, 1987.
Wood Materials and Processes, John L. Feirer, Chas. A Bennett Co., 1975.
Woodworking for Industry, John L. Feirer, Chas. A. Bennett Co., 1971.
Building Trades Blueprint Reading, Part 1, Elmer W. Sundberg, American Technical Society, 1973.
Course in Carpentry, Test and Workbook, Volumes 1 and 2, California State Dept. of Education.
Practical Problems in Mathematics for Carpenters, Delmar Publishers, 1990.
Mathematics Through Construction, Gary Ellyson, Kenneth E. Clouse (KECCo), 1990.
Curriculum Materials, Associated General Contractors.

Date outline matched against state framework, model curriculum standards, and state curriculum guides: October 1994; May 1998.

Instructional Content Instruction will include:	**Student Outcomes** At the end of instruction, the student will be able to:	**Course/Hours** 1-2 3-4			
***1. Construction Career Opportunities, Leadership, Gender Equity*.** 1. Review desirable personal traits. 2. Review skills needed for employment in field. 3. Review possible careers in field. 4. Review opportunities offered through VICA (Vocational Industrial Clubs of America) 5. Demonstrate that opportunities in field are available without regard to race, sex, national origin or handicap. 6. Correct way to fill out a job application. 7. Resume' development 8. Review and identify "apprenticeship" 9. Changing attitudes and trends that affect the lives of all students. 10. Employment outlook within the construction field. 11. Visit a local construction firm and observe employees at work. 12. Explore areas or levels of education in which teaching opportunities are available in construction technology. 13. Review sex stereotyping and bias with the requirements of carious jobs and the individual's ability to do the job. 14. Review "Help Wanted" columns in the daily newspaper for a week.	*Goal: The student will be able to demonstrate competency in lifelong career planning skills, develop leadership abilities, and develop an awareness of programs offered in higher education without regard to race, sex, national origin, or handicap as they relate to construction* A. Identify personal traits (strengths, values and weaknesses) B. Identify personal traits to discuss with an employer. C. Identify at least five skills learned in class which transfer to a job. D. Identify at least three possible career choices in the field. E. Describe the opportunities that exist through their local U.S.A chapter. F. Demonstrate that opportunities are available in the field without regard to race, sex, national origin or handicap G. Correctly fill out a job application and complete a resume' H. Understand the features of the apprenticeship program I. Understand and adapt to changing attitudes and trends which affect the lives of all students. J. Describe the employment outlook within the construction field. K. After visiting a local construction firm and observing employees, will be able to prepare a list of the different occupations that were observed. L. Name several specific areas or levels of education in which teaching occupations are available in construction technology. M. Evaluate sex stereotyping and bias with the requirements of various jobs and the individual's ability to do that job. N. After reviewing "Help Wanted" ads, can prepare a list of construction jobs available, wages, minimum requirements, and whether additional benefits, such as insurance, are offered.	**CTE**	**Anchor** 2.0 2.1 2.2 2.6 3.0-3.9	**C L** L2 N/A	**CC** 2 2

Instructional Content Instruction will include:	**Student Outcomes** At the end of instruction, the student will be able to:	**Course/Hours** 1-2 3-4			
2. Attitudes, behaviors, and personal *characteristics valued by employers.* 1. Positive attitudes & work ethic. 2. Interpersonal skills. 3. Ability to work in a team. 4. Personal traits that impact work performance.	*Goal: The student will understand attitudes, behaviors, and personal characteristics valued by employers* Demonstrate the following attitudes, behaviors and personal characteristics: A. Responsibility B. Dependability C. Promptness D. Willingness to learn new skills E. Attentiveness during instruction F. Getting along with others G. Respect for others H. Honest and integrity I. Pride in work J. Flexibility K. Not being defensive when corrected L. Working up to capacity M. Being pleasant and cheerful N. Showing strong motivation to succeed O. Good personal appearance P. Organized Q. Constructively assisting others	**CTE**	**Anchor** 3.0 3.1 3.2 7.0 7/2 7/3 7/7 8.0 8.4 9.0 9.3	**CL** 2	**CC** 2
3. Construction Technology; Orientation. 1. Basic orientation procedures. 2. Site rules and procedures 3. History and knowledge of the building trade 4. Discuss relevance of promptness and regular attendance, cleanliness of work area, conservation of supplies, and diligent work in class 5. Review materials and resources for getting information on construction process and procedures	*Goal: The student will understand the concepts of residential construction & the manner in which residential structures are built.* A. Understand site rules and procedures B. Demonstrate knowledge of the history and nature of the building trade C. Understand relevance of promptness and regular attendance, cleanliness of work area, conservation of supplies, and diligent work. D. Locate materials and resources for getting information on construction process and procedures.	D1.1 D1.2	4.0 4.1 4.3 4.4 4.5 6.0 6.1	2	2

Instructional Content Instruction will include:	**Student Outcomes** At the end of instruction, the student will be able to:	**Course/Hours** 1-2 3-4			
***4 Safety*.** 1. Review district's safety program 2. Administer shop safety tests and explain shop safety 3. Parental acknowledgment of safety requirements and conduct expectations 4. Appropriate site maintenance practices, cleaning and appropriate storing and stacking of materials.	*Goal: The student will understand the importance of personal safety, work-site safety, & ladder & scaffold safety.* A. Satisfactorily complete district's safety program B. Pass shop safety tests and demonstrate shop safety. C. Obtain parental acknowledgment of safety requirements and conduct expectations D. Safely administer appropriate site maintenance practices, including cleaning and appropriate storing and stacking of materials	**CTE**	**Anchor** 6.0-6.12	**CL** 16-20	**CC** 20
5. Basic planning and design procedures 1. Plot and floor plans 2. Code and zoning requirements 3. Building layout 4. House placement on a building lot 5. Footing and foundation building lines 6. Review site preparation terminology 7. Site utilities 8. Drawing plot and floor plans	*Goal: The student will understand the planning & layout processes used in construction technology.* A. Identify a plot and floor plan B. Recognize code and zoning requirements C. Layout a building in the field D. Locate a house on a building lot E. Establish footing and foundation building lines F. Define site preparation terms G. Identify site utilities H. Draw a plot and floor plan	D3.0	10.0-10.3	2	2
6. Hand tools 1. Review nonpower hand tools use in field 2. Safe and appropriate use of each tool 3. Review all parts of each hand tool used on the job 4. Maintenance and sharpening of tools 5. Prices of tools used in building a house	*Goal: The student will understand the names, functions, & safe uses of the nonpower handtools used in construction technology.* A. Properly identify and use hand tools, including measuring devices, levels, squares, hammers, bard, wrenches, saws, clamps, screwdrivers, pliers, drill bits, chisels, and planes B. Practice safe and appropriate use of each tool. C. Identify all parts of each hand tool used on the job D. Properly maintain and sharpen each tool E. Tally a list of tool prices to be used when building a house		6.0 6.5 6.10 6.12 10.5	2-4	4

Instructional Content Instruction will include:	**Student Outcomes** At the end of instruction, the student will be able to:	**Course/Hours** 1-2 3-4			
7. Small power tools 1. Supervised manipulation of small power tools 2. Proper and safe operation of saws, drills, planes, sanders, and routers 3. Review function of each small power tool used 4. Maintenance of small power tools 5. Written and practical tests will be administered prior to any manipulative activity 6. Review all parts of each small power tool 7. Maintenance of tools, including sharpening when appropriate	*Goal: The student will understand the names, functions, & safe uses of the power tools & machines used in construction technology.* A. Show competence in using small power tools through supervised manipulation B. Operate saws, drills, planes, sanders, and routers properly and safely C. Describe the function of each small power tool used. D. Respect and maintain the tools E. Successfully complete written and practical tests prior to any manipulative activity F. Identify all parts of each small power tool G. Properly maintain each tool, including sharpening when appropriate	**CTE**	**Anchor** 6.0 6.5 6.10 6.12 10.5	**CL** 2-4	**CC** 4
8. Power machinery 1. Administer written, visual, and oral test on each power machine demonstrated 2. Safe operation of the radial arm saw, table saw, drill press, nailers, staplers and other necessary power machinery 3. Review all parts on power machinery 4. Proper maintenance and sharpening of bits/blades on each power machine	*Goal: The student will demonstrate competency using power machinery* A. Pass a written, visual and oral test on each power machine operated. B. Safely operate the radial arm saw, table saw, drill press, nailers, staplers and other necessary machinery C. Identify all parts on all power machines E. Properly maintain and sharpen all bits/blades on each power machine.		6.0 6.5 6.10 6.12 10.5	2-4	4-6
9. Construction math 1. Addition, subtraction, multiplication, and division of whole numbers, decimals, fractions, and mixed numbers 2. Calculation of percentages, perimeters, areas, and volume of geometric figures. 3. Calculation of squares, the right triangle and its uses, and cubic measurement 4. Use of tape measure and architect's scale 5. Angle measurement 6. Calculation of rafter pitches 7. Review board foot, square foot, and lineal foot formulas.	*Goal: The student will understand mathematical processes & how to apply them in the construction industry.* A. Competently add, subtract, multiply, and divide whole numbers, decimals, fractions, and mixed numbers B. Calculate percentages, perimeters, areas, and volume of geometric figures C. Figure squares, the right triangle and its uses, and cubic measurement D. Master the tape measure and the architect's scale E. Measure angles F. Calculate rafter pitches. G. Competently use the board foot, square foot, and lineal foot formulas	D2.0 D2.1 D2.2 D2.3	5.0 5.1 5.3 11.0 11.1	4-6	4-6

Instructional Content Instruction will include:	**Student Outcomes** At the end of instruction, the student will be able to:	**Course/Hours** 1-2 3-4			
		CTE	**Anchor**	**CL**	**CC**
10. Construction of wood/construction joints 1. Butt, lap, and miter joints 2. Function of the joiner in construction 3. Function of construction joinery in freestanding buildings 4. Fabrication of construction joints 5. Construction of butt, lap, and miter joint using different tools 6. Testing the strength of wood joints	*Goal: The student will demonstrate competency in the construction of wood/construction joints* A. Build a structure that contains a butt, lap, and miter joint B. Discuss the importance of the joiner in construction C. Explain why construction joinery is the mainstay to any free standing building D. Discuss the fabrication of construction joints. E. Construct a butt, lap, and miter joint using hand, small power, and power tools F. Stress test the strength of each of the wood joints and determine which is the strongest	D6.0 D6.3 D6.5 D6.6	5.0 5.1-5.4 10.0 10.1 10.3	44-50	52
11. Fasteners and hardware 1. Anchors, nails, screws and staples 2. Use of adhesives, anchors, nails, screws, and staples 3. Installing fasteners in or through a piece of wood 4. Review and identify "fastener" and "hardware." 5. How fasteners and hardware are used in constructing a house 6. Screw and nail fasteners 7. Pneumatic and electrical fastening devices 8. Comparing power driven fastening devices and hand operated tools.	*Goal: The student will demonstrate the understanding of fasteners & hardware.* A. Identify different types of anchors, nails, screws, and staples B. List and describe proper use of adhesives, anchors, nails, screws and staples C. Install each fastener in or through a piece of wood D. Define the words "fastener" and "hardware" E. Observe, then use, fasteners and hardware in constructing a house F. Differentiate between screw and nail fasteners. G. Operate the different pneumatic and electrical fastening devices used in today's construction. H. Price each power driven fastening device and compare it to a standard hand operated tool that will do the same job	D6.0 D6.6 D7.0 D7.2 D8.0 D8.1	5.0 5.1-5.4	50-52	52-56
12. Abrasives 1. Garnet, aluminum oxide, and silicone carbide sandpaper 2. Sanding techniques 3. Compare hand sanding, small power tool sanding, and machine sanding	*Goal: The student will demonstrate competency in identifying & using abrasives* A. Differentiate between garnet, aluminum oxide, and silicone carbide sandpaper. B. Perform proper sanding techniques C. Smooth a board using each type of sandpaper. D. Evaluate the difference between hand, small power tool, and machine sanding techniques	A8.1 A8.2	5.0 5.2 5.3 5.4 10.0 10.1 10.3	N/A	2

Instructional Content Instruction will include:	**Student Outcomes** At the end of instruction, the student will be able to:	**Course/Hours** 1-2 3-4			
		CTE	**Anchor**	**CL**	**CC**
13. Finishes and coatings 1. Proper use of patching materials 2. Methods to apply paint 3. Staining wood 4. Use of pneumatic equipment 5. Use of finishing equipment	*Goal: The student will understand the application of finishing materials.* A. Use patching materials to fill marks and dents. B. Spray, roll and brush the paint. C. Apply interior and exterior paint to given surfaces D. Stain wood by brushing and wiping on the finish. E. Spray on paint, using pneumatic equipment F. Identify all parts of finishing equipment used.	D7.0 D8.0	5.3 10.1 10.3	38-40 N/A	38 1
14. Construction products and related materials 1. Review species of softwood and hardwood 2. Characteristics and grading wood 3. Imperfections in wood 4. Survey different dimensions, costs, and uses of timber 5. Types and uses of metal fasteners 6. Manufacture and grading of plywood 7. Plywood and lumber grade markings 8. Uses of heavy timber in construction 9. Calculating construction costs 10. Visiting a lumber mill, or view a video on how a tree is made into lumber and other by-products	*Goal: The student will know the names, properties, & appropriate use of materials & supplies used in the construction industry.* A. Identify various species of softwood and hardwood B. Explain the characteristics and grading of wood C. Identify imperfections in wood D. Recognize the different dimensions, costs, and uses of lumber. E. Identify metal fasteners, including nails, bolts, clips, and hangers F. Describe how plywood is manufactured and graded. G. Understand grade markings on plywood and lumber. H. Understand how heavy timbers are used in the construction trade. I. Calculate the cost for the house being built. J. See how a tree is made into lumber and other byproducts	A1.3 A1.4 A5.1 A5.4 A5.7 A5.11 D2.3 D6.2 D6.10 D6.11 D6.15	5.3 10.1 10.3	1 0-2	1 1
15. Print reading 1. Review blueprints and construction drawings, and the lines and symbols utilized 2. Blueprint drawing 3. Using an architect's scale, angles and different drafting 4. Review measuring instruments used	*Goal: The student will understand the use of blueprints in the planning & layout process, & demonstrate comprehension of print reading* A. Demonstrate an understanding of: a. Plot plans b. Section views c. Transverse sections d. Interior elevations e. Exterior elevations f. Foundation plans g. Shop drawings h. All abbreviations and symbols used in the above. B. Draw a blueprint of a house C Use an architect's scale, as well as angles and different drafting D. Thoroughly understand measuring instruments used in construction, including tapes, rules, levels	D3.0	10.1 10.2 10.3	5 NA	5 4

Instructional Content Instruction will include:	**Student Outcomes** At the end of instruction, the student will be able to:	**Course/Hours** 1-2 3-4			
16. New and emerging technology 1. Review new methods and materials that coincide with the construction trade. 2. How to incorporate new materials in any plans. 3. Review impact of computer-operated machinery in construction.	*Goal: The student will demonstrate understanding of new & emerging technology* A. Understand the new methods and materials that coincide with the construction trade. B. Incorporate new materials in any plans. C. Understand the fact that we are in the computer age, and much of industry and the machine that manufacture construction products are computer operated.	**CTE**	**Anchor** 4.0 4.1 4.2 4.3 4.4 4.5	**CC** 0-1	**CL** 1
17. Estimating costs 1. Factors necessary to estimate a given job. 2. Defining the word "estimate" and how it is used when figuring a job. 3. How to estimate the cost of a house. 4. How to calculate labor & overhead costs. 5. How to determine profit gain.	*Goal: The student will be able to determine how to "estimate" the cost of a given job* A. Determine types, sizes, and amounts of materials, labor, overhead costs, and profits necessary to estimate a given job. B. Define the word "estimate" and how it is used when figuring a job C. Estimate the cost of the house being built D. Calculate labor & overhead costs for the house being built E. Determine profit gain on the house	D2.3	5.2 5.4 10.0 10.1 10.2	2-4 0-1	2-4 1
18. Construction zones and codes 1. Instruction on zoning laws. 2. Administration of building codes. 3. Explanation of standard building codes, zoning, setbacks, & county specifications. 4. Inspection agencies and departments. 5. Visit to local zone and code building agency(ies) to talk about local ordinances. 6. How codes apply to the construction being built. 7. Local, county, and state building codes and zones, and agencies/departments.	*Goal: The student will demonstrate an understanding for construction zones and codes.* A. Develop an understanding for zoning laws. B. Recognize how building codes are administered. C. Satisfactorily explain standard building codes, zoning, setbacks, and county specifications D. Identify inspection agencies and departments E. Familiarized with local zone and building code agencies. F. Explain how codes apply to the construction being built. G. Identify local, county, and state building codes and zones, and the different agencies and departments	B8.8	8.0 8.1 8.2 8.3 10.3	2-4 0-1	2-4 1

Instructional Content Instruction will include:	**Student Outcomes** At the end of instruction, the student will be able to:	**Course/Hours** 1-2 3-4			
		CTE	**Anchor**	**CC**	**CL**
19. Mapping/surveying 1. How to locate a building and all related walks, drives, and utilities 2. How to identify roads, walks, and existing structures on a drawing. 3. Understand the location of a building and how it relates to all existing structures. 4. Surveying a plot 5. Identifying property lines 6. How to stake and locate a building	*Goal: The student will demonstrate an understanding of mapping/surveying for proper placement of a structure in relation to its existing elements* A. Locate a building and all related walks, drives, and utilities. B. On a drawing, identify roads, walks, and existing structures C. Develop an understanding as to the location of a building & how it relates to all existing structures. D. Survey the plot for a house. E. Identify property lines. F. Properly stake and locate the building in its relation to all walks, drives, and utilities	D3.0 D3.1 D3.2 D3.3 D3.4 D3.5 D4.0 D4.1 D4.2	8.0 8.1 8.2 8.3 10.3	2 0-1	1 1
20. Using a level and transit 1. Proper care, handling, set up, and adjustment of the instruments 2. Parts of the instrument 3. How to establish grades and elevations 4. Angles 5. Site preparation 6. Basic layout and the use of the level transit	*Goal: The student will understand the use of, & demonstrate competency in using a level and transit* A. Use proper care, handling, and demonstrate how to set up and adjust the instruments B. Name all of the instrument parts. C. Establish grades and elevations. D. Measure and lay out angles E. Practice preparing a site using the instruments F. Explain basic layout and demonstrate the use of the level transit, as well as advanced procedures of laying out a site	D4.1 D4.2 D4.3 D4.4	10.1 10.5 11.1	2	1
21. Constructing foundation forms and floor framing 1. Ingredients of concrete and additions 2. How to construct footings and piers, and forms and floor framing 3. How to layout forms for concrete floating slabs 4. The use of form ties, fasteners, screens, and setting of forms 5. Use of mudsills, anchor bolts, and how to set up stairs and steps 6. Termite and rot control 7. How to frame stairs and step openings 8. Terms and layout for floor joists, underpinning girders, and subfloor system 9. How to lay floor joists, cut openings, and lay subfloor 10. Accurate cutting of frame members	*Goal: The student will understand the function & construction of concrete forms, & the procedures & techniques of framing.* A. Explain the use of the ingredients of concrete and additions. B. Construct footings & piers, and forms and floor framing C. Layout forms for concrete floating slabs. D. Explain the use of form ties, fasteners, screens, and setting of forms. E. Explain the reason for mudsills, anchor bolts, and how to set up stairs and steps. F. Show understanding of termite and rot control. G. Frame stairs and step openings H. Use terms and layout for floor joists, underpinning girders, and subfloor system by defining components in standard trade terms. I. Lay floor joists, cur openings, and lay subfloor. J. Cut frame members accurately.	D5.0 D6.1 D6.2 D6.3 D6.4	10.1 10.2 10.3	3	N/A

Instructional Content Instruction will include:	**Student Outcomes** At the end of instruction, the student will be able to:	**Course/Hours** 1-2 3-4			
22. Laying out walls and partitions 1. Use of blueprints in layout 2. Study different types of wall frames, wall and stud layout, and window and door layout 3. Corner posts and partition studs, and their uses 4. Wall bracing, lining, and plumbing, and backing for interior finish & attachment	*Goal: The student will understand the processes, & demonstrate competency in laying out walls and partitions.* A. Read blueprint for proper layout. B. Show understanding of the different types of wall frames, wall and stud layout, and window and door layout. C. Identify corner posts and partition studs, and their uses.	**CTE** D6.5 D6.6 D6.7 D6.8	**Anchor** 10.1 10.2 10.3	**CC**	**CL** 36-40
5. Code requirements 6. Framing lines. 7. Bottom & top plates for studs, windows, doors, and modular wall section breaks 8. How to cut plates, studs, windows, and door headers, cripples, and sills. 9. Nailing wall sections together, raising into place, and anchoring adjacent wall sections. 10. Installing let in braces. 11. How to tie all walls together. 12. How to plumb and line the walls. 13. Advanced projects outlined by the instructor that will provide advanced practice in rough framing of walls and partitions.	D. Demonstrate an understanding of wall bracing, lining, and plumbing, as well as backing for interior finish & attachment. E. Demonstrate understanding of code requirements. F. Layout and snap framing lines. G. Layout bottom & top plates for studs, windows, doors, and modular wall section breaks. H. Cut plates, studs, windows, and door headers, cripples, and sills. I. Nail wall sections together on the floor, raise into place, and anchor adjacent wall sections. J. Install let in braces where required by code. K. Tie all walls together with top plates. L. Plumb and line the walls. M. Advanced practice in rough framing of walls and partitions.			N/A	10
23. Roof types 1. Roof types, terminology, and principles 2. Laying out common rafters 3. How to construct specialized roof framing 4. Hip, valley, and jack rafters 5. Raising a roof; gable studs, gable overhang, collar ties and purlin 6. Different types of trusses and flat desk roofs 7. Ceiling joists 8. Erecting dormers 9. Plywood sheathing on roof frames 10. How to estimate materials and costs	*Goal: The student will know the procedures, techniques, & processes used in the installation of roofing.* A. Identify and explain roof types, terminology, and their principles. B. Layout common rafters for a house, employing the rafter table book method. C. Construct specialized roof framing D. Layout hip, valley, and jack rafters. E. Raise a roof, cut in gable studs, frame gable overhang, and install collar ties and purlin F. Explain the different types of trusses and flat desk roofs G. Layout and install ceiling joists. H. Demonstrate methods of erecting dormers I. Lay plywood roof sheathing on roof frames J. Estimate materials and costs	D6.10 D6.11 D6.12 D6.13 D6.14 D6.15 D6.16	10.1 10.2 10.3	15	N/A

Instructional Content Instruction will include:	**Student Outcomes** At the end of instruction, the student will be able to:	**Course/Hours** 1-2 3-4			
24. Roofing materials 1. Review the different types of roofing materials used in today's industry 2. Review different types of plywood used 3. Shingle and shake roofs 4. Measuring roofing paper 5. Fasteners and materials used to install a roof 6. Tar and its application 7. Clay tile roofing 8. New and emerging technology	*Goal: The student will know the names, properties, & appropriate use of materials & supplies used to install roofing.* A. Identify the different types of roofing materials used. B. Evaluate the different types of plywood C. Identify the difference between a shingle and shake roof D. Select appropriate roofing paper E. Install a roof using fasteners and materials F. Explain the use of tar and its application. G. Identify clay tile roofing H. Adapt to the uses of new and emerging technology in roofing materials	**CTE** D6.16	**Anchor** 5.4 11.1	**CC** 4	**CL** N/A
25. Interior finishes 1. Blueprints, specifications, and tools used for interior finish work 2. Finish hand tools 3. Interior wall coverings 4. Installing cabinets and baseboards 5. Sheet rock 6. Hanging and trimming interior doors	*Goal: The student will understand the installation of interior finishing materials, & the application of exterior finishes.* A. Illustrate a use of blueprint specifications and tools used for interior finish work B. Use finish hands tools C. Demonstrate an understanding for interior wall coverings D. Explain how, and install cabinets and baseboards. E. Repair, refinish, and install sheet rock. F. Hang and trim interior doors interior/exterior finish unit.	D7.0	11.1	45-55	45-55
25. Exterior finishes 1. Exterior designs, finish materials, and tools for exterior finish. 2. Sheathing, building paper, and insulation. 3. Exterior window trim and exterior door set. 4. Exterior details, roofing materials, flashing, and caulking. 5. Siding materials. 6. Scribing prefinished wall panels. 7. Setting prehung door units and installing locks. 8. Temporary walls, and movable wall and door. 9. Administer written test on the interior/exterior finish unit.	A. Identify exterior designs, finish materials, and tools for exterior finish B. Demonstrate an understanding of sheathing, building paper, and insulation C. Trim an exterior window and set an exterior door. D. Recognize exterior details, roofing materials, flashing, and caulking. E. Identify types of siding and install appropriate siding on building projects F. Scribe prefinished wall panels. G. Set a prehung door, and install a cylindrical lock. H. Demonstrate an understanding of temporary walls, and movable wall and door I. Pass written test.	D8.0	11.1		

Instructional Content Instruction will include:	**Student Outcomes** At the end of instruction, the student will be able to:	**Course/Hours** 1-2 3-4			
26. Floor covering materials 1. Review various floor coverings in use 2. Calculating footage 3. Calculating costs 4. How to install various floor coverings 5. Figuring square footage	*Goal: The student will understand the materials & procedures used in installing floor coverings.* A. Identify the different types of floor coverings used in today's industry B. Compute square and lineal footage. C. Calculate the cost for a given floor covering. D. Install ceramic tiles, carpeting, vinyl sheeting, and a hardwood floor cover E. Differentiate between the costs of different floor coverings	**CTE**	**Anchor** 11.1	**CC** N/A	**CL** 1-3
27. Plumbing system 1. Basic pipe connections and fittings 2. How to install backing 3. Using blueprints 4. Minor plumbing repairs. 5. Plumbing layout 6. Local sewage system 7. Hooking up fixtures	*Goal: The student will know the procedures, techniques, & processes used in plumbing.* A. Make basic pipe connections and fittings with plastic, copper, and iron pipe B. Install backing for fixture. C. Identify plumbing specifications from blueprints. D. Repair minor problems with sinks, drains, and toilets. E. Layout the plumbing for a house. F. Understand how plumbing is tied in with the local sewage system. G. Hook up a bathroom vanity, bathroom shower, tub, and toilet.	D10.0	11.0 11.1	8-12 0-4	8-12 2
28. Electrical system 1. Determining number of circuits needed 2. Service panel layout 3. Small appliance circuits 4. 3-way and 4-way switch circuits 5. Requirements for special purpose circuits 6. Using floor plans to determine electrical need	*Goal: The student will know the materials, procedures, techniques, & processes used in electrical wiring..* A. Determine number of circuits based on square footage. B. Lay out the service panel. C. Plan small appliance circuits. D. Understand 3-way and 4-way switch circuits. E. Determine requirements for special purpose circuits, including Air conditioning, Heating, Waterheater (electrical), Range, Utility circuits, GFCI circuits F. Use floor plans to determine electrical need for plugs, lights, and switches.	D11.0	11.0 11.1	6-10	3-5

Instructional Content Instruction will include:	**Student Outcomes** At the end of instruction, the student will be able to:	**Course/Hours** 1-2 3-4			
29. Insulation 1. Basic types of insulation 2. Basic methods for installing insulation 3. Measuring lineal footage	*Goal: The student will know the materials, procedures, techniques, & processes used in insulation.* A. Identify basic types of insulation. B. Explain basic methods for installing insulation. C. Install insulation at the building site. D. Measure lineal footage.	**CTE**	**Anchor** 10.1 10.2	**CC** 16-20	**CL** N/A
30. New and emerging technology 1. Review new methods, materials and equipment that coincide with the construction trades 2. Effects of computers on the industry	*Goal: The student will demonstrate an understanding of new emerging construction trades technology* A. Identify the new methods, materials and equipment that coincide with the construction trades. B. Discuss the computer age and its effects on the construction industry.		4.0 4.1 4.2 .43 4.4 4.5	2-6	2-6