



V. COURSE DESCRIPTION: This course is structured to instruct students in the design nomenclature, processes, procedures, tools, machinery and safety procedures associated with various fields within the residential and commercial construction industry. Course outcomes will provide an overview of many construction industries related disciplines as well as prepare students with entry level employment skills in at least one area of the students choice. Students will receive relevant instruction and on-the-job experience in design site layout, concrete work, rough carpentry, sheet metal, finish carpentry and cabinet making, plumbing, floor covering, electrical wiring, brick and block work, dry wall, painting and roofing. Students will receive information on various employment opportunities available in the architectural engineering and building industries. Students practice communication skills by applying drawing, reading, writing, listening, speaking, visual and non-verbal skills. Methods used in achieving relevant course objectives include lecture on course content, reading assignments, demonstrations and laboratory building projects. Methods of evaluating student progress include examinations; student built projects, a final examination, class participation, attendance, participation in Skills USA Leadership and skill competition.

VI. HOURS:

Classroom	720
Community Classroom	180
Cooperative Vocational Education	360

VII. PREREQUISITES: Interest in the Construction and Technology Field.

VIII. REVISION DATE: March 13, 2008

IX. COURSE OUTLINE:

- a. CONTENT AREA SKILLS:
- i. EXPECTED STUDENT OUTCOMES
  - ii. HOURS OF INSTRUCTION

### COURSE OUTLINE

CONTENT AREA SKILLS	EXPECTED STUDENT OUTCOME	HOURS		
		CL = Classroom	CC = Comm. Class	CP = Co-op Ed.
Instruction will include:	Students will be able to:	CL	CC	CP
I. Construction Safety - To make students aware of the general construction safety procedures and the possible consequences.	1. Orientation <ol style="list-style-type: none"> <li>a) Be aware of class rules and procedures</li> <li>b) Identify major components of the class</li> </ol> 2. Personal Safety <ol style="list-style-type: none"> <li>a) Actively participate in student personal organization (cleanup and storage)</li> </ol> 3. Worksite Safety <ol style="list-style-type: none"> <li>a) Pass General Safety Test and demonstrate appropriate construction safety</li> <li>b) Understand the importance of worksite safety</li> </ol>	7	1	1
II. Project Planning and Layout – To instruct the students in the use of the English system of linear	I. Workplace Math <ol style="list-style-type: none"> <li>a) Identify the division of an inch 1/2,</li> </ol>	50	10	20

<p>measurement; To show how fractions are used in the trades; To show how to determine surface area; To show the students how to determine the volume of a non-cylindrical piece; How to determine material costs; to develop record keeping systems for construction; to demonstrate how to develop geometric shapes; demonstrate how to divide an angle using a compass or a protractor; to demonstrate how to use a sliding T-bevel or a protractor to copy an angle; to demonstrate the necessity for jigs and the method for laying them out; to show importance of designing for affordability; and to make students aware of the relationship between skills, salary, and living expenses; to demonstrate the development of a storypole; to demonstrate the development of a working drawing; to demonstrate the ability to read and understand a set of construction blue prints; to identify and demonstrate the proper use of measuring tools.</p>	<p>1/4, 1/8, 1/16, and 1/32</p> <ul style="list-style-type: none"> <li>b) Determine in which scale the rule is marked</li> <li>c) Mark objects within 1/32 of an inch</li> <li>d) Convert fractions to a common denominators</li> <li>e) Add both like and unlike fractions</li> <li>f) Subtract fractions</li> <li>g) Multiply fractions</li> <li>h) Divide fractions</li> <li>i) Given the length and width of a piece of stock be able to find the area</li> <li>j) With the area in square inches, convert it to areas in square feet</li> <li>k) With the area in square feet and the cost per square foot, be able to calculate the cost</li> <li>l) Given the thickness, width, and length, determine the board feet in a piece of stock</li> <li>m) Use fractions to determine board feet</li> <li>n) Use a calculator to determine board feet</li> <li>o) Multiply length times cost per foot to determine total cost</li> <li>p) Find area, convert to square feet and multiply time cost per square foot</li> <li>q) Find the board feet and multiply times cost per board foot</li> <li>r) Make a materials list from a sketch</li> <li>s) Find material cost</li> <li>t) Find hardware cost</li> <li>u) Find labor costs</li> <li>v) Make cost comparison</li> <li>w) Layout squares, rectangles, parallelograms, triangles, circles and polygons</li> <li>x) Divide angles using a compass</li> <li>y) Divide angles using a protractor</li> <li>z) Copy angle from a layout using a sliding T-bevels</li> <li>aa) Use sliding T-bevel to set saw blade or miter gauge</li> <li>bb) Use a protractor to transfer an angle</li> <li>cc) Use records to record total costs</li> <li>dd) Design for the best and most economical materials</li> <li>ee) Understand the difference between gross and net salaries</li> <li>ff) Determine the costs of benefits and how it effects salaries</li> </ul> <p>2. Drawing as a Tool in Construction</p> <ul style="list-style-type: none"> <li>a) Identify the various parts of a set of construction prints</li> <li>b) Demonstrate an understanding of terminology used on construction prints</li> <li>c) Develop a materials list from a working drawing</li> <li>d) Communicating with sketches</li> </ul> <p>3. Measuring Tools</p> <p>Students will be able to identify by name and</p>	<p>10</p> <p>8</p>	<p>5</p> <p>2</p>	<p>20</p> <p>10</p>
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	<p>demonstrate the proper use of:</p> <ol style="list-style-type: none"> <li>a) Tape measure and ruler</li> <li>b) Squares</li> <li>c) Marking Gauge</li> <li>d) Sliding T-bevel</li> <li>e) Protractor</li> <li>f) Laser tools</li> </ol>			
<p>III. Tool and Machine Usage – To instruct students in the proper safe use, care and maintenance of hand tools, portable power tools, and machinery, commonly used in various construction trades.</p> <p>Relationship of proper safety and proper tool maintenance.</p>	<ol style="list-style-type: none"> <li>1. Hand Tools <ol style="list-style-type: none"> <li>a) Identify and demonstrate the safe and correct use of hand tools used in various construction trades.</li> <li>b) Demonstrate the ability to clean, store and sharpen hand tools</li> </ol> </li> <li>2. Portable Power Tools and Machines <ol style="list-style-type: none"> <li>a) Demonstrate safe and correct use of portable power tools used in various construction trades.</li> <li>b) Demonstrate the ability to perform routine maintenance on portable power tools.</li> </ol> </li> </ol>	75	16	23
<p>IV. Site Layout – To instruct students in the correct method of laying out a building project on a construction site.</p>	<ol style="list-style-type: none"> <li>1. Batter Boards <ol style="list-style-type: none"> <li>a) Demonstrate the ability to construct batter boards to establish building lines and foundation elevations.</li> </ol> </li> <li>2. Survey and Layout Instruments <ol style="list-style-type: none"> <li>a) Use various layout and leveling instruments to create a level and square building foundation</li> <li>b) Use of a contractor transit</li> </ol> </li> </ol>	30	6	16
<p>V. Building Relationships between Building Technology Disciplines – To instruct students in the nomenclature, processes, procedures, tools, machinery and safety procedures of the local residential and commercial building trades.</p>	<ol style="list-style-type: none"> <li>1. Students will demonstrate a basic understanding and knowledge of the skills necessary for entry level employment skills in the following building trades: <ol style="list-style-type: none"> <li>a. Concrete</li> <li>b. Rough carpentry</li> <li>c. Sheet Metal</li> <li>d. Finish carpentry</li> <li>e. Cabinet making installation</li> <li>f. Plumbing</li> <li>g. Floor coverings</li> <li>h. Electrical</li> <li>i. Brick and block work</li> <li>j. Dry wall</li> <li>k. Painting</li> <li>l. Roofing</li> <li>m. Drafting</li> <li>n. Engineering <ol style="list-style-type: none"> <li>1. Civil</li> <li>2. HVAC</li> <li>3. Structural</li> <li>4. Electrical</li> <li>5. Fine systems</li> </ol> </li> <li>o. Architect</li> <li>p. Exterior finisher</li> </ol> </li> </ol>	540	140	270

IX. COURSE OUTLINE:

b) CAREER PERFORMANCE STANDARDS

- i) EXPECTED STUDENT OUTCOMES
- ii) HOURS OF INSTRUCTION

**COURSE OUTLINE**

CAREER PERFORMANCE STANDARDS	EXPECTED STUDENT OUTCOMES	HOURS
<p><b>Instruction will include:</b></p>	<p><b>Student will be able to:</b></p>	
<p><b>1. Personal Skills</b></p> <ul style="list-style-type: none"> <li>▪ Classroom policies &amp; procedures</li> <li>▪ Ethics               <ul style="list-style-type: none"> <li>➢ Work</li> <li>➢ Business</li> </ul> </li> <li>▪ Sexual harassment laws</li> <li>▪ Personal skills, including positive attitude, self-confidence, honesty, perseverance &amp; self-discipline</li> <li>▪ Professional appearance</li> <li>▪ Time management</li> <li>▪ Lifelong learning</li> </ul>	<p><b>1. Understand how personal skill development, including positive attitude, honesty, self-confidence, time management, &amp; other positive traits affect employability.</b></p> <ul style="list-style-type: none"> <li>▪ Demonstrate and understand classroom policies &amp; procedures</li> <li>▪ Define work and business ethics &amp; demonstrate the importance of ethical standards &amp; social responsibilities in the business environment.</li> <li>▪ Discuss the laws applicable to sexual harassment &amp; discuss tactics for handling harassment situations.</li> <li>▪ Demonstrate personal skills in class and/or business environment:               <ul style="list-style-type: none"> <li>➢ Positive attitude</li> <li>➢ Self-confidence</li> <li>➢ Honesty</li> <li>➢ Perseverance</li> <li>➢ Self-discipline</li> </ul> </li> <li>▪ Demonstrate and model personal hygiene and acceptable professional attire</li> <li>▪ Prioritize tasks and meet deadlines</li> <li>▪ Explain the importance of lifelong learning</li> </ul>	<p><b>Integrated in content area skills</b></p>
<p><b>2. Interpersonal Skills</b></p> <ul style="list-style-type: none"> <li>▪ Group dynamics</li> <li>▪ Conflict resolution and negotiations</li> <li>▪ Team Work</li> <li>▪ Etiquette across gender and cultural groups</li> </ul>	<p><b>2. Understand principles of effective interpersonal skills, including group dynamics, conflict resolution, and negotiation.</b></p> <ul style="list-style-type: none"> <li>▪ Identify and explain the key concepts of group dynamics</li> <li>▪ Discuss and demonstrate the dynamics of conflict resolution and negotiation,</li> </ul>	<p><b>Integrated in content area skills</b></p>

	<p>and their importance within the business environment</p> <ul style="list-style-type: none"> <li>▪ Demonstrate effective teamwork, share responsibilities, accept supervision and assume leadership roles</li> <li>▪ Demonstrate cooperative working relationships and proper etiquette across gender and cultural groups</li> </ul>	
<p><b>3. Thinking and Problem-Solving Skills</b></p> <ul style="list-style-type: none"> <li>▪ Critical and creative thinking skills</li> <li>▪ Logical reasoning and problem-solving skills</li> <li>▪ Numerical estimation, measurement, and calculation</li> <li>▪ Identify, locate, and organize needed information and propose, evaluate, and select alternative solutions</li> </ul>	<p><b>3. Understand the importance of critical thinking and problem-solving skill in the workplace.</b></p> <ul style="list-style-type: none"> <li>▪ Apply critical and creative thinking skills in a work environment and implement a plan of improvement as needed</li> <li>▪ Demonstrate logical reasoning and problem solving skills in a work environment</li> <li>▪ Apply numerical estimation, measurement and calculation skills to business applications including the following: <ul style="list-style-type: none"> <li>➢ Whole number math</li> <li>➢ Decimals &amp; fractions</li> <li>➢ Counting &amp; monetary functions</li> <li>➢ Use of tables &amp; graphs</li> </ul> </li> <li>▪ Recognize problem situations; identify, locate and organize needed information, and propose, evaluate and select from alternate solutions</li> </ul>	<p><b>Integrated in content area skills</b></p>
<p><b>4. Communication Skills</b></p> <ul style="list-style-type: none"> <li>▪ Written communication</li> <li>▪ Verbal and Nonverbal communication</li> <li>▪ Active and effective listening</li> <li>▪ Proper etiquette in business communications</li> <li>▪ Writing and editing skills</li> <li>▪ Use of reference material and handbooks</li> <li>▪ Oral presentations</li> </ul>	<p><b>4. Understand principles of effective communication.</b></p> <ul style="list-style-type: none"> <li>▪ Read and implement written instructions, technical manuals, written communication, and reference books</li> <li>▪ Present a positive image of verbal and nonverbal communication through use of appropriate methods</li> <li>▪ Demonstrate active and effective listening skills through verbal, nonverbal and written feedback</li> <li>▪ Demonstrate proper etiquette in business communications, including an awareness of and a requisite for international communications (languages, customs, and time zones)</li> <li>▪ Demonstrate the following writing and editing skills: <ul style="list-style-type: none"> <li>➢ Use correct grammar, punctuation, capitalization, vocabulary and spelling</li> <li>➢ Write, proofread and edit</li> <li>➢ Select and use appropriate forms of communication</li> </ul> </li> <li>▪ Exhibit a proficiency in the use of reference materials such as dictionary, thesaurus, telephone directory, almanac, zip code directory, and office handbooks</li> </ul>	<p><b>Integrated in content areas skills</b></p>

<p><b>5. Occupational Safety</b></p> <ul style="list-style-type: none"> <li>▪ Good safety practice</li> </ul>	<p><b>5. Understand occupational safety issues, including avoidance of physical hazards</b></p> <ul style="list-style-type: none"> <li>▪ Model and implement good safety practices including: <ul style="list-style-type: none"> <li>➢ Avoidance and reporting of physical hazards in the work environment</li> <li>➢ Safe operation of equipment</li> <li>➢ Proper handling of hazardous materials</li> </ul> </li> </ul>	<p><b>Integrated in content area skills</b></p>
<p><b>6. Employment Literacy</b></p> <ul style="list-style-type: none"> <li>▪ Expand awareness of career opportunities</li> <li>▪ Set employment goals and objectives</li> <li>▪ Aptitudes, personal characteristics and interests</li> <li>▪ Develop portfolio</li> <li>▪ Develop interviewing techniques</li> </ul>	<p><b>6. Understand career paths and strategies for obtaining employment</b></p> <ul style="list-style-type: none"> <li>▪ Explore career opportunities and develop a career plan</li> <li>▪ Identify steps for setting goals and writing personal goals and objectives</li> <li>▪ Examine aptitudes related to career options; relate personal characteristics and interest to educational and occupational opportunities</li> <li>▪ Develop a portfolio to include the following: <ul style="list-style-type: none"> <li>➢ Letter of Introduction</li> <li>➢ Cover letter</li> <li>➢ Resume</li> <li>➢ Thank you letter</li> <li>➢ Job application</li> <li>➢ Licenses, Certificates and Awards</li> <li>➢ Transcripts</li> <li>➢ Letters on Recommendation</li> <li>➢ Work Samples</li> </ul> </li> </ul>	<p><b>Integrated in content area skills</b></p>
<p><b>7. Technology Literacy</b></p> <ul style="list-style-type: none"> <li>▪ Apply Industry specific technology</li> <li>▪ Use Industry specific software</li> <li>▪ Demonstrate Keyboarding</li> <li>▪ Accessing information</li> <li>▪ Lifelong enhancement of technology skills</li> </ul>	<p><b>7. Understand and adapt to changing technology.</b></p> <ul style="list-style-type: none"> <li>▪ Identify and demonstrate use of appropriate technology</li> <li>▪ Identify and use industry specific software</li> <li>▪ Demonstrate proficiency in alphanumeric keyboarding</li> <li>▪ Input and retrieve information</li> <li>▪ Understand the importance of lifelong learning in adapting to changing technology</li> </ul>	<p><b>Integrated in content area skills</b></p>

**X ADDITIONAL RECOMMENDED/OPTIONAL ITEMS:**

- a. **ARTICULATION:** A 2 + 2 agreement with Hartnell Community College Construction program is proposed.
- b. **VOCATIONAL CREDIT:** 20 Credits/Year (variable)
- c. **ACADEMIC CREDITS:** None

d. INSTRUCTIONAL STRATEGIES:

1. Assign appropriate text reading
3. Lecture on course material
4. Encourage class participation
5. Select appropriate instruction material
6. Evaluate student's performance
7. Demonstrate correct use of tools (machine, portable, hand)
8. Invite guest speakers
9. Appropriate field trips
10. Assign career center projects
11. Present current event topics
12. Assign integrated projects when appropriate
13. Assign supplemental readings
14. Integrate curriculum with core academics

e. INSTRUCTIONAL MATERIALS:

1. Trade resources: Instructors, Unions, Contractors and Inspectors
2. Material Resources: Building Tools (hand/power), Materials necessary for residential and industrial construction, supplemental text materials, Videos, Trade Journals

f. CERTIFICATES:

Competency Certification in Construction

XI IDENTIFICATION DATA:

Advisory Committee Approval Date: March 13, 2008

Executive Board Approval Date: May 7, 2008

Prepared By: Sam Garcia

Date: March 13, 2008

New Course \_\_\_\_\_ Revision  X