

BI 0003 - INTRODUCTION TO CONSTRUCTION AND CNC WOODWORKING

Catalog Description

Formerly known as CET 3

Advisory: Completion with grade of "C" or better or concurrent enrollment in BI 1

Hours: 108 (36 lecture, 72 laboratory)

Description: Designed to teach the skills required to be successful in the construction and woodworking industries. Topics include fundamentals of woodworking, safe operation of hand tools, introduction to wood CNC manufacturing, project drawings, and environmentally sound design and construction techniques. Hands-on experience with construction and woodworking tools and materials based on assigned student project(s). (not transferable)

Course Student Learning Outcomes

- CSLO #1: Demonstrate safe handling and application of power hand tools and machinery related to woodworking.
- CSLO #2: Describe the construction process.
- CSLO #3: Demonstrate the safe setup and operation of the CNC router.

Effective Term

Spring 2021

Course Type

Credit - Degree-applicable

Contact Hours

108

Outside of Class Hours

54

Total Student Learning Hours

162

Course Objectives

Lecture Objectives:

1. Identify and explain safe handling of tools and machinery.
2. Describe proper care and maintenance of tools and machinery.
3. Describe construction processes.
4. Discuss proper use of design software.
5. Describe material selections.
6. Appraise CNC software and operations.
7. Develop techniques for fine woodworking.

Laboratory Objectives:

1. Demonstrate safe handling and application of power hand tools and machinery related to construction and woodworking.
2. Construct multiple woodworking projects:
 - a. Create a materials list;

- b. Specify materials;
 - c. Layout to minimize waste;
 - d. Demonstrate recycle and re-use opportunities.
3. Demonstrate tape measure fluency.
 4. Recognize and measure basic geometric shapes used in woodworking and construction.
 5. Examine and interpret drawings and symbols used in construction and woodworking.
 6. Solve arithmetic functions.
 7. Create CNC Code for the manufacture of products.

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- Not Transferable

Methods of Evaluation

- Objective Examinations
 - Example: Exam will cover chapters from the text, e.g.: A multiple choice section will emphasize the points of how to read blueprints and the types of lines used.
- Skill Demonstrations
 - Example: Students will show how to properly use lab machinery safely and properly, e.g.: Show the proper setup and safe use of the table saw. Rubric grading.

Repeatable

No

Methods of Instruction

- Laboratory
- Lecture/Discussion
- Distance Learning

Lab:

1. Lab techniques will be presented in a "describe / show / review" methodology. Students will complete a safety test before using equipment. Instructor will work with students until they can successfully complete the test with 100% success rate. (Laboratory Objective 1)

Lecture:

1. The instructor will demonstrate proper handling of materials and equipment set-up to maintain safe working procedures. The student will be given an opportunity to clarify any questions in an instructor-guided discussion. (Lecture Objective 1)

Distance Learning

1. Students in online classes participate, individually and in groups, in discussion boards and respond to weekly assignments via the Learning Management System. The instructor will demonstrate proper coding for Computer Numerical Control (CNC) software. Students will begin appraising CNC software and operations to

create CNC code for the manufacture of products. (Lecture Objective 6 and Laboratory Objective 7)

Typical Out of Class Assignments

Reading Assignments

1. Read text unit on machine and tool operations safety. Be prepared to pass a safety test. 2. Read the text units on joinery and cabinet structure. Be prepared to discuss and apply material.

Writing, Problem Solving or Performance

1. Demonstrate proper hand tool safety operation. Instructor will evaluate student performance using a safety rubric. 2. Lab Assignments: A. Construct an assigned woodworking project. B. Construct an assigned CNC project. C. Demonstrate care, maintenance and proper adjustments of 3 major pieces wood working equipment: 1. Tablesaw 2. Jointer 3. Bandsaw D. Demonstrate care, maintenance and proper adjustments of 3 major woodworking power handtools: 1. Skillsaw 2. Beamsaw

Other (Term projects, research papers, portfolios, etc.)

Required Materials

- Residential Construction Academy: Basic Principles for Construction
 - Author: Mark Huth
 - Publisher: Delmar Cengage
 - Publication Date: 2016
 - Text Edition: 4th
 - Classic Textbook?: No
 - OER Link:
 - OER:
- Woodworking
 - Author: Nancy MacDonald
 - Publisher: Cengage Learning
 - Publication Date: 2013
 - Text Edition: 2nd
 - Classic Textbook?: No
 - OER Link:
 - OER:

Other materials and-or supplies required of students that contribute to the cost of the course.

safety glasses, hearing protection, tape measure, square.