

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

_____ Transfer course X A.A. degree applicable course
(check all that apply)

COURSE NUMBER AND TITLE: CFT 170 – Production Workbench Construction

UNIT VALUE: 2,3,4

MINIMUM NUMBER OF SEMESTER HOURS: 64,96,128 lecture/laboratory

BASIC SKILLS REQUIREMENTS: Appropriate language and computational skills.

ENTRANCE REQUIREMENTS

PREREQUISITE: CFT 100

COREQUISITE: None

RECOMMENDED PREPARATION: None

SCOPE OF COURSE:

Design and construction of the most basic of woodworking tools, a workbench. Process rough lumber to maximize yield and minimize waste. Students will be allowed to customize the size of their bench to fit individual requirements within limits, however, mass-production techniques will not be sacrificed. In addition, a broad review of woodworking vises and other bench accessories will be conducted so that students will be able to further customize their own bench.

SPECIFIC COURSE OBJECTIVES:

The student will:

1. Construct and complete a basic workbench and appreciate the use of the workbench as a tool.
2. Compare and contrast the various types of vises, their placement, and essential nature of this accessory.
3. Develop other accessories to further enhance the utility of the workbench.
4. Study the crucial importance of the accurate machining of multiple, interchangeable parts and apply these techniques in practical terms.
5. Experience a broad exposure to stationary tools including planer, jointer, radial arm & table saw, drill press, hollow chisel mortiser, pin router, edge sander and band saw, as well as the

use of the router in some unique operations. Use hand tools such as the bench plane, chisels and scrapers.

6. Develop imaginative, yet practical and efficient solutions to speed up the manufacturing process while maintaining accuracy, safety, and quality.
7. Identify the significant safety hazards accompanying the repetitive machining process and methods to reduce or eliminate those hazards.
8. Evaluate the advantages of the "team" concept in the solution of problems and the manufacturing process; and the importance of communication to successfully achieve the goal.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

1. Provide an historical perspective of the workbench which can be dated from Roman times. Review 18th and 19th century European and American benches. Discuss the modern "joiner's" or "cabinet maker's" bench, its design and construction.
2. Compare and contrast a broad selection of vises, their uses and installation. Vises discussed will include: tail vise, shoulder vise, leg vise, wooden screw, metal screw, twin screw; analyze manufactured metal vises from companies like Jorgensen, Record, Veritas as well as individual modifications to these vises.
3. Evaluate numerous accessories to make the workbench more useful as a tool. These accessories will include, various "hold fasts", bench dogs and dog hole layout, "bench slaves", tool trays, tool cabinets, wooden "vise cheeks", both pre-manufactured and shop made.
4. Design and construct various jigs and fixtures to insure accurate, repetitive machine set-up and methods to reduce or eliminate measurement error. Fixtures will include the construction of shop made squares to maintain four-square undercarriage assembly.
5. Study and apply joinery techniques of glue lamination and mortise & tenon construction along with "knock-down" hardware while maintaining high structural integrity. Maintain face and edge grain orientation of lumber necessary for proper bench top construction.
6. Analyze potential modifications of the completed workbench to add traditional shoulder and tail vises using home shop tools, taking into account the difficulties in cross-grain construction.
7. Study the finishing process which will include the preparation of the surfaces and applications of various finishes (oil, varnish, polyurethane) both sprayed and brushed, and the "rub-out" process.

REQUIRED READING:

Instructor-generated class manual.

SUGGESTED READING:

The Workbench Book, Scott Landis, The Taunton Press Inc., Newtown, CT., 1991, ISBN: 0-9188404-76-0.

Making Workbenches, Sam Allen, Sterling Publishing Co., New York, NY., 1995, ISBN: 0-8069-0535-2.

Understanding Wood, R. Bruce Hoadley, The Taunton Press Inc., Newtown, CT., 1995, ISBN: 0-9188404-05-1.

The Workshop Book, Scott Landis, The Taunton Press Inc., Newtown, CT., 1991, ISBN: 0-942391-37-3.

The Toolbox Book, Jim Tolpin, The Taunton Press Inc., Newtown, CT., 1995, ISBN:1-56158-092-9.

Bench Tools, The Best of Fine Woodworking Magazine, The Taunton Press Inc., Newtown, CT., ISBN:0-942391-84-5.

REQUIRED WRITING: None

OUTSIDE ASSIGNMENTS:

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short-term classes.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:

- lecture
- laboratory
- lecture-laboratory combination
- directed study

This course may be offered as a distance learning course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.

Yes No

If yes, check all that apply.

- Television Course (Video one-way, e.g. ITV, video cassette, etc.)
- Online Course (Text one-way, e.g. newspaper, correspondence, electronic file, etc.)
- Two-Way Video Conferencing (Two-way interactive video and audio)
- One-Way Video Conferencing (One-way interactive video and two-way interactive audio)
- Computer Assisted Instruction (A specialized form of mediated instruction relying primarily on student access to information and prepared lessons or teaching materials through a computer terminal, but not under immediate supervision of a qualified instructor.)

GRADING POLICY AND STANDARDS (include methods of determining whether the stated objectives have been met by students):

Grading standards will be based on the following factors:

1. Participation: 40%
2. Quality of product 40%
3. Notebook 20%

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?

Yes No Number of times course may be taken for credit: 2

If yes, identify specific provision of Title 5 Division 2 section(s), 55761-55763 and 58161 which qualifies course as repeatable:
Section 58161 (D) (2) (A)

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SIGNATURES ON FILE