

Course Outline and Syllabus, Wood Technology 010 & 020

Wood Technology is a vocationally oriented program intended to teach students the skills and knowledge necessary to begin a successful career as a cabinet or furniture-maker. The first two semesters (WDTEC 010, and WDTEC 020) are intended to introduce the student to the materials and techniques necessary to enter into the fields of professional furniture and cabinet making. One semester will explore manufactured panels (as opposed to solid wood) as a building material and their application to the craft of cabinet making, the other will focus on solid wood as a construction medium and will deal primarily with furniture making. Emphasis will be on safety, accuracy and efficiency in the techniques of contemporary woodworking.

The successful completion of Wood Technology 010, 020, and 011 (Furniture and Cabinet Layout) will qualify the student for a Certificate of Completion, which will indicate to a prospective employer that the holder is ready to begin a career as a safe and efficient woodworker.

We will learn woodworking skills through lecture, demonstration and practical application. You will complete a series of projects of increasing complexity and detail, which will impart not only the techniques required to cut and process panels and solid stock, produce accurate joinery and assemble finished pieces, but also the skills required to do so in an efficient and cost effective manner. You will learn to work both as an individual craftsman and as a part of a highly skilled team. You will be responsible for shop clean up and maintenance tasks. All work done in class will be assigned by the instructor.

You will need to bring certain skills with you to class. You will require a basic competency in arithmetic and geometry. You will need take and refer to class notes. You will need to be punctual and regular in your attendance. You will need to be able to work both independently and as part of a team. With these basic tools in your kit, you will be well prepared to enter the world of the professional woodworker.

Here is some basic information about the class:

WDTEC 010 (lecture), WDTEC 010L (lab)
WDTEC 020 (lecture), WDTEC 020L (lab)
WDTEC 011 (Furniture and Cabinet Layout)

- Instructor: Ron Mackrodt (email: rmackrodt@peralta.edu)
- Class will be held in rooms G-150 and G-153. Office phone number is 510-464-3446

- Office hours will be held in room G-150 from 12:00 pm to 1:00 pm, Monday through Thursday or by appointment
- Class meeting times
 - Lecture (010 and 020) is from 8:00 am to 9:00 am Tuesday through Thursday
 - Lab (010 and 020) is from 9:00 am to 12:00 pm, Monday
 - Furniture and Cabinet Layout (011) Friday, 8:00 am to 12:00 pm
- Textbooks required:
 - Mastering Woodworking Machines, Mark Duginske, Taunton Press (1992), \$25.00
 - The Complete Illustrated Guide to Furniture and Cabinet Construction. Andy Rae, Taunton Press (2001), \$40.00
 - Textbooks are available at a 10% discount for Laney College WoodTech students at Builders Booksource, 1817 4th St., Berkeley (845-6874)
- Equipment required
 - Safety glasses or goggles
 - Tape measure (12' or 16') fractional/metric
 - Shop apron
 - Loose leaf notebook
 - Calculator
 - Additional, optional equipment may be suggested as class progresses.
- Expenses
 - Textbooks: Approximately \$65.00
 - Materials (for tool box project): Approximately \$60.00 (some materials may be available free of charge if necessary)
 - Required equipment (listed above): Approximately \$40.00
- Attendance: Students will miss no more than one class during the first six weeks of the semester, with a cumulative total of no more than four absences over the semester. Students are expected to be in class, ready to learn, by 8:00 am for lectures, and 9:00 am for labs. Students may be dropped for excessive absence or tardiness.
- Grades: Letter grades will be assigned. Three areas of student performance will be considered equally
 - Quizzes and examinations (including a final exam)
 - Quizzes will be scheduled as work progresses. You will be given advance notice. Format will be short written answers to questions and some calculation. You will be able to refer to class notes if needed.
 - Completion of assigned projects

- Your work will be graded on the following criteria
 - Degree of completion at end of class phase
 - Compliance to assigned specifications
 - Application of demonstrated techniques and procedures
- Working habits
 - You will be graded on your performance as hypothetical employee in a typical cabinet shop. Considerations will include:
 - Punctuality and regular attendance
 - Efficient use of shop time
 - Ability to work as an individual
 - Ability to function as part of a team
 - Observance of safety procedures
- Class room conduct
 - No food in classroom or shop
 - All electronic devices will be turned off
 - Class will be conducted in a manner respectful of all members

IMPORTANT NOTE: It is strongly recommended that you enroll in Furniture and Cabinet Layout 011, held on Fridays from 8:00 am to 12:00 pm. This class is an integral part of the Wood Technology Program and the skills addressed there are absolutely essential to your success in the woodworking trades.

Class Format: Students will be organized into small work groups, or teams. Each team will be lead by an advanced (020) student. While students are expected to perform as individuals, membership in a small group ensures student access to machinery and other tools in a timely and efficient manner. Field trips to local shops will be scheduled as appropriate. You will be given a week's notice in advance. Guest speakers will be brought in to lecture on relevant topics as schedule permits

Safety: Safety in the woodshop is a primary concern. Instruction will focus on developing the habits that will ensure the safety of both individual and group. Students unable to function in a safe manner may be dropped from class

Course Outline and Schedule: Wood Technology 010 and 020 will be held concurrently. While each of the two semesters will focus on a different aspect of the craft, they may be taken in any order.

Cabinet-making (one semester)

During this semester students will focus on the craft of the Cabinet-Maker, utilizing state-of-the-industry procedures and equipment. Emphasis will be on manufactured panels as a construction medium. While day-to-day progress will be somewhat fluid, depending on the pace of individuals in the class, the semester will be divided into 3 distinct phases.

Phase I: The Basics of Cabinet Construction (approximately 4 weeks). Subjects will include:

- Measurement and measurement systems
- Shop geometry
- Shop documents, including stock bills, cutting plans and bills of material
- Shop and architectural drawings
- The safe and efficient use of the tools of the trade
 - Hand tools
 - Portable power tools
 - Stationary power tools
- Materials
- Hardware
- Basic modes of construction

Phase II: Plywood Toolbox and “Small Shop” Techniques (approximately 6 weeks). Emphasis will be on the individual student’s skills and achievement. Subjects will include

- Plywood as a building material
- Reading and interpretation of shop drawings
- Layout techniques and machining plans
- Construction and application of “housed joinery” (dados and rabbets)
- Pneumatic fastening devices
- Fabrication techniques
- Selection of an appropriate tool kit

Phase III: European Style Cabinetry and Current Industrial Practices (the 32 mm system). Approximately 8 weeks. Students will produce a production run of casework to be donated to a local non-profit group. Emphasis will be on teamwork and organization. Subjects will include:

- The 32 millimeter mode of cabinet construction
- Optimizing materials and processes for maximum efficiency
- Safe and efficient use of panel processing equipment
 - Panel saw
 - Edge bander
 - Multiple spindle boring equipment
- Plastic laminate fabrication
- European style hardware
- Installation techniques (some off-site classes may be required)

Furniture-making (one semester)

On alternate semesters, students will focus on the craft of the Furniture-maker, utilizing state-of-the-industry procedures and equipment. Emphasis will be on solid wood as a construction medium. As stated above, the pace of this class will be somewhat fluid, depending upon the progress of the students.

Phase I: The Basics of Working with Solid Stock: The Mirror Frame (approximately 4 weeks) Subjects will include:

- Wood as a building material: Identification, selection, application
- Introduction to tools of the trade: hand tools, portable and stationary machinery
 - Safety
 - Efficient use
 - Setup and maintenance
- Reading and interpretation of shop drawings and documents
- Basic measurement techniques
- Preparation of rough stock
- Basic joinery and assembly techniques

Phase II: Basics of Furniture Construction: The Shaker Table (approximately 6 weeks). Emphasis will be on the individual student's skills and achievement. Subjects will include

- Designing to accommodate wood movement
- Interpreting construction drawings
- Machine-made joinery techniques
- Assembly of complex components

Phase III: The Production of Custom, High-Furniture: Project to be Announced

Approximately 8 weeks. Students will produce a production run of custom furniture to be donated to a local non-profit group. Emphasis will be on teamwork and organization, as well as advanced woodworking techniques

Subjects will include:

- Organization and planning for a large-scale project
- Customer relations
- Working in multiples
- Advanced furniture making techniques, new applications of existing equipment.

Each of the three phases will consist of lectures, demonstrations and exercises. Field trips to local shops will be scheduled as available and appropriate. Each phase will have

practical tests, short written quizzes and a final examination. Homework and reading assignments will be announced during class.

As you can see from the above, we have a lot of ground to cover each semester. Your regular and timely attendance is essential both for your success as an individual and as a group.

ADDITIONAL REQUIREMENTS FOR SECOND SEMESTER (020) STUDENTS

You will be responsible for all material as described above. However, due to your prior experience in the previous semester's (010) class, you will be assigned additional tasks and duties intended to further prepare you for a successful career in the woodworking industry.

- **Team leadership:** You will be assigned as team leader to a group of first semester students. You will develop the leadership skills that will enable you to become a vital member of a small production team. These skills will include:
 - Assuring that all members of your team are performing in the safest possible manner.
 - All personal safety gear will be in place
 - All machinery used by your team will have appropriate guards in place
 - All machinery will be properly set up for the operations being performed
 - Assuring that all team members have the materials and documents necessary for the task at hand
 - Assisting any team member who has missed a relevant lesson
- **Project management:** Team leaders will meet regularly instructor to discuss the progress of their team's work. We will discuss the upcoming sequence of operations for the project at hand, and how they may best be performed by the team. The efficiency of your team will be a primary concern
- **Machine and shop maintenance:** You will participate in discussions and practical application of mechanical and electrical aspects of a modern shop

As second semester students, you will have an all-important second exposure to the principles of safe and efficient machine operation. It is expected that you demonstrate a competency that reflects your growing knowledge and experience