

Wood A/B

Santa Maria Joint Union High School District

**New Course
Approved**

Feb 28, 2020
Scott Authier

Basic Course Information

School(s) Offering This Course:

School Name	Course Learning Environment	Transcript Code(s)	
		Abbreviation	Course Code
Pioneer Valley High School (053847)	Classroom Based	Wood A (P)	IT6687
		Wood B (P)	IT6688

Title:	Wood A/B
Length of course:	Full Year
Subject area:	College-Preparatory Elective (G) / Interdisciplinary
UC honors designation?	No
Prerequisites:	None (Recommended)
Co-requisites:	None
Integrated (Academics / CTE)?	Yes
Grade levels:	9th, 10th, 11th, 12th

course Description

course overview:

Using wood as a primary medium, students will be introduced to design of wood products, as well as practical and career applications. Students will experience real applications by designing and making projects using appropriate materials related to assigned and student selected projects. Wood A/B is part of a sequence of courses in design engineering, construction, cabinet making and technical theater pathways. The purpose of this course is to provide students with a foundation of knowledge, skills and experience in the elements of wood technology principles of design that would advance them toward further education toward a career in a skilled position related to a variety of career options.

course content:

Introduction to Wood Technology (A/B) and Related Careers and Employment

Within this unit students are given an overview of working in woods technology and the related career fields connected with the skills that will be learned in the course. Students will choose a career field to research and produce a report. The report will consist of entry level requirements, advancement opportunities, possible pay ranges, technical skills required, academic skills required, soft job skills desired, habits of mind desired, tools used and their cost, technical schools or higher education possibilities, and job placement predictions.

Unit Assignment(s):

A completed report will be produced in two forms. The first form will be a completed research paper and the second form will be an electronic presentation such as a MicroSoft PowerPoint, Apple KeyNote or Prezi that will then be presented to the class.

Workplace and Shop or Lab Safety Practices

Students will receive instruction in safety practices in a shop or lab and related to a construction work area. Safety related to hand tool use and an introduction to power tool safety will also be addressed in this unit. Specific and detailed safety instruction related to power tools will be provided during the course as the tools are needed for specific projects. Students will be instructed about Cal-OSHA requirements and practices. Students will practice general shop safety skills required to work and create a safe working environment. Part of this practice applies to safe work etiquette, good housekeeping and cleanliness of the work areas, safe and appropriate use of hand tools. Shop safety procedures will emphasize working with and transporting sharp materials and tools such as saws, chisels, nails, files, etc...

Unit Assignment(s):

Students will be required to pass a general safety procedures test before being allowed to work in the shop or lab. Students will be required to pass specific written and practical use safety tests related to each power tool before being allowed to operate them. Students will also produce a safety poster or electronic presentation for a specific assigned safety practice or power tool.

Principles of Design, Measurement and Project Planning

Students will be instructed about different wood joints and fastener options for construction of a project. Project joint strength and structural integrity will be addressed. Students will be instructed in the standard and metric measurement systems. The measurement instruction will include a review of fractions and decimals, mixed numbers, common denominators, adding, subtracting, multiplying, dividing, scaling, reading a ruler and tape measure to the nearest 1/16th of an inch for the standard system and millimeter in the metric system. Students will be provided with a working drawing and project plan documentation (bill of materials and cut list) for a “skill frame” learning activity. Students will select from provided materials to complete the required activity.

Unit Assignment(s):

Students will create a “skill frame” to demonstrate safe work practices, wood joinery as well as appropriate measurement applications. Students will be provided with a working drawing that they must read and interpret to create the project. Students will demonstrate safe hand tool practices as well as their understanding of applied math concepts in measurement. While producing the project students will communicate with the instructor using appropriate trade terminology and demonstrating proper use of hand tools and practices, with safety as a paramount goal.

Creating a Working Drawing and Using CAD to Produce Project Plans

Using the skill frame example and instructions from unit 3 students will select a project for which they will create working drawings. The detailed project plans must include accurate measurement and joinery information. Students can work as individuals or in groups of 2 or 3. If working in groups, students must keep a log of who completed the specific parts of the project. As an introduction to CAD and computer 3-D drawing programs, Students will physically examine and measure a part of the classroom and its related objects to sketch on graph paper and transition into the computer. Using a step by step guide the student will recreate the assigned classroom section in the computer 3-D drawing program.

Unit Assignment(s):

Students will select a project from a provided list to create a scaled working drawing with labeled measurements on graph paper. The student will then take the graded paper drawing and create a 3-D electronic version using a computer program such as SketchUp, Vector Works, or Solid Works.

Creating a Model or Prototype and a Written Proposal for Client/Instructor

Using the working drawings, the project will be scaled up or down to create a model of appropriate size of the project from the previous 2 units. The model and supporting documentation will be presented to the client/instructor for final approval to build a full-size prototype or finished product of the actual project.

Unit Assignment(s):

Using cardboard, balsa wood or other materials students will create a scaled model of a project. Students will use a working drawing and blueprint to follow the projects' design and dimensions but at a scaled version.

Estimating Project Cost and Materials

Students will be introduced to a spread sheet program such as MicroSoft Excel, Google Sheets, or Apple Numbers to create supporting documentation to accompany the working plans created in Unit 4. Students will consider and discuss different material and fastener/joinery options for the appropriate application to best build their project. The supporting documentation will be completed after a set of materials and assembly elements have been chosen.

Unit Assignment(s):

Using the project from Unit 4 students will create a bill of materials and cut list. Using the internet, students will look up different material options and gather pricing from 3 different vender sources to calculate the best total price for the project. Using a chosen set of materials and assembly elements the students will calculate a final overall cost.

Building a Full-Size Product

Upon approval of the documentation and model presentation of the project from unit 4 students will build the full-size project. At this point the students will demonstrate mastery of work place safety procedures and precautions. Students will demonstrate mastery of wood fabrication processes as well as material choices, the applications of joinery methods, fastening choices, and finishing processes to complete and deliver the end product. The instructor and if applicable the client will determine the overall grade for the project. While the final evaluation for a grade is the instructor's responsibility, the instructor will seek feedback from the client and as a part of the course students will evaluate each other's projects using a provided rubric.

Unit Assignment(s):

Students will demonstrate mastery of wood fabrication processes as well as material choices, the applications of joinery methods, fastening choices, and finishing processes to complete and deliver the end product.

Final or Capstone Project

Students will use all of the elements from this course to design and create a student selected project. The selection can be a personal project that the student is responsible for purchasing the materials. Or, the project can be selected from an instructor provided list for which the organization or client would be responsible for purchasing the materials. A student may also have his or her own client for whom they complete this project. A complete set of design and working drawings with all supporting documentation will be a required part of the project. Also, a model will be provided and a signed agreement/approval for the final design and plans for project must be presented to the instructor before the full size project can be started. All parts from design to the finished piece will be evaluated for the final grade.

Unit Assignment(s):

Students working individually or in teams will design and build a specific project. While the final evaluation for a grade is the instructor's responsibility, as a part of the course students will evaluate each other's projects using a provided rubric.

Course Materials

Textbooks

Title	Author	Publisher	Edition	Website	Primary
Basic Woodworking	Valley Oaks Carter School	Valley Oaks Carter School	1st ed. 2014	http://valleyoakscharterschool.org/highschool/wp-content/uploads/sites/7/2014/05/BasicWoodworkingText.pdf	Yes

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