WHEELER HIGH SCHOOL COURSE EXPECTATIONS

Materials Processing 1 - Introduction to Materials Processing
High School
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I. Course Description:

This course provides an introduction to material processing. Technical drafting equipment, sketching, and machinery are used to create several different wood working projects. Aspects of orthographic projection and geometric dimensioning and tolerances are discussed and applied in this course. Manufacturing principles for material removal, forming, joining, and finishing are used to translate an idea into a finished product.

II. Course Objectives: State of Connecticut CTE standards 2015 edition

A. Safety: Describe and demonstrate the procedures related to workplace and job-site safety, including personal protective equipment, machine safety, and material handling practices.
1. Demonstrate knowledge of proper use, storage, and disposal of hazardous materials following OSHA's proper safety practices for a woodworking facility.
2. Demonstrate and explain knowledge of workplace safety procedures.
3. Demonstrate and explain knowledge of personal safety practices pertaining to eye wear, footwear, clothing, and personal protective equipment (PPE) used in wood technology.
4. Describe safety practices for the following machines: table saw, drill press, stationary sander, router table, and miter saw.
5. Demonstrate and explain knowledge of proper use and storage of basic hand tools.
6. Demonstrate and explain knowledge of proper use and storage of portable power tools.
7. Explain safe proper use, disposal, and storage of chemicals following OSHA standards.

B. Machines and Tools: Identify and describe the function of various types of layout hand and power tools in the Wood Technology field.
8. Identify, use, and maintain the following measuring, layout, and marking tools: steel rule, tape measure, combination square, sliding "T" bevel, and compass.
9. Identify proper use and function of the following portable power tools: circular saw, drill, jig/saber saw, finishing sanders, and routers.
10. Identify proper use and function of the following fastening tools: hammer, philips head screw driver, and slotted/flat head screw driver.
11. Identify proper use and function of the following hand tools: cross cut saw, rip saw, level, coping saw, nail set, hand plane, chisel, and file.
12. Identify proper use and function of the table and miter saws.

C. Design, Measurement, and Layout: Interpret technical drawings, rough drawings and sketches, and the use fractional measurement.
13. Describe and identify fractional measurements from a basic plan and assembly drawings.
14. Describe and prepare rough drawings and sketches.
15. Explain and prepare a cut list or bill of material from a basic plan and assembly drawing.
16. Measure accurately to a sixteenth of an inch.
17. Identify the difference between both nominal and actual dimensions.
18. Estimate material quantities in both board feet and linear feet.
19. Consider the natural characteristics of grain, knots, and checks when laying out a board.

D. Materials: Describe characteristics and appropriate applications for softwoods, hardwoods, and plywood.
20. Identify characteristics and applications of the following coniferous softwoods: pine, cedar, and fir.
21. Identify characteristics and applications of the following deciduous hardwoods: oak, maple, and poplar.
22. Identify characteristics and applications of the following engineered lumber: plywood and medium density fiberboard.

E. Material Processing: Identify and describe the various types of processes associated with the woodworking field and the characteristics of wood as a medium.
23. Identify and select the proper cutting process based on grain direction.
24. Identify how grain direction affects a material's strength.
25. Understanding kerf and its application to cutting and layout operations.

F. Abrasives: Describe the various types of abrasive materials used in wood technology.
26. Describe the abrasive grit numbering grading system.

G. Joinery: Identify various types of joints and describe the process for preparation and assembly.
27. Identify and assemble the following types of joints: butt, miter, dado, rabbet, and lap.
28. Prepare stock for use.

H. Assembly: Identify and describe the purpose of various types of fasteners, adhesives, and clamping devices.
29. Identify and describe the purpose and use of the following woodworking fasteners: common nails, round head screws, flat head screws, and oval head screws.
30. Identify and describe the purpose of the following clamping devices: bar clamp, c-clamp, parallel/hand screw clamp, and spring clamps.

I. Finishing: Describe various types of available finishes and safety precautions used during the application process.
31. Identify and apply various wood finishes for interior and exterior, with brush or wipe on, for the following: paint, stain, and clear coat.

III. Material Required:

Nearly all of the classroom materials will be provided. Students are however, responsible for bringing to class a pencil and eraser.

IV. Grading Policy and Methods:

Class assessment is based on class work and projects along with a final exam.
Class Work – 20%
Projects – 80%

V. Class/Behavior Expectations:

Students are required to follow all school rules at all times. In addition, behavior expectations specific to this course must also be followed:

1. All safety rules are followed at all times
2. Students respect each other and the classroom
3. Students do not handle materials that are not theirs
4. Students comply with situation specific rules given by the teacher
5. Students will not destroy or vandalize school property

VI. Academic Integrity Statement -See student handbook

VII. Attendance Policy – See student handbook

VIII. Academic Expectation:

Analysis