CONSTRUCTION II

Content Standard 8: Production Systems: Students will understand and be able to demonstrate the methods involved in turning raw materials into usable products.
Performance Standard p: demonstrate an ability to safely and accurately use the layout, form, separate, combine, treat and finish tools and processes in manufacturing a product

Content Standard 3: Career Awareness: Students will become aware of the world of work and its function in society, diversity, expectations, trends and requirements.
Performance Standard b: demonstrate an ability to take responsibility for their own actions

Content Standard 2: Technological Impacts: Students will understand the impact that technology has on the social, cultural and environmental aspects of their lives.
Performance Standard c: evaluate technologies based on their positive and negative outcomes.
Performance Standard d: discuss societal and industrial responsibilities for using proper hazardous waste disposal techniques.

Unit	*Learning Objectives*	*Sample Activities*	*Assessment Strategies*	*Resources*
1a. REVIEW OF SAFETY	1a. Students will know how to work safely in the Forest Products Laboratory. They will be able to use the miter saw, band saw, jointer, surfacer planner, and table saw safely.	1a. Safety lessons in general safety, and use of the miter saw, band saw, jointer, surfacer planner, and table saw. Students will take safety quizzes for each machine. They must pass each quiz in order to use that machine.	1a. Safety quizzes and Teacher observation of students while working.	1a. Safety quizzes for the miter saw, band saw, jointer, surfacer planner, and table saw
1b. MSDS	1b. Students will be able to use Material Safety Data Sheets to identify hazards, and will be able to describe how to get a copy of a MSDS for a given product.	1b. Students will be able to use Material Safety Data Sheets to identify hazards, and will be able to describe how to get a copy of a MSDS for a given product.	1b. Grading of student presentation and completion of assignment, by rubric.	1b. Computer lab with internet access, list of various chemicals and other products used in lab.

CONSTRUCTION II

Content Standard 6: Materials and Processes: Students will know the origins, properties and processing techniques associated with the material building blocks of technology.
Performance Standard a: list the techniques used to extract raw materials from the environment
Performance Standard b: describe the physical structures and properties of materials used in technological systems
Performance Standard c: classify raw materials according to their physical and mechanical properties

Unit	*Learning Objectives*	*Sample Activities*	*Assessment Strategies*	*Resources*
2. REVIEW OF WOOD AS A MATERIAL AND STRESSES	2a. Students will be able to describe the difference between stresses and strains, as well as define compression, tension, shear, and torsion.	2a. Lessons on stresses and strains, compression, tension, shear, and torsion.	2a. Quiz	2a. Quiz
	2b. Students will be able to identify oak, walnut, mahogany, poplar, maple, cherry, ash, pine, spruce, and Douglas fir, as well as various exotic timbers used in the lab.	2b. Students will prepare their own wood sample set.	2b. Wood identification quiz.	2b. Wood samples, wood identification quiz.

CONSTRUCTION II

Content Standard 5: Leadership: Students will identify and develop leadership attributes and apply them in team situations.
Performance Standard a: apply organizational skills to classroom and laboratory activities
Performance Standard b: develop a personal time management plan
Performance Standard c: assume roles within a team environment commensurate with their skills and expertise
Performance Standard d: present information in a clear, concise and appropriate manner

Content Standard 8: Production Systems: Students will understand and be able to demonstrate the methods involved in turning raw materials into usable products.
Performance Standard b: differentiate between manufacturing and construction systems
Performance Standard c: trace the historical development of the construction industry
Performance Standard g: demonstrate the ability to read and interpret architectural renderings
Performance Standard h: demonstrate the safe and accurate use of layout, forming, separating, combining, treating, and finishing tools and procedures in building a shelter or structure
Performance Standard o: discuss the advantages of environmentally conscious manufacturing

Unit	*Learning Objectives*	*Sample Activities*	*Assessment Strategies*	*Resources*
3. TIMBER FRAMING	3a. Students will be able to identify these parts of a timber frame structure: joist, plate, post, beam, sill, brace, purloin, and rafter, girt, bent, and bay.	3a. Lesson on timber framing.	3a. Quiz	3a. Quiz and student built models of timber frames.
	3b. Students will be able to layout the parts of a timber frame structure using scribe rule and mill rule. They will be able to describe square rule.	3b. Working in teams, students will layout the parts of a timber frame structure.	3b. Teacher assessment, by rubric, of student layouts.	3b. Oak, pine, or other suitable wood for frames, squares and marking gages.
	3c. Students will be able to cut and fit the typical joinery of a timber frame; mortise and tenon, bridle joint, and dovetail lap.	3c. Students will build a timber frame model.	3c. Teacher assessment, by rubric, of model build.	3c. Hand saws, chisels, mallets, and planes.

CONSTRUCTION II

Content Standard 4: Problem Solving/Research and Development: Students will recognize technology as the result of a creative act, and will be able to apply disciplined problem-solving strategies to enhance invention and innovation.
Performance Standard a: use research techniques to support design development
Performance Standard c: develop several alternative design solutions to the same problem.
Performance Standard d: use a communication technology to visualize a design idea
Performance Standard h: select appropriate technical processes and fabricate a prototype

Unit	*Learning Objectives*	*Sample Activities*	*Assessment Strategies*	*Resources*
4. DECORATIVE PLASTER	4a. Students will be able to describe the difference between plaster and lathe, and sheet rock.	4a. Lesson.	4a. Quiz	4a. Quiz
	4b. Students will be able to design and make a plaster medallion. Students will be able to describe how a plaster cornice is made.	4b. Demonstration of plaster work, followed by students designing and making a plaster medallion.	4b. Teacher assessment, by rubric, of each student's medallion. Quiz.	4b. Plaster, sheet metal and snips, polyurethane molding compound, and scrap wood.

CONSTRUCTION II

Content Standard 8: Production Systems: Students will understand and be able to demonstrate the methods involved in turning raw materials into usable products.
Performance Standards n: trace the historical evolution of manufacturing

Unit	*Learning Objectives*	*Sample Activities*	*Assessment Strategies*	*Resources*
5. HISTORY	5a. Students will be able to describe a number of architectural and furniture traditions.	5a. Students will look up one furniture style or architectural school. They will then present what they have learned to the class.	5a Assessment, by rubric, of report, and quiz based upon student reports.	5a. Field trip to Yale University's furniture collection.

CONSTRUCTION II

Content Standard 3: Career Awareness: Students will become aware of the world of work and its function in society, diversity, expectations, trends and requirements.
Performance Standard b: demonstrate an ability to take responsibility for their own actions

Unit	*Learning Objectives*	*Sample Activities*	*Assessment Strategies*	*Resources*
6. ADVANCED TOOL MAINTENANCE AND TOOL MAKING.	6a. Students will be able to tune a bench plane.	6a. Demonstration of bench plane tune up.	6a. Assessment, by rubric, of student work, or quiz.	6a. Float glass, bench plane, abrasives, and contact adhesive. The plane may be a school plane, or one brought from home.
	6b. Student will be able make a tool handle.	6b. After a demonstration, each student will turn a tool handle for a lathe tool, chisel, file, or screw driver.	6b. Assessment, by rubric, of student work.	6b. Old tool, ferrul, suitable wood (1 ½ to 2 inches square, strait grain, and two inches longer than final length), and wood lathes.
	6c. Student will be able to make a scratch stock or marking gage.	6c. After a demonstration, each student will make a scratch stock or marking gage (the basic principle for each tool is the same).	6c. Assessment, by rubric, of student work.	6c. Maple or other suitable wood, scrap metal, thumb screw.

CONSTRUCTION II

Content Standard 4: Problem Solving/Research and Development: Students will recognize technology as the result of a creative act, and will be able to apply disciplined problem-solving strategies to enhance invention and innovation.
Performance Standard a: use research techniques to support design development
Performance Standard c: develop several alternative design solutions to the same problem.
Performance Standard d: use a communication technology to visualize a design idea
Performance Standard f: present a design idea using multimedia technology
Performance Standard h: select appropriate technical processes and fabricate a prototype

Unit	*Learning Objectives*	*Sample Activities*	*Assessment Strategies*	*Resources*
7. DESIGN	7a. Students will be able to describe the importance of ergonomics.	7a. Lesson on the ergonomics and furniture scale.	7a. Quiz	7a. Quiz

CONSTRUCTION II

Content Standard 4: Problem Solving/Research and Development: Students will recognize technology as the result of a creative act, and will be able to apply disciplined problem-solving strategies to enhance invention and innovation.
Performance Standard a: use research techniques to support design development
Performance Standard c: develop several alternative design solutions to the same problem.
Performance Standard d: use a communication technology to visualize a design idea
Performance Standard g: prepare and document a design brief
Performance Standard h: select appropriate technical processes and fabricate a prototype

Content Standard 10: Enterprise: Students will demonstrate the techniques of enterprise and how they relate to product and service production, economics, human and material resources, and technology.
Performance Standard d: design a product based on customer need, available materials, tools, equipment and fiscal resources
Performance Standard h: calculate the cost of producing a manufactured product and determine a retail price

Unit	*Learning Objectives*	*Sample Activities*	*Assessment Strategies*	*Resources*
8. PILLAR AND CLAW TABLE	8a. Students will be able to prepare a three view sketch of a table of their design, with basic dimensions.	8a. Students sketch their table design.	8a. Assessment of sketches by rubric.	8a. Plain and graph paper for sketching.
	8b. Students will be able to prepare a cut list and estimate materials needed and costs.	8b. Students complete bill of materials worksheets, including board feet, and cost of materials for table.	8b. Check for accuracy and completeness, each student's cut list. Quiz on materials estimating.	8b. Bill of materials worksheets with costs of available woods. Quiz.
	8c. Students will be able to mill lumber.	8c. Students rough cut wood from the wood pile, and surface four sides with jointer, surface planer, and table saw.	8c. Asses student work by rubric.	8c. Selection of hardwood lumber in 4/, 8/4, and 12/4 thickness. Miter saw, jointer, surface planner, and table saw.
	8d. Students will be able to turn the pillar.	8d. Students prepare a template of their pillar. Students use this template to turn their pillar.	8d. Assess student work by rubric.	8d. MDF or plywood for templates. Lathes with tools, and band saw.

CONSTRUCTION II

Unit	*Learning Objectives*	*Sample Activities*	*Assessment Strategies*	*Resources*
8. PILLAR AND CLAW TABLE (Continued)	8e. Students will be able to design and shape the claws (legs) of their table.	8e. Students prepare a template, and then cut three or four claws to match. These are then shaped by the student.	8e. Assess student work by rubric.	8e. Template materials, wood for parts, and shaping tools; spoke shaves, router in router table with various bits, and files.
	8f. Students will be able cut sliding dovetail.	8f. Students use a series of routers, a cradle for their pillars, and a router lift for their legs, to cut a sliding dovetail. They then fit the claws to the pillar.	8f. Assess student work by rubric.	8f. Router lift, four routers with bits, shop made cradle, and hand tools for fitting parts.
	8g. Students will be able to assemble and finish their table.	8g. Students sand, applies a finish to their tables, and then assembles them.	8g. Assess student work by rubric.	8g. Brass screws, sanders, abrasive paper, stain, linseed oil, shellac, rags, and brushes.
	8h. Students will be able to describe the design designs they made in designing and building their table.	8h. Students complete a reflective writing on their completed tables.	8h. Assess student work by rubric.	8h. Reflective writing worksheet.

CONSTRUCTION II

Content Standard 3: Career Awareness: Students will become aware of the world of work and its function in society, diversity, expectations, trends and requirements.
Performance Standard b: demonstrate an ability to take responsibility for their own actions
Performance Standard c: explain the need to be a lifelong learner
Performance Standard d: exhibit appropriate behaviors in both school and work situations
Performance Standard e: define and demonstrate a personal work ethic

Content Standard 10: Enterprise: Students will demonstrate the techniques of enterprise and how they relate to product and service production, economics, human and material resources, and technology.
Performance Standard d: design a product based on customer need, available materials, tools, equipment and fiscal resources
Performance Standard h: calculate the cost of producing a manufactured product and determine a retail price

Unit	*Learning Objectives*	*Sample Activities*	*Assessment Strategies*	*Resources*
9. INDIVIDUAL PROJECTS	9a. Students will be able to design and build their own projects.	9a. Students propose, and upon approval, design a project. Students then build their projects.	9a. Assess student work by rubric developed between the teacher and student.	9a. The tools and supplies of the forest products laboratory.

CONSTRUCTION II

Content Standard 3: Career Awareness: Students will become aware of the world of work and its function in society, diversity, expectations, trends and requirements.
Performance Standard b: demonstrate an ability to take responsibility for their own actions

Unit	*Learning Objectives*	*Sample Activities*	*Assessment Strategies*	*Resources*
10. LAB RESTORATION	10a. Students will demonstrate responsibility for restoring the lab at the end of the year.	10a Lab is thoroughly cleaned, and all tools and supplies put away, leaving the lab ready for the next year.	10a. Student's contribution to lab clean up is evaluated by lab rubric.	10a. Clean up supplies.