Bakersfield College

Mr. S. J. Hageman, M.A.

Name: Wood B-5

Grade: 1 2 3 4 5

BC WOOD Cross-curricular Rubric

CRITERIA | 1 | 2 | 3 | 4
---|---|---|---|---
Response to Topic | Fulfills the writing task | [ ] | [ ] | [ ] | [ ]
Organization | Organizes his/her ideas | [ ] | [ ] | [ ] | [ ]
Support | Provides evidence/support | [ ] | [ ] | [ ] | [ ]
Mechanics | Uses complete sentences, proper grammar, punctuation & correct spelling | [ ] | [ ] | [ ] | [ ]

WEEKLY JOURNAL ENTRY

CLASSROOM LECTURE / DEMONSTRATION NOTES:

Wednesday, January 21, 2009

This was the first class meeting of the Spring Semester for Wood B5. With the exception of a few students, most of the class has successfully completed one of the prerequisite wood classes offered by Mr. Hageman.

Mr. Hageman handed out and/or explained/discussed the following documents:

- Course Syllabus: This was discussed in greater detail.
- Daily Work Performance Evaluation cards
- Course Supplemental Articles
- Student Safety Portfolio
- Midterm/Final exams and Journals were discussed

Mr. Hageman offered to order premium quality 3/4” plywood for our case sides and with an estimated cost of 20-30 dollars per student (four students per sheet). Approximately nine students committed to use the premium plywood. The side panels for the rest of the class would be cut from other good quality plywood sheets.

Mr. Hageman told us that using the CNC machine to cut the sides and bottoms saves about three weeks of lab time.

Class was released early.
Monday, January 26, 2009

Whiteboard Advanced Organizer
- Journal #2 (Includes Week One): Chapters 2, 7, 10, 11, 12, 18, 21
- Collect Safety Portfolios
- Discuss Weekly Journals
- CNC Discussion
- Sides/Bottoms > CNC
- Collect $25 for plywood upgrade
- (3) students will have option of using solid panel bottoms
- Lecture/Demonstrate web-frames

*Drawer Bottom 1/4" x 11 1/2 x 24
*Greene & Greene
   - Individual Design > Footprint

This was only our second class meeting of the semester. Mr. Hageman handed out the Project/Procedure Booklet for a Magazine End Table, as well as project plans for the same table. He explained that this would be the first B5 class to assemble sides and bottom case pieces cut with the CNC machine.

Student Safety Portfolios were collected and checked for completeness.

There was additional discussion about the weekly Journals and Mr. Hageman indicated he would post sample journals on the web-page.

Mr. Hageman had previously purchased the premium plywood and by this class meeting he had successfully machine three sheets to produce four perfect pairs of side panels per sheet.

Lecture/CNC Demonstration

CNC Routers are Computer Numerically Controlled multi-directional machines. They can move and cut in different directions to accurately cut shapes and patterns from a variety of materials.
The CNC machine in our lab is a three axis router, meaning it can move in three different directions:
- **X-axis** - Travels front to back
- **Y-axis** - Travels left to right
- **Z-axis** - Travels up and down

This machine was purchased for about $100,000.

To work with a CNC router, you first need to program CAD software for the type of design you want to work with. This software is used to create files which guide tool movements with extreme precision.

Mr. Hageman prepared the CNC to cut four pairs of side panels from a 4' x 8' sheet of 3/4" plywood.

- The machine’s table consists of a perforated metal base on top of which sits a low density "spoil board".
- The sheet material is placed on top of the spoil board
- A powerful vacuum system holds the material tightly against the table
- The sheet material is checked for proper placement
- The appropriate file was selected and opened for our case sides
- The computer estimated a completion time of 29 minutes and 32 seconds
- When activated, the CNC selected the appropriate bit and began to systematically cut the material

When the process ended, Mr. Hageman noticed the CNC failed to cut completely through the sheet material. The reason for this problem was not immediately known or apparent. Mr. Hageman proceeded to successfully cut case bottoms from a separate sheet of plywood with the CNC machine.

Before class ended, students received their case sides and bottom panels.

**Wednesday, January 28, 2009**

Mr. Hageman explained the reason why the CNC had failed to cut completely through the sheet of plywood during the demonstration the previous class meeting. Apparently, the premium plywood and the standard plywood were purchased in two separate orders. The premium material was at the appropriate 3/4" thickness for which the CNC was programmed. The standard plywood, however, was produced by a foreign supplier and its
thickness was found to be 1/16th inch less than the 3/4” programmed into the CNC. The CNC did not fail, rather it simply did what it was programmed to do.

For the benefit of those who received panels from the “problem” plywood, Mr. Hageman informed them the dados and rabbets would be too shallow as well. He told them this was not a problem so long as they took it into consideration as the case construction progressed.

This project has two web frames with net dimensions of 11 1/2 x 21” and 3” width on rails and stiles.

Instructions were given to collect lumber for the web frames.

- Collect RGH lumber
- RGH rip to 3 1/4”
- Joint most stable face to 80% clean
- Surface to .750” and 100% clean and no defects
- Try piece in dado
- Joint best edge to 90 degrees
- Rip to 3” width
- Square one end to 90 degrees
- NET length to 90 degrees
- Faces and edges should be marked when appropriate

Students collected the necessary lumber and worked to complete the machining.


This chapter goes well beyond simply telling you to keep your hands away from the saw blade. It take a comprehensive look at overall site safety to help reduce or eliminate hazardous conditions and create a safe work environment.

Unsafe acts or injuries are typically the result of carelessness or physical and/or emotional stress. Unsafe acts can manifest themselves in a variety of conditions including: fire, electrical, hazardous materials and operation of machinery.
Safety Rules And practices

- Avoid distracting other or being distracted while operating machinery
- Have all electrical circuits properly grounded
- All hazardous or flammable materials and liquids should be handled and stored properly
- Eye protection should be worn at all times
- Hearing and breathing protection are highly recommended
- Breathing protection is a must around certain materials or particles
- Maintain a neat, clean safe environment
- Make appropriate use of point-of-operation guards


Working drawings help guide you when designing and building a product.

Cabinetmakers commonly use two types of drawings:

- Architectural Drawings and Shop Drawings

Architectural drawings are used by contractors to construct a house. A cabinetmaker uses them to know where things will go and to get material specifications and work schedules.

Shop drawings differ from architectural drawings in that they only show the product to be built and not its surroundings. Shop drawings show multiple views of the product, material specifications, joint work, and outlines how the cabinet will be built.

There are a number of important parts to a Shop Drawing including:

- Title Block - provide project name, scale, number of pages, revisions
- Supplies - abrasives, adhesives, filler stains
- Plan of Procedure - assembly of all components, finish, Bill of Materials
- Pictorial, Exploded and Assembly views

The Language of Drawings

A drawing communicates lines, shapes, texture, and color. There are several types of lines: visible, hidden, center, extension, dimension, leader, radius, cross section, phantom, cutting, break, and border.
Article: Rules of Thumb

Ten Tips To Get The Most From Your Measuring Tools
1. Stay sharp mentally
2. Treat your tape kindly
3. Keep your eye on the line
4. Mark material clearly
5. Use a calculator
6. Measure from the 10-inch mark
7. Measure to and from a precise location
8. Don’t guess
9. Maintain your measuring tools
10. Don’t measure if you don’t have to

Chapter 12: Cabinet And Furniture Woods, Review pages 139-164.

There are over 100,000 species of wood in the world. The most popular species are found in furniture and cabinets making.

This chapter helped classify woods according to color, hardness, texture, and grain pattern. It also described present and potential applications for a number of species.

Wood for furniture should be less likely to warp or shrink and have a pleasing appearance.

Sugar Pine is easy to work and used a great deal for mill products. The texture is fine, soft, and uniform.

Walnut is moderately dense and hard. Walnut has excellent machining and finishing properties.
Chapter 21: Sawing With Stationary Power Machines: Read pages 305-335.

Answer questions 1-20.

1. Tilting table saw and radial arm saw
2. Using a straight edge or fence
3. Kerf
4. Rip fence, miter gauge and sliding table
5. Anti-kickback pawls
6. Alternate top bevel, triple chip, alternate bevel and raker grind
7. Counterclockwise, toward the front of the saw
8. For rip cutting use standard or carbide tip blade and position blade at least 1/4" above material, same procedure for crosscutting.
9. 1"
10. Stop rod and stop block
11. Blade
12. When the stock width is less than the max blade height
13. Raise or lower the blade
14. First crosscut to pieces no wider than 18-24"
15. Blade width
16. Relief cuts
17. Blade tracking
18. Start machine and proceed with the cutting sequence. Make relief cuts when necessary
19. A. Flat top grind; B. Alternate top bevel grind; C. Alternate top bevel and combination grind;E. Triple chip and flat grind; F. triple edge
20. Hook tooth for most woods, fiberglass and plastics; Skip tooth for soft woods and plastics; Regular blade for wood only

Article: A Table Saw Primer - Ripping And Crosscutting

A table saw is a versatile machine that gets a lot of use in a wood shop. It can do grooves, dados and rabbets but ripping and crosscutting seem to be the more common procedures. Any saw can present hazards but if one uses sound safety practices and appropriate guards and accessory tools, a table saw is relatively safe.
When ripping, be sure to use lumber that has a flat face and a straight edge so the board can be pushed squarely past the blade. Maintain all the necessary guards and splitter to avoid kick-backs and use push sticks.

A miter fence should be used for crosscutting and an auxiliary fence should be used to cut long boards.

**Chapter 2: Cabinetry, Browse pages 23-40.**

Cabinets and other furniture pieces are often built to match a particular style that distinguish it from other pieces. Style refers to features such as color, molding and shape of a cabinet. Many styles can be traced back to 17th and 18th century Europe.

Styles can vary widely but it is usually desirable that furniture pieces coordinate with each other.

**Article: James Krenov**

Mr. Krenov is a world renowned master wood-worker. He's now retired but he taught for many years at California's College of The Redwoods. He preached patience and advised students to decide what to build and why.

When building one of a kind projects, Krenov's process starts with a cardboard or paper model. Then he builds a full-dimensional complete or partial mockup of the project.

Krenov believes anybody can achieve at a higher level than they thought they could before they tried. “The thing is, you have to try.”

**Chapter 10: “Wood Characteristics” Browse pages 107-116.**

Understanding wood characteristics is critically important to building quality cabinetry.

Both hardwoods and softwoods have variations in characteristics which should be considered and evaluated in order to choose wood with physical properties that accommodate a particular design.

The appearance of the wood determines the decorative effect of your product. Appearance includes color, grain, texture and natural defects.
A tree is made of several distinct layers including bark, cambium, earlywood, latewood, annual rings, sapwood, heartwood, pith, and wood rays.

**Articles: Why Worry About Wood movement and Why Wood Moves**

These are both excellent articles which supplement chapter ten.

Much of wood movement has to do with moisture content and the location on the tree the board was cut from. All wood moves and construction must anticipate and allow for wood movement.

Wood moves in three directions: longitudinal (with the grain), tangential (around the concentric circles), and radial (perpendicular to the growth rings).

A properly constructed frame takes into account the season, moisture content and geographical location.

Living trees are full of water known as free water. Once the tree is cut, the drying process begins to evaporate the water. Wood used for cabinet making should ideally have a moisture content of 6-8%.

**Chapter 11: “Lumber And Millwork” Browse pages 117-138.**

Wood is a worldwide resource for cabinet making and construction. All woods are brought to market after a series of steps including harvesting, sawing, drying, and grading. Trees are harvested either through sectional felling or systematic felling. Lumber is sawed by the three methods of plain sawing, quarter sawing and rift sawing.

After sawing, lumber is air dried or kiln dried to remove moisture. Wood contains natural defects including knots, pitch pockets, bark pockets, and peck.

Some defects are caused by improper storage and seasoning or by machining.

Hardwood is graded as factory, dimension or finished market lumber. Finish lumber is used where appearance is important. When ordering lumber you must know qualities, quantities and species.
Articles: The State of the Forests—Where our wood comes from and where it’s going

Buying Lumber—Know what to look for and what to avoid

The United States has approximately 75% as much forest land today as when Columbus landed. Our forest produce a number of products including paper, lumber and fuel. It is expected that wood use in the United States will double before 2030.

Lumber for furniture making can be found in lumber yards, woodworking stores or hardware stores. When buying lumber, know what you want, shop for a fair price and inspect the lumber carefully for defects.

Journal

Now that I’m a retired old turkey, I’m excited to be back in a woodworking class. I’m taking B-2 again as well as this B-5 class so I should stay busy, but it’s a good kind of busy.

Berta is in my B-2 class and there are several familiar faces in B-5 so it should be fun. Plus, I know Mr. Hageman is always helpful and maintains a safe and productive learning environment for all students.

I’m building my B-2 project out of walnut lumber. I traveled to a supplier in Fresno to purchase the lumber and I’m excited about this project. The B-5 project is exciting as well.

The CNC machine is an awesome piece of equipment, but for an old guy like me there is no substitute for basic skills with basic tools.

B-5 class is a bit crowded and I felt a little uncomfortable working around some of the machines with people all bunched up. I need to remember to always be patient and not rush just to accommodate the crowd.

Mr. Hageman gave us the option of making some design modifications to the magazine table. I like the way it looks but I’ll give it some thought.

The most stressful part of the week was trying to learn Apple word processing software after being a longtime PC user. Finally, I think I’m getting it.