Objectives
Practice woodworking skills: tool sharpening, millwork, joinery, gluing, & sanding.
Learn the characteristics of the material wood, including specific species.
Analyze the strength of wood joints.
Design a piece of furniture based on a program of use, with materials and techniques in mind.
Understand the point of view of the maker within the design process.
Complete the final project.

Schedule
The first six weeks, we practice solid wood joinery using hand tools and power tools. This is a crucial time to attend every day and stay current. There will be an assignment each week due on Tuesday. Students sharpen chisels and mill lumber flat and straight. Our discussions are grounded in wood’s cellular structure and grain direction. Strength derives from long grain, weakness from the lack of long grain. We will study furniture design history and visit the shops of Austin craftspeople to see how they work.

The final project is one piece of furniture of your choice of program. It must be mostly solid wood, no digital fabrication, and no larger than 20 cu.ft. Plywood is allowed as a secondary material. Final project design assignments include sketches, scaled drawings, models at 3”=1'-0", and full-scale mock-ups. The class holds two design reviews before construction begins, allowing seven weeks for completion. The class participates in school-wide final reviews with other design studios. Begin now thinking about what you want to build for your final project. On the seventh week, your proposal will be locked in.

Week 1, Sep 2
Tuesday - Handout and lecture on the properties of wood: cellular structure, grain direction, and movement with changes in moisture. Demonstration of milling lumber to S4S (surfaced four side) with chop saw, joiner, planer, and table saw.
Assignment – Buy three 2x4’s, 8’ long, preferably SPF grade. Cut to 4’ long and repeat milling procedure on 2x4’s. Closely observe the results. Due Sep 5

Thursday - Review milling exercise results and discuss grain direction. Demonstration of chisel sharpening with bench grinder and whetstones. Introduction to router, changing bits and using the router to cut mortise, using the chisel to cut the corners square.
Assignment – Repeat hinge mortise exercise 3 times in 2x4’s and once in hardwood.
Assignment (Design/build 1) – Design and build a wood Box, 27 cubic inches inside. No joinery has been taught yet, so students must find their own methods. Both due Sep 10

Week 2, Sep 9
Tuesday - Review Box designs and use the boxes to discuss craft techniques and gluing wood cross-grain. Discuss the hand tools in the class locker. Demonstration of Japanese saw for cross-cutting 2x4 by hand. Demonstrate the dado saw and the fence to cut a precise half-lap joint in 2x4’s, using test pieces. Tightness is the goal.
Assignment – Using Japanese saw, cut four samples of 2x4 square on ends.
Assignment – Repeat dado saw half-lap exercise on 2x4’s. Both due Sep 12
Thursday - Review cross-cuts and half-laps. Demonstrate hand plane use and care. Slide show of Design History images of furniture design, particularly Eames, Aalto, Nakashima, Wegner, differences between solid-wood construction and veneer or laminated construction, compare bent-lamination technique to steam-bending.

**Assignment** – Cut Block (see drawing) from cherry lumber with hand tools only. Discuss specific techniques. Due Sep 17

**Week 3, Sep 16**

Tuesday - Review Block. Discuss list of joint types, including joint names, mechanical properties, and strength analysis. Demonstrate mortise-and-tenon joint in 2x4’s with horizontal mortiser, chisel, and dado saw.

**Assignment** – Repeat mortise & tenon exercise. The goal is tight fit on long grain and shoulder.

**Assignment** – Read David Pye, The Nature and Art of Workmanship, chapters 1-4, 7, 11, 12. Both due Sep 19

Thursday - Review m&t joints. Discuss Pye. Define craft, workmanship of risk, workmanship of certainty, diversity of scale, rough vs. precise, and designer’s intention. Slide show featuring examples of wood movement, wood engineering characteristics, shaping wood in 3D, fasteners, construction techniques, laminated products, and some architectural applications.

**Assignment** – Schematic Design of Final Project, including concept sketches/models and scaled drawings. Schematic Design review Sep 24

**Week 4, Sep 23**

Tuesday - Final Project Schematic Design review and discussion with entire class. Demonstrate 3D shaping tools and techniques.

**Assignment (Design/build 2)** – Design and make a Handle for prospective application by shaping wood in 3D. Handle due Oct 1

Thursday - Sep 26 Class field trip locations:
The house of Jean Mather whose husband Bob Mather taught Wood Design for ten years
The studio of Philippe Klinefelter, sculptor
Maček Furniture Company to see current projects

**Week 5, Sep 30**

Tuesday - Review Handle assignment. Discuss buying lumber at hardwood lumber stores, nomenclature, lumber grading, define the unit of one board-foot. Demonstrate hand cutting single dovetail joint using hand tools.

**Assignment** - Repeat dovetail joint four times in two species of wood.

**Assignment** – Final Project Design Development, required model at 3”=1’-0” due Oct 8.

Thursday – Discuss hardware, hinges, drawer slides. Demonstrate edge-gluing two boards and clamping tactics. Demonstration of screws, pilot holes, counter bores. Demonstrate slip tenons such as biscuit joiner and Domino machine.

**Week 6, Oct 7**

Tuesday - Design Development Review with guest critic.

**Assignment** - Make design revisions based on review discussion.

**Assignment** - Make a joint from list of joints.

Thursday - Discuss handouts regarding construction drawings, cut lists, and full-scale mock-ups. Discuss wood species characteristics with 25 samples of hardwood, softwood, and engineered products. Discuss imported lumber vs. domestic and standards of sustainably harvested wood.

**Assignment** - Work on shop drawings and cut list.
Week 7, Oct 14
Tuesday - Read handout comparing wood finishes. Look at finish sample library and discuss. Hold individual desk crits with students needing design advice.
Assignment – Buy lumber for final project by Oct 22.

Thursday - The rest of the semester, studio time is devoted to individual discussions with students regarding technique, design, construction sequence, and schedule.
Assignment - Begin full-scale joinery details, create schedule for final project.

Week 8, Oct 21 - work and desk crits
Week 9, Oct 28 - work and desk crits
Week 10, Nov 4 - work
Week 11, Nov 11 - work
Week 12, Nov 18 - work
Week 13, Nov 25 - work, Thanksgiving
Week 14, Dec 2 - work, Final Review Dec 6

Readings
Required reading: The Nature and Art of Workmanship by David Pye.
There will be handouts and texts on Canvas, including Design History
List of bookmarks at www.diigo.com/user/wooddesign

Grading
First 6 weeks 25%
Final project 75%
The first six weeks are graded on effort, timeliness, and craft. I evaluate final project designs based on intent (expression of a design idea), process (self-criticism, iterations, variations), and resolution (effort and craft). After the last day of the semester, the wood shop hours are shortened. A grade of incomplete will only be granted for illness or family emergency.

Safety Training
All students must take two forms of shop safety training. One is John Vekho’s shop safety orientation. Two is UT’s Environmental Health and Safety department (EHS) online training module (https://utdirect.utexas.edu/ehs/class.WBX?course_comp=O&course_prefix=OH&course_number=0500) After watching the videos, each student must pass a short exam to complete the training.

Accommodations
Students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, 471-6259.

Absence policy
Four unexcused absences will result in a full letter drop in your grade for the semester. Contact me ahead of time if you plan to miss class, and notify me as soon as possible if you are sick or have a family emergency. By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of a religious holy day. You will be given an opportunity to complete the missed work within a reasonable time after the absence. Please keep me informed so that I can help you.

Required supplies
Lock for desk
Tape measurer, combination square, 1” chisel
Dust masks. The good ones have two straps.
Lumber

**Keep the shop clean**
CLEAR your bench top and sweep the floor at the end of work day.
The only available scrap wood is in the scrap bins.
When gluing, cover the bench top with newspaper or wax paper.

**Observe safety rules and tool maintenance**
Wear hearing, eye, and respiratory protection.
No MDF. No reclaimed lumber unless specifically approved.