ARC F328W / F392W
Wood Design
Unique # 70435 / 70480
Summer first session 2022
M-F 9:00am-12:00pm
GOL 1.108

Instructor – Mark Maček
mmacek@utexas.edu
Office hours by appointment

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 seven classes, we practice solid wood joinery using hand tools and power tools. There will be an assignment each day. It is crucial to attend and stay current. Students sharpen chisels and mill lumber flat and straight. Our discussions are grounded in wood’s cellular structure and grain direction. We will study furniture design history and visit the shops of Austin craftspeople to see how they work.

The third week we focus on the final project design. The assignment is a table. You choose what kind of table. The specific activity around the table is important to the object. Requirements: It must be mostly solid wood, no digital fabrication, and no larger than a drafting table. 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. At the end of Week 3, Friday, June 17, your proposal will be locked in, allowing about three weeks for completion. The class will hold final review on the last day.

Week 1
Thursday, June 2 – Introduction to Wood Design. 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 joiner, planer, and table saw.
Assignment – Mill two 2x4’s, 8′ long, SPF grade. Cut boards to 4′ long on chop saw and repeat milling procedure. Closely observe the results. Due June 3

Friday, June 3 - 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. Due June 6

Week 2
Monday, June 6 - 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.
Assignment – Using Japanese saw and 2x4, cut four samples square on the end. Save cut-offs.
Assignment – Repeat dado saw half-lap exercise on 2x4’s. Tightness is the goal. Both due June 7
Tuesday, June 7 - Review cross-cuts and half-laps. Demonstrate hand plane use and care and WITH the grain. Block assignment. Design History images of furniture design, 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 and chiseling cross grain. Discuss specific techniques. Due June 9

Wednesday, June 8 - Review Block progress. 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 Jun 9

Thursday, June 9 - Review Block and Mortise & Tenon joints. Discuss Pye. Define craft, workmanship of risk, workmanship of certainty, diversity of scale, rough vs. precise, and designer’s intention. Images of wood movement, wood engineering characteristics, shaping wood in 3D, fasteners, construction techniques, laminated products, and some architectural applications.

**Assignment** - Make one joint from the list of joints. Due June 10

Friday, June 10 – Review joints made. Discuss buying wood at hardwood lumber retailers, define the unit of one board-foot and lumber grading. Demonstrate cutting single dovetail joint using hand tools.

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

**Assignment** - Final Project Schematic Design. Required: concept sketches and scale drawings. Models are encouraged. Due June 13

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**Week 3**

Monday, June 13 – Look at dovetails. Schematic Design review

**Assignment** - Design and build a Handle for a prospective application. Shape and carve wood in three dimensions to accommodate the hand. Due June 15

**Assignment** - Final Project Design Development, required model at 3”=1'-0”. Due June 16

Tuesday, June 14 – Class field trip locations:
- Lars Stanley Blacksmith, FAIA
- Philippe Klinefelter, sculptor
- Maček Furniture Company

Wednesday, June 15 - Review Handle assignment. 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.

**Assignment** - Glue two boards together, drill countersunk holes and screws two boards together. Cut a domino or biscuit joint.

Thursday, June 16 - Design Development Review with guest critic

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

Friday, June 17 – 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 vs. domestic and standards of sustainably harvested wood.

**Assignment** - Continue design development. Begin shop drawings and cut list.

**Assignment** - Design and build a Box of 125 cu.in. Due June 21
Week 4
Monday, June 20 – Desk crits

Tuesday, June 21 – Review Box assignment. Desk crits
**Assignment** – Buy lumber for final project.

Wednesday, June 22 – Begin construction of final projects. Desk crits and construction the remainder of the semester.

Week 5

Week 6
Thursday, July 7, **Final review**

**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](http://www.diigo.com/user/wooddesign)

**Grading**
First 3 weeks 25%
Final project 75%
The first three 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.

**Grade Scale**
A/A- Excellent
Project surpasses expectations in terms of inventiveness, appropriateness, verbal and visual ability, conceptual rigor, craft, and personal development. Student pursues content or techniques beyond what is discussed in class.

B+/B/B- Above average
Project is thorough, well-researched, diligently pursued, and successfully executed. Student pursues ideas and suggestions presented in class and puts in effort to resolve required projects.

C+/C/C- Average
Project meets minimum requirements. Suggestions made in class are not pursued with dedication and rigor. C- does not meet the minimum grade to be counted toward student’s degree.

D+/D/D- Below average
Basic skills including graphics, model-making, verbal clarity or logic of presentation are not level-appropriate. Student does not demonstrate required design skill and knowledge base.
F Failure
Minimum objectives are not met. Performance is not acceptable

X Excused incomplete
Given only for legitimate reasons of illness or family emergency, assigned after consultation with Associate Dean’s office. A schedule for completion must be agreed upon with Build Lab staff.
Absence policy
Attendance is mandatory. Participation is expected. Three unexcused absences will result in a full letter drop in your grade for the semester and recommendation to drop the class. 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, the only absences that will be considered excused are for religious holidays or family emergency. If you plan to miss class due to observance of a religious holiday, please let me know at least two weeks in advance. You will not be penalized for this absence, although you will still be responsible for any work you will miss on that day.

If you have to be absent, use your resources wisely. Ask the Build Lab staff and other classmates for a summary and notes on any lessons you miss. 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.

Build Lab Tool Safety Training
All students must take two forms of shop safety training. One is the shop manager’s in-person shop safety orientation. Two is UT’s Environmental Health and Safety department (EHS) online training module (https://utdirect.utexas.edu/ehs/class.WBX?s_course_comp=0&s_course_prefix=OH&s_course_number=0500) After watching the videos, each student must pass a short exam to complete the training.

Important Safety Information
Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.
Familiarize yourself with all exit doors of each class room and building you may occupy.
Remember that the nearest exit door may not be the one you used when entering the building.
Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.
In the event of an evacuation, follow the instruction of faculty or class instructors. Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.
Link to information regarding emergency evacuation routes and emergency procedures can be found at: www.utexas.edu/emergency

Safety and Class Participation/Masks
COVID-19 Update: While we will post information related to the contemporary situation on campus, you are encouraged to stay up-to-date on the latest news as related to the student experience. https://coronavirus.utexas.edu/students

Services for Students with Disabilities
The university is committed to creating an accessible and inclusive learning environment consistent with university policy and federal and state law. Please let me know if you experience any barriers to learning so I can work with you to ensure you have equal opportunity to participate fully in this course. If you are a student with a disability, or think you may have a disability, and need accommodations please contact Services for Students with Disabilities (SSD). Please refer to SSD’s website for contact and more information:
http://diversity.utexas.edu/disability/.
If you are already registered with SSD, please deliver your Accommodation Letter to me as early as possible in the semester so we can discuss your approved accommodations and needs in this course.
Required supplies
Lock for desk
Tape measurer, combination square, 3/4” 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.

Sharing of Course Materials is Prohibited
No materials used in this class, including, but not limited to, lecture hand-outs, videos, assessments (quizzes, exams, papers, projects, homework assignments), in-class materials, review sheets, and additional problem sets, may be shared online or with anyone outside of the class unless you have my explicit, written permission. Unauthorized sharing of materials promotes cheating. It is a violation of the University’s Student Honor Code and an act of academic dishonesty. I am well aware of the sites used for sharing materials, and any materials found online that are associated with you, or any suspected unauthorized sharing of materials, will be reported to Student Conduct and Academic Integrity in the Office of the Dean of Students. These reports can result in sanctions, including failure in the course.