

# CED Fabrication Shop

*Introduction to the Fabrication Shop at CED*

2011-12



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## Fabrication Shop Use & Policies

CED's Fabrication Shop (#277 Wurster) primarily serves students enrolled in courses that require the modeling and execution of three-dimensional designs. However, it is also available to all Wurster students as well as faculty and staff for other, including extra-curricular, projects, when traffic permits.

### Shop User Requirements

For all affiliates of CED there are three requirements that must be met:

- ◆ Pay Shop fees **before** attending a scheduled orientation session.
- ◆ Complete a *Waiver of Liability, Assumption of Risk, & Indemnity Agreement*.
- ◆ Complete the Shop orientation.

**Undergraduate and Non-PDST Students:** Shop payment is required for each academic term and due before orientation and access are granted. Payments are made at 477 Wurster Hall using the Cal1 Card.

**Professional Degree Supplemental Tuition (PDST) Students:** No Shop fees are required for Fall or Spring semesters, however, registration at the Student Technology Services Center in room 477 is still required. (Except for MUD students, Summer is not included in the PDST fee calculation and additional fees for Summer are required.)



**Jamie Banes**

Manages the Fabrication Shop. Coordinates with Instructors, schedules Mechanics, conducts orientations on the safe and proper use of equipment, oversees Shop adherence to EH&S/CalOSHA safety compliance, manages hazardous waste collection and disposal, inventories equipment and supplies, manages budget, etc.

To see more of Jamie's personal work go to: <http://jamiebanes.com/>

For instructions on how to obtain a Cal 1 Card and fund your debit account, please visit the Cal 1 Card website at <http://services.housing.berkeley.edu/c1c/>, or visit room 477 of Wurster Hall.

Students in good standing, who have attended Fabrication Shop orientation prior to the current term, are not required to attend an additional session. In this case, ID cards may be validated for Shop access by any Mechanician upon registration or payment of Shop fees and verification that a *Waiver of Liability, Assumption of Risk, and Indemnity Agreement* is on file. Access tags issued prior to the current term are void.

## Alcohol/Drug Policy

As a matter of LIFE/SAFETY we are posting the following policy: Alcohol/Drugs and all controlled substances are strictly forbidden in the Shop rooms at all times.

- ◆ Shop users under the influence of alcohol, drugs or any other controlled substance are strictly forbidden from entering the Shop and/or using any of the equipment.
- ◆ Violation of these rules will result in an immediate loss-of-use of the Shop for the remainder of the semester (without reimbursement).
- ◆ Working while fatigued is also dangerous. Users showing signs of weariness will be asked to leave the facility until a later time.

## Shop Practices

As soon as you enter the Shop, please sign in on the red clipboard and show your validation sticker to a Mechanician on duty.

While in the facility, you are a safety monitor too. Assist your colleagues to follow safe work procedures, and inform a Mechanician of any safety violations or injuries immediately, no matter how small.

Dull or damaged tools and equipment are dangerous; so report them to a Mechanician at once.

Instruction on the operation of tools and equipment must come from a staff Mechanician, not from other users. Do not attempt to use equipment you have not been trained on; equipment you have been trained on is documented on your *User Profile*.

Do not talk to others while operating tools or machinery; keep your concentration on your activity. Likewise, do not distract other operators (except to caution them about an immediate safety hazard).

Do not attempt to adjust or clean machines until they have come to a complete stop and have been unplugged. Do not walk away from a machine that is still running.

Follow Mechanician recommendations before performing any excessively dusty, loud, or potentially blinding activities. Dust masks, ear protection, and sight protection are available for all users.

Consult with a Mechanician on the proper way to dispose of finishes, solvents, casting resins, or rags.

**Clean up after yourself!** Untidy work areas are a serious safety hazard; return all tools and equipment to their proper place when you have finished using them. All tools, machines, worktables, floors, and other work areas must be cleaned after use. Users who consistently leave the facility without cleaning risk suspension of Shop privileges.

If you're ever in doubt about anything, please ask for assistance. Mechanicians are here to help you. There are no questions too big or too small, and there are never any judgments made.

## Shop Orientation

Orientations are offered a **limited number of times** at the beginning of each term. Students failing to attend orientation will not be granted access for the duration of the term. Sessions are subject to cancellation in the event of insufficient enrollment, at the discretion of the presenter. Additional orientations may be added if all scheduled sessions are filled, or for the training of PDST students not enrolled in associated classes.

## Shop Hours

Shop hours are subject to change so we post the schedule on the Shop door weekly.

If we do close, it is generally due to UCB holidays, recess, curtailments, staff training, equipment or facility maintenance, or special events like orientations, demonstration, or Cal Day.

In general the Shop hours are:

Monday	11:30 am-8:00 pm
Tuesday	11:30 am-8:00 pm
Wednesday	11:30 am-8:00 pm
Thursday	11:30 am-8:00 pm
Friday	11:30 am-8:00 pm
Saturday	11:30 am-8:00 pm
Sunday	CLOSED

For information on upcoming scheduled orientation sessions, please send an email to Jamie Banes at [jbanes@berkeley.edu](mailto:jbanes@berkeley.edu).

Orientations are participatory presentations in which students will practice the techniques demonstrated. Therefore, **proper attire is required**. Students not appropriately dressed will be asked to leave the facility and reschedule their session. (Proper attire, called Personal Protection, is



**Bradley Boggie**

Carpenter – Models: Provides on-site supervision to assure adherence to Shop safety and use policies. Specialty is in the area of furniture maker, product designer, illustration, print making, and models.

To see more of Bradley's personal work go to: <http://www.tinysparkdesign.com/>

described in the box on this page.)

Registered students who fail to attend their scheduled orientation may forfeit their Shop fees. To withdraw from a session without penalty or to reschedule, students must visit the Shop and make arrangements prior to the session for which they are registered. Students must arrive to their session on time as late arrivals will be refused entry. Additionally, early departure from a session will disqualify students from receiving an ID card access sticker.

***The improper use of tools or equipment can result in SEVERE INJURY OR DEATH. The willful violation of Shop policies will result in suspension or termination of Shop privileges.***

## Orientation Outline

*Below is a high level outline of what is covered during orientation. The focus is primarily on Shop operations, equipment use, and safety.*

### Introduction & Welcome

- ◆ Review Shop Rules
- ◆ Shop procedures
- ◆ Safety measures & Shop Attire
- ◆ Personal Protective Equipment
- ◆ Housekeeping

### Emergency Equipment

- ◆ Fire Extinguishers & Alarms
- ◆ Eye wash station & First Aid
- ◆ Emergency exits
- ◆ Earthquake response

### Materials Purchasing

- ◆ Dimensional lumber/rough stock



- ◆ Sheet goods
- ◆ Cross-cutting
- ◆ Ripping
- ◆ Milling (squaring materials)

### Tool Orientations

For each tool listed below we will discuss the purpose of the tool and provide a description of its use, features, and accessories; and will discuss its operation and safety devices that are available.

Further we will discuss material and tool techniques and provide a demonstration of its proper use. Then there will be time for monitored student use, and if time allows, a brief written test of competency.

- ◆ Panel & Table Saws
- ◆ Radial Arm Saws
- ◆ SawStop Table
- ◆ Jointer
- ◆ Surface Planer
- ◆ Band Saws
- ◆ Scroll Saws
- ◆ Compound Miter Saw
- ◆ Floor Sander Area
- ◆ Drill Press



Shop Orientation

## Personal Protection

Eye protection must be worn at all times inside the double doors. General use safety glasses are provided at the Shop entrance. Prescription eyeglasses **are not** safety glasses.

Excessive or loose clothing must be removed. During most operations, push long sleeves up past the elbows.

Long hair must be tied back securely. Rubber bands are provided in the cabinet near the office door.

Open-toed shoes, flip-flops, sandals, ballerina flats, heels, or “Toms” are not permitted; feet must be completely covered by non-slip shoes.

Shorts, skirts, dresses, culottes, tights, leggings, or capri pants may not be worn. Legs should be completely covered by long pants.

Jewelry such as necklaces, bracelets, watches, rings, and some earrings must be removed. Lanyards, scarves, or ties must also be removed. Gloves should not be worn for most operations.

Headphones, ear buds, mobile phones, or blue tooth headsets are not to be used in the facility. However, ear protection in the form of foam inserts or head gear (as in photo above) are allowed.

## Shop Refund?

Requests for an access refund must be made within 4 weeks from the start of instruction. Do not sign up if you are not sure your class requires Shop use. There are no refunds at the end of a semester regardless if you used the facility or not. There will be no refunds if you took orientation, and no refunds to PDF students.

Refund means moving the funds back to your Cal1 Card. Make arrangements with the Cal1 Card people for cash refunds.

Details available at :

<http://services.housing.berkeley.edu/c1c/static/index>.

# Shop Fees

The CED Fabrication Shop is a student fee-based operation; this means we use student fees to cover all costs related to Shop activities.

## 2009 - 2011 MSF Shop Fees:

Even though our costs have gone up, the **Miscellaneous Student Fee (MSF)** for the prior three years was kept at a low \$105 per semester.

## Proposed 2012-13 MSF Fees:

As a way to move toward balancing the Shop budget we have requested an increase of the MSF Shop fee to \$120 per semester (*an increase of \$15*). A description of what the fee covers is noted at right.

## Proposed 2012-13 CMF Fees:

Additionally, we have requested the institution of a **Course Materials Fee (CMF)** of \$240 per student for the following classes: Arch 100A, Arch 100B, ED 11B, Arch 150 and Arch 160.

Students who pay CMF will not be charged MSF; students who take two CMF courses will be refunded \$120 into their Cal1 Card or CARS accounts; students who already pay PDST will receive a partial refund equivalent to the



**Semar Prom**

Metals/Concrete: Provides on-site supervision to assure adherence to Shop safety and use policies. Specialty is in the area of metal fabrication; including forging, milling, bronze casting, and patinas. Experienced with copper, brass, nickel-alloy, and silver. Knowledge of ceramics, cement, and plaster.

To see more of Semar's personal work go to: <http://semarprom.blogspot.com/>

amount already considered in the PDST calculation.

CMF fees cover items beyond the description below. CMF includes personal protection gear that will be supplied to you for your own use, additional materials or equipment training related to the class (such as welding, concrete, plaster, metal, etc), and full integration with the instructor's requirements.

**What is not provided by CMF are the actual base materials (wood, metal, or concrete) from which you will design and build models, structures, or furniture.** The instructor-assigned tasks are either specified as to materials or students are given the responsibility to choose the materials they want to use for their various projects. The choices are too numerous for the Shop to purchase in advance and hold in-house. Instead, the Shop maintains all the supplies students may need to work with the various materials.

## What do fees cover?

STAFFING: We are required by policy and regulations to have two journeyman level staff on the Shop floor during open hours to assure safe use of tools and the facility, and we maintain a 1 Mechanician to 20 students ratio. Mechanicians are also responsible for the orientations and materials training.

SUPPLIES - Your fees cover the cost of maintaining a full selection of supplies that may be needed for your projects, including: 10 types sandpaper sheets, 2 types sanding discs, 7 types sanding belts, 8 types sanding drums, wood and white glue, 2 types hot-melt glue, 2-part epoxy, acrylic cement, mold release, acetone, alcohol, 3 types thinners/solvents, buffing wheels, disposable gloves, nitrile gloves, disposable respirators, duct tape, masking tape, double-sided tape, electrical tape, construction pencils, 3 types knife blades, various wood and sheet metal screws, nuts, bolts, finish nails, gun nails, framing nails, staples, grinding wheels, 3 types cutting wheels, 7 types flap-disc wheels, wire buffing and stripping wheels, rags, paint, spray paint, varnishes/lacquers, 3 types Welding wire, 4 types compressed welding gasses, port-

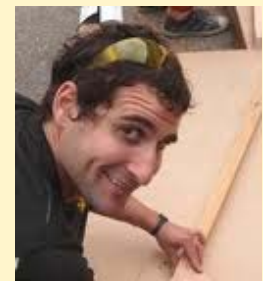
able compressed propane, cutting fluid, kerosene, solder, sweeping compound, hand soap, paper towels, vacuum filters, first aid supplies, joining biscuits, foam-cutting wire, casting buckets, cold-weld epoxy, 4 types buffing wax, 15 types casting cabinet inventory, etc.

REPLACEMENTS - Your fees cover the cost of replacement when 300+ types of hand tools (such as chisels, screwdrivers, etc), power tools, specialty tools, and accessories that are no longer safe to use and where repair is not possible.

MAINTENANCE - Your fees cover the cost of equipment and parts maintenance: blade/drill bit/hand tool/router tip sharpening, machine lubricating fluid, belt dressing & replacements, spray booth filters, belt cleaning blocks, and various replacement parts as needed.

HAZARDOUS MATERIALS: Your fees cover the cost of hazardous waste disposal and pickup: wood and metal shavings, oil soaked rags, empty paint cans, empty varnish cans, and over 20 types of hazardous chemicals.

COMPLIANCE ACTIVITIES: Your fees cover the cost of meeting EH&S and CalOSHA requirements for safety.



**Matt Wolpe**

Carpenter – Furniture: Provides on-site supervision to assure adherence to Shop safety and use policies. Specialty is in the area of furniture to small structures, finish carpentry, and general construction.

To see more of Matt's personal work go to: <http://justfinedesignbuild.com/about/us>

# CED Shop

## √ Accomplishments

### ● Goals

#### School Years 2009-2010

As budget cuts continued, CED persisted in providing Fabrication Shop service in room #277. In a cost saving move, the facility was centralized and opened up to all students at CED.

#### Spring 2011

- √ Hired a manager for the Fabrication Shop.
- √ Initiated the writing of job descriptions for each type of Mechanician and proceeded to hire.
- √ Safety efforts: posted safety notices, revitalized the first aid station, fixed the eye wash, relocated the safety glasses bin, reduced trip hazards, and installed proper exit signs.
- √ Compliance efforts: cleaned the Shop and ductwork, taped clearances for equipment work areas, designed a new orientation presentation,
- √ Initiated a compliant Lock Out/Tag Out Energy Isolation program.
- √ Inventoried and disposed of hazardous chemical waste. Reviewed and updated materials storage, and amended the Materials Safety Data Sheet (MSDS) catalog.



**Dov Osheroff**

**Carpenter – Furniture:** Provides on-site supervision to assure adherence to Shop safety and use policies. Specialty in the area of finish carpentry, cabinet maker, furniture maker, construction, and he is a luthier.

- √ Initiated Shop Mechanicians wearing staff T-shirts to distinguish them from other users.
- √ Started the Shop Safety program and installed a suggestion and feedback box in the hallway.

- √ Fixed the paint booth compressor.
- √ Fixed the floor near the entry door, which buckled due to a leak from the old spot welder.

#### Summer 2011

- √ Participated in the CED Summer Institute.
- √ CED Students: Refinished butcher-block student desks, repaired other students desktops, and built drafting table lock bars.
- √ CED Classrooms/Labs: Built table-top lecterns for classrooms and a podium for 214. Other 214 activities included repairing a broken paper cutter, assisting with moving out the old and building and moving in new computer tables. Built the rolling shield for the CNC room.
- √ CED Faculty/Researchers: Assisted in building a rolling flat cart, and media cart; assisted in the Gallery rolling partitions; assisted Robert Adams on 114-sculpture.
- √ CED Staff & Shop: Built and installed safety storage rails, fixed desks, built a clamp storage rack, vertical storage racks, etc.

√ Purchased a spot welder to replace the broken one that has been out of Service for years.

√ Replaced the Northfield saw with a SawStop to better meet safety considerations. (Go to [www.sawstop.com](http://www.sawstop.com) to find out more about this amazing saw.)

√ Developed and implemented a new system of tracking and documenting user training with the “User Profile.”

#### Fall 2011

√ Conducted the first “all hands” safety and equipment use training for Mechanicians, Facilities, and Blake Gardens staff and student workers. This included a full review of compliance re-

quirements, ladder training, policies and procedures, etc.

√ American Red Cross certified training for all Shop and CAD/CAM staff as well as available student workers on 1st Aid, CPR, and AED.

- √ Added file cabinets to house supplies and hand-held equipment.
- √ Painted sink and installed a new paper towel dispenser.

√ Equipment: Blades/bits sharpened, Planer sharpened and calibrated. Received a large donation of new clamps and hand tools from the Bessey Company.

√ Fixed Vertical Mill, Metal Lathe, the TimeSaver, Band Saw, and Spot Welder.

√ Installed Job Safety Analysis (JSA) documentation near each major grouping of equipment.

#### Spring 2012

√ Designed and conducted two PDF workshops on Basic Milling and Machining, and Advanced Wood Joinery.

● Coordinating CED’s first participation in Maker Faire.

#### Summer & Fall 2012

- Purchase and install new equipment: Portable MIG welder, and portable air compressor.
- CED Students: Continue ongoing upgrade of students Desktops.



**Ramon Quiambao**

**Machinist:** Provides on-site supervision to assure adherence to Shop safety and use policies. Specialty is maintaining the Shop and CAD/CAM/CNC equipment, fabricating parts or tools to fix the machines, and creating and maintaining equipment logs.