DiLaura Inspiration and Design Lab

Safety Procedures & Operations Manual

Chapter 1 — Overview and General Safety

1.1 Purpose

This manual provides the safety procedures, operational guidelines, and behavioral expectations for all users of the DiLaura Inspiration and Design Lab. All students, staff, and approved users must read this manual and sign the Safety Agreement prior to participating in any lab activities.

The Keenan Center maintains active safety practices consistent with OSHA, NIOSH, and standard industry guidance for digital fabrication, woodworking, electronics, and machine shop environments.

1.2 Controlled Access and Lab Zones

All equipment and all lab zones require either direct staff supervision or documented prior training and authorization. Access to any lab zone does not imply authorization to operate equipment within that zone.

The lab consists of the following functional zones:

- Additive Manufacturing Zone and Assembly Areas (3D printing, vinyl cutting, poster printing)
- Subtractive Manufacturing Zone (laser cutting and CNC cutting/routing)
- Woodworking Zone and Finishing Areas (band saw, drill press, grinder, sanding tools, hand tools)
- Electronics & Soldering Zone
- Audio & Media Production Zone (low-risk equipment)

All zones require supervised access when operating equipment. This supervised access may be granted by completing the survey at the following link: Keenan Center Welcome Survey. Unsupervised access is permitted only after training requirements are met and authorization is documented by staff. This is extremely rare and will be granted in writing by staff.

Unauthorized individuals may not be admitted into any lab area at any time. If you have any questions about who is permitted, please contact the Keenan Center or DiLaura Inspiration and Design Lab staff.

1.3 Staff Support and Consultation

Lab staff oversee:

- Safe and proper operation of all tools and machines
- Instruction and training
- Review of digital files for fabrication readiness
- Material approval (particularly for laser cutting and CNC routing)

If at any time you are unsure about a tool, workflow, or safety procedure, stop immediately and ask a staff member.

1.4 Project Planning Expectations

Prototyping and fabrication require advance planning. Users should:

- Meet with staff early in the design process
- Submit digital files for review prior to scheduling equipment time
- Build realistic project timelines
- Avoid last-minute fabrication that compromises safety

Deadlines do not override lab safety rules.

1.5 Etiquette and Behavior

A safe lab environment requires professionalism and organization.

Users must:

- **Report damage to any equipment immediately.** Failure to do so may result in loss of lab privileges.
- Notify staff of low or no stock of a certain product or item (e.g., using the last ink cartridge in a particular color, running low in a particular type of vinyl or paper, etc.)
- Maintain clean, organized workspaces
- Return all tools and materials to their designated storage
- Clean all work surfaces before leaving the lab
- Avoid any horseplay, jostling, or disruptive behavior

1.6 Appropriate Attire

Required:

- Closed-toe shoes
- Long hair tied back securely

Prohibited:

- Sandals, flip-flops, or open shoes
- Loose sleeves, scarves, dangling jewelry, sweatshirt ties

Improper attire results in loss of access for that session.

1.7 General Ground Rules

- Never work alone in supervised equipment zones
- Do not work while impaired, overly tired, or emotionally distracted
- Wear safety glasses at all times in tool or machine areas or wherever it is posted
- Report all injuries immediately
- In emergencies: use the machine safety stop, evacuate, and notify Campus Safety

1.8 Emergency Response, Safety Staff, and Rally Point

In the event of an emergency, users must follow the direction of the Keenan Center safety staff or the supervising technician on duty. Safety staff are responsible for:

- Initiating emergency shutdown procedures
- Directing users to evacuate
- Conducting headcounts at the rally point
- Communicating with Campus Security
- Determining when it is safe to re-enter the facility

Primary Rally Point

If an unsafe condition arises, activate the nearest **Rally Point.** If appropriate, cease all work immediately and evacuate the building.

All users must proceed to the designated rally point, which is:

The emergency phone located on the red pole with a blue light, situated outside the Keenan Center between the Keenan Center and the Soule Branch Library.

This location serves as the primary meet-up point for:

- Accountability and headcount
- Coordination with safety staff

- Contacting Campus Security directly from the emergency phone

Secondary Rally Point

If it is unsafe to wait at the emergency phone rally point (e.g., due to fire, hazardous materials, or structural risks):

- **Lift the phone from the receiver at the primary rally point emergency pole, which will automatically notify Campus Security of the evacuation**, and then continue to the **secondary rally point at the PAC Field**.
- Safety staff will reconvene with all users at this location and communicate next steps.
- Do Not Re-Enter the Building.

Re-entry is strictly prohibited until:

- Safety staff have cleared the area,
- Campus Security or emergency personnel have given explicit approval, and
- Staff confirm equipment has been secured and powered down safely.

1.9 Violations and Consequences

The lab uses a three-strike system:

Strike 1: 1-day suspension, meeting with staff, re-sign safety agreement
Strike 2: 1-week suspension
Strike 3: Permanent loss of lab access, notification of instructor and department leadership

A user may move directly to permanent loss of lab access in extreme circumstances when it is deemed necessary by DiLaura Lab staff.

Weapon or weapon-component fabrication is strictly prohibited.

Chapter 2 — Facilities Overview

All equipment and all lab zones require staff supervision or documented prior training and authorization, without exception.

2.1 Assembly & Finishing Areas

Used for:

- Project assembly
- Light finishing

- Adhesives (non-aerosol)

Expectations:

- Reset the room to default layout after use
- Clean all surfaces
- Store materials in assigned areas only

Aerosol use is restricted to designated finishing/paint spaces with hood availability in room KC108.

2.2 Electronics & Soldering Zone

Includes:

- Soldering irons
- Microcontroller and circuit tools

Safety guidelines:

- Never leave a powered iron unattended
- Inspect circuits for shorts before powering on
- Keep the workspace clean of wire clippings and debris

2.3 Woodworking Zone

Includes:

- Drill press
- Band saw
- Bench grinder
- Sanders
- Hand tools

Safety guidelines:

- Eye protection is required at all times
- No gloves when using rotating machinery
- Use push sticks and fixtures where appropriate
- Report unusual tool behavior immediately
- Return all tools to proper storage

2.4 Audio & Media Production Zone

Includes:

- Microphones
- Audio interfaces
- Studio headphones
- Recording equipment
- Video/Audio editing equipment

Hazards are minimal. Safety considerations focus on:

- Cable management (avoid trip hazards)
- Safe volume levels to prevent hearing damage
- Use of surge protection

Chapter 3 — Machine & Tool Use

All machines, tools, and equipment require staff supervision or documented prior training and authorization before use.

The following rules apply to all equipment:

- Think through the entire job before beginning
- Use the correct tool for the task
- Check that guards, shields, and clamps are properly positioned
- Keep hands clear of cutting paths; use push sticks
- Maintain focus and avoid distractions
- Never distract another user operating a machine
- Do not leave a machine until it has come to a full stop
- Clean work surfaces and surrounding areas after use
- Only staff may perform repairs or adjustments

Chapter 4 — Personal Protective Equipment (PPE)

4.1 Eye Protection

Safety glasses must be worn at all times in zones with tools or machinery.

4.2 Hearing Protection

Required when operating:

- CNC router
- Woodworking machinery
- Any tool producing >85 dB sound levels - identification of these tools is currently ongoing and will be identified on each piece of equipment.

Earplugs and earmuffs are available.

4.3 Respiratory Protection

N95 dust masks are provided for voluntary use and recommended during:

- Sanding
- CNC cutting
- Woodworking
- Any situation involving airborne particulates

4.4 Clothing and Hair

- Long hair must be tied back
- No loose clothing
- Remove jewelry that could become entangled in equipment

Chapter 5 — Digital Fabrication & Machine-Specific Procedures

5.1 Bambu 3D Printers

- Use approved filaments only
- Allow the nozzle and bed to cool before removal
- Monitor early layers of print for adhesion

5.2 Stratasys F370 & Fortus 450mc (Staff Operated)

- Only staff turn on/off these printers
- Only staff load/unload these printers
- Staff evaluate file readiness and schedule prints

5.3 Roland Vinyl Cutter

- Keep hands away from cutting carriage
- Do not realign material while machine is active

- Power off before blade replacement

5.4 Canon Poster Printer

- Do not reach into the paper path during printing
- Follow staff guidance for paper and ink profiles
- Remove prints carefully to avoid damage

5.5 Epilog Laser Cutter (Supervised)

- Laser cutter must remain attended at all times
- Only approved materials may be cut to avoid off-gassing of hazardous chemicals
- Eye protection required
- Verify ventilation before starting
- Stop immediately if flames persist longer than a brief flare

5.6 ShopBot CNC Router (Staff Operated)

- Staff review all toolpaths
- Workpiece must be secured properly
- Eye and ear protection required
- Dust extraction must run during all cuts
- Only staff may change bits or adjust spindle settings

5.7 Woodworking Tools

- Use push sticks and fixtures as appropriate
- No gloves near rotating equipment
- Maintain stable footing and awareness
- Clear debris only after the tool has fully stopped

5.8 Soldering Station

- Do not leave iron unattended
- Inspect connections for shorts before powering

5.9 Audio & Media Equipment

- Keep cables organized to prevent tripping
- Avoid prolonged exposure to loud playback
- Use surge protectors for electronic equipment

Chapter 6 — Materials Policies

6.1 Materials Provided at No Cost

- Scrap wood (as available)
- Fasteners (screws, bolts, washers)
- General-use adhesives (non-aerosol)
- Common drill bits and consumables
- PLA for 3D printers in modest quantities

6.2 Materials Requiring Purchase

- Large wood sheets and composite sheets not already on hand
- Acrylic and specialty plastics in specialty colors not currently on hand
- Foam and modeling materials not typically available
- Specialty vinyl and large-format print media

6.3 Materials Requiring Pre-Approval

- All laser-cut materials
- CNC router stock
- Heat transfer vinyl for t-shirts
- High-temperature 3D printing materials