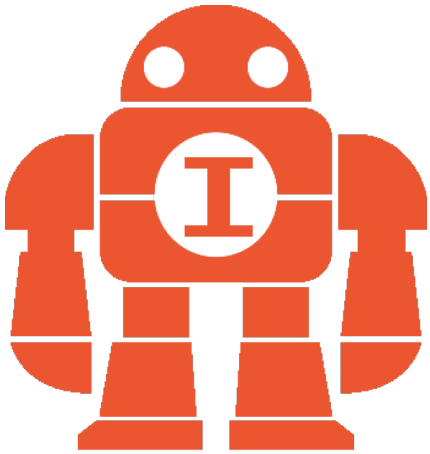


Maker Network

The guidebook to studios, labs, and makerspaces at Illinois.

Curated by Gabe Tavas

How this book is organized

"Makers" come in a bunch of different shapes and sizes: some are focused on electronics, a few like to carve out wood, and still others experiment in the laboratory. What is common among all of them though is their eagerness to put theory into practice, to create something interesting from scratch. Yet there are so many places where someone could do this that it is often difficult to keep track of all the options — especially on campuses as big and diverse as the one at Urbana-Champaign. The point of this guidebook, then, is to break down key information of Illinois' maker labs into three levels based on accessibility, or how easy it is for people to start designing in them. Each lab page is color coded on the side to match one of the following categories, beginning with the green 'Level One'.

Level One

- Open to anyone who complies with any safety training and fees
- Prior experience not needed. Learning is all part of level one.

Level Two

- Same as level one except the space is restricted to all students and faculty
- Some prior experience helps but is not absolutely necessary

Level Three

- Even if they do not have an application process, these are usually marketed to a few students and faculty.
- Prior experience is needed or highly recommended

Techhub

bit.ly/CITL-TechHub

The TechHub is the best place on campus for people with absolutely little to no experience with newer technologies can see a fun, insightful showcase of the 21st century — from 3D printing to drones to laser cutting!

Contact	Location	Fun Fact
- Jamie Nelson - jamien@illinois.edu	151A Armory Building 505 E. Armory Ave. Champaign, IL 61820 (Next to Einstein Bagels)	Expect to see some playful displays of tech and people playing videos games in the lounge!
Access	**Materials**	**Tools**
Anyone is free to walk in during open hours listed on the webpage. Any other time would need to be made by appointment.	- PLA plastic filament - Some wood and acrylic for laser cutting	- 360° camera - Ultimaker 3D printers - Glowforge laser cutter - iPad 3D scanners - Playstation VR

How to start designing here

1. Check the open hours on the TechHub webpage (above)
2. Plan a visit during those open hours OR schedule an appointment to do it outside of open hours
3. Explore the space and perhaps ask staff members for introductions to the different technologies
4. Consider trying out one of the technologies! If the 3D printer peeks your interest, ask a staff member to show you how to start using one. If it is the laser cutter, do the same thing, and so on. Though, keep in mind that the machines here are more for brief introductions than intense project work.

Champaign-Urbana Community Fab Lab

cucfablab.org

Among the most accessible of makerspaces on campus, the CU Fab Lab encourages people from all walks of life to imagine, design and create using open source software and collaborative methodologies.

How to start designing here

1. Plan a visit that lines up with their open hours (posted online)
2. Sign in on their ipads when you walk in
3. Ask a staff member to give you a tour if it's your first time visiting
4. Pick a machine in the space to start learning
5. Go through online tutorials with a nearby computer and/or consult a staff member
6. Start making your design with the machine once you've got the hang of it
7. Pay for any material used once you're finished

Contact	Location	Fun Fact
communityfablab@gmail.com (217) 265-5342	1301 South Goodwin Ave Urbana, IL 61801	The CU Fab Lab has the most open and one of the largest arrays of textile machines on campus!
Access	**Materials**	**Tools**
Open to everyone — students, locals, and visitors — during open hours, which are posted on the website.	- Electronics, microcontrollers - Acrylic, wood, and glass for laser cutting - Specialty fabrics - 3D printer filament	- Desktop workstations - Embroidery machines - CNC mill and laser cutters - FDM 3D printers - Vinyl cutter

Illinois Makerlab

makerlab.illinois.edu

The Makerlab seeks to provide U of I faculty and students with the knowledge and resources to be at the forefront of the emerging maker movement. Teaching users how to design, manufacture, and market physical objects is their specialty.

How to start designing here

1. If you've never designed anything that can be 3D printed, consider signing up for workshops at the Makerlab that will teach you how step-by-step
2. Once you understand the process, either visit the lab to request services related to 3D printing, 3D scanning, and design OR submit information online so that they can 3D print your object. More details can be found at https://makerlab.illinois.edu/pricingservices.

Contact	Location	Fun Fact
You can send them a message through the 'Contact' page of their website	Business Instructional Facility, Room 3030, 515 East Gregory Drive Champaign, IL 61820	The Illinois Makerlab is actually the world's first business school 3D printing lab!
Access	**Materials**	**Tools**
The workshops and machines are pretty much open to anyone, though discounts are given to students and faculty.	- PLA plastic - ABS plastic - 3D printer resin	- Numerous FDM and SLA 3D printers - Microcontrollers - CNC machine (Carvey) - Kinect for 3D scanning

ECE Open Lab

openlab.ece.illinois.edu

The ECE Open Lab is a creative workspace for and run by students that is open to all across campus as a place to work on personal projects outside of the classroom. Here, you will find all kinds of smart students, clubs, and sometimes startups tinkering in curiosity.

How to start designing here

1. Fill out their application form
2. Complete division of research safety using your netID to login in and saving the resulting certificate as a PDF
3. Upload the training certificate PDF
4. Attend a safety orientation and tour of the lab. You will not receive an email about your application, and there is no need to make a reservation. Simply show up at ECEB 2024 on time.
5. You will then receive 24/7 PROX card access to the lab and building
6. Consult ece-openlab@illinois.edu about storing any project work

Contact	Location	Fun Fact
- Casey Smith, instructional lab coordinator - ece-openlab@illinois.edu	Electrical and Computer Engineering building, Rooms 2024 and 2026	The Open Lab has some of the most advanced electronics equipment of all the maker labs!
Access	**Materials**	**Tools**
Focused on independent students working as part of RSOs or for their individual projects	- Accepts (and provides some) variety of electronics - Wood and acrylic for the laser cutter - PLA and ABS for 3D printers	- Soldering stations - Oscilloscopes, radios - FDM 3D printers - Laser & vinyl cutters - Various hand tools

Visualization Laboratory

bit.ly/beckman_vislab

Without a doubt, the Vislab is the most advanced space at Illinois for doing 3D scanning, 2D/3D/4D image analysis, publication graphics, and ultra-high speed video. Processing engaging and accurate imagery has never been easier with their resources.

How to start designing here

1. Read the policies of the Vislab and complete the form at the bottom agreeing to the terms and conditions
2. Email itg-vl@beckman.illinois.edu:
    - Your University NetID
    - University Billable account number (CFOP)
    - Group shared lab folder if required
    - Department name, group, advisor (if applicable), email and campus addresses, phone number
    - A brief description of the intended project(s) to be completed in the lab
    - A completed facilities usage agreement (non-UIUC users only)
3. Visit Beckman main office (room 1317) to have your i-card activated

Contact	Location	Fun Fact
- (217)-244-3074 - itg-vl@beckman.illinois.edu	Room 4602 of the Beckman Institute in the engineering quad	Students from other universities sometimes make the trek to UIUC just so they can use Vislab's equipment!
Access	**Materials**	**Tools**
It typically receives graduate students and postdocs but is open to all faculty, students, and staff at UIUC.	The Vislab can scan and visualize nearly any type of material. To know for sure though, it's always best to consult the staff.	- Computer workstations - State-of-the-art scanners - High speed cameras - Assortment of multimedia production equipment

Art + Design Fabrication Labs

bit.ly/adfablabs

Whatever Illini artists need to make, these fabrication labs can probably do. With a full assortment of wood, metal, plastic, and ceramic-based tools, the Art + Design staff works hard to ensure the only thing limiting you is your own imagination.

How to start designing here

1. Unless you're already a student of the department, you'll need to pay $95 for semester-long access
2. Get in touch with the staff so that you can watch the mandatory introductory training videos
3. Attend an in-person safety orientation which, when completed, will get you access to the lab
4. You can then use any machine labeled with green 'Level 1' stickers during open hours (posted online)
5. Staff will be around to assist and train you further for yellow 'Level 2' machines as needed
6. Make appointments for red 'Level 3' machines as needed

Contact	Location	Fun Fact
Look at 'Contact Support' on the website for your specific needs	- 408 E Peabody Dr, Champaign, IL 61820 - Welding at 1207 S 4th St Champaign, IL 61820	A+D is so stacked with machinery to build things that they even have a waterjet cutter!
Access	**Materials**	**Tools**
Generally geared towards department students, but anyone who pays the $95 facility fee can gain access	- Accepts wide variety of woods - Plastics, including foams - Variety of metals - Plaster	- Extensive woodshop - CNC machines - MIG and TIG welders - Spray booths - Metal fabrication tools

Biotechnology Center

hpcbio.illinois.edu

The Roy J. Carver Biotechnology Center provides a state-of-the-art research environment that is great to use for projects related to the analysis of living cells and genetic engineering.

How to start designing here

The Biotechnology Center has no written application process that someone who wishes to join has to fill out.

1. Instead, explore the directory of professors on their website to determine which would best relate to your interests
2. Inquire with one of those directors about gaining access to the center and provide any information related to a project you want to pursue there (consulation is a cornerstone of the Biotechnology Center!).
3. Wait back for a response and proceed with the steps they recommend

Contact	Location	Fun Fact
- lipking@illinois.edu - (217)-244-0466	1206 W. Gregory Drive Urbana, IL 61801	There's no other location on campus that has the DNA sequencing capacity
Access	**Materials**	**Tools**
It typically receives graduate students and postdocs but is open to anyone with enough money to pay for machine use	Essentially, any materials that make up living organisms (involving DNA and proteins).	- Computer workstations - State-of-the-art DNA sequencers - (Many more listed on their website)

Virtual Reality Lab

bit.ly/CITL-VR

The Virtual Reality Lab is a cool space for teachers and their classes to further their education with virtual reality technology, or to develop and assess their own VR content.

How to start designing here

Owing to its small size, the VR Reality Lab simply starts collaborations through in-person visits.

1. So go to the webpage and click on 'Schedule A Visit'
2. Pick a time on the form that fits with your schedule
3. Elaborate on your interests in the VR tools with staff members at the lab during your visit so that they can figure out how to assist you in your class curriculum.

Contact	Location	Fun Fact
- Jim Wentworth - jwentwor@illinois.edu	173 Armory Building 505 E. Armory Ave. Champaign, IL 61820	The Virtual Reality Lab has the largest amount of advanced VR equipment on campus!
Access	**Materials**	**Tools**
This lab is generally for teachers who want to use the VR tools for their classes as well as a select number of student RSOs.	There are no physical materials that are processed here.	- Full room VR experience with original HTC Vive - One Oculus Rift - Four Oculus Go's - 360° video camera

Product Design Lab

productdesignlab.ise.illinois.edu

Even though it is part of the industrial engineering department, the Product Design Lab has open hours when virtually anyone can visit, get advice on product designs, and create intricate models with tools like 3D printers.

How to start designing here

1. If you are not sure how to approach product design, the classes are a good way to start learning. One of the most interesting classes held here at one point had students use Revit, an architectural software, to model and 3D print some of the buildings on campus.
2. But, if you have a project you really want to develop from the start, consulting skilled lab members during the open hours would probably be more helpful:

    Monday 11-noon, 4-6pm

    Tuesday 11-2pm

    Wednesday noon-6pm

    Thursday 11-6pm

    Friday noon-4pm

Contact	Location	Fun Fact
- Molly Goldstein - ise-pdl@illinois.edu	Room 207: Transportation Bldg., 104 S. Mathews Ave., MC-238 Urbana, IL 61801, USA	Several of the products designed here are sponsored by actual companies!
Access	**Materials**	**Tools**
This is one of those engineering labs that is remarkably open to any student and faculty member.	Mainly, the materials consist of 3D printer filament. There are lots of models showing as much.	- Large, multi-material 3D printers - Formlabs SLA 3D printer - Low-fidelity desktop 3D scanners

Materials Research Lab

mrl.illinois.edu/

The Materials Research Lab (MRL) fosters interdisciplinary research at the forefront of materials science with over 100 advanced instruments for materials fabrication, processing, and characterization.

How to start designing here

1. Submit an online proposal for your research to MRL's portal so that the staff can determine the feasibility of your project (mrl.illinois.edu/facilities/become-user)
2. Complete U of I online division of research safety
3. Attend an MRL researcher orientation session
4. Review the MRL building Emergency Action Plan (BEAP)
5. Become trained by MRL staff for each technique/equipment

Contact	Location	Fun Fact
- mrl@illinois.edu - (217) 333-1370	104 South Goodwin Ave MC 230 Urbana, IL 61801, USA	MRL has a 3D printer that can create microscopic objects!
Access	**Materials**	**Tools**
It typically receives graduate students and postdocs but is open to anyone with enough money to pay for machine use	MRL has the capacity for nearly any material imaginable, so long as it poses no safety concerns.	-Detailed surface analysis - High-tech electron microscopes - Laser & spectroscopy - Nano fabrication

Fresh Press: Agri-Fiber Paper Lab

freshpress.studio

Instead of chopping trees, Fresh Press makes quality paper from agriculture waste like cotton while inviting students and faculty to participate through workshops and projects.

How to start designing here

Prof. Eric Benson, a graphic design instructor, and his team have spent the past few years acquiring large grants that have, among other things, established the Agri-Fiber Paper Lab as well as an off-grid sustainable farm. So getting involved depends on which projects interest you.

1. Check out the Fresh Press website for the full list of projects
2. Also check any dates for workshops, if part of your interest is to learn how to make the paper itself
3. If you want to help harvest the agricultural waste, also visit the Sustainable Student Farm's website, since that is where the off-grid farm is based
4. Inquire with Fresh Press about opportunities to get involved through the contact form on its website

Contact	Location	Fun Fact
- Prof. Eric Benson - Fresh Press has a contact form directly on its website	2116 Griffith Drive, South Studio #3 Champaign, IL, 61820	Fresh Press is partnering with university libraries to provide their paper for book binding.
Access	**Materials**	**Tools**
Generally, when staff members are present, all students and faculty are welcome to visit. Using the tools though requires training first.	- Agricuture waste, including cotton, hemp, corn, and soybeans. (Essentially, cellulose) - Finished paper products	- Specialized equipment for beating raw plant fibers - Tools for pressing and drying the fibers - 3D printer for cellulose

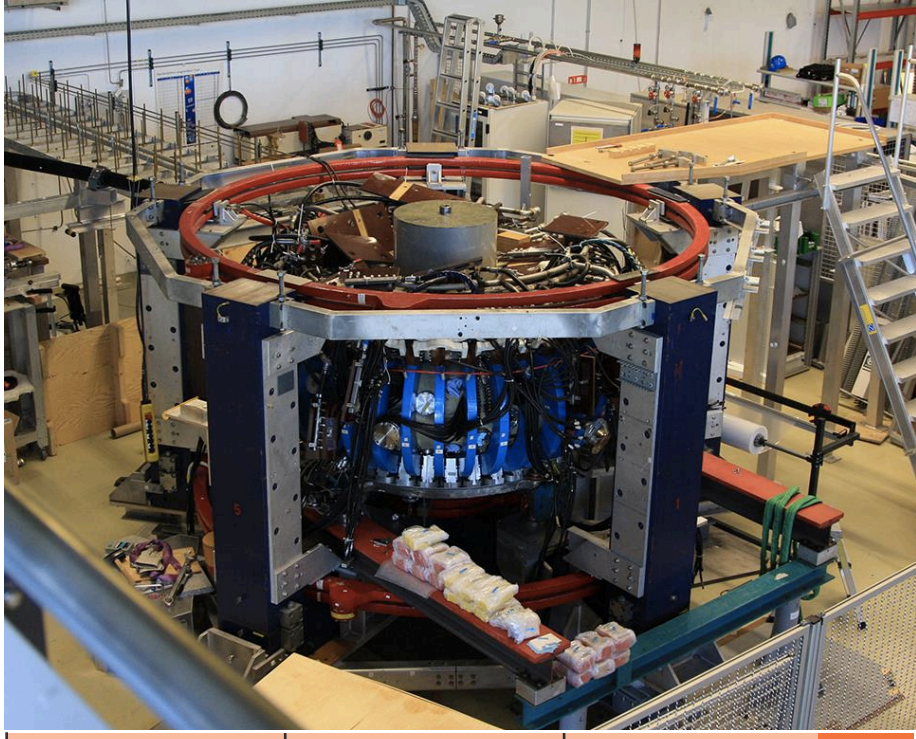
Nuclear Radiation Laboratory

cpmi.illinois.edu/about-cpmi/

If you want something (almost) straight out of Iron Man's lab, this facility has some of U of I's coolest applications of plasma technology, including the HIDRA nuclear fusion reactor in the photo.

How to start designing here

1. One way to get a sense of whether you would like the work happening here is to sign up for the NPRE 101 class, which introduces students to energy sources through interesting lectures and fun tours. It also covers general education requirements in quantitative reasoning II and physical sciences.
2. If that captures your interest (or you just want to dive in from the start), inquire with Prof. Andruzcyk about working at the lab.
3. From there, you will have to go through a standard university onboarding process
4. Then, assuming you are an undergraduate, you will be paired with a graduate student on a project happening in the lab. Learning happens gradually from there.



Contact	Location	Fun Fact
- Daniel Andruzyck (andruczy@illinois.edu) - Director, David Ruzic (druzic@illinois.edu	201 South Goodwin Avenue Urbana, IL 61801 (Just across the street from Loomis)	When it's running, HIDRA uses about 5% of the university's power supply!
Access	**Materials**	**Tools**
This lab is remarkably friendly to students who are not even necessarily in a STEM major. As long as you are engaged, they will welcome your help.	Tons and tons of electronics and metal parts. Though, it is hard to say exactly what they have given how crowded the workspace is.	- HIDRA fusion reactor - Plasma tools for semiconductor creation - Industrial plasma applications

Experimental Music Studios

music.illinois.edu/experimental-music-studios

Evolving to reflect innovations in music technology since its founding, EMS offers six uniquely-designed studios, a broad spectrum of hardware and software, and a comprehensive curriculum, providing students with an exceptional array of resources for learning and creative endeavors.

How to start designing here

1. Because the Experimental Music Studios only have so many staff members available to manage the equipment, you have to first sign up for one of its courses (on the website).
2. Early on in the class, you will then be able to speak with the TAs and/or the director about reserving a regular time to use the studios over the course of the semester.
3. Once you have a time slot, use what you learn in the class and any prior knowledge with electroacoustics to make some exciting music!

Contact	Location	Fun Fact
- Director, Eli Fieldsteel - eli@illinois.edu	4th floor of 1114 W. Nevada St. Urbana, IL 61801	This is an internationally recognized space that has had electroacoustic equipment since the 1950s
Access	**Materials**	**Tools**
These studios are usually reserved for those registered in the courses of the Experimetal Music Studios (found on the webpage).	There are no physical materials that are processed here.	- Interfaces with Logic Pro X software - Analog/digital mixers - Programmable synthesizer - Theremin (and more!)

Community Learning Lab

bit.ly/uiuc_communitylab

While it might not have the tools of other design spaces, the Community Learning Lab is an incredible resource for those who wish to pursue projects that have an impact on underserved communities near the university.

Contact	Location	Fun Fact
- Director, Katie Shumway - kshumway@illinois.edu	2nd floor of 1010 W. Nevada, Urbana, IL 61801	The lab has partnered with several local schools, community centers, and the Carle hospital over the years.
Access	**Materials**	**Tools**
Because there is a small staff with relatively limited resources, services are often given to students in the School of Social Work.	There are no physical materials that are processed here.	No tools. The strength of this lab lies in its people, who make for good advisors and connectors in social work.

How to start designing here

CLL works with over 400 community partners on projects that are matched to courses, students projects, or individual students who complete it on behalf of the partners. Projects can involve grant-writing, fundraising, policy manuals, and more.

1. If you have a project that you would like to share with the Community Learning Lab's network, submit an application through its website.
2. Or alternatively, if you would like to take on a project, inquire with the CLL's staff by emailing the director or going through the website

Krannert Center Level 21

bit.ly/krannertlevel21

Making a great performance happen in the Krannert Center takes a lot of the preparation — much of which happens in its six back-stage levels. Some of the U of I's best textile/fashion, recording, welding, and woodworking facilities can be found here.

Contact	Location	Fun Fact
- Asking a question: comments@krannertcenter.illinois.edu	500 S Goodwin Ave, Urbana, IL 61801	Roughly 90% of costumes used in Krannert performances are created through Level 21
Access	**Materials**	**Tools**
It tends to be geared towards students in the Schools of Theater, Dance, and Lyric Opera. Any artist is encouraged to explore though	- Endless amounts of fabrics and costumes (which can be rented from the website) - Plenty of wood - Various used props	- CNC machine - Plasma cutter - Embroidery machines - Looms and knitting machines

How to start designing here

Because of its specific function as a performance venue, the Krannert Center focuses its facilities for theater, dance, and opera projects. But, they are looking to involve more artists outside of those categories as well.

1. Visit the Level 21 webpage and explore any links that appear there. One link should take you to the School of Theater's Design, Technology, Management programs (which is open to undergrads and graduates)
2. If getting a degree in the program is more of an investment than you would like, inquire with Krannert's 'comments' email address to find out if there are any classes that would let you gain access to the facility. Depending on the semester, a class in 'Experimental Fashion' might be one of the options.