

What is a fab lab?

short for fabrication laboratory

an open access workshop that houses digital fabrication equipment for rapid prototyping

aims to provide the general public with tools used typically in product development

encourages entrepreneurs to take their ideas from simple ambition to reality

provides the opportunity for creative and innovative minds to

- build a prototype of an original concept
- test, improve, and optimize completed model
- personalize or design custom products

Calling all creative and innovative minds!

Fab Lab inspires the inventive genius in everyone!

***If you dream IIT,
you design IIT,
and NOW you can fabricate IIT!***



Technical Challenges

1. **Staff:** For the Fab Lab to fulfill its potential, knowledgeable staff should be hired to supervise users and implement safety procedures.
2. **Collaboration:** Personnel within the Museum of Science and Industry should be proactive and communicate effectively with members of the IPRO to make decisions.
3. **Maintenance:** Due to the specialized nature of the equipment within the Fab Lab, a skilled individual should be responsible for upkeep and repair, in order to keep the lab functional.

Next Steps

1. **Fully operable lab:** Increase availability of the Fab Lab to museum patrons and users by hiring staff to maintain equipment, monitor individuals, and enforce safety policies.
2. **Sustainability:** Brainstorm strategies and create a business plan on how the Fab Lab can financially support itself.

In collaboration with

Museum of Science and Industry, Chicago
Steven Willis, Director of the Fab Lab

Contact Information

Consider attending one of our open house sessions at the Fab Lab, which includes a tour, overview of the equipment, and hands-on activities.

Contact Cindy or Sabina to schedule your visit.
(ipro333f09@iit.edu)

Wikipedia Page:
http://en.wikipedia.org/wiki/Fab_Lab_at_MSI

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IPRO 333

MSI-entists

Fabrication Laboratory at the
Museum of Science and Industry, Chicago



fablab

Team Members

Andrew Bonesz
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Jered Linares

Paul Marks
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Raymond Zhou

Faculty Advisors

Blake Davis
David Gatchell

Equipment

CNC Router:
(ShopBot PRSAlpha)
specify movements in 3 axes (X, Y, and Z) for a tool spindle to cut, drill, carve, or engrave 96" x 60" x 6" work area



3D Milling Machine:
(Roland Modela)
small scale CNC router and 3D scanner
best suited for model making 8" x 6" x 2-3/8" work area



3D Printer:
(Stratasys Prodigy Plus)
3D objects are created by successive layers of plastic 8" x 8" x 12" work area



Laser Cutter:
(Epilog Mini 24)
high power laser cuts or engraves flat-sheet materials 24" x 12" work area



Vinyl Cutter:
(Roland CAMM-1 Servo)
print-and-cut reflective vinyl, paint mask, heat transfer, and sandblast material 22-15/16" maximum width



Electrical Stations:
tools include soldering rods, oscilloscope, and wave generator
supplies include batteries, resistors, capacitors, motors, transistors, and sensors



Problem Statement

The Fab Lab, located in the Museum of Science and Industry, is a powerful tool and resource for creative and innovative minds. However, access to the Fab Lab remains off limits to museum patrons. IPRO 333 strives to demonstrate the vast potential of the lab and open the doors of the Fab Lab to a wider range of users.

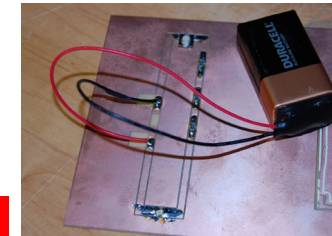
Objectives

1. Develop projects and activities for specific age range of students (4-12th grade) that teach how to use the equipment and reinforce mathematical and scientific concepts.
2. Organize the tools and supplies within the Fab Lab for ease of use and time efficiency.
3. Create safety policies for the Fab Lab and display within lab to emphasize accountability.
4. Design tutorials for each machine in preparation for novice users and troubleshooting.
5. Promote the Fab Lab's presence within the IIT community, overall Fab Lab network, and Chicago metropolitan area.

Accomplishments

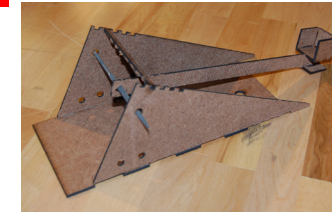
1. **Projects:** A range of activities has been prototyped and tested for targeted audience.
2. **Organization:** Drawers and cabinets have been labeled appropriately to its content.
3. **Safety:** Policies have been created for each machine and displayed in applicable locations.
4. **Tutorials:** Instructions for each machine have been compiled to aid in training of users.
5. **Marketing:** Invitations were mailed to organizations to visit the Fab Lab. A video that introduces the concept and equipment of the Fab Lab has been completed.
6. **Resource:** Students from IPRO 347, 358, 350, and the Department of Industry Technology and Management have used the Fab Lab to further develop their projects.

Completed Projects



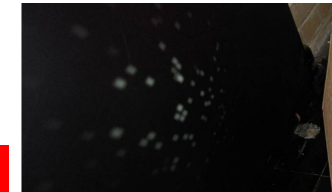
Electrical Circuit Board
focuses on principles of

resistance
voltage and current Ohm's law



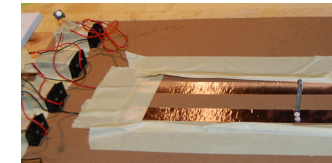
Catapult
focuses on principles of

physics, engineering
inertia, trigonometry
projectile motion



Home Planetarium
focuses on principles of

star patterns
celestial navigation



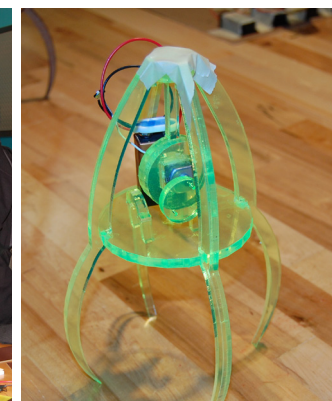
Railgun
focuses on principles of

electromagnetics
vector cross products



Discovery of Pi
focuses on principles of

circle circumference
and diameter



Jitterbug
focuses on principles of

balance of parts
rotational vibration

