

## 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](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  
Howard Clark  
Charlie Douglas  
Michael Gajdorus  
Keenan Gottschall  
Rachel Hendricks  
Clayton Kimball  
Jered Linares

Paul Marks  
James Mellom  
Cindy Oblenida  
Sabina Pop  
Carl Stelcel  
Jeremy Young  
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.

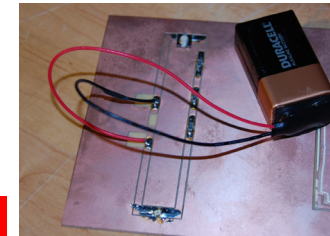
## Objectives

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.

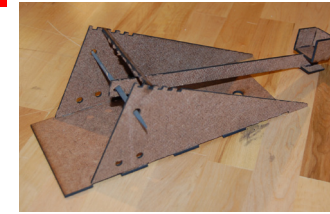
## Accomplishments

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.

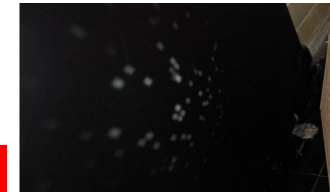
## Completed Projects



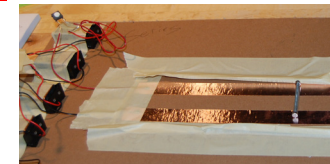
**Electrical Circuit Board**  
focuses on principles of  
  
resistance  
voltage and current Ohm's law



**Catapult**  
focuses on principles of  
  
physics, engineering  
inertia, trigonometry  
projectile motion



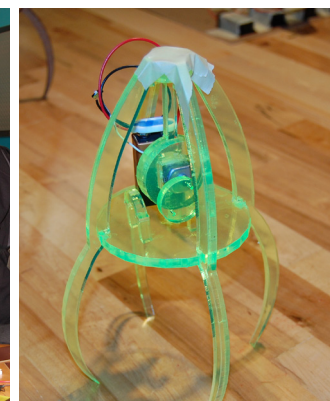
**Home Planetarium**  
focuses on principles of  
  
star patterns  
celestial navigation



**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

