

EP1000

Digital Fabrication Prototyping Fundamentals Introduction

Presented by:

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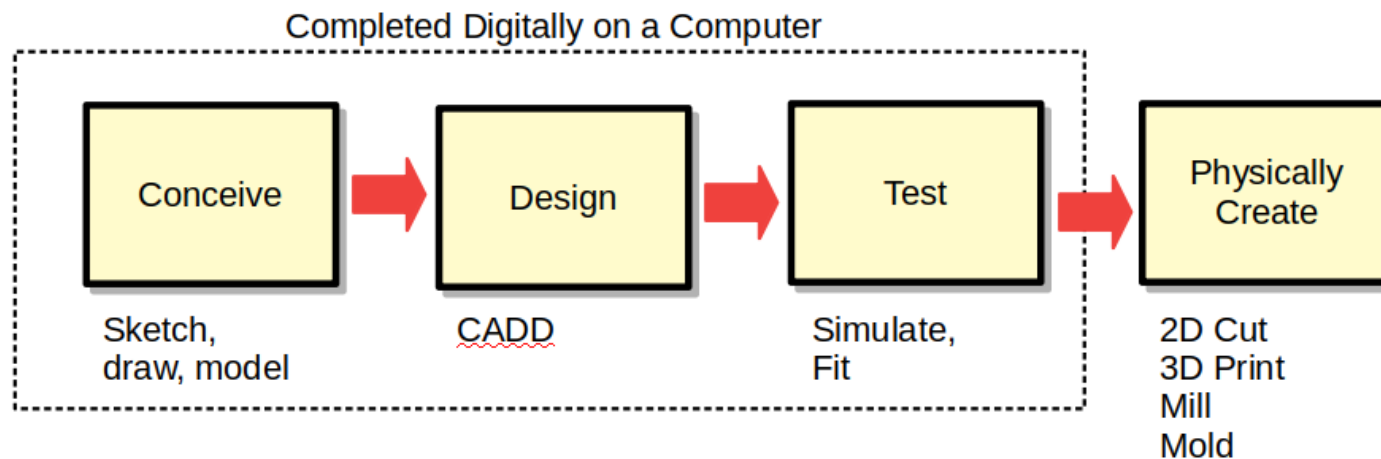
<https://rdorville.github.io/ep1000digfab>

Digital Fabrication

- Learn how to use Digital Fabrication techniques in
 - Computer Aided Design
 - 3D printing processes
 - Laser Cutting
 - Embedded controllers - sensing & actuation
- Covert your design into a working prototype
- Integrate technologies
- Document and present your prototype.

Definition

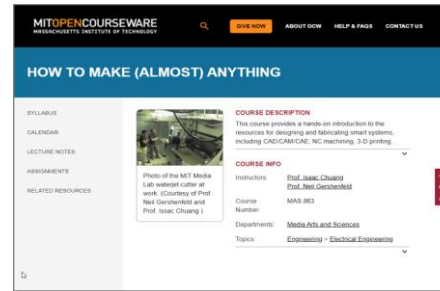
- [Digital modeling](#) and fabrication is a design and production process that uses digital information as its source.
(Ref: [Wikipedia](#))
 - Digital Fabrication allows you to build your object/idea on a computer and spending **minimal time** as well as expertise in creating the physical object on the actual machine.
- Workflow



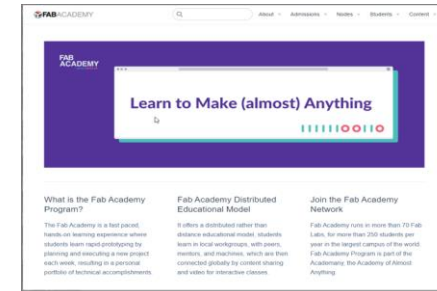
Commercial Break!



Fab Foundation



MIT: How to Make



FabAcademy



Prof. Neil Gershenfeld



Manu Prakash



Assessment

- Course Assessment

Sn	Code	Description	Score
1	CA1	Safety, Documentation, Web site	20%
2	CA2	Digital Fabrication Skills	40%
3	CA3	Summative Project	40%

- Assessment Method

- Documentation
- Skill Certifications (Safety, 3D Printing, Laser Cutting)
- Skill Assignments (mini-practical projects)
- Module Project

Course Schedule 22/23 Sem 1

Week	Date	Topic	Comments
1	18 Apr	Introduction, Fablab Safety, Tools, Documentation, HTML	Safety Assessment
2	25 Apr	HTML & CSS, Website, Github Pages, Version Control, Markdown	Jake Wright's Example, Github account
3	02 May	Computer Graphics - Raster, Vector Fusion 360, 2D-CADD	Public Holiday Selfie, Logo, Basic F360
4	09 May	3D Modelling techniques 3D Printing Process	Extrusion, Rotations, 3D-Model, 3D Print Knight
5	16 May	Box creation, 3D Model tools Laser Cutting	Public Holiday Laser Cutting - Name tag
6	23 May	Fablab Certifications - 3D Printing, Laser Cutting	Certifications, 3D & Laser cutting practical
7	30 May	3D Printed Knight piece Music Box Mini-project	Mid-Semester Test Project work
8,9,10	06 June	Term Break (3 weeks)	

Course Schedule 22/23 Sem 1

Week	Date	Topic	Comments
11	27 June	Basic Electronics Arduino System	Breadboarding, soldering, simulation, TinkerCAD, Uno
12	04 July	Basic Arduino Programming Simple Input/Output	Simulation – Uno, Switch & LED interfacing
13	11 July	Input Devices Switches, Ultrasonic, Sensors	Public Holiday Ultrasonic, DHT-11
14	18 July	Output Devices Displays, LCD, Neopixel, Motor control	Output programming, LCD, Neopixel, Servo, Stepper
15	25 July	Project Week 1 Conception, Design	Design, cardboard prototype, materials, components
16	01 Aug	Project Week 2 Physical cutting, fabrication	Physical cutting and fabrication
17	08 Aug	Project Week 3 Electronics, Microcontroller integration	Soldering, testing, fitting, integration
18	15 Aug	Project Week 4 Documentation, Testing	Site, Presentation, 1-minute Video
19	22 Aug	Exam Week - Presentations	

Extra benefits...

- Besides your grades ...
 - Fablab Safety
 - 3D Printing Certification
 - Laser Cutting Certification
- Usage of Fablab, equipment, materials outside of course hours
- Life-long skills in “making”

EP1000

Introduction

End