Introduction to 3D Printing

Education Commons
Traditional Methods:

Link to the Video >> https://youtu.be/4Fikcxmnn8Q
New Paradigm:

Link to the Video >> https://youtu.be/NX46AXfkbs0
New Paradigm:

Faster - Cheaper - Stronger.
Link to Video>> https://youtu.be/VGd-NfPHs0w

Achieving complex shape - almost impossible to achieve by traditional means.
Link to Video>> https://youtu.be/tGJeeEZTLhw
Technology Landscape:

Source: Gartner 3D hype cycle
Facilities around Campus

Education Commons:
http://guides.library.upenn.edu/3deducom

ADD Lab:
http://medesign.seas.upenn.edu/index.php/Guides/3DPrinting

Biomedical Library:
http://guides.library.upenn.edu/3d
World of 3D printing
Digital Camera Vs 3D printing
Maker Faire

Stereolithography - SLA
Selective Laser Sintering - SLS
Fused Depositioning Method: FDM
Maker Bot - Hands ON

- Steps Involved
- Do it Your self
- Tips
- Troubleshoot
Modelling Aid

Free 3D modeling software

Blender - a powerful, free and open source 3D animation suite you can use for 3D models. Enable the 3D Printing Toolbox.

OpenSCAD - a free software for creating solid 3D CAD models

Sketchup - comes in free or pro versions. Get the Sketchup STL from the Extension Warehouse.

Tinkercad - a browser-based 3D design platform, now part of Autodesk (free version available).

123D Design - a free, powerful, yet simple 3D creation and editing tool from Autodesk.

List of additional free software packages from 3ders.com

STL software

netfabb - a free Windows program for 3D printing to view, edit, analyze and repair STL files

Meshlab - Open source software for processing and editing of unstructured 3D triangular meshes. It also has an extremely fast slide function.
Built ready models

**Thingiverse** - Makerbot's searchable design library community

**3D Warehouse** - Sketchup's searchable design library

**SketchUP warehouse**

**Instructables** - 123D community

**Yeggi** - search engine to find 3D models

**Repables** - 3D printing file repository

**Smithsonian X3D** - collection of 3D models of various artifacts from the Smithsonian Museums

**NIH 3D Print Exchange** - website for searching, browsing, downloading, and sharing biomedical 3D print files, modeling tutorials, and educational material

**NASA 3D Resources** - printable 3D models from NASA
Post Processing - Surface finish

http://hackaday.com/2013/02/26/giving-3d-printed-parts-a-shiny-smooth-finish/
Lynda references:

Up and Running with 3D Printing with Kacie Hultgren

Getting Started with MakerBot 3D Printers with Kacie Hultgren
How to use EC Printer...

http://guides.library.upenn.edu/3deducom

When you are ready to submit your print request, please email your .STL file to educom1@pobox.upenn.edu with the subject "Pennkey_3dp_MM-DD". MM-DD stands for the month and the date on which you are submitting your files.

Example:-

Subject: "educom1_3dp_05-15";

STL files: "educom1_3dp_05-15.stl" or "educom1_3dp_05-15.zip"
Thanks