

STEM Robotics
Lesson Plan

Session 1: 3D Printing

Learning objectives:

Students will use Tinkercad to better understand how to develop a 3D model
Students will explore Thingiverse to select a model for printing
Students will import stl files into Cura to convert to Gcode in preparation for 3D printing.
Students will be introduced to using the Printrobot printer

Class Outline:

- A. Welcome: Outline of class structure, general housekeeping
- B. Begin a print on machine for demonstration purposes- Today we learn: How did we get to here?
(video: Mashable/3D printing)
- C. Explanation of X,Y,Z axes used for 3D designs (diagram on Elmo)
- D. Give quick overview of TinkerCad with video and then have students navigate to site to explore on their own (20 minutes)
- E. Introduce Thingiverse site and how to navigate and then have students navigate to site and explore. Discuss Hints, Files, and CC (20-30 minutes)
- F. Demonstrate importing files into CURA and how to save file onto desktop then set up a file for printing. Have students practice import and set up of a file they have downloaded from Thingiverse. Once loaded, mention how to find print time.(20 min)
- G. Show students the wheels and chassis already made; give option to print something of their own by setting up an appointment. Also encourage them to pick out and download something from Thingiverse to print.
- H. Give students a copy of draft policy- homework assignment is to read and comment on for next class.