

**3D Printing Technology Design Challenge (100 points)****Name:** \_\_\_\_\_

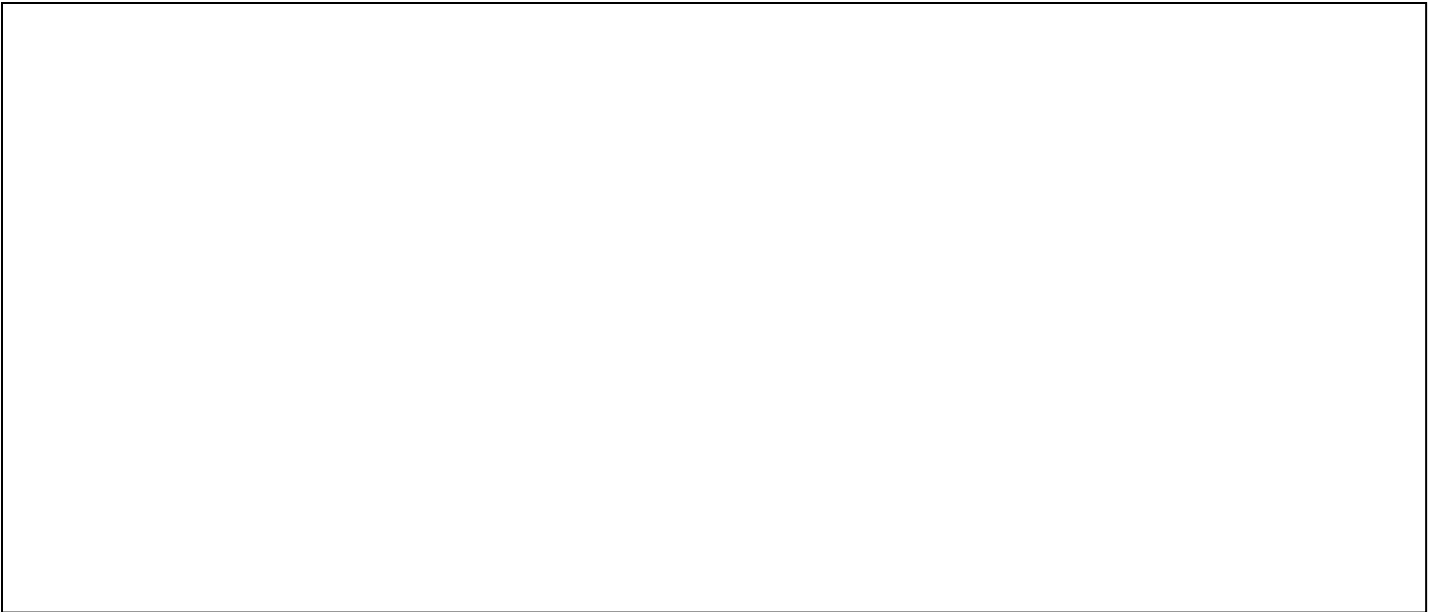
For this design challenge, each candidate will individually redesign your 2D geometric creature using both plane and solid geometric figures. Your geometric creature must stand by itself and have at least two moving parts.

Additionally your creature must:

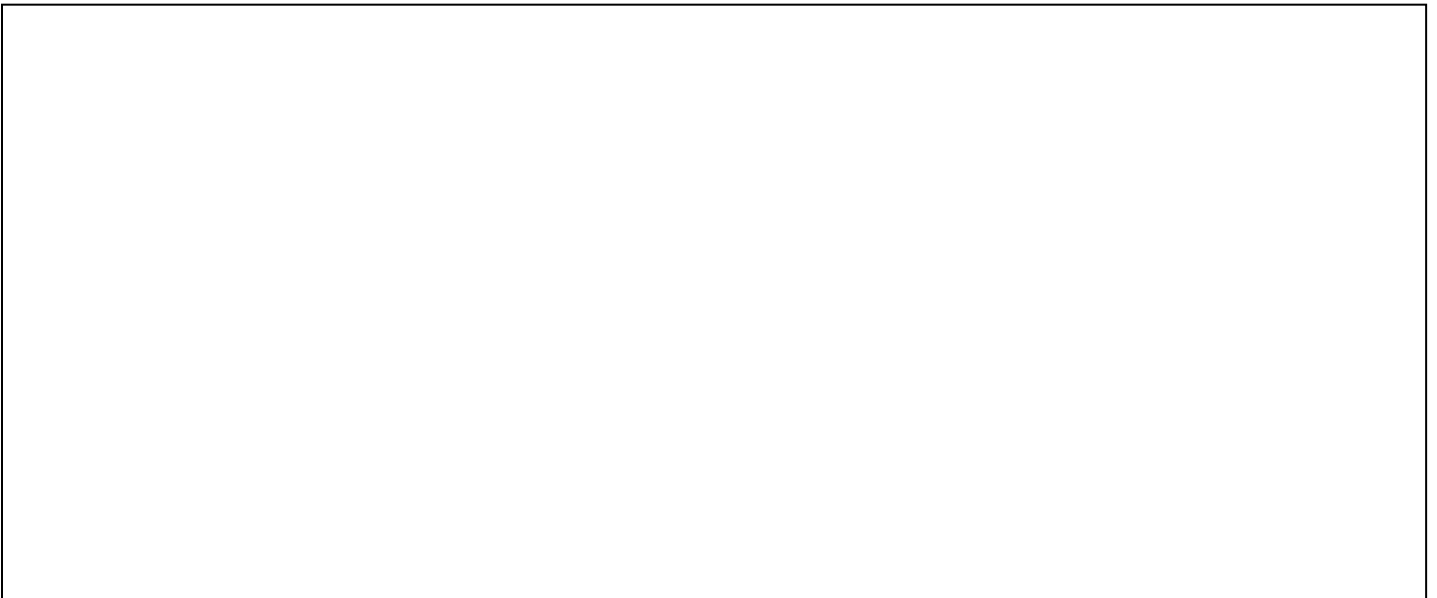
- Have at least 5 different plane shapes (typically used to decorate your creature)
- Have at least 3 different solid shapes (these must be 3D printed)
  - The 3D printed creature components must fit within the constraints of 10 cm X 10 cm X 2 cm or \_\_\_\_\_ in X \_\_\_\_\_ in X \_\_\_\_\_ in
    - See <https://www.mathsisfun.com/geometry/> for examples of plane vs. solid geometry.
- The 3D shapes must fit together with appropriate tolerances (we will discuss strategies for doing this in class).
- Have two moving parts (using levers, pneumatics, pulleys, etc.)
  - The moving parts of your creature can be created with the addition of a variety of fasteners such as 3D printed parts that snap together pen springs, etc. (no brads are allowed on this project).
- Be freestanding
- Be neat and attractive

**Sketch two ideas for your geometric creature.**

**Sketch your best idea for your geometric creature in a perspective view.**



**Sketch the parts that you will need to create using TinkerCAD on the computer. Identify what these parts will look like on the build plate of the 3D printer. Make sure to include all dimensions.**



**\*If you need more space to sketch you may use additional paper.**

**Now it is time to begin your CAD drawing.**

- Complete your TinkerCAD drawing and begin 3D printing by exporting your .STL for printing.

**\*note – if class time does not allow for you to complete your print, you may need to arrange time to use the 3D printer during open lab hours. Additionally, we will discuss how you can check out a 3D printer from CMASE.**

**Grading Criteria – 100 points**

- Completed all sketches with appropriate details (25 points)
- Designed figure within the given parameters/constraints (25 points)
- Completed assembly of the 3D printed creature and presentation to the class (50 points)