IME 100: Interdisciplinary Design and Manufacturing

Musical Instrument Project

Your Mission: To design and manufacture a playable musical instrument (25 points)

In groups of **4**, you will design and manufacture musical instruments. Your musical instrument needs to meet a minimum complexity and should play reasonably well.

To begin, you must join an Instrument group on Blackboard where you will maintain and submit documents. Each group member must sign up for the group

Use Fusion 360 to design your musical instrument. You may manufacture it using the LagunaIQ and/or 3D print pieces. Other manufacturing options may also be available on request.

Stock material for LagunaIQ is x = 11.25 inches, y <= 16 inches, z = 0.5 inches, 0.75 inches, or 1.5 inches. Other stock sizes may be available with justification.

3D print filament available are PLA and ABS (PLA is recommended).

Once you have your design completed and approved, you will need to step through your Fusion 360 model to verify datum (Origin), stock size, and estimated machining time (≤ 20 minutes) from your setup sheet. Once approved by the technicians/instructor, you will need to (for Laguna) post-process and save your files on a blank USB stick. You can then proceed with your **Setup Sheet** to the manufacturing lab or (for 3D Printing) proceed to the 3D printing farm where you will have to take additional steps.

Deliverables:

1. Proposal with a plan for design and manufacturing (Due on Week 7 Monday) [5]
2. A photo of your completed musical instrument [2.5]
3. A Video of someone in your group playing it! [2.5]
4. Dimensioned Engineering Drawing(s) [5]
5. Set up Sheet and/or Slice data (gcode) [5]
6. Group Reflection [5]

Once manufactured, the items above will be turned in as a package (Submit all files at the same time).

Your group reflection (~ 2 pages) should discuss what went well during the design/manufacturing process and what did not go well during the design/machining process. For example,

- Did the project follow the proposed timeline and plan listed in the proposal ?
- Did the proposed and actual machining/printing times match?
- Did the instrument resemble your model? If not, why not.
- Did it play correctly??

Overall project grades will be based on your reflection, the quality of your instrument, and the thoroughness with which you completed the design and manufacturing plan (Proposal).

Due on Monday of Finals Week