

ME 410 FINAL PROJECT

Project Goal

Your goal is to design and fabricate an educational artifact from among a variety of end uses that also provides immersion in one or more manufacturing processes that your team would like to become more proficient (3D printing, CNC coding, mill operations, lath operations, CNC can cycles, welding, etc.). Consideration should be given how to produce a batch of six end products within reasonable time.

Deliverables

Design Documentation - Create a complete drawing package, properly dimensioned, mindful of manufacturing issues. Show proper assembly views, drawings for all manufactured parts as well as special fixtures, a bill of materials, and pictures of manufacturing/ assembly/final product. You should follow the ME drawing package guidelines, which are available on the Mindworks website.

Manufacturing Plan - Develop a written manufacturing plan using appropriate machining templates on the Mindworks site. Think about the sequence of operations and how you will secure the part in each operation. Strive to minimize manufacturing setups. Outline a machining schedule that could be used to create a run of a half-dozen parts. Consider the following questions:

- Has a mentor reviewed/approved your drawing package?
- Has a mentor reviewed/approved your manufacturing plan?
- What fixturing is needed for manufacturing? How has this been specified?
- Have you signed up for machine times? (sign-up board located in senior design suite)
- Is all of the material (stock) available?
- Are all of the tools available?
- Which items (if any) should be purchased rather than manufactured?

Final Product Evaluation - Discuss the success of your design in achieving specifications shown in your drawing package. Discuss the pros and cons of the fabrication techniques selected by your team with respect to material cost, ease of handling, manufacturing lead time, and ultimate product quality.

Project Reflection - Provide an assessment (greatest strength and greatest area for improvement) for (a) each team member, (b) your team as a whole, and (c) the ME 410 final project experience.