

## **IDP250 Applied Design and Prototyping**

**Schedule:** January 15 thru 18 2019

**Instructor:** Eric Jensen, [ejensen@smith.edu](mailto:ejensen@smith.edu), Susannah Howe, [showe@smith.edu](mailto:showe@smith.edu)

**Overview:** In this course students will see how learning fabrication enhances design. Using CAD skills developed in IDP150 or IDP151 students will reverse engineer a product, and applying design intent, will create their own version of it. The process involves measuring, hand sketching, developing engineering drawings and fabricating their project using the machine tools in the Center for Design and Fabrication. Students will learn how to detail and communicate their design intent. They will complete a physical model and the design documentation for it.

### **Schedule:**

*January 15 - 18, 2019. 9:00 AM to 4:00 PM (Lunch 12-1)*

**Class Requirements:** IDP150 Autocad, and/or IDP151 Solidworks are a prerequisite. Attendance is mandatory for the four days of the class. Each day builds on the work of the previous, so missing a day or joining late cannot be allowed.

**Grading:** Class is graded S/U. Passing assumes full attendance for the 4 days, plus a completed prototype and relevant documentation.

### Day 1 - Measure, Design

- Survey on experience with CAD, student expectations
- *Intro* - Discuss course overview and context of Stirling Engines
- *Lab* - Disassemble motors, sketch parts
- *Lunch*
- *Lab* - Measure, design and make drawings of parts
- *Lab* - Design individual flywheel

### Day 2 - Manufacture

- Safety training, assemble work teams
- *Lab* - Working in teams make parts
- *Lunch*
- *Lab* - Working in teams make parts

### Day 3 - Manufacture

- *Review* - Check status of all students' progress
- *Lab* - Working in teams make parts
- *Lunch*
- *Lab* - Working in teams make parts, each student make custom flywheel

### Day 4 - Putting It All Together, and Intro to Drawings

- *Review* - Check status of all students' progress
- *Lecture* - Discuss assembly drawings and BOM
- *Lab* - Assemble engines
- *Lunch*
- *Lab* - Finish Assembly
- Motor runoff showcase - students test motors, enjoy snacks!
- Final class surveys

### **Stirling Engine Prototype**

