Abstract

There are many challenges related to the implementation of project-based learning (PBL) in the engineering curriculum:

- The amount of work required by instructors to design well-posed projects
- Poorly designed PBL activities cause frustration among students, create extra work for instructors and students alike, and detract from the intended learning outcomes

The Projects-to-Classrooms (P2C) program is a unique co-curricular program that supports instructors in the creation of high-quality and high-impact PBL activities. The program is innovative as it involves and benefits multiple stakeholders including students employed through the program, faculty, industry, and the engineering curriculum.

Goals of the P2C program

The P2C program employs undergraduate students to work on special projects in engineering design based on real-world/industry problems. P2C projects are then integrated into undergraduate courses as case studies, projects, or labs.

Enhancements to the program

To provide P2C students formal and consistent training on how to manage their projects or translate them into curricular material, we are developing resources on topics that are uniquely relevant to the goals of the program, including:

- Writing effective learning outcomes
- Content delivery & assessment strategies
- CEAB GA process & reporting
- Inclusive curriculum

We are also defining reporting milestones and rubrics to (i) guide students and faculty members through their projects, and (ii) facilitate an objective and consistent evaluation of P2C projects.

Example projects

- Development of a resistance spot weld process for automotive applications
- CNC machining of 3D solid & surface models
- Sheet metal & plastic molding optimization
- Advanced metrology and laser scanning
- Data science for industrial automation
- Validation of the thermomechanical properties of materials, and boundary conditions for industrial casting and forming processes

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