

# Innovative Teaching – Course Redesign project (ITCR)

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## ME 283: Automatic Control of Manufacturing Processes

This course covers general concepts for control of manufacturing processes, including the concepts of and tools for process modeling, process optimization and process control. It emphasizes the integrated approach combining statistical process control (SPC) and automatic process control.

## Brief description of the course and its place in the curriculum

ME 283 is a graduate course where students learn concepts and tools for process modeling, process optimization and process control. The class combines statistical process control (SPC), design-of-experiments (DoE), and discrete process control (DPC). This is the only course in the program that focuses on statistical analysis of experimental data, and thereby has value for students who perform research involving data analysis.

## Summary of course re-design activities

Our goals are to provide students with open-ended learning opportunities and to promote the development of lifelong learning skills for **real-world** applications.

To this end, we will:

- (1) Convert required projects from an "outside-of-the-classroom, on-your-own-time" format to a more interactive, engaging activity involving groups of students and the instructor.
- (2) Supplement in-class activities with "flipped" instructional content including short video lessons and self-paced reading assignments with weekly on-line quizzes as checkpoints.
- (3) Analyze student mastery of course content to determine which course learning objectives are best achieved via in-person interaction and which might be better suited for online delivery.

