

ISE 489/589

Advanced Materials Processing

Spring 2021

Course Objectives

This course offers an advanced treatment of materials processing with emphasis on machining processes. We will study casting and forming processes with an emphasis on bridging modeling and practice. Similarly we will blending theory and practice to understand machining, its impact on part quality and how to apply this to contemporary problems including difficult to machine materials, machining of castings and formed components and finishing of additively manufactured metal components.

Hands-on Laboratory

The course will have group projects utilizing state-of-the-art facilities. The topics will include the finishing of metal additively manufactured components and sensor-based machining. Team will be formed by week 2 of the course and specific topics assigned. These projects will require you to obtain additional software skills and to write a final project report in the form of a publishable paper. In addition, presentations on progress and results will be required. While in the lab you must conform to all safety procedures and be approved, with training, to run the equipment needed. Machining must be done with at least two group members present.

Course Grading

Midterm Exam (25%), Final Exam (25%), Project (25%), Homework (25%)

Recommended Background

Undergraduate courses in statics, material science and materials processing

Time

M/W 1:30- 2:45pm

Instructor

Paul H. Cohen, Woolard Distinguished Professor, 4357 Fitts-Woolard Hall, pcohen@ncsu.edu

