Theory of Elasticity (MAE 650)

Instructor: Liping Liu   Room: SEC 203 Phone: 723-445-2390-5935
Email: liu.liping@rutgers.edu   Time: TuTh 3:20-4:40pm (and to be discussed)

Office hours: To be discussed. **Office:** Hill Center 516 & MAE ??

The required textbook: None

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The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.
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Major Assignments/Exams:

Homework: Homework will be assigned but not graded.
Oral exam: You will be asked questions from your homework.
Project: There will be a final project. You are required to submit an electronic copy and a hard copy of the solutions to a project problem. The project problems will be either assigned or some problem you are interested in or encountered in your research, and relevant to this course.

Final Grades:

Attendance: 20%; Oral exam: 40%; Project: 40%. Exceptional performer in either oral exam or project will get an "A" regardless attendance, etc.

Learning Objectives:

This course concerns the classic theory of elasticity. It is intended to give a rigorous foundation for linearized elasticity. The structure of this course will follow the modern framework of continuum mechanics. In particular, we will address Saint-Venant's problems, derive from the general three dimensional theory various lower-dimensional theories including plane-strain, plane-stress and anti-plane shear, and present detailed solutions to some classic and extremely useful problems: Kelvin problem, Boussinesq's problem, Eshelby's inclusion problem and Hertz's contact problem. The goal is to transmit an "insider's view" of seemingly different problems, which are actually handled by the same technique. The exposition in this course will be quite traditional, but examples will be chosen to reflect modern trends in technology and research.

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