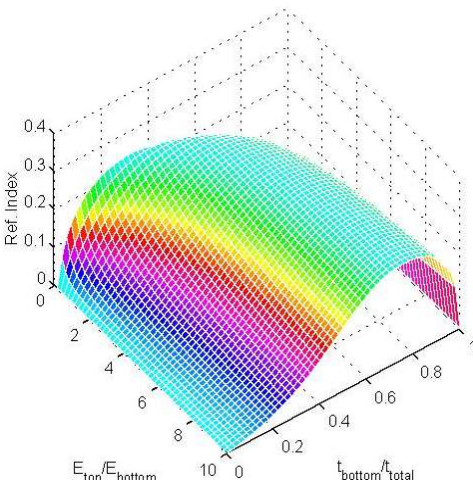
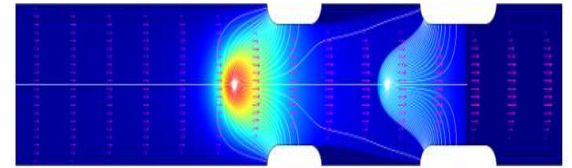
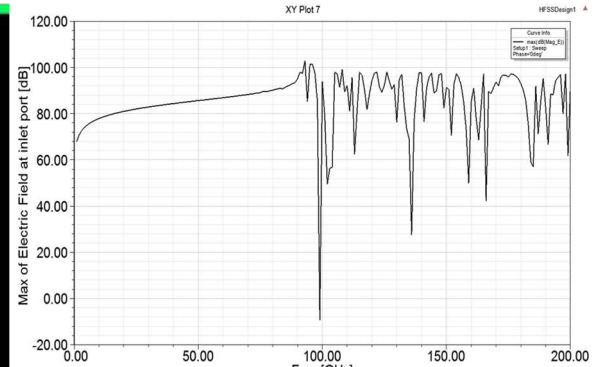
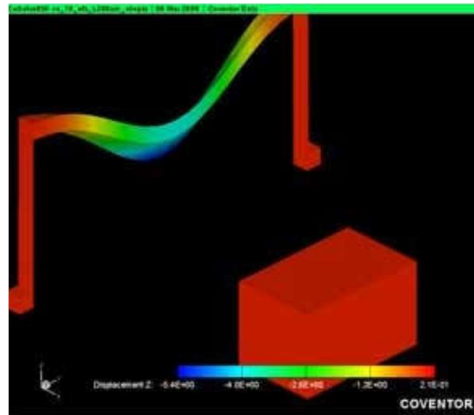


Course Overview

EE 503, Modeling of Micro- and Nano-Electro-Mechanical Systems, is a four-credit graduate level course, should be of value to those working in industry, academia, and IP protection. The course focuses on modeling of sensors, actuators, and microfluidic systems, with the emphasis on electromechanical dynamics, micro-optics, and heat transfer. After a review of medical, aerospace, and consumer device applications, students will focus on the course project in the area of their interest.



The course will introduce students to numerical and analytical modeling and design of microsystems using leading software in the field. Two software packages, COMSOL and ANSYS Maxwell will be in a dedicated computer lab to simulate electrostatic, magnetostatic, mechanical, electromechanical, thermal, piezoelectric, and fluidic phenomena.

Lecture material also includes MEMS and NEMS design philosophy, lumped modeling, conjugate power variables, equivalent circuits for linear transducers, linear system dynamics, design optimization, parametric analysis, and patterns of patentable designs.

There are no special prerequisites. Basic understanding of matrix algebra and ordinary differential equations is expected.

Schedule

SLN:21668 EE P 503 4 Credits MODELING OF MEMS AND NEMS

Textbook

Stephen Senturia, Microsystem Design.

Grading

Grades will be based on homework assignments, midterm exam, and a final project.

Homework assignments	50%
Midterm exam	20%
Final project	30%