



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Optimum Design of Machines and Structures

MECHENG 7761

Credit Hours:

3.00 - 3.00

Course Levels:

Graduate (5000-8000 level)

Course Components:

Lecture

Course Description:

Application of optimization techniques to mechanical systems and structures. The structures considered will typically be high performance structures such as in aircraft and spacecraft.

Prerequisites and Co-requisites:

Prereq: Sr standing, or permission of instructor.

Course Goals / Objectives:

- Be able to formulate an optimization problem from a general technical description of the problem
 - Understand the classical approaches to optimization
 - Understand standard common mathematical programming approaches to nonlinear optimization with and without constraints
 - Understand the simplex method and be able to solve linear programming problems
 - Understand and be able to solve problems in robust design optimization
 - Be able to solve problems in topology shape optimization
 - Understand the application of calculus of variations to optimum design
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Course Topics:

- Introduction to optimum design
 - Classical theory of optimization
 - Mathematical programming methods with no constraints
 - Mathematical programming methods with constraints
 - Robust design optimization
 - Introduction to topology shape optimization
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Designation:

Elective