THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Optimal Design of Aerospace Structures

AEROENG 7844

Credit Hours:
3.00 - 3.00

Course Levels:
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
Optimization applied to aircraft and spacecraft structures.

Prerequisites and Co-requisites:
Prereq: Grad standing in Mechanical or Aerospace Engineering, or permission of instructor.

Course Goals / Objectives:
- Be able to formulate optimization and optimal design problems from a technical description of the problem
- Understand the classical approaches to optimization and optimal design of aircraft and spacecraft structures
- Understand standard linear and nonlinear mathematical programming approaches to optimization with and without constraints
- Understand and be able to solve problems in reliability based design optimization and robust design optimization
- Understand the fully stress design approach for aircraft and spacecraft structures
- Understand the topology shape optimization
- Understand the application of energy methods and calculus of variations to optimum design

Course Topics:

- Introduction to optimum design
- Classical theory of optimization
- Mathematical Programming methods with no constraints
- Mathematical programming methods with constraints
- Reliability based design optimization
- Robust design optimization
- Introduction to topology shape optimization

Designation:

Elective