Fall 2004 Graduate Course

53:235 APPLIED OPTIMAL DESIGN

Instructor: J. S. Arora

Time: 4:30 – 5:45; Tuesday, Thursday

Place: 3026 SC

Course Description: The purpose of this course is to present modern concepts of optimal design of systems. Basic ideas from optimization theory are developed with simple design examples. Analytical and numerical methods are developed and their applications discussed. Use of numerical simulation methods in the design process is described. Students work on a substantial project from their area of expertise. Prerequisite: 53(58):113

http://www.engineering.uiowa.edu/~jsarora/COURSES/53-235%20AOD/course_index.html

Course Learning Objectives

1. Introduction; notation; Design process
2. Optimal design problem formulation
3. Unconstrained optimal design theory; applications
4. Constrained optimal design theory; applications
5. Numerical methods; Linear and quadratic programming
6. Numerical methods; unconstrained problems
7. Numerical methods; constrained problems
8. Optimal design with numerical simulation method; design sensitivity analysis
9. Applications; Projects related to students’ area of expertise