**Instructor:** S. Lakshmivarahan

**Class Time and Place:** T-Th 1.30 to 2.45pm in CEC 117

**Email:** varahan@ou.edu

**Office Hours:** T-Th 9.00 to 10.00AM & 3.00 to 3.30pm in DEH-230

**Text Book:**


**Topics Covered:** Overview of vector spaces, matrices, and multivariate calculus. Linear least squares problem, Methods for solution – normal equations, QR-decomposition, SVD. Nonlinear least squares problems and methods for solving them. Projection (orthogonal and oblique) methods and their relation to least squares. Overview of optimization algorithms including gradient, conjugate gradient and quasi-Newton methods. Programming exercises will use MATLAB.

**Grading:** 6-8 home works, one mid-term, and a final. Assignment –30%, midterm 30%, and final 40%.

**Mid-Term Exam:** Thursday, October 14th, 2010

**Final Exam:** Tuesday, December 14th 2010, from 1.30 to 3.30 pm

**Note:** This is a slash-listed course. Graduate students must register in CS5743 to get graduate credit. Also, graduate students will be required to do extra work – the nature and type of this work will be specified throughout the course.

Please contact us immediately after the first class if anyone, due to disability, has special needs, so that arrangements can be made with the Student Services to help you out.

**ABET Student Outcomes to be addressed**

- **B:** An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- **J:** An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices

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