

**Department:** Civil Engineering  
**Course Number:** CE6332/5332  
**Title:** Modern Methods in Engineering Computation

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**Textbook:** **Applied Numerical Methods with MATLAB for Engineers and Scientists**  
Steven C. Chapra, Mc-Graw Hill, 4<sup>th</sup> Edition, 2018

**Topics:**

Implementation of numerical methods to the solution of various engineering & research problems of medium to high complexity requiring the implementation of numerical methods including:

- a. Linear Algebra
- b. Eigenvalues and Eigenvectors
- c. Curve Fitting
- d. Root Finding
- e. Optimization
- f. Differentiation and Integration
- g. Ordinary Differential Equations
- h. Others

**Course Objectives:**

The objective of this course is to provide students with the basic numerical analysis and programming skills that are critical to the development of a successful research project.

**Class Schedule:**

Meeting time: 1:30 p.m. – 2:50 p.m., TR

**Projects:**

Between five and eight projects will be assigned during class requiring the numerical solution of engineering/research problems using Matlab. The programs have to be developed individually although interaction and discussion with other classmates is acceptable and encouraged.

**Grades:**

Projects            100%