Course No.: Math 535
Course Title: Numerical Methods
Core Course: No
Term: Fall 2017
Instructor: Yau Shu Wong

Syllabus:

This graduate course will introduce numerical analysis and scientific computing. The course is particularly designed for students interested in computational methods, or planning to take the core course MATH 536 in the winter term but have not taken numerical courses in their undergraduate programs. However, computing experience is an essential requirement for this course.

Topics in MATH 535:

Error in computing
Numerical solution of nonlinear equations (including system of nonlinear equations)
Numerical linear algebra: Direct and Iterative solvers for linear systems and Eigenvalue problems
Approximations
Polynomial and spline interpolations
Numerical differentiation and integration
Computational solutions for ODE’s: Initial-value and boundary-value problems

Suggested reference books:

Numerical Analysis by D. Kincaid & W. Cheney

Numerical Analysis by Burden and Faires
Prerequisites:

The required background includes undergraduate courses in Calculus, Linear Algebra and ODE's. You must be capable of writing a computer code in at least one programming language, and also be familiar with standard visualization software (e.g. Matlab, Maple etc.) for presentation of your numerical results.

Grading:

Homework and project presentation: 25%
Midterm examination (2 hours): 25%
Final examination (3 hours): 50%

The time for the midterm and final exams will be decided in the course of the term so that it is suitable for both the students and the instructor.