Course Website: http://venus.cs.qc.cuny.edu/~smane/cs361/

Classes: Mo/Tu/We/Th 2:00 – 3:34 pm, SB C205; 3 hr., 3 cr.

Office & Hours: SB A201; Mo/Tu/We/Th 1.15 – 1.45 pm and 3.45 – 4.15 pm (approx)

Prerequisites: CSCI 220 and 313; Math 152 and 231.

Textbook: no required text.

Reference texts (optional):
- Timothy Sauer, Numerical Analysis, 2nd ed.

Learning Goals: There will be emphasis not only on computation but also analysis. Students will be expected to learn computational algorithms and also to understand the principles underlying the algorithms.

Course Description: Basic topics which will be covered are:
- Useful ‘basic’ techniques (Horner’s rule, gcd calculator, Taylor series, etc.).
- Solution of non-linear equations (bisection, Newton-Raphson, secant, fixed point iteration).
- Numerical integration (trapezoid, Simpson, etc.), multi-dimensional integrals.
- Applied Linear Algebra (matrix operations).
- (Optional, if time permits) Fourier Series and Digital Fourier Transforms.
- If time permits, additional topic(s) may be included.

Students will be required to write working programs to implement the above algorithms.

All coding will be in C++.

Students will be required to carry out basic mathematical computations in class, using a calculator and/or spreadsheet, including questions for in-class exams.

Grade Policy: The grading policy will consist of:
- Midterm 1, Midterm 2, Final.
- Projects (tentatively three projects, details to be fixed).

Students who form teams to collaborate on projects must inform the lecturer of the names of all team members ahead of time, else the submissions will be classified as cheating and will receive a failing grade.

- Some exam/project questions will be mandatory for graduate students and optional for undergraduates.
- Homework is not officially graded. Good quality homework solutions may be counted for a grade boost.
- All exam and project questions will be scored from 0 to 1 and the final score for the course is multiplicative:

  \[ \text{overall score} = 100 \times \prod \text{(score on each graded question)} \]

Exam Dates: There will be two midterms and a final. Dates to be decided.

Academic Policy: Academic dishonesty such as plagiarism or cheating will be dealt with seriously in accord with the University’s policy on academic integrity.
A student caught cheating on any question in an exam or project will fail the entire course.