Course Website: [http://venus.cs.qc.cuny.edu/~smane/cs365/](http://venus.cs.qc.cuny.edu/~smane/cs365/)

Classes: Mo/Tu/We/Th 4:30 – 6:04 pm, SB B141; 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 313 and MATH 241; or CSCI 314 and ECON 249 for Finance students.

Textbook: no required text.

Reference texts (optional):

Learning Goals:
- The emphasis of the course will be on computation, not abstract mathematics.
- Prior knowledge of finance is not a prerequisite.
- Advanced mathematics such as stochastic calculus is not required.

Course Description: Valuation of derivatives as a family of algorithmic computations, with analysis of the underlying financial model and hands-on implementation practice. Topics to be covered will include:
- time value of money (interest rates, yield curves)
- arbitrage based pricing and hedging, including risk neutral pricing and risk free portfolio
- options and Black-Scholes-Merton model
- path-dependent and ‘exotic’ derivatives
- volatility smiles
- 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.