Spring 2018
Introduction to Computational Finance
MAP 5611

Details

• Time and Place: 11:15 – 12:05, 200 Love Building

• Instructor: K. A. Gallivan (5-0306, 318 Love Building, gallivan@math.fsu.edu)

• Homepage http://www.math.fsu.edu/~gallivan

• Office Hours: 8:00 – 9:00 (MWF), 10:00 – 11:00 (MWF) and by appointment.

• Prerequisites: MAP 5601 and programming proficiency in C++.

• Text: no required textbook

• Recommended Reference Texts:

• Grades: Homework 40 %, Midterm Exam 25 %, and a comprehensive Final Exam 35 %.

• The Final Examination will be held at the time scheduled by the University. Currently, this is Monday, 30 April 2018 from 10:00 – 12:00. The times posted on the Registrar’s Exam Schedule supersede any posted on the class website or given here.

• No makeup exams will be given without prior approval or, if not possible, without documentation of an excused absence.

• Homework: Homework will consist of written exercises and programming assignments. They are due at the time specified in the assignment. Homework solutions will be accepted after the due date only with prior approval or with documentation of an excused absence.

• All programming assignments must be completed in C++. MATLAB and scripting languages are not acceptable for the code implementing the algorithms used to solve the assignment but they may be used to control or support the testing and evaluation of your code.

• All solutions for programming assignments must be submitted in the form described in “A Note on Reporting Programming Assignment Results” available on the class website.
• University Attendance Policy: Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

• Class Attendance Policy: With the exception of the first class meeting, attendance is not required but is strongly advised. A student absent from class bears the full responsibility for all subject matter and procedural information discussed in class.

• Class Participation Policy: Students are expected to be prepared for class lectures and for any office visits. Students are encouraged to prepare carefully for class by reading relevant posted notes and sections of the textbook; to ask questions; and to initiate and/or participate in discussions in class and office visits.

• Electronic devices may be used to access class notes and related material during lectures. Other uses of cell phones and similar devices are often disruptive to the lecture and are not permitted, in class and office visits.

• Class Information: Class notes, homework, programming assignments and announcements will be posted on the class website (follow the teaching link from www.math.fsu.edu/~gallivan). You are expected to consult the website in a timely and regular manner. Parts of the class website are password protected. The user name and password will be announced in the first lecture.

Objectives

Sophisticated mathematical models, whose solution often requires computer programming, have become important in finance. This course will give students from a variety of disciplines, who are interested in financial mathematics, the basic numerical tools and practice to solve financial problems using computation.

Content

Below are the expected topics to be covered. Actual coverage will depend on time constraints.

1. Floating Point representation and errors
2. Problem conditioning and algorithm stability
3. Solving nonlinear equations
4. Interpolation and least squares approximation
5. Quadrature
6. Monte Carlo methods
7. Differentiation
8. Integration of ordinary differential equations
9. Fast Fourier Transforms
10. Basic Partial Differential Equations and finite difference methods
11. Application to Black-Scholes Model

Syllabus Changes
Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.

Honor Code
The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to ... be honest and truthful and ... [to] strive for personal and institutional integrity at Florida State University. (Florida State University Academic Honor Policy, found at http://dof.fsu.edu/honorpolicy.htm.)

Americans with Disabilities Act
Students with disabilities needing academic accommodation should, during the first week of class:

1. register with and provide documentation to the Student Disability Resource Center;
2. bring a letter to the instructor indicating the need for accommodation and what type.

This syllabus and other class materials are available in an alternative format upon request. For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource Center
874 Traditions Way
108 Student Services Building
Tallahassee FL, 32306-4167
644-9566 (voice), 644-8504 (TDD), sdrc@admin.fsu.edu, http://www.disabilitycenter.fsu.edu.