SYLLABUS

ISC 3313 - Introduction to Scientific Computing
Programming Language: C++
Summer Session A 2011

http://people.sc.fsu.edu/~jburkardt/classes/isc_2011/isc_2011_syllabus.pdf

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Class:	time: TR 11:00-12:15 room: 152 DSL (Dirac Science Library).
Instructor:	John Burkardt, email: `jburkardt@fsu.edu` office: 445 DSL phone: 850-645-9610
Office Hours:	W 11:00-12:15, 152 DSL, other times by appointment
TA:	Detelina Stoyanova, email: `dks10d@fsu.edu`, office: 422J DSL
TA Office Hours:	MF 11:00-12:15, 152 DSL.
Prerequisites:	MAC 2311, MAC 2312 (corequisite)
Text:	Deitel and Deitel, *C++: How to Program: Late Objects Version, 7e*, ISBN13: 9780132165419.
Open Lab:	MWF 11:00-12:15

Official Course Description: This course introduces the student to the science of computations. Topics cover algorithms for standard problems in computational science, as well as the basics of an object-oriented programming language, to facilitate the student's implementation of algorithms.

Instructor's Course Description: I want to teach you to program. My second goal is to expose you to algorithms for solving scientific problems.

Course Objectives: At the end of the course, students will be able to:

- identify the components of scientific computing;
- identify standard problems in scientific computing;

- implement basic algorithms for standard problems in computational science using the programming language C++;
- write, debug, and verify computer codes;
- output results of computer simulations in a meaningful manner.

C++ Topics:

- operating system, editor, files, compiler, graphics;
- program format, variable names, statement structure;
- control structures: if, while, switch;
- functions and segmented programs;
- arrays and vectors;
- pointers;
- input/output and files;
- classes.

Scientific Computing Topics:

- iteration;
- finding the solution of a nonlinear equation;
- polynomials;
- approximating a function;
- solving a differential equation;
- approximating the integral of a function;
- random number generation and use;
- using graphics to display data.

Grading Policy: The student's grade for the course will be based upon classwork, programming homework, a midterm and a final capstone project. This work is weighted as follows:

- Classwork - 20%
- Programming Homework - 40%
- Midterm Exam - 20%
- Capstone Project - 20%

Submissions: In-class lab exercises should be completed during the last 15 minutes of a lab class, and must be shown to the TA for credit. Homework

assignments and programs must be submitted via email to the TA. The capstone project will require the submission of printed copies of a report and program.

Late Assignment Policy: You can turn in *one* laboratory assignment and *one* homework program late with no questions asked and no penalty. However, the assignment must be turned in no more than one week past its due date. Additional late assignments will be penalized; in particular, an assignment that is one week overdue will be penalized 25%, and assignments more than a week past the due date will not be accepted.

Computer Competency Requirement: In order to fulfill FSU's Computer Competency Requirement, the student must earn a "C-" or better in the course, and in order to receive a "C-" or better in the course, the student must earn at least a "C-" on the computer competency component of the course. If the student does not earn a "C-" or better on the computer competency component of the course, the student will not earn an overall grade of "C-" or better in the course, no matter how well the student performs in the remaining portion of the course.

Capstone Project: This course requires a final "capstone project", in order to fulfill FSU's Computer Competency Requirement. The student, with the guidance and approval of the instructor, selects a computer project to work on. Completion of the project requires a working program, a written report, and an oral presentation. Details about the capstone project will be presented sometime after the fourth week of classes.

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.

Academic Honor Policy: The Florida State University Academic Honor Policy outlines the Universitys expectations for the integrity of studentss 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 truth-

ful 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:

1. register with and provide documentation to the Student Disability Resource Center; and
2. bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

This syllabus and other class materials are available in 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
Florida State University
Tallahassee, FL 32306-4167
(850) 644-9566 (voice)
(850) 644-8504 (TDD)
sdrc@admin.fsu.edu
http://www.disabilitycenter.fsu.edu/

Syllabus Change Policy: "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."