

Class Syllabus: Programming for Scientific Applications

Spring 2011

Location	152 Dirac Science Library
Course name	Programming for Scientific Applications
Course number	ISC 4304
Course time	Tuesday, Thursday: 11:00 pm - 12:15 pm Friday (lab): 3:30 pm - 6:00 pm
Office Hours	By email or appointment
Instructor	Gordon Erlebacher (with help from Ian Johnson, graduate student)
Telephone (wk)	(850) 644-0186
FAX	(850) 644-0098
Email	Gordon Erlebacher Ian Enjalot
Instructor home page	http://www.sc.fsu.edu/~erlebach
Prerequisites	Calculus 2 (MAC 2312) or permission of the instructor.
Text Book	None. Instead we use web-based tutorials
Content	12 weeks on Python, 12 weeks on C++, a midterm and final exam. Two lessons are dedicated to material review. The labs are applied to practical applications.
Assignments	<p>Students will be given homework problems once or twice a week basis to help master the material learned in class. The assignments will be executed using the tools installed on the classroom machines (that are accessible remotely via ssh), the machines in the hallway on the 4th floor of Dirac Science Library, or on the personal laptops or PCs of students. Using the linux or mac operating systems will be easiest, but windows is allowed, but we will not provide much support.</p> <p>The labs on Friday will require writing programs that pull together various concepts learned in class to develop a variety of tools usually used in scientific applications, and they will be applied to actual data. Students should expect to program 10-15 hours a week outside course time. The web is a bountiful resource of program examples and tutorials.</p>
Course Description	This course provides knowledge of a scripting language that serves as a front-end to popular packages and frameworks, along with a compiled language such as C++. Topics include the practical use of an object-oriented scripting and compiled language for scientific programming applications. There is a laboratory component of the course,

	concepts learned are illustrated in several science applications. Prerequisite: MAC 2312.
Course Objectives	<ul style="list-style-type: none"> • to understand the benefits of interpreted and compiled languages and know when to use each one to best advantage • to understand Python sufficiently to program applications with confidence • to understand C++ sufficiently to program applications • learn to interface C++ and Python to each other, to take advantage of the best features of both languages • through lab work, develop the skills to apply Python and C++ to a range of practical scientific applications, ranging from graphical user interfaces, web-based display of results, processing of scientific data, and visualization
Attendance	Students are required to attend all classes. Exemptions are only excepted for sickness and the attendance of scientific conferences. Students, not the professor, are then responsible for bringing themselves up to date both on subject matter covered during class, as well as completing homework assignments in a timely manner. Information given in class supplants information provided on the course web site.
Courtesy	You should get to class on time, and remain until class is dismissed. If you must leave class early, please let the instructor know before class begins. Please consider leaving your previous location 15-20 min early to get to class on time.
Grading	<p>The course grade will be based on four components:</p> <ul style="list-style-type: none"> • Class homeworks: 30% • Lab reports+attendance: 30% • Midterm exam: 20% • Final exam: 20% <p>Class homeworks are given 1-2 times a week, and lab reports are due weekly or biweekly (depending on the lab). Late homeworks/labs are not accepted.</p> <p>The scale for the grades will be A (90-100%), A- (87-89%), B+ (83-86%), B (77-82%), B- (73-76%), C+ (69-72%), C (63-68%), C- (59-62%), D+ (55-58%), D (50-54%), and F (<50%).</p>
Exam Policy	There will be a midterm given on February 24th and a final given on the date assigned by the university, sometime between April 25 and April 29, 2011. Homeworks will be assigned once a twice a week to test understand of programming. Homeworks must be turned in on the appropriate due date to avoid a zero (unless the student is excused for medical emergency; a doctor's note would be required).
Honor code	The Academic Honor System of The Florida State University is based on the premise that each student has the responsibility 1) to uphold the highest standards of academic integrity in the student's own work, 2) to refuse to tolerate violations of academic integrity in the University community, and 3) to foster a high sense of integrity and social responsibility on the part of the University community. Please note that violations of this Academic Honor System will not be tolerated in this class. Specifically, incidents of plagiarism of any type or referring to any unauthorized material during examinations will be rigorously pursued by

	this instructor. Before submitting any work for this class, please read the "Academic Honor System" in its entirety (as found in the <i>FSU General Bulletin</i> and in the FSU Student Handbook) and ask the instructor to clarify any of its expectations that you do not understand.
American Disabilities Act	Students with disabilities needing academic accommodations should: 1) register with and provide documentation to the Student Disability Resource Center (SDRC) ; 2) bring a letter to the instructor from SDRC indicating you need academic accommodations. This should be done within the first week of class. This and other class materials are available in alternative format upon request.