CPSC120B

Fundamentals of Computer Science

Syllabus

Instructor: Dr. Durell Bouchard
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Course Objectives

This course is the first in a two course sequence designed to introduce students to the fundamental concepts of computer science. The course focuses on the design of algorithms to solve problems and the implementation of the algorithms in the programming language Python.

Intended Learning Outcomes: At the end of the course the successful student will be able to

1. design and implement (in the Python programming language) algorithms to solve small problems, appropriate for an introductory course.
2. use the basic data types (numbers, booleans, and strings), control structures (conditionals and loops), data structures (lists and dictionaries), and modules (math and random) provided by the Python language.
3. debug programs that successfully complete execution but have incorrect output.

Course Content

Prerequisites: There are no prerequisites for this course.

Text: *How to Think Like a Computer Scientist: Learning with Python: Interactive Edition*, by Bradley Miller and David Ranum, Runestone Interactive, 2015.

Activities: Programming activities during class give the student a structured experience in software design, implementation, and debugging and increase the student's ability to use and understand the tools available for software development. The activities connect the reading and lectures to the practice of programming and prepare students for assignments. Activities not completed during class are due the next class.

Assignments: Regular small programming assignments are designed to reinforce class concepts. As such they are one of the most important aspects of the course both for student learning and for assessment. You are encouraged to start on them immediately when assigned and get help from the instructor as needed. Assignments are due before the beginning of class. Late assignments, will receive no credit.

Project: In addition to regular programming assignments, there will be a large programming project at the end of the semester. This project is designed to give students the opportunity to put together all of the problem solving and programming skills they have learned.

Quizzes, Tests, and Exams: Short quizzes will be given to make sure you are understand the concepts and are keeping up with the course work. Quizzes will be at the beginning of class. No make-up quizzes will be given. Three tests and one comprehensive final exam will be given.

Test Dates: Test #1   Wednesday, September 19
             Test #2   Friday, October 12
             Test #3   Friday, November 9
             Final Exam Monday, December 10 (6:30PM-9:30PM)

Co-curricular: The Department of Mathematics, Computer Science, and Physics is offering a series of lectures designed to engage the campus community in discussions of ongoing research, novel applications, and other issues that face these disciplines. You are invited to attend all of the events but participating in at least two is mandatory. Within one week of attending an event you must submit a one page, single-spaced, paper (to Inquire) reflecting on the discussion. If you do not turn the paper in within the one week time frame you may not count that event as one you attended.

Grading: Course grades are assigned based on the following weights and scale:

Grade Weights:					
quizzes…12%	activities…12%	project…12%	assignments…12%	co-curricular…2%	
test 1…….5%	test 2……..10%	test 3…..15%	final exam…….20%		

Grade Scale:					
93-100 A	83-86 B	73-76 C	63-66	D	
90-92 A-	80-82 B-	70-72 C-	60-62	D-	

87-89 B+   77-79 C+   67-69 D+   below 60 F

Course Policies

Attendance Policy: Class attendance is vital to your success in this course; material covered during missed sessions is the responsibility of the student. Conversations held in class illuminate the published class materials and are subject to evaluation on subsequent tests and quizzes.

Late Assignment Policy: Unless otherwise specified, assignments are to be turned in before the start of class on the due date. If you anticipate being unable to meet a deadline, talk to me at least 24 hours before the deadline. In extenuating circumstances we may be able to make special arrangements. Please note that this must be discussed – just sending an email does not automatically grant you extra time. Unexcused late work will receive no credit. Electronic "glitches" do not waive your responsibility to submit your work in a timely manner.

Make-up Policy: Everyone is expected to take tests, quizzes, and the exam at the scheduled time. Make-ups will be given only for legitimate, documented absences that the instructor has been notified of ahead of time.

Academic Integrity: It is accepted that you have read and understood the standards for academic integrity at Roanoke College. All tests and exams are to be the work of the individual student. You are encouraged to get help from the instructor if you need help with any aspect of the course including programs and assignments. Student assistants, tutors, and classmates may help you understand course concepts but may not show you how to do any particular aspect of an assignment. Students may discuss work and help each other out but in all cases the work you turn in must be your own. Copying someone else's work or turning in someone else's work is NEVER allowed. Using someone else's work or ideas as your own is plagiarism and an academic integrity offense. Examples of academic integrity violations include copying a program or part of a program (even one line) from someone else, writing code for someone else, telling someone else how to solve a problem or having someone tell you how to solve a problem. Discussion among students about programming projects should be limited to general concepts, not specific aspects of how to complete the work.

Computer Use Policies: All students must abide by the Computer Use policies of Roanoke College. Failure to do so will result in involuntary withdrawal from the course.

Electronic Devices: All cell phones must be silenced and stored out of sight during class. The use of any electronic device during a test or quiz is prohibited. This includes cell phones, personal media players, personal digital assistants, and laptops. Any use of such a device during a test or quiz will be considered a breach of academic integrity.

Subject Tutoring: Subject Tutoring, located on the lower level of Fintel Library (Room 5), is open 4 pm – 9 pm, Sunday – Thursday. We are a Level II Internationally Certified Training Center through the College Reading and Learning Association (CRLA). Subject Tutors are highly trained Roanoke College students who offer one-on-one tutorials in a variety of general education and major courses such as: Business, Economics, Mathematics, INQ 240, Modern Languages, Lab Sciences, INQ 250, and Social Sciences (see all available subjects at www.roanoke.edu/tutoring). Tutoring sessions are available in 15, 30, or 45-minute appointments. Feel free to drop by for a quick question or make an appointment at https://www.roanoke.edu/tutoring for a longer one-on-one appointment. For questions or concerns, please contact us at 540-375-2590 or subject_tutoring@roanoke.edu.

Accessible Education Services: Accessible Education Services (AES) is located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library. AES provides reasonable accommodations to students with documented disabilities. To register for services, students must self-identify to AES, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. Please contact Laura Leonard, Assistant Director of Academic Services for Accessible Education, at 540-375-2247 or by e-mail at aes@roanoke.edu to schedule an appointment. If you have registered with AES in the past and would like to receive academic accommodations for this semester, please contact Laura Leonard at your earliest convenience to schedule an appointment.

Diversity: I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

Preferred Name/Pronoun: I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records.

Course Schedule

This course expects you to spend at least 12 hours of work each week inside and outside of class.

Week of	Topic
Aug 29	Introduction to Computer Science, Linux, and Python
Sep 3	Variables, Expressions, and Statements
Sep 10	Loops

Week of	Topic
Sep 17	Modules
Sep 24	Functions
Oct 1	Conditionals
Oct 8	While Loops
Oct 15	Fall Break
Oct 22	Strings
Oct 29	Lists
Nov 5	Aliasing
Nov 12	Graphics
Nov 19	Thanksgiving Break
Nov 26	Two-dimensional Lists
Dec 3	Projects