

# CPSC120B Fundamentals of Computer Science I

## Fall 2015

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**Instructor:** Mr. Scotty Smith

**Office Hours:** Monday - Thursday 6:00 pm - 7:00 pm

**Office:** Trexler 365-B

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## Course Objectives

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This course is the first in a two course sequence designed to introduce students to the fundamental concepts of computer science including the underlying foundations from discrete mathematics. The course focuses on the design of algorithms to solve problems, the basics of mathematical logic, and the implementation of the algorithms in the programming language Python. Students will gain familiarity with the Linux operating system and the Emacs text editor as they develop programs.

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

1. design, implement (in the Python programming language), and test algorithms to solve small to moderate size problems, appropriate for an introductory course. In particular, to implement the algorithms the student will be able to
  - use the basic control structures (conditionals and loops), data structures (lists and dictionaries), and modules provided by the Python language.
  - implement Python classes.
2. explain the fundamental concepts underlying objects, classes, and methods.
3. use the Linux command line interface for running Python programs and navigating the Linux file structure.
4. express integers in twos complement and vice versa and be able to perform and understand computer arithmetic.

## Course Content

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**Text:** *How to Think Like a Computer Scientist Learning with Python: Interactive Edition 2.0.* Brad Miller and David Ranum, 2015.

**Note:** More information on how to access this book in class.

**Work Load:** Students should expect to spend 12 hours combined on in class and out of class assignments and activities.

**Lab:** For three hours every week, students will complete lab exercises during the scheduled times. The purpose of the lab exercises is to give the student a structured experience in software design, implementation, and testing. The lab exercises will also increase the student's ability to use and understand the tools available for software development in the Linux environment. Unless otherwise specified, the lab exercises must be done during the scheduled time, and turned in before leaving.

**Assignments:** In addition to regular reading and lab work, there will be weekly assignments during the semester. These assignments are designed to give the student the opportunity to put into practice the problem solving and programming skills they have learned. As such they are one of the most important aspects of the course both for student learning and for assessment. The assignments, most of which involve writing programs, will vary in length and difficulty. **You are encouraged to start on them immediately when assigned and get help from the instructor as needed.**

All assignments will be done in pairs. You will be given the opportunity to select who you work with for each assignment. Until otherwise specified, you may not repeat partners during the semester.

**Important:** While assignments are to be done in pairs, you may only discuss the assignment with your partner. You may ask class members, lab assistants, and others for help with system questions (e.g., "How do I run my Python program in Windows?", "How do I get a printout of my program?") or general information about a topic covered in class (e.g. "What is the symbol for boolean AND?") provided you can do so without divulging or receiving information specific to the solution of the assignment problem. You may not discuss any aspect of the design or coding of a program with anyone except your partner and the instructor. This policy will be strictly enforced; see the section on Academic Integrity below.

**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. The lowest quiz grade will be dropped when final grades are calculated. No make-up quizzes will be given. Three tests and one comprehensive final exam will be given.

<b>Test Dates:</b>	Test #1	Friday, Sept. 25
	Test #2	Friday, October 16
	Test #3	Friday, Nov. 13
	<b>CPSC 120 B Final Exam</b>	<b>Tuesday, December 15 (8:30 - 11:30 AM)</b>

**MCSP Conversations:** The Department of Mathematics, Computer Science, and Physics (MCSP) is offering a series of discussions that appeal to a broad range of interests related to these fields of study. These co-curricular sessions will engage the community to think about ongoing research, novel applications, and other issues that face our disciplines. You are invited to attend all of these events but **participation in at least 2 is mandatory**. Within one week of attending an event you must submit a one page paper reflecting on (not just summarizing!) 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. The MCSP discussions are generally scheduled for Wednesdays at 5:30 or Tuesday or Thursday at 7:00. A schedule will be provided soon and will be posted on the course web page. Please discuss scheduling conflicts with the instructor ASAP.

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

<b>Grade Weights:</b>	pre/post labs.....16%	tests.....30%	final exam.....20%
	assignments.....20%	labs.....12%	co-curricular.....2%

<b>Grade Scale:</b>	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

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**Academic Integrity:** It is accepted that you have read and understood the standards for academic integrity at Roanoke College. All tests, quizzes, and exams are to be the work of the individual student. You may work with one partner of your choice on course assignments. You must inform the instructor of your choice before you begin work on these assignments. 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 lab work (including the pre-lab assignments) 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.

**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. **Moreover, quizzes and in class assignments are not available for make-up, except in extenuating circumstances.**

**Late Assignments:** 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. **If you have not been granted extra time ten percent per calendar day (24 hours) will be deducted for late work (including weekends and holidays); work more than 2 days late 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. Make-up tests, if given, may be oral. There will be no make-up quizzes. Make-up in class activities must be approved at the instructor's discretion.

**Electronic Devices:** All cell phones and pagers must be turned off prior to entering the classroom or lab. The use of any electronic device during a test or quiz is prohibited. This includes cell phones and any other non-academic devices. Any use of such a device during a test or quiz will be considered a breach of academic integrity.

**Special Services:** If you are on record with the College's Special Services as having special academic or physical needs requiring accommodations, please meet with me during my regular office hours or schedule an appointment as soon as possible. We need to discuss your accommodations before they can be implemented. Also, please note that arrangements for extended time on exams and testing in a semi-private setting must be made at least one week before every test or exam. If you believe you are eligible for accommodations but have not yet formally contacted Special Services, please call 375-2248 or drop by the Center for Learning and Teaching in Fintel Library.