SYLLABUS

CSCI 1310: COMPUTER SCIENCE 1: STARTING COMPUTING

FALL 2016, 4 CREDITS, AUGUST 22 – DECEMBER 16, 2016

Class meeting times: Lecture Monday, Wednesday, Friday 1:00-1:50pm; recitations vary

Class meeting location: MUEN E050; recitations vary

INSTRUCTOR INFORMATION

Name: Rhonda Hoenigman

Email: rhonda.hoenigman@colorado.edu

Office Location: ECOT 738

Office Hours: W-Th-F at 11am – 12pm, or by appointment

TA INFORMATION

Name: Camilla Lambrocco

Email: Camilla.lambrocco@colorado.edu

Office hours and location: Tuesday, Friday, 12-12:50pm in ECCS 128

Name: Brennan McConnell

Email: brennan.mcconnell@colorado.edu

Office hours and location: Wednesday, 2 - 4pm in ECCS 102

COURSE INFORMATION

Fit within curriculum: required foundation course for Computer Science BS and BA students.

Course description and prerequisites: Teaches techniques for writing computer programs in higher level programming languages to solve problems of interest in a range of application domains. This class is intended for students with some experience in computing or programming. Credit not granted for this class and CSCI 1300 or CSCI 1320 or ECEN 1310. Requisites: Requires a prerequisite or corequisite course of MATH 1300 or MATH 1310 or APPM 1345 or APPM 1350 (all minimum grade C-).

TEXTBOOKS AND MATERIALS

Optional text: Problem Solving with C++, Ninth Edition. Savitch. Pearson Education. 2015. ISBN: 9780133591743. (Note: there are older versions of the book available online that will work fine for this class.)

Other supplemental materials: The Practice of Computing Using Python, Second Edition. Punch and Enbody. Pearson. 2012. ISBN: 9780132805575.

It is highly recommended that you get a Dropbox account, or invest in a USB memory stick, to save files created in the virtual machine environment. This environment is not backed up, and if it crashes, you will lose all of your work.

Course materials, such as lecture notes and assignments, will be available in electronic form on the Moodle site for the course: http://moodle.cs.colorado.edu/.

COURSE OUTCOMES

This class covers the basics of computer programming using C++ and Python. The focus will be on understanding the basic components of computer languages. Upon completion of the course, the student can:

- Design and construct algorithms for problem solving by applying processes of abstraction and program decomposition.
- Implement fundamental programming constructs, such as variables, expressions, conditionals, and iterative control structures, in a higher-level language.
- Evaluate and implement simple I/O, such as user input and file I/O, including the necessity for external input to a program and the role of external data storage.
- Design and explain the role of functions in program construction, including an understanding of parameter passing and return values.
- Describe the properties of data types, including the primitive types of numbers, characters, and booleans, as well as more complex data types, such as arrays, records, and strings.
- Use an Integrated Development Environment to produce code that is free of syntactical, logic, and run-time errors. Understand the process of debugging as part of software development.
- Design and create code using object-oriented design methodology, including an understanding objects and classes, information encapsulation, and efficient class design.
- Use third-party code to accomplish a programming objective. This includes learning to read code written by another individual and modifying the code, or using third-party libraries.
- Develop understanding that software development is a dynamic, social process, and that learning how to seek out information is a necessary skill for success.

Brief list of topics to be covered:

- Computer architecture and environment
- Variables and data types
- Variables and operators
- Functions
- Control structures: if statements
- Control structures: if/elif/else statements
- Control structures: while loops
- Control structures: for loops, iteration
- Strings: indexing, iteration, comparing
- File I/O
- Functions
- Lists
- Dictionaries
- Classes and objects
- Classes, functions, methods
- Arrays
- I/O Streams

GRADING

Recitation	30%	(Weekly, due by 5pm on Sunday)
Homework	40%	(Weekly, due by 12:30pm on Friday)
Projects	10%	(two project, equally weighted)
Lab Midterms	20%	(Three exams, equally weighted)

ADDITIONAL EXAM GRADE REQUIREMENTS TO PASS THE CLASS

There are three lab midterms in this class, administered in recitation, that account for 20% of your final grade. There are 300 points possible on these exams, which break down to 100 points per exam. You must earn at least 195 points on the three exams to receive better than a D+ in the class, regardless of your scores on the other aspects of the class. The 195 points is equivalent to a 65% average on your midterm exams. The midterm exam schedule is given in the class schedule shown below. A grade of a C- in this class is required to take the next class in the computer science sequence.

The final exam will be a midterm makeup exam. If you do not earn the minimum exam points to pass the class, you can take the final exam to replace your lowest midterm grade. Even if you do earn the minimum midterm grade, you are still welcome to take the final exam to bring up your grade.

ASSIGNMENT GRADING LOGISTICS:

The weekly assignments should always be submitted both on Moodle and to the auto-grader known as COG (https://web-cog-csci1300.cs.colorado.edu). If you forget to submit your assignment to Moodle you will receive a 10% penalty. If you don't submit your assignment to both Moodle and COG you will get a zero. If you are not happy with the grade given to you by COG, you have the option of scheduling a grading interview with your recitation TA. Also you may be randomly selected for each assignment to participate in a grading interview. In the interview, you will be asked questions about the assignment you submitted. These questions are designed to test your understanding of the code as well as provide you with an opportunity to ask questions of your TA. Please note that there is no guarantee that the grade you get in the interview will be higher than the one COG gave you. Your TA will announce when grading meetings are available, and it is your responsibility to schedule an interview with your TA as soon as the scheduler is posted.

Interview Grading Guidelines:

This is a large class, and as such, it is important that every student attends their grading meetings at the scheduled time. Please take the time to read and understand the following interview grading guidelines.

- Grading meetings are 10-15 minute appointments, scheduled Monday-Friday

- Sign-up is on Moodle

- The grade you receive for an assignment is 40% for the technical components and 60% for the interview. If you do not attend an interview, you lose the 60%.

- If you need to reschedule your interview, that is okay, but you must email your TA at least 24 hours in advance (i.e. no waking up 5 minutes before the appointment, realizing you are going to be late, and sending a panicked email cancelling at the last minute). Emergency situations are an exception and will be evaluated on a case-by-case basis.

- There is a 1-minute "grace period" for being late, after that it is 10% off for each minute the student is late, at 6 minutes late you get a zero for the interview.

- My advice to all students is to get to the appointment 5 minutes *early* and use the extra time to prepare.

The grades for this class follow the standard percentage breakdown for the College of Engineering:

93%-100%	A
90%-93%	A-
87%-90%	B+
83%-87%	B
80%-83%	B-
77%-80%	C+
73%-77%	C
70%-73%	C-
67%-70%	D+
63%-67%	D
60%-63%	D-
0%-60%	F

Course Calendar

WEEK 1, AUGUST 22-26

Topics: Introduction, Representation, Algorithms and pseudocode

Due:

Recitation 1: VM setup

Assigned:

Assignment 1: Algorithms and pseudocode

WEEK 2, AUGUST 29-SEPTEMBER 2

Topics: Functionizing, Variables and Data Types

Due:

Recitation 2: Hello World in C++, Installing software on Linux

Assignment 1

Assigned:

Assignment 2: Variables and data types

WEEK 3, SEPTEMBER 5-9

Topics: Functions

Due:

Recitation 3: Functions and libraries

Assignment 2

Assigned:

Assignment 3: Functions

WEEK 4, SEPTEMBER 12-16

Topics: Control structures - branches and loops

Due:

Recitation 4: Control structures

Assignment 3

Assigned:

Assignment 4: Control structures

WEEK 5, SEPTEMBER 19-23

Topics: Loops and strings

Due:

Recitation 5: Loops and strings

Assignment 4

Assigned:

Assignment 5: Exam review

WEEK 6, SEPTEMBER 26-30

Topics: File I/O

Due:

Recitation 6: Midterm 1

Assignment 5

Assigned:

Assignment 6: Loops, strings, and file I/O

WEEK 7, OCTOBER 3-7

Topics: File I/O, Classes

Due:

Recitation 7: File I/O

Assignment 6

Assigned:

Assignment 7: File I/O, classes

WEEK 8, OCTOBER 10-14

Topics: Classes

Due:

Recitation 8: Classes

Assignment 7

Assigned:

Assignment 8: Classes

WEEK 9, OCTOBER 17-21

Topics: Arrays and char strings

Due:

Recitation 9: Arrays

Assignment 8

Assigned:

Assignment 9: Arrays

WEEK 10, OCTOBER 24-28

Topics: Advanced class topics

Due:

Recitation 10: exam review

Assignment 9

Assigned:

Assignment 10: Final Project in C++

WEEK 11, OCTOBER 31-NOVEMBER 4

Topics: Advanced class and array topics, Introduction to Python

Due:

Recitation 11: Midterm 2 up through arrays

Week 12, November 7-11

Topics: Python variables, functions, control structures, lists

Due:

- **Recitation 12: Introduction to Python**
- Assignment 10 Final Project due

Assigned:

- Assignment 11: Python introduction and lists

Week 13, November 14-18

Topics: Python libraries, lists, APIs

Due:

- **Recitation 13: Python APIs**
- Assignment 11

Assigned:

- Assignment 12: Python APIs

Week 14, November 21-25

No class; Fall Break

Week 15, November 28-December 2

Topics: APIs and real data

Due:

- **Recitation 14:** exam review
- Assignment 12

Assigned:

- Final Project in Python

Week 16, December 5-9

Topics: Python dictionaries

Due:

- **Recitation 15: Midterm 3 (Python variables, control structures, functions, and lists)**

Final Exam Week

Exam Date and Time:

- Monday, December 12, 4:30pm

This exam is used as a midterm makeup to replace your lowest midterm grade. If you are satisfied with your midterm grades, you do not need to take the final exam.

Due:

- Python project due Monday, December 12, 4:30pm

ACCOMMODATION STATEMENT

I am committed to providing everyone the support and services needed to participate in this course. If you qualify for accommodations because of a disability, please submit to your professor a letter from Disability Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact Disability Services at 303-492-8671 or by e-mail at dsinfo@colorado.edu. If you have a temporary medical condition or injury, see Temporary Medical Conditions: Injuries, Surgeries, and Illnesses guidelines under Quick Links at Disability Services website and discuss your needs with me.

RELIGIOUS OBSERVANCES

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required assignments/attendance. If this applies to you, please speak with me directly as soon as possible at the beginning of the term.

CLASSROOM BEHAVIOR

Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, color, culture, religion, creed, politics, veteran's status, sexual orientation, gender, gender identity and gender expression, age, ability, and nationality. Class rosters are provided to the instructor with the student's legal name. 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. For more information, see the policies on class behavior and the student code.

It is my expectation that each of you will be respectful to your fellow classmates and instructors at all times. In order to create a professional atmosphere within the classroom, you are expected to:

- Arrive to class on time.
- Turn off your cell phone (talk and text).
- Bring your laptop to class if you have one to participate in classroom activities. Please restrict laptop use to these activities only, no email, Facebook, Youtube, etc.
- Put away newspapers and magazines.
- Refrain from having disruptive conversations during class.
- Remain for the whole class; if you must leave early, do so without disrupting others.

- Display professional courtesy and respect in all interactions related to this class.

Compliance with these expectations will assist all of us in creating a learning community and a high quality educational experience.

Though many of the above stated policies address academic climate within the classroom, these policies should also be upheld outside of the classroom. As a member of the CU community you are expected to consistently demonstrate integrity and honor through your everyday actions. Faculty, TAs, and staff members are very willing to assist with your academic and personal needs. However, multiple professional obligations make it necessary for us to schedule our availability. Suggestions specific to interactions with faculty and staff include:

- Respect posted office hours. Plan your weekly schedule to align with scheduled office hours.
- Avoid disrupting ongoing meetings within faculty and staff offices. Please wait until the meeting concludes before seeking assistance. Respect faculty and staff policies regarding use of email and note that staff and faculty are not expected to respond to email outside of business hours. Send email messages to faculty and staff using a professional format. Tips for a professional email include:
- Always fill in the subject line with a topic that indicates the reason for your email to your reader.
- Respectfully address the individual to whom you are sending the email (e.g., Dear Professor Smith).
- Avoid email or text message abbreviations.
- Be brief and polite.
- Add a signature block with appropriate contact information.
- Reply to email messages with the previously sent message. This will allow your reader to quickly recall the questions and previous conversation.

Discrimination and Harassment

The University of Colorado Boulder (CU-Boulder) is committed to maintaining a positive learning, working, and living environment. CU-Boulder will not tolerate acts of discrimination or harassment based upon Protected Classes or related retaliation against or by any employee or student. For purposes of this CU-Boulder policy, "Protected Classes" refers to race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. Individuals who believe they have been discriminated against should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Student Conduct (OSC) at 303-492-5550. The full policy on discrimination and harassment has more information.

Submitting work late

You can receive a three-day extension on any assignment or recitation for a 20% grade penalty. After three days, your homework is late and cannot be turned in. In the event of a documented personal, family, or medical emergency, consult your TA about receiving a penalty free extension. If you know you will be missing a weekly recitation, go to a recitation with the same TA being held at a different time.

Attendance

Attendance at all class meetings and recitations is highly recommended. You are responsible for knowing the material presented during class and recitation, even if you were not in attendance when the material was presented.

Other information

Written work must be neat and readable, with adequate spacing and margins. Your name, the date, and your section number must be at the top right of the first page. Code files should have your name, date, and homework number included as comments at the top of the file.

A limited amount of printing may be required in this class. You need to ensure that your printing account has sufficient funds for this. Your initial allocation may deplete quickly, depending on your other printing activities. If this causes problems, please come see me.

Honor Code

All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu; 303-735-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). The Honor Code Office has more information.

CSCI 1310 Fall 2016 Collaboration Policy

The Computer Science Department at the University of Colorado at Boulder encourages collaboration among students. To support students in collaboration the Department has created a Collaboration Policy that makes explicit when their collaborative behavior is within the bounds of collaboration and when it is actually academic dishonesty, and therefore a violation of the University of Colorado at Boulder's Honor Code.

Students are most successful when they are working with other students to understand new concepts. The ultimate goal is that you fully understand the code you develop and be able to collaborate with others in a mutually beneficial way.

Unless otherwise specified, you may make use of outside resources (internet, other books, people), but then you must give credit by citing your sources in the comments inside your code. Use of outside resources does not include downloading complete, or almost complete, solutions to an assignment, whether you cite the source of the solution or not. This is considered plagiarism and violates the University's Honor Code policy.

Examples of citing sources include:

```
// Modified version from https://github.com/Phhere/MOSS-PHP
// Adapted from Program #7.2 in book "Accelerated C++" by Stroustrup
// Worked with Joe Smith from class to come up with algorithm for sorting
// Received suggestions from stackExchange website (see http://….)
```

A good rule of thumb: "If it did not come from your brain, then you need to attribute where you got it."

Collaboration Exceptions

Certain homework, quizzes, or exams may be required to be completed without outside resources (see course overview for details). In these cases it is your responsibility to know the extent of approved resources and use only those that have been specifically allowed. Use of outside resources in these cases would violate the collaboration policy.

Examples of violating the Collaboration Policy

- Sharing a file with someone else.
- Submitting a file that someone else shared with you.
- Stealing a copy of someone else's work and submitting as your own (even with modification).
- Copying or using outside resources to solve a component of a larger problem and not citing your sources.
- Copying or using an entire solution that you didn't generate, regardless of whether you cited your sources.

Examples of collaborating correctly:

- Asking another student for a helpful suggestion.
- Reviewing another student's code for issues/bugs/errors.
- Working together on the whiteboard (or paper) to figure out how to approach and solve the problem. In this case you must include that person's name in your collaboration list at the top of your submission.

One way to know you are collaborating well is if everyone fully understands the code that is developed. If you do not understand what is in your code or why certain parts of the code are included, you need to ask someone to clarify! This collaboration policy requires that you be able to create the code (or solve the problem) on your own before you submit your assignment.

Any discovered incidents of violation of this collaboration policy will be treated as violations of the University's Academic Integrity Policy and will lead to an automatic academic sanction in the course and a report to both the College of Engineering and Applied Science and the Honor Code Council. Students who are found to be in violation of the Academic Integrity Policy can be subject to non-academic sanctions as well, including but not limited to university probation, suspension, or expulsion.

Other information on the Honor Code can be found at www.colorado.edu/policies/honor.html and www.colorado.edu/academics/honorcode.

Collaboration boundaries are hard to define crisply, and may differ from class to class. If you are in any doubt about where they lie for a particular course, it is your responsibility to ask the course instructor.