

CSCI 2270 – CS2: Data Structures

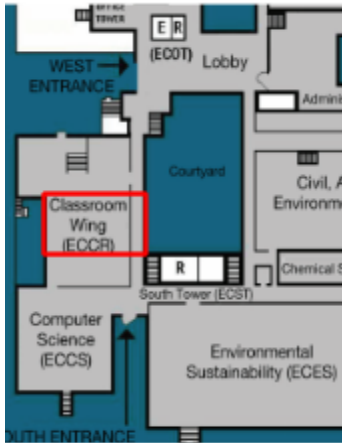
Summer 2015

Instructor

Brittany Ann Kos

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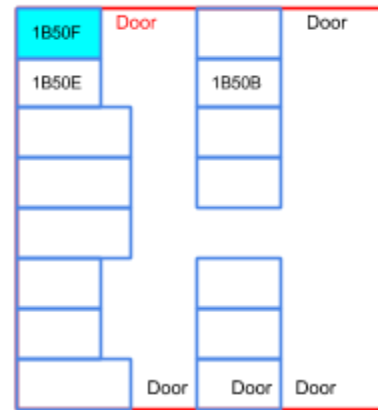
Office Hours: MTW, 11-1 in ECCR 1B50F



Office hours will be in ECCR 1B50F, which is in the basement of ECCR, in the Systems Lab.

On the map to the left, you can see the systems lab in red. This is a closed lab, so the doors will be locked. The lab also takes up the entire floor, so to enter from the north or south side, you will need to go outside and reenter the building.

When I'm holding office hours, I'll have the northeast door propped open (door in red). The room is on the right side, first door, as shown on the map to the right.



TA

Mohammad Hashemi

s.mohammad.haashemi@gmail.com

LA Help Hours

Monday	Tuesday	Wednesday	Thursday	Friday
11am - 5pm	10am - 5pm	10am - 5pm	10am - 3pm	None
Kade 11am - 4pm Sam 12 - 5pm	Taylor 10am - 3pm Sam 11am - 4pm Kade 12 - 5pm	Taylor 10am - 3pm Kade 12 - 5pm	Taylor 10am - 3pm	None

Meeting Times

Mon-Thur 8-10:40am in FLMG 156

Mon, Tue, Wed with Brittany

Thur with Mohammad

Materials

An iClicker. This can be purchased from the CU Book store on campus or on the hill.

There is no required textbook for this class. All required readings will be provided to you on moodle.

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, assignments, labs, and readings will be available in electronic form on the Moodle site for the course: <http://moodle.cs.colorado.edu/>

Grading Expectations

Pre-Quizzes	10%	Due before class starts at 6am
Clicker Questions	10%	In-class
Labs	20%	In-class, due daily by 10pm
Assignments	20%	3 total, due weekly (Mon, July 13, July 20, July 27) by 8am
Final Project	10%	Due Wed, Aug 5 by 11:59pm
Midterm Exam	15%	Out-of-class, July 16, 20, 21
Final Exam	15%	Out-of-class, Thur, Aug 5, 6, 7

Pre-Quizzes

Before every class you will be required to review the “Prep-material” (read chapters from textbooks, watch videos, or review sample code). To make sure you are prepared for the class, you will have to take a pre-quiz that reviews the material. Pre-quizzes will be multiple choice and administered through Moodle. They will be due at 6am before every class. Pre-quizzes will be graded on correctness.

Clicker Questions and Labs

Class time will be devoted to reviewing the material and going more in-depth than the readings or videos. Roughly half of class will be devoted to clicker questions, where you will be working with a group. The second half of class will be completing labs, or small programming assignments, that will use the material. Labs will be graded on completeness and correctness.

Assignments and Final Project Grading Logistics

All assignments in the class will be graded through an interview with the TA. Each week you are responsible for scheduling a 15-minute meeting with them, where they will ask you questions about the assignments you submitted the previous week. These questions are designed to test your understanding of the code as well as provide you with an opportunity to ask questions of the TA.

As per Computer Science department policy, 40% of your grade will be determined by correctly running code, and the remaining 60% will be determined from the interview grading session.

- Grading meetings are 15-minute appointments, generally offered 12-5pm, Monday-Thursday

- Sign-up is on Moodle, under the assignment section
- Not showing up without emailing in advance results in a zero. If you have to reschedule that is okay but you must email the TA at least 1 HOUR 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. The TA will keep track of the time and "on-time" and "late" will be determined by their clock.
- My advice to all students is to get to the appointment 5 minutes *early* and use the extra time to prepare.

You must attend a grading meeting to receive credit for your assignments.

Exam Logistics

There will be two exams for this course (midterm and final). These will both be offered outside of class. There will be multiple offerings of the exam and you are responsible for signing up for one of the slots. You can take the exam multiple times to improve your score.

The MIDTERM exam schedule is listed below. As you can see, each day has 3 time slots you can sign up for. You can only sign up for one time slot per day.

Monday, July 20	Tuesday, July 21	Wednesday, July 22
2pm - 4pm	2pm - 4pm	2pm - 4pm
4pm - 6pm	4pm - 6pm	4pm - 6pm
6pm - 8pm	6pm - 8pm	6pm - 8pm

Due to student scheduling conflicts, there will also be an offering on Thursday, July 16 from [12pm-2pm], [2pm-4pm], and [4pm-6pm].

The FINAL exam schedule is listed below. As you can see, each day has 3 time slots you can sign up for. You can only sign up for one time slot per day.

Wednesday, August 5	Thursday, August 6	Friday, August 7
2pm - 4pm	11am - 1pm	9am - 11am
4pm - 6pm	1pm - 3pm	11am - 1pm
6pm - 8pm	3pm - 5pm	1pm - 3pm

If you are unable to make it to any of the exam offerings, you must notify me of any such conflicts by the end of the second day of class so we can work out alternatives.

The exam will be computer-based, you will be given a set of questions that will need to be implemented in code and described theoretically. You can take either exam up to three times to improve your score. You will receive the grade of the highest exam attempt. You must receive at 70% or better (averaged

between the two exams) to receive a passing grade in this class, regardless of your other scores on homework assignments.

Grading Policies

You are allowed one late homework (pre-quiz, lab, or assignment) during the semester. Please contact me if you will be turning your work in late and I will change your deadline on Moodle. If you will be turning in a late homework, you will be given a 24 hour grace period from the original due date. No more than one late homework will be accepted. This pass will not apply to the final project or either of the exams.

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.

Attendance

Attendance at all class meetings is required. You are responsible for knowing the material presented during class, even if you were not in attendance when the material was presented. Previous experience has shown me that students who do not attend class regularly often receive a failing grade and have to repeat the class the following semester.

If you will be absent during for class, you must notify me of any such conflicts by the end of the second day of class so we can work out alternatives.

Campus policy regarding religious observances requires that faculty make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments, or required attendance. You can find the details at www.colorado.edu/policies.

If you qualify for accommodations because of a disability, please submit a letter to me from Disability Services by the end of the first week of classes so that your needs may be addressed. Disability Services determines accommodations based on documented disabilities. Contact info: www.colorado.edu/disabilityservices, 303-492-8671, Willard 322. That office also maintains guidelines about temporary medical conditions or injuries.

In Class Expectations

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

Out of Class Expectations

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 with 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, polite, and respectful.
 - 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.

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.

Course Outline

We will be covering concepts of data organization and retrieval. Different methods of structuring data, such as lists, queues, stacks, hash tables, and trees will be covered. Additionally, we will cover algorithms for building and searching these structures and their complexity.

Approximate Lecture Schedule

Week	Date		Topic
1	Tue	July 7	Intro, C++, data structures, structs
	Wed	July 8	Abstract data types, memory, pointers, dynamic arrays
	Thur	July 9	Objects, classes, container classes
2	Mon	July 13	Recursion

	Tue	July 14	Dynamic memory allocation, linked lists
	Wed	July 15	Double linked lists
	Thur	July 16	Review midterm and work day
3	Mon	July 20	Stacks (Midterm)
	Tue	July 21	Queues (Midterm)
	Wed	July 22	Inheritance (Midterm)
	Thur	July 23	Activity: Choose the correct data structure
4	Mon	July 27	Search algorithms, complexity, efficiency
	Tue	July 28	Trees
	Wed	July 29	Tree traversal
	Thur	July 30	Activity: TBA
5	Mon	Aug 3	Tree search, depth-first, breadth-first search
	Tue	Aug 4	Tree sort
	Wed	Aug 5	Dictionaries, hash tables (Semester Project) (Final)
	Thur	Aug 6	No class (End of semester project interview grading) (Final)

Collaboration Policy

IMPORTANT!!! 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, academic dishonesty, fabrication, lying, bribery, and threatening behavior. Plagiarism includes using material from outside sources (e.g., the web) without clear identification and citation.

This class also has specific guidelines for what is considered collaboration and what is considered academic dishonesty. The collaboration policy is given here:

CSCI 2270 Summer 2015 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 the Collaboration Policy and when it is actually academic dishonesty, which would be considered a violation of the University of Colorado at Boulder's Honor. All students of the University of Colorado at Boulder are responsible for knowing and adhering to the University's Honor Code. Violations of this policy may also include cheating, plagiarism, academic dishonesty, fabrication, lying, bribery, and threatening behavior.

Collaboration on homework assignments is allowed and encouraged. 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.

Plagiarism includes using material from outside sources (e.g., the web) without clear identification and citation. 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.

Students are expected to generate their own code for this class, but we are aware that collaboration and using examples from other sources is often necessary. There will be a strict 10%-90% rule. **10% of the code a student submits can be from outside sources, but 90% of the code MUST be original from the student.**

How to cite your sources

Examples (assuming // indicates beginning of code comment):

```
// 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://....)
```

If you are using code directly from another source, you must say where that code begins and ends. For example:

```
// Start code from stackExchange website (see http://....)
// End code 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."

Note: you do not need to cite if you are adapting from slides for the course or the required readings for the course or from the hired staff for the course.

Certain homeworks, pre-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.

Adhering to the Collaboration Policy

Some examples of violating the collaboration policy include (but are not limited to):

- 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 and not citing 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.

Grade Breakdown

GRADES 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

Official CU Policies

Religious Observances

Campus policy regarding religious observances requires that faculty make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Please contact me before class regarding any absences or conflicts due to religious observances. See full details at http://www.colorado.edu/policies/fac_relig.html

Disability Services

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 Injuries under Quick Links at Disability Services website (<http://disabilityservices.colorado.edu/>) and discuss your needs with your professor.

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). Other information on the Honor Code can be found at <http://www.colorado.edu/policies/honor.html> and at <http://honorcode.colorado.edu>

Discrimination and Harassment

The University of Colorado Boulder (CU-Boulder) is committed to maintaining a positive learning, working, and living environment. The University of Colorado does not discriminate on the basis of race, color, national origin, sex, age, disability, creed, religion, sexual orientation, or veteran status in admission and access to, and treatment and employment in, its educational programs and activities. (Regent Law, Article 10, amended 11/8/2001). 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, or veteran status. 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. Information about the ODH, the above referenced policies, and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at <http://hr.colorado.edu/dh/>

Behavioral Standards

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, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. 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. See policies at <http://www.colorado.edu/policies/classbehavior.html> and at http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code