# Data Structures and Algorithms
## CSCI 2270 Spring 2014
**Instructor:** Elizabeth White
`elizabeth.white@colorado.edu`
office: ECOT 822 (Engineering Center)

**Office Hours:**   **Wed 9:30am-11:00pm,**
   **Thurs 10am-11:30am,**
   **in ECCS 112.**

**Your LAs will post office hours this week.**

**Lectures:**   Mon, Wed, Fri 2-2:50pm in MATH 100
   FINAL EXAM: Monday May 5, 1:30pm-4pm

**Midterms:**   **February 17, March 17, April 21 in class**

**Texts:**
Pearson Custom Computer Science book for CSCI 2270, CSII: Data Structures, ISBN 1-269-25756-0.

**Other Materials:**
iClicker Radio-frequency Response Transmitter (available from CU Book Store)

Register your clicker via http://oit.colorado.edu/node/779

You may want to invest in a USB memory stick for the virtual machine environment.

A variety of materials will be available in electronic form on the **Moodle** site (http://moodle.cs.colorado.edu/) for the course.  You should begin by going to the Moodle site and making an account.

Your recitations (which I often refer to as labs) will provide you with an Ubuntu environment, in which you can run C++ and Java, the languages we'll focus on in this class.  If you want to develop code on your desktop or laptop in the same environment, you will want to download and install the CU CS Virtual Machine environment; the directions for this are at http://foundation.cs.colorado.edu/sde/.  If this is daunting to you, remember that we will help you in the first 2 weeks, so you don't have to do this on your own, and we'll help you troubleshoot it if you need that.  It will be worth your while to do this, since you can then test your code using exactly the same system your TA will use to grade it.

5 percent of your course grade involves attending a research talk with significant computer science content and writing up a six-page essay (plus references) summarizing the talk and giving me an interesting reaction to what you learned there.  In the summary, you will probably need to do some research to find relevant papers that help you process the material, and you'll have to tell me something about what you learned, or something you think would work better than the speaker's talk.  It's got to be interesting to me and well written, and you have to do this part on your own; you can't collaborate with other students on the actual writeup.  If you write a really excellent paper, I will give you extra credit.  This writeup is due on the last day of classes (May 2nd) at midnight.  If you cannot attend the regular talks in computer science (see http://www.colorado.edu/cs/colloquia/colloquium-schedule for

these), then you will need to find a relevant talk outside the department sometime over the semester, and convince me it's worth writing up.

**Topics:**
        Introduction
        ADTs, class design
        Testing code
        Recursion
        Arrays/Vectors
        Linked Lists
        Trees
        Parsing
        Searching
        Sorting
        Encoding
        Graphs
        Networks

**Grading Policy:**

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|---|---|---|
| Clicker questions | 10% | three lowest days' scores dropped |
| Homework | 25% | |
| Labs | 20% | |
| Midterms (3) | 20% | |
| Research talk writeup | 5% | |

http://www.colorado.edu/cs/colloquia/colloquium-schedule

| | |
|---|---|
| Final (cumulative) | 20% |

FINAL EXAM: Monday May 5, 1:30pm-4pm in MATH 100

**Other Information:**

1. Outside of the usual penalties, late work is not accepted in CSCI 2270 *except in the case of documented personal, family, or medical emergency.* Homework is collected electronically via the Moodle site. Once the deadline has passed, your work is late and cannot be turned in. Lab worksheets and check-ins are due at the posted end time of your scheduled section period. Please do not ask the TA for more time. If you find that you're running out of time before you complete the lab assignment, you should start working through the labs ahead of time.

2. Written work must be neat and readable, with adequate spacing and margins. Your name and the date must be at the top right of the first page. The following pages should have your name and page number at the top right.

3. Attendance at all class meetings and labs is required. If you arrive late to lab, you will likely not be able to complete the lab assignment. If you know in advance that you will miss a lab, you must make arrangements with me (not the TA) *at least two weeks before the lab period in question*. 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.  You must notify me of any such conflicts *by the end of the first week of classes* so we can work out alternatives.

4. A limited amount of printing—a couple of pages per week, plus a dozen or so during the project week—will be required of students in this class. You need to ensure that your printing account has sufficient funds for this. The 100-page initial allocation may deplete quickly, depending on your other printing activities. If this causes problems, please come see me.

5. If you qualify for accommodations because of a disability, please submit a letter to me from Disability Services *by the end of the second week of classes* so that your needs may be addressed. Disability Services determines accommodations based on documented disabilities. Contact info: http://disabilityservices.colorado.edu/, 303-492-8671, Center for Community, room N200. That office also maintains guidelines about temporary medical conditions or injuries.

6. **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)
  Sit in the first three rows of the lecture hall if you want to use a laptop, and limit its use to class purposes (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. The University of Colorado Classroom behavior policy compliments these classroom expectations:

**University of Colorado Classroom Behavior Policy:**
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 www.colorado.edu/policies/classbehavior.html or www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code.

7. **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 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.

8. The University of Colorado at Boulder policy on Discrimination and Harassment , which can be found at http://www.colorado.edu/policies/discrimination-and-harassment-policy-and-procedures, and the University of Colorado policy on Sexual Harassment and the University of Colorado policy on Amorous Relationships apply to all students, staff and faculty. Any student, staff or faculty member who believes she or he has been the subject of discrimination or harassment based upon race, color, national origin, sex, age, disability, religion, sexual orientation, or veteran status should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Judicial Affairs at 303-492-5550. Information about the ODH and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at www.colorado.edu/odh.

9. **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, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. Plagiarism includes using material from outside sources (e.g., the web) without clear identification and citation.  Anything you turn in and do not cite as someone else's work is assumed to be yours; this means that failing to cite other peoples' work is equivalent to claiming it as your own.

If you work with a friend, you must each write your own code; do not work together on a single file and then copy the file you made to turn in.  Asking another student for a helpful suggestion, or giving such a suggestion, does not constitute academic dishonesty; however, using another student's work, allowing another student to use your work, or copying code off the internet will be considered a violation of the honor code. ***Please don't do it.***  We use software tools to make sure that no one turns in copied work for CSCI 2270. Since it is generally impossible to tell who copied from whom, the course policy is that everyone involved is responsible when two or more people submit code that is effectively identical*. Leaving your code in a publically accessible place (on portable storage media, or the hard drive of a lab computer, for instance) is an honor code violation in CSCI 2270..*

Any discovered incidents of academic dishonesty 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 http://www.colorado.edu/policies/student-honor-code-policy and http://honorcode.colorado.edu/.

***Academic honesty boundaries are hard to define crisply, and they differ from class to class. If you are in any doubt about where they lie for this class, please ask me.***

10. **GRADES follow the standard percentage breakdown for the College of Engineering:**

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|---|---|
| 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 |