

CS 2100: Discrete Structures

Course Syllabus and Administrative Details

Fall 2017

Instructor: Dr. Bei Wang Phillips
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Course Information

Instructor. Bei Wang Phillips

Office: WEB 4608

Email: beiwang@sci.utah.edu

Office Hours: See course webpage for details.

Teaching Assistants (TAs). See course webpage for details.

Office Hours: See course webpage for details.

Class Meeting Time. Administered by the Instructor.

Session 1: Tuesdays, Thursdays, 12:25 PM - 1:45 PM, WEB L101

Discussion Sessions. Administered by the TAs.

Session 2: Friday, 09:40 AM - 10:30 AM, WEB L120

Session 3: Friday, 10:45 AM - 11:35 AM, WEB L112

Session 4: Friday, 11:50 AM - 12:40 PM, WEB L122

Session 5: Friday, 12:55 PM - 01:45 PM, WEB L122

The discussion sections should be attended. They will help you master the material and complete homework assignments.

Textbook. *Discrete Mathematics: Mathematical Reasoning and Proof with Puzzles, Patterns, and Games* by Ensley and Crawley

Public course web page.

<http://www.sci.utah.edu/~beiwang/teaching/cs2100-fall-2017.html>

Additional course materials are available on Canvas.

Course Description

CS 2100 provides an introduction into the discrete mathematics and structures that are at the foundation of computer science. It teaches logical thinking about discrete objects and thinking about abstract things.

Fair Warning. The pacing in this class is brisk. Students should be aware that not all of the topics they need to know will be covered during lectures. Students should spend a considerable amount of time reading, studying, and solving problems outside of lecture.

Workload. Attend lectures and discussion sections. Do the readings and practice problems. Homework assignments (roughly every 2 weeks), quizzes (5), and final exam.

Syllabus. The following topics will be covered. See the schedule page on the class website for a detailed schedule.

- Modules 1A and 1B: Mathematical Reasoning: (Chapters 1 and 2) Introduction to formal mathematical statements, logic, theorems and proofs. We will cover several fundamental strategies for proving mathematical statements.
- Module 2: Set Theory and Boolean Logic: (Chapter 3) Introduction to sets, set operations, proving set properties and Boolean Logic.
- Module 3: Relations and Functions: (Chapter 4) Introduction to relations, equivalence relations, functions, and properties of functions.
- Module 4: Combinatorics and Probability: (Chapters 5 and 6) Basic combinatorics, counting principles, and an introduction to discrete probability.
- Module 5: Graph Theory: (Chapter 7) Basic graph theory and networking.

Final exam. The final exam is scheduled by the University to take place 10:30 AM - 12:30 PM on Tuesday, December 12, 2017, in WEB L101.

Additional and Administrative Details

Classroom Behavior. According to the University of Utah Student Code¹, all students are expected to maintain professional behavior. Students should read the Code carefully and know that they are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, beginning with verbal warnings and progressing to dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee. Students are expected to engage with the instructor and classmates during class meetings. Students are permitted to use a laptop or mobile device to take notes. Use of a laptop or mobile device for any other purpose is not permitted, and students who do so will be asked to leave the classroom.

¹ <http://www.regulations.utah.edu/academics/guides/students/studentRights.html>

Getting Help. Take advantage of the instructor office hours, TA help hours, and the Friday discussion sessions. We will work hard to be accessible to students. Please send us email if you need to meet outside of office hours. Do not be shy if you do not understand something: come to office hours, post questions to the discussion board, send email, or speak up in class!

Students are encouraged to use the Canvas Discussion Board for questions outside of class and office hours. For private questions or concerns, send e-mail to the class mailing list (to be announced via Canvas) to reach the instructors and the TAs; we will respond to each such question individually. Email the instructor for urgent private matters.

Announcements. Important announcements, such as assignment corrections or deadline changes, will be posted to the Canvas course page as public announcements. Make sure you set up Canvas notifications appropriately to receive the announcements in a timely manner. Ideally, you should receive an email notification as soon as an announcement gets posted.

Textbook. Discrete Mathematics: Mathematical Reasoning and Proof with Puzzles, Patterns, and Games by Ensley and Crawley. You are welcome to buy a used copy. The schedule on the class website lists the sections covered in each lecture. It is recommended that you read these sections before they are covered in class.

Schedule. The current schedule can be found via the public course web page, at <http://www.sci.utah.edu/~beiwang/teaching/cs2100-fall-2017/schedule.html>.

Grading Policy. The final course grade is based on the homework assignments (15%, graded equally), five quizzes (60%, best four of five), and the final exam (25%). Letter grades are assigned as follows:

A 100-93 **A-** 92-90 **B+** 89-87 **B** 86-83 **B-** 82-80 **C+** 79-77 **C** 76-73 **C-** 72-70 **D+** 69-67 **D** 66-63 **D-** 62-60 **E** 59-0

There will be no rounding of scores. For example, 93.00 earns an A, while 92.99 earns an A-.

Homework Assignments. Homework assignments and deadlines will be posted to the class website. Student solutions must be uploaded to Canvas by 5:00 pm on the due date. Homework grading will not be negotiated (as it is a 4-tier scale, see below). Give yourself time to think about the material. Plan on working on the assignments a little each day, and ask questions when you get stuck. Do not plan on solving the assignments all at once; it actually takes much longer to finish! Our suggested approach is to

- Read the relevant sections of the textbook in a timely way.
- Try solving the practice problems, as well as the blue problems that are solved in the back of the book.
- Try solving the homework problems.
- If you are struggling with either step 2 or step 3, try doing the online activities on the textbook's website².
- If you are still struggling after step 4, see a member of the course staff.

²http://higheredbcs.wiley.com/legacy/college/ensley/0471476021/anim_flash/index.html?newwindow=true

The homework solutions must be submitted to Canvas as PDF. (See more below.) Homeworks are to be done independently. It is acceptable for you to discuss homework solutions with fellow class members, but copying/duplicating solutions is not acceptable.

The homework assignments will consist of up to 3 parts: 1) problems from the book, 2) problems we devise that are not in the book, 3) Canvas quizzes. The Canvas quiz part of an assignment can be attempted any number of times taking any amount of time until the assignment deadline. Only students with perfect scores on the Canvas quiz parts of the assignment are eligible for full credit on that homework assignment³.

Homework assignments are graded according to the following 4-tier scale:

- 3/3 points: Canvas quiz portion is 100% and the rest of the submission is complete and at least 75% correct.
- 2/3 points: Canvas quiz portion is 100% and the rest of submission is complete and 40 - 74% correct; or if the Canvas quiz portion is 0% and the rest of the submission is complete and at least 75% correct.
- 1/3 points: Submission is incomplete and/or less than 40% correct.
- 0/3 points: There is no submission or it is unreadable.

Steps for submitting homework:

- Make sure that you have achieved perfect scores on all the Canvas quizzes in that homework assignment before 5:00 pm on the day the assignment is due. Take the Canvas quizzes as many times as needed. (The Canvas quizzes close promptly at 5:00 pm and will not reopen.)
- Submit neat and organized solutions to the written problems, with your work shown. The homework solutions must be submitted as PDF. While typeset homeworks are preferred, scans of handwritten homeworks will be accepted if A) the scan is of sufficient contrast to be easily read; B) the handwriting is of reasonable size for the course staff's eyes; and C) it is neatly written.

Occasionally, students who try to submit their work close to the deadline experience difficulties due to circumstances beyond their control, including the following:

- The clock on the student's machine runs a little behind that of the server hosting this website, causing the student's submission to be received after the deadline.
- The student's internet connection goes down, preventing the student from accessing the class website.
- The student's machine freezes or experiences some other technical difficulty and must be reset or restarted. For these and similar reasons, there is a one-hour grace period for submissions. This means that the submission button will disappear when the clock on the server hosting this website reads exactly 6:00 pm. Any submission received before this time will be graded without penalty.

³For example, if a student has completed the pdf homework and it is at least 75% correct, but the student has not gotten the canvas quiz portion perfectly, the grade will be a 2/3.

Submissions will not be accepted after the grace period except in the case of a serious medical emergency for which the student can supply official documentation.

It is highly-recommended that you complete all assignments before the posted deadline and that you use the one-hour grace period only as a backup for resolving submission difficulties.

In-class Quizzes. Quizzes are closed book/closed notes. Only pen/pencil can be used during the quiz. No calculators, headphones, mobile phones, or other devices may be used. Once the quiz has started, students may leave only after handing in their quiz. Make sure to check the quiz dates on the class website and verify that you will be in attendance on those days.

Per the class schedule, quizzes will be on Sep 7, Sep 26, Oct 19, Nov 2, and Nov 30 (In the unlikely situation when changes have to be made to the schedule, these changes will be announced via Canvas).

We take best four of five quizzes. **Make-up quizzes will not be arranged for any reason other than a documented medical emergency.**

If you believe there is an error in the grading of your quiz, you may request a regrading within one week of receiving your grade. Requests must be made in writing, explaining clearly why you think your answer is correct. Note that we scan your quizzes before we return them to you, so we can verify the answers you return as original. Trying to change an answer after the quiz is graded and resubmitting it for more credit is considered cheating.

NOTE: In-class Quizzes are not the same as the Canvas quizzes, which are parts of homework assignments.

Working Together. You are welcome to discuss the homework problems with your fellow classmates. However, you must write up your own solutions. Do not read another person's write-up, and do not show your write-up to anyone else. Copying another student's solutions is considered cheating, as is offering your solutions to another student to copy. Also, it is important that you first try to solve problems on your own, and discuss them only when you are stuck or to reassure yourself about your answer. If you are unable to solve problems on your own, you will not perform well on the quizzes, which are the majority of your final course grade. Of course, there must be no collaboration during quizzes and the final exam.

If a student is caught cheating on a homework, quiz, or final exam, he/she will receive a failing grade for the course.

For a detailed description of the CS 2100 Academic Misconduct Policy, see the document linked to Canvas. For a detailed description of the university policy on cheating, please see the University of Utah Student Code⁴.

Students with Disabilities. The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations.

⁴<http://www.admin.utah.edu/ppmanual/8/8-10.html>