
CSCE 235 – INTRODUCTION TO DISCRETE STRUCTURES
Spring 2011

“Computer Science is no more about computers than astronomy is about telescopes.”
–Edsger Dijkstra

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1 Course Info

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| Lectures: Time & Venue | Monday, Wednesday, Friday 12:30 – 1:20 p.m. Avery Hall 106 |
| Recitations: Time & Venue | Monday 3:30– 4:20 p.m. Avery Hall 110 and 19 |
| Prerequisites | CSCE 155 and Math 106. CSCE 156 recommended but not required. |
| Course Web Page | http://www.cse.unl.edu/~cse235 |
| Textbook (required) | <i>Discrete Mathematics and Its Applications</i> Kenneth H. Rosen, McGraw Hill, 6th Edition , 2007 |

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|---------------------------|---|
| Manual (recommended) | <i>Student's Solutions Guide</i> ISBN-10: 0-07-310779-4; ISBN-13: 978-0-07-310779-0 |
| Instructor | Berthe Y. Choueiry <code>choueiry@cse.unl.edu</code> 360 Avery Hall Office hours: Wednesday & Friday 3:30 – 4:30 p.m. Also by appointment |
| Main GTA | Robert Woodward <code>rwoodwar@cse.unl.edu</code> Office hours: Thursday 5:00–6:00 p.m. and Friday 9:00–10:00 a.m., Student Resource Center Also by appointment |
| Recitation GTA | Shant Karakasian <code>shantk@cse.unl.edu</code> Office hours: Thursday 9:00–11:00 a.m., Student Resource Center Also by appointment |
| Quiz Grader UTA | Mary Burke <code>mburke@cse.unl.edu</code> Office hours: Wednesday 1:30–2:30 p.m., Student Resource Center Also by appointment |
| Homework Grader UTA | Nicholas Jewell <code>njewell@cse.unl.edu</code> Office hours: Tuesday & Thursday 2:00–3:00 p.m., Student Resource Center Also by appointment |
| Online Tutor & Grader UTA | Geoffrey Priester <code>gprieste@cse.unl.edu</code> Office hours: Wednesday 5:00–6:00 p.m. and Thursday 3:00–4:00 p.m., Student Resource Center Also by appointment |

2 Course Description

Computer Science is not programming. Rather, Computer Science is the mathematical modeling and study of what computation is—that is, what problems have a computational solution and how *efficient* that solution can be. Thus, a strong foundation in mathematics is essential to your success as a computer scientist. At the heart of computer science are fundamental, discrete structures which we will study in this course. Specifically, you will learn many of the mathematical definitions, techniques, and ways of thinking that will be useful in Computer Science.

3 Tentative Schedule

Below is a *tentative* list of topics I intend to cover along with the relevant sections of the text. This schedule may be changed and topics added/removed. Furthermore, though we will follow the book, additional material may be introduced (with sufficient resources) while the depth of each topic may vary.

| Topic | Sections |
|---------------------|----------------|
| Propositional Logic | 1.1 - 1.2 |
| Predicate Logic | 1.3 - 1.4 |
| Proofs | 1.5 - 1.6 |
| Sets | 2.1 - 2.2 |
| Functions | 2.3 |
| Relations | 8.1, 8.3 - 8.6 |
| Induction | 4.1 - 4.3 |
| Algorithms | 3.1 - 3.3 |
| Counting | 5.1 - 5.2 |
| Combinatorics | 5.3 - 5.5 |
| Recursion | 7.1 - 7.2 |
| PIE | 7.5 |
| Graphs | 9.1 - 9.5 |
| Trees | 10.1 - 10.3 |

I intend to teach from a combination of slides and board work. I will make handouts of the slides available, but you are ultimately responsible for the material, thus regular attendance is strongly encouraged. Furthermore, you will be expected to *read the relevant sections of the textbook before coming to class*.

The instructors for the recitations are Robert Woodward and Shant Karakasian, both graduate teaching assistant (GTA). Recitation meets every Monday from 3:30 to 4:20 in Avery 110 or 19, depending on your section. Recitation will primarily serve as a question/answer session and an opportunity for you to see more examples of concepts presented in lecture, therefore you should come prepared with any questions or examples that you wish to see worked out. *There will be a quiz at almost every recitation.*

4 Grading

Grade distribution is as follows:

| | |
|--------------------------------|-----|
| Homework | 34% |
| Quizzes | 15% |
| Progress Assessment Test (PAT) | 1% |
| First midterm | 15% |
| Second midterm | 15% |
| Final | 20% |

- If you have questions about grading or believe that points were deducted unfairly, you must first contact the respective UTA (Mary for Quizzes, Nicholas and Geoffrey for Homework) to see if the problem can be resolved.
- Such questions should be made within 5 working days after the graded assignment has been returned. No further consideration will be given to any assignment 5 working days after it has been graded and/or returned to you.

4.1 Homework

The GTA will assign about one homework per week. Homework is usually assigned on a Friday and due the following Friday *before class*. Homework may consist of selected exercises from the textbook as well as original problems and programming assignments. Please carefully follow the indications below:

- You will be expected to follow all instructions specified on each homework assignment.
- Clarity and legibility are of great importance. If homework is sloppy or unclear, points *will* be deducted.

- You are not *required* to typeset your homework assignments, however, it is *strongly* recommended that you do so using L^AT_EX or a similar typesetting system. Bonus points are give for typesetting homework in L^AT_EX only, but in *no other word-processing program*. Resources for L^AT_EX are available on the course web page. If you typeset your homework, you must submit the TEX and PDF files by webhandin.
- Two students can work together and submit a single homework under the condition that they *must* typeset their homework in L^AT_EX.
- Programming portions (when assigned) of each homework must be completed using C++ or Java, and must compile and run on `cse.unl.edu`. Code that does not compile or run on `cse.unl.edu` will be ignored, considered as incorrect, and will receive no partial credit.
- Source files, both L^AT_EX and program code, and all relevant files *must* be handed in using the CSE *web* handin program (<http://www.cse.unl.edu/handin>).

4.2 Quizzes

There will be almost weekly quizzes (i.e. they may or may not be announced in advance) given *at any time* during the recitation on Monday. In general, *there will be no make-up quizzes*. Exceptions may be made in certain circumstances such as health or emergency, but you must make every effort to secure prior permission from the instructor. The goal of the quizzes is to ensure that you are keeping up with the required readings and the class discussions, and quickly identify misunderstandings. They will generally be short and will cover recent topics. Quizzes will cover all material from:

- The required reading.
- Textbook examples.
- Class discussions.
- Slides.

4.3 Progress Assessment Test (PAT)

As part of CSE's assessment of its academic programs, every student in this course must take a Progress Assessment Test (PAT) at the end of the semester. Some time between Wednesday of the fourteenth (14th) week of classes 4/13/2011 and Wednesday of the fifteenth (15th) week of classes 4/27/2011, you will need to take the exam in Blackboard consisting of 30-40 multiple choice questions based on content of this course. This exam will count towards 1% of your final grade based on whether or not you have taken it and regardless of your performance on the test.

4.4 Exams

There will be two midterm exams and one final exam given in class (see the schedule for dates). Exams are semi-comprehensive in the sense that

- Topics covered by a previous exam may be included in a future exam if student's performance on those topics was not satisfactory.
- Any topic from the entire course may be the subject of true/false questions in any exam after the topic has been discussed in class.

All exams are closed-book exams, but you have the option of using a single 8.5x11 sheet of hand-written notes (front and back). You will hand in your cheat sheet along with your exam. In general, *there will be no make-up exams*. Exceptions may be made in certain circumstances such as health or emergency, but you must make every effort to get prior permission. The projected exam dates are:

- Midterm 1: Wednesday, February 16, 2011.
- Midterm 2: Wednesday, March 30, 2011.
- Final: Wednesday, May 4, 2011, 3:30–5:30 p.m.

Exam copies are not given back to students. However, students *must* check and discuss their exams with GTA and/or instructor as instructed by email. *This requirement is a solid one and will never be waived.* Students have *two* weeks to visit with the GTA/instructor about their exams during office hours or by appointment. After that deadline, one (1) point will be deducted from the exam’s grade if students do not meet with GTA/instructor. Grades will be posted on Blackboard after two weeks.

4.5 Late work

Please make note of the following policies:

- All homework are due at the beginning of each class on the due date (usually, Friday) unless specified otherwise.
- You are allowed to turn in two, at most two, late assignments (without penalty) the following weekday after the homework was due, *regardless of school holiday or closing* (e.g., if the homework was due on Friday, the homework would have to be turned in by Monday). No assignments will be accepted after this time. The web handin program that you will use enforces a *strict* handin time based on the CSE server’s clock.
- Programs or homework that are even a few minutes late will be marked as late so is *extremely* important that you handin your electronic files well within the time that they are due.
- All parts of a homework must be handed by the deadline.
- When giving your paper copy, make sure it is given by hand to the GTA or the instructor. If they are not available, you can give it the CSE Office Staff, *explicitly asking that they put a time stamp when they receive it from you.* Copies that are not time stamped by CSE Staff will be considered as handed in whenever the GTA or the instructor physically receives them.

4.6 Bonus points

You can collect bonus points for participating in class discussions and providing useful feedback:

- Attendance will be taken at the beginning of every lecture. A perfect attendance will be awarded by up to 3 bonus points.
- Some homework, quizzes, and exams will include bonus questions.
- An individual who typesets her/his homework in \LaTeX will receive bonus points.
- Bonus points will be awarded for finding errors in slides or in discussions.
- Filling the end of semester evaluation will be awarded a bonus point.

4.7 Scale

Letter grades will be awarded based on the following scale. This scale may be adjusted upwards if the instructor deems it necessary based on the final grades only. No scale will be made for individual assignments.

| | | | | | | | | | |
|----|------|----|------|----|------|----|------|---|------|
| A+ | ≥ 97 | B+ | ≥ 87 | C+ | ≥ 77 | D+ | ≥ 67 | F | < 60 |
| A | ≥ 93 | B | ≥ 83 | C | ≥ 73 | D | ≥ 63 | | |
| A- | ≥ 90 | B- | ≥ 80 | C- | ≥ 70 | D- | ≥ 60 | | |

4.8 Academic integrity

All homework assignments, programs, quizzes, and exams must be your own work. No collaboration with fellow students, past or current, is allowed unless specified otherwise. The Computer Science & Engineering Department has an Academic Integrity Policy. All students enrolled in any computer science course are bound by this policy. You are expected to read, understand, and follow this policy. Violations will be dealt with on a case by case basis and may result in a failing assignment or a failing grade for the course itself. The most recent version of the Academic Integrity Policy can be found at http://cse.unl.edu/ugrad/resources/academic_integrity.php.

5 Communication

The best way to communicate with the instructor, the GTAs, and the UTAs is through email to the address cse235@cse.unl.edu. Messages sent to this address will be received by the instructor and all of the GTAs/UTAs, who will respond to the requests within regular business hours. Moreover, I may send out emails to the class using the account cse235-m1@cse.unl.edu. However, these emails will only be sent out to your CSE email accounts. Because spam filters may reject some emails, it is very important that you use your CSE email account for all communications (they will all be white-listed).

Another valuable communication tool is the course web page. Announcements and resources will periodically be made available. Also, there is an anonymous suggestion box that you may use to voice your concerns about any problems in the course if you do not wish to be identified.

Finally, the instructor will hold regular office hours in Avery Hall 360 and the GTA's/UTA's will hold regular office hours in the Student Resource Center. We will make ourselves available by appointment; please email us to cse235@cse.unl.edu to set up one. Generally speaking, you should talk to Dr. Choueiry for questions about course material and lecture. You should talk to Mr. Woodward about homework, and recitation material. You should talk to Ms. Burke about quiz grading rebuttals. You should talk to Mr. Jewell about homework grading rebuttals. You should talk to Mr. Priester about homework and any concerns you may have or help you may need.

6 Special Needs

Students with special needs should contact the instructor as soon as possible.