

CMSC 250–Discrete Structures

Syllabus

Summer 2014

Contents

1 Overall course description

We will focus on the fundamental mathematical structures and logical principles that are relevant to computer science. In this course, students will be encouraged to develop an understanding of how modern mathematics provides as a sound foundation for understanding the elements of computing.

1.1 Resources

Resource	Details...
<i>Recommended Text</i>	Discrete Mathematics with Applications[?]
<i>Class webpage</i>	http://www.cs.umd.edu/class/summer2014/cmssc250/
<i>Piazza</i>	https://piazza.com/umd/summer2014/cmssc250/home
<i>Grades Server</i>	https://grades.cs.umd.edu/classWeb/viewGrades.cgi?courseID=701

Table 1: Resources

The fourth edition was used in planning this course, but students may use any edition of the text. Students should check the class webpage regularly for updates, and the Piazza site for help with homework and class content.

1.2 Overview of course topics

Computer Science is, in many ways, a product of engineering and modern mathematics—stemming from the early twentieth century. And thus, students’ developing a robust sense of modern mathematical thinking in the context of computing is a primary goal in designing this course. This course provides students with an introduction to essential elements of

mathematics for computing: sets, relations and functions, formal logic, axiomatic method and theorem proving, induction and recursion, and an introduction to graphs. Topics discussed in this course include but are not limited to

1. Propositional logic.
2. Set theory
3. Predicate logic.
4. Elements of numbers theory that are relevant to computer science, such as divisibility, prime factorization, and common proof techniques, including direct and indirect proof, as well as proof by induction.
5. Summations, recurrences, and mathematical induction.
6. Functions and their properties: Armed with an understanding of sets, formal properties of functions are introduced, such as cancellation properties, partitions, and algebraic relations.
7. Formal treatment of relations, mostly binary relations, including orderings and equivalences.
8. Combinatoric counting principles, including sum and product rules, pigeonhole principle, and some probability.

2 Instructor & TA Information

Instructor

Yoav Segev

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Office Hours: Mondays after classes, or by appointment

TA

Casey Mihalow

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Office Hours: TBD

3 Grading

3.1 Weighting

Homework:	5-6	15% .
Quizzes:	5-6 in discussion	10%.
Midterm:	One, in class	30%
Final:	Comprehensive, in class	45%

3.2 Exams

Midterm:	Friday 27 June 2014	in class
Final:	Friday 15 July 2014	in class

3.3 Exceptional conditions, conflicts, etc.

The final exam will be rescheduled only for students having another final exam at *exactly* the same time, or for students who have more than three final exams scheduled on the same day. If this is the case, let your Instructor know by Wednesday 11 June 2014.

4 Quizzes, Homework, Excused Absences, Disability policy, Academic Integrity, Laptop Policy

Quizzes are given (almost) every Thursday in discussion. Unless you have an excused absence (described in greater detail in the next section), to receive credit you must take a quiz during discussion time.

Homework will be posted by Thursday nights and collected the next Thursday as indicated on the Homework assignment. Homework must be handed in during the first 10 minutes of the discussion. If you are late to discussion without an excused absence (again, see the next section) you will receive a zero on that particular Homework assignment.

Homework assignments are only accepted in person, in-class. Homework assignments must be written legibly, single-sided on your own paper with the answers clearly labeled. You must put your name, and your University ID numbers in the upper right-hand corner of your Homework. Staple all pages together, and be sure that your name appears on each sheet of paper.

You may discuss Homework with other students; however, you must write up any solutions yourself.

4.1 Contesting Exam Grades

Students who feel that an item has been incorrectly graded must present a *written statement* that clearly states their case. This statement must be presented to the Instructor or TA

within one week. Note, requests for reassessment may positively or *negatively* impact a student's grade: if it is determined that the student's proposed solution would have resulted in *fewer points being awarded* for the item in question, then the Instructor may reduce the student's score.

4.2 Use of electronic devices in lecture

We strongly suggest that students refrain from using electronic devices during lecture owing to the nature of this content. Students may elect to use portable electronic devices, such as laptops, to take class notes. Instructors reserve the right to ask these students to show their notes to the Instructor. Naturally, students with appropriate accommodations may use whatever recording media and methods per their accommodations.

4.3 Students with disabilities

Students who have been certified by Disability Support Services as needing any type of accommodations should see their Instructors as soon as possible.

All arrangements for exam accommodations as a result of a disability *must* be made with the Student's Instructor *at least three* (3) business days prior to the Exam date, or accommodations cannot *cannot* be made. *Moreover, students should provide hardcopy forms to Instructors for their approval and not depend upon email. Students requesting accommodations are responsible for getting the paperwork to and from the testing center.*

5 Excused Absences

Reasons for missing coursework, such as illness, religious observances, participation in required University activities, or family and/or personal emergencies (such as a serious automobile accident or a close relative's funeral) will be considered to justify an excused absence.

Students requesting excused absences for any reason must apply in writing *as soon as possible* and must furnish documentary support that the absence qualifies as excused.

5.1 Illness

Absences due to medical reasons must be supported with documentation from the health-care professional who treated you. Note: this documentation should clarify that you were *incapacitated* or in some way incapable of undertaking normal work and must contain a telephone number and the dates of your visit. In other words: self-documentation of illness is *not* sufficient evidence for purposes of classwork.

5.2 General provisions

In the general case, excused absences are granted pending documentation, as outlined above. Excused absences will not be provided *after the fact*. In particular, an excused absence will not be granted *after performing coursework*. For example: you cannot take an exam and then claim to have been ill.

Students who might miss exams for any reason other than those mentioned above must contact the Instructor *in advance* to discuss particular circumstances. Bear in mind that an Instructor is *not obliged* to offer a substitute assignment or give a student a makeup assessment unless the failure to perform was due to an excused absence. Students' responsibilities for make-up work is as follows:

Exams A make-up exam will be given ASAP.

Homework Students with excused absences will be given a *short* extension (such as an extra day in typical cases); contact your Instructor as soon as possible in such cases to discuss appropriate arrangements.

Quizzes After documenting the excused absence with their Instructor, the TA will be informed, and the student will arrange with their TA to take the make-up quiz as soon as possible.

5.3 Religious observances

It is the University's policy to provide accommodations for students with religious observances that conflict with coursework. It is, however, the *student's responsibility* to provide Instructors written notification *in advance* of anticipated absences. In the case of conflicts with one of the exams, notice must be provided by Monday 16 June 2014.

6 Academic Integrity

As a general principle: you are permitted to discuss what the homework problems are asking with your classmates, but your solutions must strictly be your own work (although these may incorporate content from Instructional staff).

Any evidence of cooperation on homework assignments, quizzes or exams, or use of unauthorized materials while taking a quiz or an exam, or other possible violations of the Honor Code will be submitted to the Student Honor Council, which could result in an XF for the course, suspension, or expulsion.

If you have any questions whether a particular situation would violate any of the provisions of the Academic Integrity Code, talk with your Instructor in advance. Should

you have difficulty with the coursework you should *see the Teaching Assistants during Office Hours*. Do not solicit help from anyone else in violation of Academic Integrity rules. Remember:

It is the responsibility, under the Honor Policy, of anyone who suspects that an incident of academic dishonesty has occurred to report it to their Instructor, or directly to the Honor Council.

Every semester our Department has discovered a number of students attempting to cheat on their coursework, in violation of the academic integrity requirements. Students' academic careers have been significantly impacted by poor decisions. Consider this carefully before undertaking any actions that might jeopardize your career. Students are encouraged to discuss homework, classwork, as well as questions on exams and quizzes *after* they are submitted!

7 Copyright

All course materials are copyright of the Instructors ©2014. All rights reserved. Students are permitted to use course materials for their own personal use only. Course materials may not be distributed publicly or provided to others (excepting other students in the course), in any manner or format.

References

- [1] Epp, Susanna S., *Discrete Mathematics with Applications*. Brooks/Cole, a Division of Cengage Learning, Inc., Fourth edition, 2011
- [2] Epp, Susanna S., *Discrete Mathematics with Applications*. Brooks/Cole, a Division of Cengage Learning, Inc., Third edition, 2004