CMSC 250–Discrete Structures, Syllabus

Spring 2013

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 upon which to build a deeper understanding of the elements of computing.

1.1 Texts, and other instructional materials

Resource	**Details...**
Text book(s)	Discrete Mathematics with Applications
Class webpage	`www.cs.umd.edu/class/spring2013/cmsc250/`
Piazza	`piazza.com/class#spring2013/cmsc250`
Additional resources	(Online text) How to Prove It, by Daniel Velleman

Table 1: Textbook(s) and website locations.

The fourth edition of the Epp text was used in planning this course, but students may use any edition. Note also that the Velleman text is freely available as an ebook. 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

This course provides students with an introduction to essential elements of mathematics for computing: formal logic, sets, relations and functions, standard theorem proving methods, with an emphasis on induction, and, time-permitting, an introduction to graphs. Topics discussed include but are not limited to

Logic This topic includes the elements of formal logic, including propositional and quantificational forms.

Circuits and binary operations We explore how logic enables the design of circuits and in basic mathematical operations in computing.

Basics from Number Theory Students are introduced to the elements of numbers theory that are relevant to computer science, such as divisibility, prime factorizations, and common proof techniques, including direct and indirect proof, as well as proof by induction.

Summations, recurrences, and mathematical induction Special emphasis is placed on the development of student facility with inductive methods as this forms the backbone of many areas of computing.

Combinatoric counting Sum and product rules, permutations and combinations, pigeonhole principle, and an introduction to probability.

Sets Arguably, sets are the basis for structure in modern mathematics. Students will apply logic in order to construct basic proofs with finite and infinite sets.

Functions and their properties Students are given a brief introduction to modern perspective on functions as mathematical objects with an emphasis on cancellation and binary relations.

Graph theory (Time permitting) An introduction to the graphs and their properties that commonly occur in introductory courses in computer science.

2 Instructor & TA Information

Sections 0101, 0102, 0104, 0201, 0202, 0203, 0204	Sections 0103 Honors
Tom Reinhardt	Clyde Kruskal
3239 A.V. Williams, 405-2773	3215 A.V. Williams, 405-2683
tomr55@umd.edu	kruskal@cs.umd.edu
Office Hours: Mondays 11:00am-1:00pm	Office Hours: Fridays 2-5pm

Table 2: Contact information for Course Instructors.

Name	**Email Address**	**Office Hours**	**Location**
Anderson Garron	agarron@cs.umd.edu	TuTh: 2:00 - 3:30pm	1112-AVW
Milad Gholami	mgholami@cs.umd.edu	MW: 11:00am - 12:30pm	1112-AVW
Reza Khani	khani@cs.umd.edu	Th: 11:30am - 1:00pm	1112-AVW
Kookjin Lee	klee@cs.umd.edu	MW: 9:00 - 10:30am	1112-AVW
Shangfu Peng	shangfu@cs.umd.edu	MW: 10-11:30am	1112-AVW
Yoav Segev	segev@cs.umd.edu	TuTh: 12:30-2:00pm	1112-AVW
Fatemeh Mir Rashid	fatemeh@cs.umd.edu	TBD	1112-AVW

Table 3: TAs, addresses, office hours, and location.

3 Grading

3.1 Weighting

Please note that these weights are approximate:

Section Number	Time	Room Number	Name of TA
0101	11-11:50am	CSI 3120	Andy Garron
0102	12-12:50pm	CSI 3120	Yoav Segev
0104	11-12:30pm	CSI 2120	Milad Gholami
0201	9-9:50am	CSI 3120	Shangfu Peng
0202	8-8:50am	CSI 3120	Kookjin Lee
0203	1-1:50pm	CSI 3120	Yoav Segev
0204	10-10:50am	CSI 3120	Andy Garron
0101(H)	2-2:50pm	CSI 2120	Fatemeh Mir Rashid

Table 4: Discussion Group Sections, arranged by section.

Homework:	Assigned weekly	1% each.
Quizzes:	weekly in discussion sections	1% each.
Midterms:	two midterms	$\approx 48\%$ (24% each)
Final:	will be comprehensive	$\approx 36\%$

Note that, we will in effect drop the lowest quiz and lowest homework score during the computation of final grades for the semester.

3.2 Exams

Midterm #1:	Tuesday 12 March 2013	given in class
Midterm #2:	Tuesday 16 April 2013	given in class
Final exam:	Tuesday 14 May 2013, 4:00 - 6:00PM	TBA

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

Quizzes are given every Monday in Recitation. In order to receive credit, you must take your quiz during *your own* Discussion session time.

Homework will be *posted* by Tuesday nights and *collected* the following Wednesday indicated on the Homework assignment. Homework must be handed in at the beginning of the Discussion. If you are late to Discussion without an excused absence (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, with the answers clearly labeled, and in sequential order as assigned. You must put your name, your Directory ID, the name of your TA, and the time of your Discussion section 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 the solutions yourself.

4.1 Use of electronic devices in lecture

We require that students refrain from using electronic devices during lecture owing to the nature of this content. Students who use portable electronic devices, such as laptops, to take class notes should know that 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.

4.2 Use of Slides, worksheets, and other instructional materials

While considerable effort has gone into the design and creation of slides for this course, students should *not substitute these slides for attending all class and discussion sections.*

4.3 Students with disabilities

Students who have been certified by Disability Support Services as needing any type of accommodations should see their appropriate 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 hard copy 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 healthcare 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

Per University policy, students are permitted to provide their own written excuses for *one absence* per semester, *providing that absence does not occur on the day of an examination.* 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 teaching TA will be informed, and the student will arrange with their teaching 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.

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 inappropriate cooperation on homework assignments, quizzes or exams, or the use of unauthorized materials while taking a quiz or an exam, or other potential violations of the Honor Code may 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.

7 Evaluation process

All students are encouraged to submit end-of-course evaluations through the University Evaluation System located at the Course Eval Website. Your input is read by Staff and is used to improve instruction for all students.

8 Right to change information

Although every effort has been made to be complete compete and accurate, Instructors reserve the right to change this syllabus or other course materials.

9 Copyright