Syllabus   CS 214 (Section 1) Introduction to Discrete Structures   Spring 2017

Class Lecture Meeting Times: MW 2:20-3:40 pm (in TH N 326).

Instructor: Dr. Tim Newman
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    Office: TH N 364
    Phone: 824-6619

Office Hours: M 8:30-9:30am; 12:30-1:30pm
T 12:30-1:30pm
WR 9:30-11:00am

Prerequisite: CS 121 and MA 171

Course Overall Aim: Examine the fundamental discrete mathematical concepts that give a foundational background for later courses in computing. Students are to be able to achieve application of knowledge of these computing and mathematics in ways appropriate to the computing discipline.

Supporting Aims: Establish a sophomore-level, structured thinking capacity about computational underpinings needed for the computing disciplines.

Students are to be able to apply mathematical foundations and computing theory from discrete structures in modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.

Topics Addressed:

- Formal Logic
- Proofs
- Operations on Sets, Relations, and Functions
- Graphs and Trees
- Boolean Algebra
- Finite State Concepts

Text: *Mathematical Structures for Computer Science, 7th Ed.* by J. Gersting, W. H. Freeman, 2014.

Grading: The final grade will be composed of the following weights. The instructor reserves the right to make changes to this system. Changes will be announced in class.

Activity	Total Points
Mid-term Exams (2)	200 pts. total
Final Exam	125 pts.
Programming Assignment	30 pts.
Homeworks	80 pts. total
Participation	25 pts.
Grand Total	460 pts.

The grading scale will be **no stricter than**:

At/Above 415 pts.	for a 4.0;	At/Above 370 pts.	for a 3.0;
At/Above 325 pts.	for a 2.0;	At/Above 306 pts. ($>$**66.5%**)	for a 1.0;
$<$306	for a 0.0		

This course will utilize the plus/minus grading system for final grades. Note that a plus or minus grade doesn't affect GPA (e.g., a B- is counted in GPA the same as a B or B+).

Exams: There will be two mid-term examinations, each worth 100 points, currently scheduled for **Mon., Feb. 13** and **Mon., Mar. 27**. The 125 point comprehensive final is at the time the University specifies (currently listed as **Mon., May 1**, from 3:00 pm to 5:30 pm). Tests will cover lectures, assigned readings, homework, and programming assignments. Documented crisis or one week's prior notice required for *consideration* of exam make-up.

Programming Assignment: There will be 1 programming assignment in this course. The assignment is to be IN-DIVIDUAL work. For help on programs, you may utilize only a CS Help Desk/Lab TA or the instructor. All programs need to compile and run using the Visual C/C++ compiler (2012 version of Visual Studio) in the CS PC lab. Programs are always due at the *start* of class on the due date.

Notes on Programming Assignment: Both hardcopy (printout) and softcopy (electronic) versions of your source code will be submitted. More details on the softcopy requirements will be provided later.

All programs are expected to contain a reasonable amount of documentation.

Programs are due at the **start** of the class period on the due date. Late programs will receive a 15% penalty if they are up to one day (0-24 hours) late. No programs more than 24 hours late will be accepted. Please do not delay starting the assignments. Malfunctioning or unavailable equipment, etc., are not reasons that justify lateness.

Remember to save your program on your own flash stick, compact/digital video disk, or to your linux home directory at the end of every lab visit.

Homeworks: Regular homeworks will be assigned throughout the term. At least one, and possibly two, homeworks will be due in the last two weeks of class. A total of 9 homework assignments will be made. Homeworks are due at the start of class on the due date. No late homeworks are accepted. Homeworks are to be done on your own. Please do utilize the Help Desk TA's guidance if you need some guidance on homework problems.

Each graded homework is worth 10 points. The lowest homework score will be dropped; the best 8 scores will be recorded. Missed homeworks cannot be made up.

Pop Quizzes: The instructor reserves the right to have a pop quiz, although only on a date a homework is due. If there are pop quizzes, they won't be pre-announced—they could be on any homework due date, including a date within the last two weeks of the class. If there is a pop quiz, lecture, assigned readings, homework assignment topics, etc., are all fair game. If there are any pop quizzes, there will be a change to the total number of points possible in the course, and you will be notified of that at a class session.

Turn-in Policy: Turn in all work to the instructor, preferably at the start of class, otherwise during office hours. If you need to turn in your assignment at a different time during the day, you may turn it in to one of the department secretaries (in the CS main office) during regular working hours (be sure to ask the secretary to time stamp the assignment and to give the assignment to Professor Newman–it is your responsibility to ensure that the secretary time stamps the assignment and receives clear direction to give the assignment to the instructor.) **Do not turn any work in to a lab TA!**

Attendance and Absence: Class attendance and effective, constructive participation is important to your performance in the course and **makes up a portion of the grade**. Of the 25 participation points, 20 are based on the instructor's assessment of the **effectiveness and constructiveness** of your class participation, with that assessment made at the end of the course. The other 5 points are based on **attendance** at 5 randomly selected lectures (1 point per class you fully attend). Also note the exam absence policy mentioned earlier.

If you need help: I have scheduled a liberal amount of office hours and I want to help you learn the material and to succeed in the course. Please seek my assistance if you have any questions or concerns. The lab assistants at Help Desk are also ready to help you with any difficulties you have on the assignments.

Academic Honesty: The University policy on academic honesty, discussed in the code of Student Conduct, is strict. The instructor's academic honesty policy is very strict; instances of academic dishonesty will be penalized, at least by failure on the item and usually by failure of the course (in addition to any University penalties). **Unless otherwise stated, all work is to be individual work.** Getting all or part of a homework answer or program from a blog, forum, web answer sheet, library book, a friend, or any other source consitutes academic dishonesty; they are all example violations of the instructor's academic honest policy. So: **DO NOT WORK WITH ANYONE ON ANY THING RELATED TO AN ASSIGNMENT OF CS 214.** (Of course, appropriate guidance from the Help Desk TA is allowed.) In addition, on programs, do not follow an approach similar to what someone else has used; following a similar approach as someone else is also regarded as a clear violation of the instructor's academic honesty policy.

Stick with it!: Some of the things we study in 214 may be new and require expansion of your way of thinking about computing. Don't be discouraged if that happens, even if it seems a bit painful at times—such pains may be "growing pains." :-) If you stick with it, you'll find out in later courses that 214 gave you a good foundation.

UAlert Emergency Notification System: UAHuntsville has implemented the UAlert emergency notification system. UAlert allows you to receive time-sensitive emergency messages in the form of e-mail, voice mail, and text messages.

Everyone who has a UAHuntsville e-mail address will receive emergency alerts to their campus e-mail address. In order to also receive text and voice message alerts, you are asked to provide up-to-date phone contact information. Participation in UAlert text and voice messaging is optional, but enrollment is strongly encouraged. You can't be reached through UAlert unless you participate. The information you supply is considered confidential and will not be shared or used for purposes other than emergency notification.

To review your UAlert account, add or update phone and alternate e-mail addresses, and set the priority for your contact methods, please visit the UAlert web site: http://ualert.uah.edu.

Class Policies Note: Please also see the Department's Course Policy Sheet.

Spring 2017 CS 214 (01) MW 2:20 Class Tentative Schedule

Date		Topic	Reading Assignment	Special Comments
Mon.	1/9	Intro. and Logic Statements and Truth	Ch. 1.1	
Wed.	1/11	Propositional Logic	Chs. 1.1 and 1.2	
Mon.	1/16	MLK Day; NO CLASS	re-read 1.1-1.2	
Wed.	1/18	Determining Validity	Ch. 1.3	
Mon.	1/23	Validity and Proof Tech. I	Ch. 1.3 and 2.1	Drop w/Refund Deadline
Wed.	1/25	More about Proofs, Induction	Ch. 2.1 and 2.2	
Mon.	1/30	Induction and Recursion	Ch. 2.2 and 3.1	
Wed.	2/1	Recurrences and Recur. Relations	Ch. 3.1 and 3.2	
Mon.	2/6	Recur. Relations and Sets	Ch. 3.2 and 4.1	
Wed.	2/8	Recurrences and Sets	Ch. 3.2 and 4.1	
Mon.	2/13	**TEST 1**	Covers thru Chap. 4.1	**TEST 1**
Wed.	2/15	Sets	Ch. 4.1	
Mon.	2/20	Counting	Ch. 4.2	
Wed.	2/22	Counting and Inclusion/Exclusion (I/E)	Ch. 4.2 and 4.3	
Mon.	2/27	I/E, Pigeon., and Permutations	Ch. 4.3 and 4.4	
Wed.	3/1	Perm., Combos. and Prob.	Ch. 4.4 and 4.6	
Mon.	3/6	Probability and Binomial Thm.	Ch. 4.6 and 4.5	
Wed.	3/8	Bin. Thm. and Relations	Ch. 5.1	
Mon.	3/13	Spring Break; NO CLASS	re-read 4.1-4.6, 5.1	
Wed.	3/15	Spring Break; NO CLASS	re-read 4.1-4.6, 5.1	
Mon.	3/20	Rel. and Topo. Sorting	Ch. 5.2	
Wed.	3/22	Functions (and Mod.?)	Ch. 5.4 (and 5.6?)	
Mon.	3/27	**TEST 2**	Covers 4.2 to 5.6	**TEST 2**
Wed.	3/29	Mod and Matrices	Ch. 5.6 (and 5.7 ?)	
Mon.	4/3	Matrices	Ch. 5.7	
Wed.	4/5	Graphs	Ch. 6.1	
Mon.	4/10	Graphs and Trees	Ch. 6.1 and 6.2	
Wed.	4/12	Trees, Graph Algs. (+ Huffman?)	Ch. (6.4? and) 7.1	
Mon.	4/17	Graph Alg. and Boolean Algebra	Ch. 7.1 and 8.1	
Wed.	4/19	Boolean Alg. and Algebraic Structures	Ch. 8.1 and 9.1	
Mon.	4/24	FSAs and Last Lecture	Ch. 9.3	
Wed.	4/26	Study Day; NO CLASS		
Mon.	5/1	**FINAL**	Covers Chaps. 1-9	currently: 3:00-5:30pm

if time: Section 6.4, Huffman Codes