COT 4210-01 – Discrete Structures II - Spring 2015 Syllabus

Class Time: Tuesday, Thursday 12:00-1:15pm

Class Location: MSB - 359

Lecturer: Arup Guha Office: HEC – 240 Email: dmarino@cs.ucf.edu Phone Number: 407-823-1062 Office Hours: TBA (http://www.cs.ucf.edu/~dmarino/ucf/OH/html) Course Web Page: http://www.cs.ucf.edu/courses/cot4210/spr2015/ Teaching Assistants: Travis Meade (travm12@knights.ucf.edu), Leah Fortier (leahfortier@knights.ucf.edu) TA Office Hours & Location: TBA (http://www.cs.ucf.edu/courses/cot4210/spr2015/)

Course Objective

The true title of this course should be "Theory of Computation." We will examine different models of computation and determine their computational ability. For each model, we will look at specific problems that can be solved within a particular model of computation and other problems that can not be solved within that model. Our ultimate model will be the Turing Machine, which as far as any one knows, is a model as powerful as any computer that can be built, at least in terms of types of problems it can solve. (It's possible for a standard computer to solve problems *faster* than they could be solved on certain Turing Machine models, for example.) We will study which problems are solvable by a Turing Machine and which ones are not. Furthermore, we will differentiate between problems that can be solved on a standard Turing Machine in Polynomial time. For many of the latter problems, it is not known whether or not a standard Turing Machine exists to solve them in Polynomial time also. This background will lead to a solid understanding of the P=NP? question. Finally, we will briefly discuss the practical ramifications of the complexity class NP.

Recommended Textbook

Introduction to the Theory of Computation Third Edition by Sipser ISBN-13: 9781133187790 (Note: You may obtain the first or second edition as well. The content covered in this course is adequately covered in both versions.)

Grading

The final letter grade will be based upon the items listed on the following page. Weekly problems (11) will be due **at the beginning of** class and programming assignments (2) will be due over WebCourses. You are allowed to collaborate on the weekly problems in your **assigned groups.** All programs must be done in Java and must be done INDIVIDUALLY. The essay will be submitted via WebCourses. For each of the exams, the format will be discussed in class. Note: plus/minus grades will be issued, when deemed appropriate.

Item	Number	Percentage of Grade	Total Percentage
Weekly Problems	11 (drop min)	1	10
Programming Assignments	2	5	10
Essays	1	10	10
Quizzes	3	5	15
Exam #1	1	15	15
Exam #2	1	15	15
Final Exam	1	25	25

Note that the weekly problems are to be done in your assigned homework groups (except for the first week). The goal of these problems is to help you learn the material and for challenging material, such as the material in this class, it's helpful to work in groups. Typically, the group as a whole can come to an understanding that no single individual can. Each student must do their own write up in their own words and submissions should not be carbon copies of one another. The act of writing without copying actually helps strengthen neural connections relevant to learning. Groups should meet weekly and each group member should do some work on their own before the meeting so that the meeting can be effective.

Community Service Opportunity

In lieu of the last programming assignment, you may perform 5 hours (or more) of community service <u>with a registered 501 (c)(3) organization</u>. This option will give you a 100 for this assignment. In order to get this credit, you must complete the community service and turn in the requisite form signed directly to me (in my hand) by <u>March 30, 2015</u>. All grades for the community service will be posted before the last programming assignment is due.

Week	Tuesday Class	Thursday Class
Jan 12-16	1.1	1.2, weekly #1 due
Jan 20-23	1.2	1.3, weekly #2 due
Jan 26-30	1.4, quiz #1	1.4, weekly #3 due
Feb 2-6	Minimal DFAs	2.1, weekly #4 due
Feb 9-13	2.2	2.3, weekly #5 due
Feb 16-20	E1 Review, prog #1 due	Exam #1
Feb 23-27	3.1	3.2, weekly #6 due
Mar 2-6	4.1, quiz # 2	4.2, weekly #7 due
Mar 9-13	SPRING BREAK	DROP DATE!!!
Mar 16-20	4.2	5.1, weekly #8 due
Mar 23-27	5.2, essay rough draft due	5.3, weekly #9 due
Mar 30-Apr 3	E2 Review	Exam #2
Apr 6-10	7.1, 7.2, 7.3, prog #2 due	7.4, weekly #10 due
Apr 13-17	7.5, quiz #3	7.5, weekly #11 due
Apr 20-24	7.5, essay final draft due	FE Review
Apr 27-May 1	Reading Period	Final Exam (10am – 1pm)

Tentative Schedule

All sections listed in this chart refer to sections of the textbook. Note that this is a **tentative** schedule. Changes may be made in class. For this reason, attending class is important. Also, some material may be pulled from other sources in lecture. Thus, it will be beneficial for you to take your own notes AND read the posted course notes.

Late/Make Up Exams and Assignments

If a student is unable to complete an assignment on time or take an exam on time due to a serious family, medical or work situation, he or she must contact the instructor **BEFORE** the due date and ask for an extension. Extensions will be granted in situations the instructor deems reasonable. If an emergency occurs that prevents contacting the instructor before the due date, then the student should contact the instructor as soon as possible and reasonable accommodations will be made.

Incompletes

Incompletes are reserved for students who have been disabled in the middle of the course (typically for a medical or family reason) and have successfully completed a majority of the course, but will need extra time to get well and complete the remainder of the work. **INCOMPLETES WILL NOT BE ISSUED TO STUDENTS WHO ARE DOING POORLY IN THE CLASS WHO WISH TO RAISE THEIR GRADE.** If you are doing poorly in the course and are worried about not passing, make an appointment with the instructor, and if necessary, drop the course, **BEFORE THE DROP DEADLINE, MARCH 24, 2015!!!**

Regarding being near the next grade

After the course is over, if you are .1% away from the next higher grade, please do NOT send me an email asking to be given the next higher grade!!! In a class with as many students as are in this class, there will ALWAYS be students near any grade boundaries I may choose to draw. Nonetheless, I must draw grade boundaries. (If I don't and everyone gets an 'A', then as far as the outside world is concerned, no one in the class is any better than the worst student in the class.) All such emails will be ignored. (Last semester, I spent about 10 hours answer these sorts of queries and it took away from the teaching and grading I did, which takes away from the quality of education all students receive. In short, my philosophy is that the rest of the students shouldn't suffer because of a few whiny students.)