

SYLLABUS COT3100 - Applications of Discrete Structures

Basic Information:

Semester: Fall 2012

Classroom: PUGH 170

Time: MWF 8th period (03:00pm – 03:50pm)

Webpage: <http://www.cise.ufl.edu/class/cot3100fa12/index.html>

Prerequisites: MAC 2311, MAC 2233 or MAC 3472

Discussion session: #1096 - W 7th period CSE221; #1097 – W 9th period CSE222

Instructor: Nam Nguyen

Email: nanguyen@cise.ufl.edu

Office: CSE E309/E555.

Office Hours: Tuesday 1-3pm or by appointment.

Teaching Assistants:

+ Jialong Chen (jicheng@cise.ufl.edu) leading discussion session #1096, #1097

+ Yuanwen Huang (yuanwen@cise.ufl.edu)

+ Subhankar Mishra (Mishra@cise.ufl.edu)

BASIC COURSE DESCRIPTION

The essential course theme is mathematics of discrete events or entities. The following is an overview of the course contents:

- (1) Elements of **mathematical reasoning** with a view to developing the ability to comprehend as well as write clear, correct proofs. Different proof techniques will be taught.
- (2) **Discrete structures:** These include entities such as sets, relations, graphs, and trees. These entities act as very fundamental representations useful in a broad spectrum of applications across the length and breadth of computer science.
- (3) **Basic Combinatorial Analysis:** This includes the basic concepts of permutations, combinations, counting, probability, and the pigeonhole principle.
- (4) **Introduction to algorithms** and time complexity.

The contents of this course serve as a pillar for several applications in computer science, and provide highly useful background for subsequent courses on data structures and algorithms, theoretical computer science, as also other fields within computer science such as databases, networks, operating systems, programming languages, compilers, artificial intelligence, graphics, etc. It is important to note that this is by no means a programming course. Rather, it emphasizes mathematical reasoning. You will be expected to solve problems and write proofs just as in any typical mathematics class.

GRADING

The grading will be based on two midterms (20% each) and one final exam (25%), homework (25%) and in-class quizzes (worth 10%).

Homework

There will be 6 homework assignments. Each HW is equally weighted and you can drop (one) your lowest score. The homework will be strictly due at the beginning of class on the due date. No late homework will be accepted and there are no electronic submissions. Also, the solutions will be posted immediately after the due

time. Homework is **individual** and must be turned in on paper with the student's name and section number written clearly on it.

Quizzes

There will be a quiz almost every week (or bi-weekly up to the instructor). Each quiz is equally weighted. The dates will be determined later.

Exams

The two mid-terms will be in-class (closed books, closed notes, but you are allowed a two-sided A4 sized cheat-sheet on which you can write down your favourite formulae). **Midterm exams are scheduled to be in class during normal class time.** The final exam will be held during the official final exams week. For policies on make-up exams, please see the section on COURSE POLICIES.

Grading letters (Final grades might be curved)

Letter	Percent
A	90-100
A-	87-89
B+	84-86
B	80-83
B-	77-79
C+	74-76
C	70-73
C-	67-69
D+	64-66
D	60-63
D-	57-59
F	<56

COURSE TEXTBOOK

The official textbook for the course will be the 7th edition of "Discrete Mathematics and its Applications" by Kenneth Rosen, McGraw Hill. A 6th edition of this book is also available; however homework assignments will be based primarily on the 7th edition of the book. Hence, it is ENTIRELY your responsibility to locate the appropriate topics or exercises should you choose to use the fifth edition of the book. No excuse regarding any confusion on this matter will be entertained. Please note that students' solutions to selected exercises are also available for this book. Feel free to use them, though it is obviously recommended that you attempt to solve all problems yourself first for your own practice instead of rushing to look at available solutions.

TENTATIVE LIST OF TOPICS

- (1) Propositional and predicate calculus with proof techniques (1.1-1.7)
- (2) Set theory, Functions, and Sequences (2.1-2.4)
- (3) Algorithms and Integers (3.1-3.5)
- (4) Induction and Recursion (4.1-4.4)
- (5) Counting (5.1-5.3)
- (6) Graphs and graph algorithms (9.1-9.6)
- (7) Trees (if time permits, 10.1-10.4)

COURSE POLICIES

Re-grading:

You are free to discuss any concerns regarding grading with me or the TAs but verbal discussion will not lead to any alteration in your grades. You need to submit a written request on a separate sheet of paper attached to your answer sheet clearly stating the reason for your request, either to me or to one of the TAs. This is true for exams, quizzes and homework. On no account, should you write or make absolutely any changes whatsoever on the answer sheets. All re-grade requests must be made **WITHIN ONE WEEK** from the time the graded answer sheets are distributed to the class.

Make-up Exams:

There will be no make-up quizzes at all under any circumstances. Make-up midterms and final exams will be given only if you provide official documentation for a VALID EXCUSE which must be submitted to me PRIOR TO the exam. In the absence of such documentation, please do not ask for any make-up exams.

Homework policy:

No late homework will be accepted except in the case of medical problems that span the entire period starting from the day the homework was assigned till the day that it was due. Official documentation such as a doctor's certificate is absolutely required in all such cases.

Attendance:

I will not be taking any attendance during class or any of the discussion sessions, but it is your responsibility to ensure that you are aware of and comprehend all the material taught in class.

Cell-phones and laptops or tablets:

All cell-phones must be OFF throughout class. No calls or messaging are allowed while in class. Chatting or web-browsing on laptops or tablets is also strongly discouraged.

Announcements:

Please go through the class website from time to time regarding any updates or announcements. It is your responsibility to ensure that you check the website frequently enough. The class website is <http://www.cise.ufl.edu/class/cot3100fa12/>

Honesty policy:

All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others. The following link contains more information on this matter:

<http://www.dso.ufl.edu/judicial/>

Accommodation for Students with Disabilities:

Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

UF Counseling Services:

Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling.
- SHCC mental Health, Student Health Care Center, 392-1171, Personal and Counseling.
- Center for Sexual Assault/Abuse Recovery and Education (CARE), StudentHealth Care Center, 392-1161, sexual assault counseling.
- Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.