COT5405/CIS4930: ANALYSIS OF ALGORITHMS

Syllabus

“People who analyze algorithms have double happiness. First of all they experience the sheer beauty of elegant mathematical patterns that surround computational procedures. Then, they receive a practical payoff when their theories make it possible to get other jobs done more quickly and more economically…”

Donald E. Knuth

Basic Info

- Semester: Spring 2017
- Schedule: T 3-4, R 4
- Location: NEB 0100
- Professor: Alper Üngör
  E534 CSE Building
- TAs: TBA
  (cot5405sp17@cise.ufl.edu)

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- Office hours:
- Web-page: http://www.cise.ufl.edu/class/cot5405sp17
- Prerequisites: COT3100, COP3530 or equivalent, or Instructor’s permission
**Main Theme**

The study of algorithms is aimed at creating techniques that will enable a computer to perform a certain task in an efficient manner. An *algorithm* is a set of well-defined instructions for accomplishing some task, often explained by analogy with a culinary recipe. To analyze an algorithm is to determine the amount of resources (such as time and storage) necessary to execute it. Usually the efficiency or complexity of an algorithm is stated as a function relating the input length to the number of steps (time complexity) or storage locations (space or memory complexity) required to execute the algorithm. In this course, we will study various algorithmic paradigms (such as divide-and-conquer, greedy, dynamic programming), various analysis techniques (such as worst-case, expected, approximate), various problem domains (such as searching, sorting, graph theory, geometric, and combinatorially hard) problems.

**Coursework**

Grades will be based on homeworks (10%), three exams (each 30%).

- **Homeworks**: There will be 5-6 assignments, each consisting of 4-6 problems. Late submissions will not be accepted.
- **Exams**: Exams are tentatively scheduled on February 14, March 21, and April 18. Specific times and locations will be announced in class as the exam dates approach. All exams will be closed book.
- **Attendance**: This is an online class. Feel free to watch the lecture videos any time you like.

The grading scale will be A = [100,90], A- = (90,87], B+ = (87,84], B = (84,80], B- = (80,77], C+ = (77,74], C = (74,70], C- = (70,67], D+ = (67,64], D = (64,60], D- = (60,57], E = (57,0] or more lenient if I decide to use a curve.
**Course Material**

- **Required Textbook:**
  

- **Recommended Textbooks:**


  4. I will also distribute other papers and sources.

- **Conferences:** STOC, FOCS, SODA, APPROX, RANDOM, SoCG, LATIN, ESA

Course Policies

- **Regrading Policy:** You are free to ask me or one of the TAs why an answer did not get full credit. However, such verbal discussions will never result in extra points. Actual regrade requests must be made in writing, and then turned in to any of the TAs. Attach a separate page to your assignment/exam with the requested regrade and the reasons for the regrade. In no case may you write on the assignment/exam itself after it is graded. Requests must be made within one week of when we return the graded assignment/exam to class.

- **Make-up Policy:** Make-up exams for the midterms and the final will be given only if you have a written official documentation of a valid excuse and you contact me prior to the exam.

- **Late Policy:** Late HW submissions will not be accepted under any circumstances. Unless you have an official documentation of a valid excuse covering the entire period of the assignment (HW out – HW due), please do not ask for an extension.

- **Attendance:** I do not keep track of the attendance, directly. I believe that you are mature enough to decide what is best for you. It is your responsibility to stay abreast of the material presented in class.

- **Distractions:** This is a large class and I expect you to be extra careful not to cause any distraction in the classroom. Absolutely no phone calls or text messaging during the class. Also please be on time to the lectures. If you are more than a couple of minutes late do not enter the classroom.

- **Announcements:** Students are responsible following the announcements on UF E-learning (Canvas). Schedule updates regarding the homeworks, exams and office hours will appear there.

- **Accommodations for Students with Disabilities:** Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation.

- **The University’s 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 student at the University of Florida and to be honest in all work submitted and exams taken in this class and all others.

The following link contain additional information relating to academic honesty:
- [http://regulations.ufl.edu/chapter4/4041.pdf](http://regulations.ufl.edu/chapter4/4041.pdf)