Course Syllabus

Course Information
CS 4349-003: Advanced Algorithm Design and Analysis, Fall 2019
Mon & Wed 1:00pm–2:15pm, ECSS 2.201
Website: https://utdallas.edu/~kyle.fox/courses/cs4349.003.19f/

Instructor Contact Information
Kyle Fox, Assistant Professor
Phone: (972) 883-4168
Office: ECSS 4.224
Office Hours: Mondays 2:30pm–3:30pm, Tuesdays 10:00am–11:00am (tentative). Additional office hours by request.

Course Pre-requisites, Co-requisites, and/or Other Restrictions
CS 3305 with a grade of C or better, and (CE 3345 or CS 3345 or SE 3345 or TE 3345)

Course Description
According to CourseBook: Asymptomatic analysis, recurrences, and graph algorithms. Algorithm design techniques such as greedy method, dynamic programming, and divide-and-conquer. Issues from computational complexity. Course emphasizes a theoretical approach.

Specifics are subject to change at the instructor’s discretion. Focus will be on preparing students to meet the Student Learning Objectives/Outcomes listed below.

Student Learning Objectives/Outcomes
- Ability to use asymptotic notations, solve recurrences, perform algorithm analysis
- Ability to design, analyze, and prove correctness of algorithms based on Divide-and-Conquer techniques
- Ability to design, analyze, and prove correctness of algorithms based on Dynamic Programming techniques
- Ability to design, analyze, and prove correctness of algorithms based on Greedy techniques
- Ability to design, analyze and prove correctness of graph algorithms

Required Textbooks and Materials

Jeff Erickson: Algorithms. Available at http://jeffe.cs.illinois.edu/teaching/algorithms/. (main source for lecture material and homework problems)
Assignments & Academic Calendar
Homework will be assigned roughly weekly with exceptions based on University closures and exams. There should be ten homework assignments released. There will be two midterm exams and a cumulative final exam.

Tentative Exam Schedule
Midterm 1: Wednesday, October 2nd from 1:00pm to 2:15pm in ECSS 2.201
Midterm 2: Wednesday, November 13th from 1:00pm to 2:15pm in ECSS 2.201
Final Exam: Wednesday, December 11th from 2:00pm to 4:45pm in ECSS 2.201

Grading Policy
Each student’s lowest homework assignment score is dropped, but each assignment is otherwise given equal weight. Afterward, grades are determined by a weighted sum of the following three items.

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Homework</td>
<td>30%</td>
</tr>
<tr>
<td>Midterm Exams</td>
<td>20% each</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
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Grades are determined by each student’s performance relative to the class average, and the final cutoffs will likely be more relaxed than a typical 90, 80, 70, 60… scale. However, there is no fixed curve. If everybody performs well, then everybody can get top grades. Please talk to the instructor about grades before considering dropping the course.

Course & Instructor Policies
Details on remaining course policies for assignments and writing of solutions can be found on the course website https://utdallas.edu/~kjf170230/preview/courses/4349.003.19f/. A few key points can be found below.

Doing homework is vital for learning algorithm design and succeeding in the course. All assignments will be due on eLearning immediately before class starts on the day they are due. Late submissions will accepted, but any late submission made within 24 hours of when the assignment is due will have its score deducted by 10% the maximum score possible. Late submissions made more than 24 but less than 48 hours after the assignment is due will have the score deducted an additional 10% (so 20% total). No points will be awarded for submissions more than 48 hours late. Even after deductions, scores cannot be negative.

Homework should be turned in individually via eLearning. However, students are highly encouraged to work together, preferably in small groups, to complete assignments. Students working together must cite each other as collaborators. See the next paragraph.

You are expected to solve problems using only course material and your work within small groups of students. If necessary though, you are permitted to use any outside source or person as long as you cite the source and rewrite the solution in your own words. You must cite all collaboration with other students in the class as well. Properly cited and rewritten outside material is still worth full credit. Material not cited or not rewritten in your words will be considered an act of academic dishonesty and suspected incidents will be reported to the Office of Community Standards and Conduct. You do not need to cite anything from this course or prerequisite courses, but when in doubt, cite anyway just to be safe.

There may be a small amount of extra credit available. It will not affect the percentage cutoffs for students’ grades, so it can only help you.
Requests for regrades must be made within one week of the homework assignment or exam being returned. The problem in question will be completely regraded, so your score may actually go down. Please send regrade requests for exams to the instructor and requests for homework assignments to the TA.

If you know about a conflict with the scheduled exam dates, please inform the instructor at least one week in advance to set a conflict exam time. If you have or feel you may have a disability that requires a reasonable accommodation in the structure or administration of an exam, please consult with and get written documentation from the Office of Student AccessAbility (OSA) at least one week in advance of the exam.

Exams are closed book, and no other sources, collaboration, or cheat sheets are allowed.

It is the Computer Science Department’s policy that absence in three consecutive lectures will result in the course grade being lowered by one letter and absence in four consecutive lectures will automatically result in a failing grade (F) in the course.

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**UT Dallas Syllabus Policies and Procedures**
The University maintains a standard policies and procedures segment for course syllabi. Please refer to [http://go.utdallas.edu/syllabus-policies](http://go.utdallas.edu/syllabus-policies) for this segment.

*These descriptions and timelines are subject to change at the discretion of the Professor.*