

# ***CS 4349 – Advanced Algorithm Design and Analysis***

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## **Course Information**

CS 4349 Advanced Algorithm Design and Analysis  
Fall 2018, honors section

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## **Professor Contact Information**

Dr. James Willson  
jkw053000@utdallas.edu  
Office Hours: Tu 1:30 – 3:30, and by appointment; ECSS 4.608

Teaching Assistant TBA

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## **Course Pre-requisites, Co-requisites, and/or Other Restrictions**

Prerequisites: (CS 3305 with a grade of C or better) and (CE/CS/SE/TE 3345)

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## **Course Description**

**Advanced Algorithm Design and Analysis** (3 semester credit hours) 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.

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## **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 Greedy techniques  
Ability to design, analyze, and prove correctness of algorithms based on Dynamic Programming techniques  
Ability to design, analyze and prove correctness of graph algorithms

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## **Required Textbooks and Materials**

Introduction to Algorithms, 3rd ed., Cormen, Leiserson, Rivest, and Stein. MIT Press

## **Assignments & Academic Calendar**

Tentative exam dates

Exam 1: Wed, October 3

Exam 2: Wed, November 7

Exam 3: In exam week as scheduled by the registrar

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## **Grading Policy**

Homework: 20%

Exams: 80% (Three exams, equally weighted)

(but see Attendance and Assignment policies for some special cases)

Grading will be on a curve, and will not be decided until all grades are in.

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## **Attendance Policies**

Class attendance is mandatory. In accordance with department policy, three consecutive unexcused absences will result in a one letter drop of the course grade, and four consecutive unexcused absences will result in a grade of F for the course. (If there are excused absences in the middle of three unexcused absences, that's still three consecutive unexcused absences.) (Multiple runs of three unexcused absences will result in multiple letter drops.)

In addition to the department policy, ten total unexcused absences will result in a grade of F for the course.

Excused absences must be coordinated with the instructor prior to the absence, except for emergencies. A student who misses a class is still responsible for any handouts, announcements, reading material and contents of the missed class.

All make-up exams are scheduled and given at the discretion of the instructor.

Make-up exams are only given to those students who coordinate the missing of an exam prior to the originally scheduled exam date and time, or for an emergency.

## **Assignment Policies**

All assignments must be submitted online via eLearning. This is the only acceptable method of submission. All submissions can be revised before the deadline.

Late work will be accepted until the date noted on the assignment, with a small penalty. You are responsible for ensuring your assignment is completed and submitted before the deadline. After submitting, please check to make sure the submission worked and that you submitted the right thing. Broken submissions will not be given credit.

All assignments must be submitted. If one or more assignments are missing, that will result in a grade of F for the course. For this purpose, the absolute last date assignments can be submitted is the day before the final exam. (but work submitted after the assignment's late date is still scored as a 0)

You may discuss the assignments with your classmates, but the work you submit should be your own.

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## **UT Dallas Syllabus Policies and Procedures**

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

***The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.***