Course Syllabus for CS 4384

Last Updated: Thursday, February 9, 2023

Special Message: None at this time.

Course Information

Automata Theory – Spring 2023

CS 4384.001 on TR from 8:30am to 9:45am.

Classroom: ECSS 2.410

Professor Contact Information

Prof. Tim Farage

See my UTD homepage at www.utdallas.edu/~tfarage for office hours, etc.

Grader Contact Information

TA: TBA

Email: TBA

Note from Professor Farage:

I am here to assist each of you to learn the information in this course. And I want you to learn this information. Please email me with any questions that you might have, or ask questions in class.

Course Pre-requisites

Pre-requisite: CS 3305 with a grade of C or better

Course Description

A review of the abstract notions encountered in machine computation. Topics include finite automata, regular expressions, PDAs, and context-free languages.

Student Learning Objectives/Outcomes

1) Ability to design finite state automata and regular expressions

2) Ability to convert among DFA, NFA, regular expressions

3) Ability to show that a language is not regular

4) Ability to design Push-Down Automata (PDA) and Context-Free Grammars

5) Ability to convert PDAs to context free grammars and vice-versa

6) Ability to show that a language is not context free

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Required Textbooks and Materials

Introduction to Theory of Computation by Sipser, 3rd edition

This is a *free* online book that can be found at:

https://www.mog.dog/files/SP2019/Sipser_Introduction.to.the.Theory.of.Computation.3E.pdf

It is in a .pdf format.

Assignments (These are for practice for the tests and will not be graded).

1.6) a, b, c, d, e, h, I, j, l (DFAs)

1.7) a, b, c, e (NFAs)

1.16) a, b (convert NFAs to DFAs)

a1.17) a, b (convert an RE to an NFA then to a DFA

1.18) (give a RE for a given language)

1.19) a, b (convert RE to NFA)

1.20) a, b, c, d

1.21) (convert DFA to RE)

1.28) (convert RE to NFA)

a1.29) a, b, c (the pumping lemma)

2.4) a, b, c, e (context free grammars)

2.4) (modified) a, b, c, e (give PDAs for these)

2.6) a (context free grammars)

2.9) (context free grammars)

2.28) b (context free grammars)

Note: Exams are closed book and closed notes. No electronic devices may be used. You may not consult with any individuals during the tests.

Test Dates

Test 1 – Thursday, February 23rd

Test 2 – Thursday, March 30th

Test 3 – Thursday, April 27th

There is no final exam.

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All tests are weighted equally. No extra credit will be given.

Dates are subject to change.

Grading Policy

The 3 tests will determine your grade.

Letter grades will be assigned as given below. I reserve the right to make the grading scale easier than given here.

98-100	A+
92-97	A
90-91	A-
88-89	B+
82-87	B
80-81	B-
78-79	C+
72-77	C
70-71	C-
68-69	D+
62-67	D
60-61	D-
Below 60	F

Your grade will be based only on your scores as described above. PLEASE do not ask me to change your score/grade or give you a score/grade for any other reason. I know that some of you will

lose scholarships, be deported, etc. if you do not make a certain score/grade; there is nothing I can do about this. Of course, if a mistake was made in scoring, I will correct it. Any requests for changes to scores must be made within 30 days after the day the graded material was returned to the class. Any request for a grade change must be made within 60 days after the day that grades were posted.

Course & Instructor Policies

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.

There is a strong, direct correlation between class attendance and class performance. Those students who regularly attend class tend to make significantly higher final grades than those who don't.

Students are expected to be respectful to each other and to the course instructor. Disruptive behavior in the class room is not tolerated.

Each student in the class is encouraged to join/form a study group. Members of each study group are strongly encouraged to assist one another in learning and understanding the course material.

UT Dallas Syllabus Policies and Procedures including COVID Information

For general UTD policies go to the link:

https://go.utdallas.edu/syllabus-policies

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