

CS 4384.002 Automata Theory Syllabus Fall 2009

Course Information: CS 4384.001 Automata Theory

CRN Number: 10221
Time: 2:30 – 3:45 PM MW
Room Number ECS 2.415

Professor Contact Information

Professor's name Nancy Van Ness
phone number: (972) 883 - 4858
email: nancyvn@utdallas.edu

office location ECS 4.706

<i>office hours</i>	MW	9:00 AM – 12 :30 PM	Advising Suite first floor
		4:00 PM – 5:30 PM	ECS 4.706
	W	7:00 PM – 7:30 PM	ECS 4.706

other information Additional times are available through appointments

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

(including required prior knowledge or skills)

Prerequisite: CS 3305.

Course Description (Catalogue)

CS 4384 Automata Theory (3 semester hours) A review of the abstract notions encountered in machine computation. Topics include finite automata, regular expressions, PDAs, and context-free languages. If time permits Turing Machines will also be covered

Student Learning Objectives/Outcomes ABET Objectives

Ability to design finite state automata and regular expressions
Ability to convert among DFA, NFA, regular expressions
Ability to show that a language is not regular
Ability to design Push-Down Automata and Context-Free Grammars
Ability to convert PDAs to context free grammars and vice-versa
Ability to show that a language is not context free.

Required Textbooks and Materials

Introduction to the Theory of Computation, second edition, Michael Sipser, Thomson Course Technology, ISBN 0 -534-95097-3

Suggested Course Materials :JFLAP

JFLAP is a free software that allows you to build and run DFAs, NFAs, PDAs, and Turing Machines. I will be using it in class. You can get it at <http://www.jflap.org/> or put JFLAP into a search engine to find the download.

I strongly recommend it.

Assignments & Academic Calendar

(Topics, Reading Assignments, Due Dates, Exam Dates)

assignment	due	comments	material/ABET Objective
page 83 #1.3,1.4acf,1.5cf	31-Aug	quiz #1	DFA ABET #1
page 83 #1.7 ce, 1.8 ab	9-Sep	quiz #2	NFA ABET #1
page 83 #1.13, 1.14, 1.17,1.20	21-Sep	quiz #3	NFA/DFA ABET #1 & 2
exam #1	23-Sep		
minimization (handout)	7-Oct	quiz #4	handout ABET #1
page 86 1.21, 1.22,1.28	14-Oct	quiz #5	regular expression ABET #2
page 90 #1.46,1.48,1.54	21-Oct	quiz #6	not regular ABET #3
page 128 #2.4	28-Oct		grammars ABET #4
exam #2	28-Oct		
page 129 #2.5,2.6bd	9-Nov	quiz #7	PDA ABET #1
page 129#2.9,2.11,2.14,2.15	16-Nov	quiz #8	Chomsky ABET #5
page 128 #2.2,2.30ad,2.35	23-Nov		Pumping lemma ABET #6
page159 #3.7,3.8bc	30-Nov		Turing machines
page 182 #4.2, 4.7	7-Dec		Decidable
Final	14-Dec	2PM	University Scheduled

Grading Policy

(including percentages for assignments, grade scale, etc.)

Homework	10%
Quizzes	20%
Two mid terms each 20%	40%
Final	30%

Homework is due at the beginning of the class. It does not need to be typed but it must be neat. Write your name and class in the upper right hand corner of a standard 8 ½ by 11 sheet of paper. **Homework not following these guides for submission is subject to being rejected for grading.**

Special Dates for Fall 2009

First Day of Classes	20-Aug	
Last Day to Add a class	27-Aug	
Census Day	4-Sep	
Last day to Drop without a "W"	4-Sep	
UG withdrawl WP/WF begins	8-Sep	
Exam 1	23-Sep	
UG withdrawl WP/WF ends	22-Oct	
Exam 2	28-Oct	
G withdrawl with "W" ends	9-Nov	
Last Day of Class	7-Dec	
Final Exam	14-Dec	2:00 PM

Course & Instructor Policies

(make-up exams, extra credit, late work, special assignments, class attendance, classroom citizenship, etc.)

1/3 of the homework and quizzes will be dropped. You are responsible for the material of all assignments. There will be no acceptance of late homework and no quiz make up because of this policy. However, unusual circumstances should be explained as soon as possible as make up exams are not usually given. Please respect the rights of all students and turn off cell phones during class and exams.

Exams will be closed book. However, you will be allowed to bring in two sheets of paper for the mid terms and 4 for the final on which you have prepared information. You may write on both sides of these papers. You will be required to sign in to each exam at which time you will get an assigned seat.

Field Trip Policies

Off-campus Instruction and Course Activities

Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at the website address http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm. Additional information is available from the office of the school dean. Below is a description of any travel and/or risk-related activity associated with this course.

Student Conduct & Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, *A to Z Guide*, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the *Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3*, and in Title V, Rules on Student Services and Activities of the university's *Handbook of Operating Procedures*. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

Email Use

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

Withdrawal from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures*.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grade Policy

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of **F**.

Disability Services

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.

The contact information for the Office of Disability Services is:

The University of Texas at Dallas, SU 22

PO Box 830688

Richardson, Texas 75083-0688

(972) 883-2098 (voice or TTY)

Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for

students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.

It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

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