Greensheet

CS 154: Formal Languages and Computability
Spring 2017, Section 04

San José State University
Department of Computer Science

Instructor Info

Name	**Ahmad Yazdankhah**	My name is difficult to pronounce!
Office	DH 282	It is a shared office and usually I don't use it! I usually use MH 210.
Email	ahmad.yazdankhah@sjsu.edu	Please don't use my personal email.
Website	Under construction!	Our official educational web tool is Canvas at https://sjsu.instructure.com/
Phone	(408) 924-5060	Email is the best way to communicate!
Office Hours	MW 1915 – 2115	By appointment please!

Class Info

	Section 04
Meeting time	MW 6:00pm – 7:15pm
Classroom	MH 225
Course Number	27535

General Events of Semester

Description	**Day**	**Month**	**Day #**	**Comment**
First day of instruction	Thursday	January	26	For MW classes, Monday January 30th
Last day to drop	Tuesday	February	7	
Last day to add	Tuesday	February	14	
Daylight saving time	Sunday	March	12	
Spring Break	Mon-Fri	March	27-31	Recess
Last day of instruction	Tuesday	May	16	For MW classes, Monday, May 15th
Final Examinations	Thu-Wed	May	18-24	Look at the syllabus of this course for the info
Grades due from faculty	Tuesday	May	30	End of semester

For academic events of this semester, please refer to the course syllabus at the end of this greensheet.

Course Brief Info

Catalog Description

Finite automata, context-free languages, Turing machines, computability.

Prerequisites

Math 42	Discrete Mathematics	Grade C- or better
CS 46B	Introduction to Data Structure	Grade C- or better

The Department of Computer Science strictly enforces prerequisites. If you are not already pre-enrolled, you must come to the first class meeting and pick up an Add-Form from the instructor. If applicable, show the instructor your card that indicates you're a graduating senior. It will be the instructor's and the department decision whether or not to send you an add-code by email.

Any student who does not show up during the first two class meetings may be dropped by the instructor.

Required Text

Peter Linz, "An Introduction to Formal Languages and Automata," 5th edition, Jones & Bartlett Learning,
ISBN-13: 978-1449615529

Further Readings

The references at the end of each lecture note

Course Detail Info

Course Learning Outcomes (CLO)

1. The basic concepts and applications of formal languages, grammars, and automata
2. Different types of automata machines such as: finite accepters, pushdown, and Turing machines
3. Different classes of formal languages
4. The concepts of deterministic and nondeterministic automata
5. The concepts of regular languages, regular expressions, regular grammars, their properties, and the relationship between them
6. The concept and application of context-free grammars
7. The basic concepts of computability and complexity

Student Learning Outcomes

Upon successful completion of this course, students would be able to:

1. Construct deterministic and non-deterministic machines for various languages
2. Describe a regular language in terms of regular expression and vice versa
3. Construct a regular expression for a language described by a finite automaton and vice versa
4. Construct a grammar for a language
5. Construct a pushdown automaton for a language

6. Construct and use context-free grammars
7. Construct and use Turing machines
8. Turn a non-deterministic finite automaton into a deterministic one
9. Minimize a deterministic automaton
10. Use the pumping lemma technique to show that some languages are not regular or not context-free
11. Describe the properties of various automata and languages
12. Describe decidability and classify basic problems as decidable or undecidable
13. Describe computability and complexity of problems

Examinations and Evaluations

- Every week, there would be a short quiz and there would also be two midterms, and a final exam.
- All examinations would cover from the beginning of the semester.
- All examinations would be closed book.

Grading Information

Assignments	10%
Project	15%
Quizzes	30%
Midterm #1	10%
Midterm #2	15%
Final	20%
Total	**100%**

Nominal Grading Scale

From	To	Grade
97	100	A+
92	96.99	A
90	91.99	A-
88	89.99	B+
82	87.99	B
80	81.99	B-
78	79.99	C+
72	77.99	C
70	**71.99**	**C-**
68	69.99	D+
62	67.99	D
60	61.99	D-
0	59.99	F

To practice time management, late submissions will lose 20% of the assignment's total score and an additional 20% for each 24 hours after the due date.

Final Grade

- Your final grade can be adjusted depending upon your level and quality of participation in the class activities.
- If the FINAL grades of class are not normal, then I would curve the grades.

Workload

- Success in this course is based on the expectation that students will spend at least 6 – 10 hours per week for:
  - working on the assignments
  - preparation for the quizzes, midterms, and final exam
  - working on the project
- SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy S12-3 at http://www.sjsu.edu/senate/docs/S12-3.pdf.

Classroom Protocol

- Be on time! Coming late is disruptive.
- My classes are always interactive. So, participate in the class' activities as much as you can.
- Ask good questions and answer to the questions (in class and in the forum) as much as you can and get extra credit for them!
- Cell phones should be in silent mode and should be kept in your pocket or backpack, and should NOT be used during the lectures.
- Wireless laptops should remain closed until I inform you that it is needed for a particular activity.
- Instant messaging, e-mails, texting, tweeting, etc. are strictly forbidden in my class.
- Attendance is recommended, but is not mandatory, except for exam dates.
  - NOTE that University policy F69-24 at http://www.sjsu.edu/senate/docs/F69-24.pdf states that "Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading."

Consent for Recording of Class and Public Sharing of Instructor's Material

- Common courtesy and professional behavior dictate that you notify someone when you are recording him/her.
- You must obtain the instructor's permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only.
- The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/"

Course Schedule

Note: this is a tentative schedule and is subject to change but with fair notice.

Day#	Date	Lec#	Topics	Readings	Exams
1	01/30	1	Greensheet in detail; A big picture of the course; My background;		
2	02/01	2	Mathematical preliminaries (part 1);	1.1	
3	02/06	3	Mathematical preliminaries (part 2); Formal Languages (part 1); Checking prerequisites;	1.1	
4	02/08	4	Formal Languages (part 2);	1.2	Quiz 1
5	02/13	5	Formal Languages (part 3); Deterministic finite automata (part 1); Finalizing enrollments;	1.3, 2.1	
6	02/15	6	Deterministic finite automata (part 2);	2.1	Quiz 2
7	02/20	7	Deterministic finite automata (part 3); Regular languages;	2.4	
8	02/22	8	Nondeterministic finite accepter (part 1);	2.2	Quiz 3
9	02/27	9	Nondeterministic finite accepter (part 2); Review for Mid 1;	2.2	
10	03/01		Midterm 1	All Above	Midterm 1
11	03/06	10	Midterm 1 solution; Equivalency of DFA's and NFA's;	2.3	
12	03/08	11	Regular languages; Pushdown automata (part 1);	7.1, 7.2	Quiz 4
13	03/13	12	Pushdown automata (part 2);	7.3	
14	03/15	13	Turing machines (part 1);	9.1	Quiz 5
15	03/20	14	Turing machines (part 2); **Assigning term project**	9.2, 9.3	
16	03/22	15	Turing machines (part 3);	10.1, 10.2	Quiz 6
17	03/27	-	Spring break	-	
18	03/29	-	Spring break	-	
19	04/03	16	Turing machines (part 4);	10.3, 10.4	
20	04/05	17	Regular expressions (part 1);	3.1	Quiz 7
21	04/10	18	Regular expressions (part 2); Review for Mid 2;	3.2	
22	04/12		Midterm 2	All Above	Midterm 2
23	04/17	19	Midterm 2 solution; Non-regular languages; Pumping lemma (part 1);	4.3	
24	04/19	20	Pumping lemma (part 2);	4.3	Quiz 8
25	04/24	21	Grammars (part 1);	1.2, 3.3	
26	04/26	22	Grammars (part 2); **Term project due date;**	3.3, 5.1	Quiz 9
27	05/01	23	Grammars (part 3);	5.2, 5.3	
28	05/03	24	Introduction to complexity (part 1);	14.1, 14.2	Quiz 10
29	05/08	25	Introduction to complexity (part 2);	14.4	
30	05/10	26	Introduction to complexity (part 3);	14.5	
31	05/15	27	Wrapping up the semester; where we are and what would be the next step? Review for final		

Final exam	**Section 04 (MW 6:00pm – 7:15pm)**
Date and Time	Monday, May 22 @ 5:15pm – 7:30pm
Venue	MH 225