

CS 302 Automata Theory

Fall 2020

	<i>NAME/SCHEDULE</i>	<i>E-MAIL/PLACE</i>	<i>OFFICE HOUR</i>
INSTRUCTOR	Kemal İNAN	<i>inan</i>	By appointment
ASSISTANT(S)	<i>Ali Osman Berk ŞAPCI Cavit ÖZBAY Müge KUŞKON (LA) Berk TÜRETKEN (LA)</i>	<i>Aliosmanberk / <u>Google Meet</u> Cavitozbay / <u>Zoom</u> Mugekuskon / <u>Zoom</u> Berkturetken / <u>Zoom</u></i>	<i>M 09:40 – 11:30 R 10:40 – 12:30 W 13:40 – 14:30 M 15:40 – 16:30</i>
LECTURES	<i>M 12:40 – 14:30 W 10:40 – 11:30</i>	REMOTE https://sabanciuniv.zoom.us/j/92007903843	
RECITATION	<i>M 18:40 – 19:30</i>	REMOTE	

Main Text : [Introduction to Automata Theory, Languages and Computation](#) , Hopcroft, Motwani & Ullman, Pearson (Addison Wesley) 2006 , 3rd edition

Auxiliary Text : *Elements of the Theory of Computation*, Lewis & Papadimitriou, Prentice Hall 1998.

Grading Policy : 10% HW, 35% Quizzes, 20% MT, 35% Final

Important : 10 quizzes with 15 minute duration each shall be part of the course. Quizzes will be held during chosen lectures. A student missing more than 3 quizzes **fails** irrespective of medical or any other excuses ! The overall quiz grading will be the average of the best 7 out of 10.

Homework Policy : There will be 8 homeworks as part of the course. HW collection policy shall be announced in time.

Tentative Schedule

<i>Oct</i>	5 1,2	7 2	12 3	14 3 HW1	19 3,4 HW2	21 4	26 5	28 Holiday	
<i>Nov</i>	2 6 HW3	4 8	9 8,7	11 9,10	16 11 HW4	18 12,13	23 13	25 Midterm	30 13 HW5
<i>Dec</i>	2 14,15	7 15	9 15	14 16 HW6	16 16	21 16,17	23 17	28 17 HW7	30 17
<i>Jan</i>	4 17 HW8	6 Review			18 Final 9:00 - 12:00				

Tentative Course Outline

- 1 – Introduction: Languages, Automata and Grammars (Main Text (MT) 1.1, 1.5) Slide1*
- 2 – Deterministic Finite Automata as Language Acceptors (DFA) (MT 2.1, 2.2) S2*
- 3 – Nondeterministic Finite Automata (NFA) and Linguistic Equivalence to DFA (MT 2.3 - 2.5) S2*
- 4 – Regular Expressions (RE) (MT 3.1) S3*
- 5 – RE and NFA (M.T 3.2) S3*
- 6 – Regular Languages and Properties (M.T. 4.1, 4.2) S3-S4*
- 7 – State Equivalence and Minimal State DFA (MT 4.4) S4*
- 8 – Algorithms for the DFA and NFA (MT 4.3, 4.4) S4*
- 9 – Context-Free Grammars (CFG) (MT 5.1) S5*
- 10– Parse Trees and Applications (MT 5.2, 5.3) S5*
- 11 – Ambiguity in Grammars and Languages (M.T. 5.4) S5*
- 12 – Pushdown Automata (PDA) (MT 6.1, 6.2) S6*
- 13 – CFG and PDA (M.T. 6.3) S6*
- 14 – Deterministic Context-Free Languages (MT 6.4) S6-S7*
- 15 – Properties of and Algorithms for Context Free Languages (MT 7.1,7.2, 7.4) S7*
- 16 - Determinism and Parsing (AT 3.7, p 158-177) S7*
- 17 - Introduction to Turing Machines (AT Chapters 4 ,5 selections) S8*