



University of Tehran
School of Electrical and Computer Engineering

Course:	8101444 – Automata and Language Theory									
Course type:	EE*						CE*			Credit: 3
	Com	E	P	B	Con	D	SW	HW	IT	
	Required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Elective	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Level:	Undergraduate <input checked="" type="checkbox"/> Graduate <input type="checkbox"/>									
Co-requisite(s):	None.									
Prerequisite(s):	Data Structures (8101437)									
Prerequisite by topic:	-Fundamentals of discrete mathematics (sets, relations, graph) -Basic proof techniques -Data structures									
Textbook(s):	1- Peter Linz, “An Introduction to Formal Languages and Automata”, 5th Edition, 2012. 2- John E. Hopcroft, Rajeev Motwani, Jeffrey Ullman, “Introduction to Automata Theory, Languages, and Computation”, 3rd Edition, 2007. 3- Micheal Sipser, “Introduction to the Theory of Computation”, 3rd Edition, 2013.									
Coordinator:	Kargahi, Professor, School of ECE									
Goals:	To introduce the basic concepts in the theory of computation. To introduce different formal models of computation. To clarify the limitations of different computational models.									
Outcome:	Upon successful completion of the course, students will be able 1. To design different computational machines such as finite automata, pushdown automata, Turing machines. 2. To model their problem at hand as an appropriate language. 3. To understand the limitations of different models of computation.									
Topics:	1) Finite automata, regular languages, and regular grammars. 2) Context free grammars, languages, and pushdown automata. 3) Context sensitive grammars, languages. 4) Turing machines, unrestricted grammars. 5) Decidability 6) Computational complexity									
Computer usage:										
Assignments: 12 homework assignments									

Projects:	-
Grading:	Assignments: 25 % Projects: 0 % Quizzes: 5 % Midterm exams: 35% Final exam: 35 %
Further readings:	Languages and Machines: An Introduction to the Theory of Computer Science (3rd edition), Thomas A. Sudkamp, 2006.
Prepared by:	Hakimeh Fadaei
Date:	5/November/2017

*EE: Electrical Engineering		CE: Computer Engineering	
Com	Communications	SW	Software
E	Electronics	HW	Hardware
P	Power	IT	Information Technology
B	Bioelectronics		
Con	Control		
D	Digital System		