

COURSE DESCRIPTION

NAME OF INSTITUTION	Lahore Garrison University
PROGRAM (S) TO BE EVALUATED	Computer Science , Spring 2022

Course Description :

Course Code	CSC353		
Course Title	Theory of Automata		
Credit Hours	3+0		
Prerequisites by Course(s) and Topics	Nill		
Assessment Instruments with Weights (homework, quizzes, midterms, final, programming assignments, lab work, etc.)	SESSIONAL (Quizzes, Assignments, Presentations) =25 % Midterm Exam =25 % Final Exam = 50%		
Course Coordinator	Dr. Umer Farooq		
URL (if any)			
Current Catalog Description			
Textbook (or Laboratory Manual for Laboratory Courses)	Introduction to computer theory, Daniel I. A. Cohen, 2nd Edition		
Reference Material	An Introduction to Formal Languages and Automata, by Peter Linz, 4thedition, Jones & Bartlett Publishers, 2006, • Automata, Computability and Complexity: Theory and Applications, by Elaine Rich, 2011		
Course Goals	On successful completion of this course, students will be able to answer these questions: • Explain and manipulate the different concepts in automata theory and formal languages such as formal proofs, automata, regular expressions, Turing machines etc. • Prove properties of languages, grammars and automata with rigorously formal mathematical methods • Differentiate and manipulate formal descriptions of languages, automata and grammars with focus on regular and context-free languages, finite automata and regular expressions. • Design automata, regular expressions and context-free grammars accepting or generating a certain language;		
Course Learning Outcomes (CLOs):	At the end of the course the students will be able to:		Domain
	will be able Understanding basic concept of Automata theory		C
	Will be able to apply formal languages and regular Expression for the problem solving		C
	* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain		
		BT Level*	

Topics Covered in the Course, with Number of Lectures on Each Topic (assume 15-week instruction and one-hour lectures)	Week	Lecture	Topics Covered
	Week 1	1	General Introduction
		2	Languages, Practice Questions
	Week 2	3	Kleene Star, Recursive Definition
		4	Recursive Definition & Theorems
	Week 3	5	Regular Languages
		6	Regular Languages
	Week 4	7	Regular expressions
		8	Regular expressions
	Week 5	9	Finite Automata FA practice examples
		10	Transition Graphs practice examples
	Week 6	11	NFA to DFA
		12	NFA to DFA practice examples
	Week 7	13	Push Down Automata
		14	Push Down Automata
	Week 8	1 hours	Mid Term
	Week 9	15	Push Down Automata practice examples
		16	Push Down Automata practice examples
	Week 10	17	Push Down Automata and CFL
		18	JFLAP
	Week 11	19	CFG
		20	CFG, Right liner grammar, Left liner grammar and relationship
	Week 12	21	Parse Tree, Types of Parse Tree, Examples, Ambiguity, Precedence
		22	Left-Recursive
	Week 13	23	Types of Parsing, Top-Down Parsing Introduction, Bottom Up Parsing, Backtracking
		24	Predictive Parsers
	Week 14	25	Turing Machine
		26	Turing Machine and JFLAP
	Week 15	27	Presentations/Project
		28	Presentations/Project
	Week 16	29	Revision
		30	Revision
	Week 17	2 hours	Final Term
Laboratory Projects/Experiments Done in the Course			
Programming Assignments Done in the Course			

Instructor Name	Dr. Umer Farooq
Instructor Signature	
Date	