

Branch Name:	Bachelor of Technology (INFORMATION TECHNOLOGY)
Program Code:	ET105
Course Title:	Formal Language and Automata Practical
Course Code:	2ET1050602P
Pre-requisite Course:	Programming Language C / C++ / Lex

Course Objectives:

The objective of this course is to learn, understand and implement the various computational models.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								Total (Marks)
					Theory (Marks)				Practical (Marks)				
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	-	-	2	2	-	-	-	-	10	25	10	25	50

Course Contents:

Pr. No:	Topics	Total Hours
1	a. Design Finite Automata (FA) that accepts all strings over input symbols {0, 1} for string ending with 1. b. Design a Deterministic Finite Automata (DFA) that accepts all strings over input symbols {0, 1} having three consecutive 1's as a substring. c. Design and implement Finite Automata (FA) that accepts all decimal string which are divisible by 3.	06
2	a. Design a Finite Automata (FA) that accepts all strings over input symbols {0, 1} which are divisible by 3. b. Design a Push Down Automata (PDA) that accepts all string having equal number of 0's and 1's over input symbol {0, 1} for a language 0^n1^n where $n \geq 1$. c. Design a PDA to accept WCWR where w is any binary string and WR is reverse of that string and C is a special symbol.	06
3	a. Design a Program to create PDA machine that accept the well-formed parenthesis. b. Design PDA for a language $0a1b$ where $a \geq 0, b \geq 0$ over alphabet {0, 1}	06
4	a. Design a Turing Machine which will increment the given binary number by 1. b. Design a Turing Machine that calculate 2's complement of given binary string.	06

Text Books:

1. Introduction to Languages and the Theory of Computation, 4th by John Martin, Tata Mc Graw Hill

Reference Books:

1. Introduction to Automata Theory, Languages, and Computation By John Hopcroft, Rajeev Motowani and Jeffrey Ullman
2. An introduction to automata theory and formal languages By Adesh K. Pandey, Publisher: S.K. Kataria & Sons.
3. Introduction to the Theory of Computation By Michael Sipser, PWS Publishing.
4. Computation: Finite and Infinite By Marvin L. Minsky Prentice-Hall
5. Compiler Design By Alfred V Aho, Addison Wesley

Course Learning Outcomes (CLO):

Course Outcomes	Description	Bloom's Taxonomy Level
CLO1	Students should be able to understand, explain basic language theory and regular expression and able to design Finite Automata	Understanding (2) Applying (3)
CLO2	Students will be able to differentiate between regular and non-regular languages and design PDA for the non-regular languages.	Understanding (2) Applying (3)
CLO3	Students should be able to explain higher class languages and their design and implementation using Turing Machine	Understanding (2) Applying (3)

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	M	M	H									L	M	M		
CLO2	M	H	H		M							L	M	M		
CLO3	M	H	H		M							L	M	M		

H: High, M: Medium, L: Low