



EAST POINT COLLEGE OF ENGINEERING & TECHNOLOGY

Department of CSE (Artificial Intelligence and Machine Learning)

Approved by AICTE New Delhi | Affiliated to VTU, Belagavi,
Virgo Nagar, Bengaluru-560049

Action taken based on the analysis of students' and faculty feedback on curriculum for the academic year 2025-2026, Department regularly collects feedback on curriculum from students and faculty.

Recommendation	Action Taken
There are no recommendations given by the students.	As no recommendations were received from students, no action was required.
The faculty recommended including a case study in the Theory of Computation course(BCS503) to enhance the practical understanding of the concepts.	The suggested case study has been incorporated into the Theory of Computation course (24CI52) curriculum for the academic year 2026–2027.


Professor & Head
Dept. of CSE (AI & ML)
HOD, CSE (AI & ML) East Point Technology
An Autonomous Institute, Affiliated to VTU, Belagavi,
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Theory of Computation

Course Code	24C152	CIE Marks	50
Teaching Hours/Week (L: T: P)	3:2:0	SEE Marks	50
Credits	04	Total Marks	100
Contact Hours	50	Exam Hours	03
Examination type (SEE)	Theory		

Prerequisites:

The students should have knowledge of

- Discrete Mathematics

Course Objectives:

- Understand the foundational concepts of Automata and Theory of Computation.
- Explore different classes of formal languages and their interrelationships.
- Gain knowledge of grammars and recognizers for various formal languages.
- Apply theoretical principles to prove or disprove theorems in automata theory.
- Assess the decidability and computational complexity of problems.

Teaching-Learning Process (General Instructions)

These are sample Strategies that teachers can use to accelerate the attainment of the various course outcomes.

1. Lecturer method (L) needs not to be only a traditional lecture method, but alternative effective teaching methods could be adopted to attain the outcomes.
2. Use of Video/Animation to explain functioning of various concepts.
3. Encourage collaborative (Group Learning) Learning in the class.
4. Ask at least three HOT (Higher order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop design thinking skills such as the ability to design, evaluate, generalize, and analyse information rather than simply recall it.

Module-1	10 Hours
Introduction to Finite Automata, Structural Representations, Automata and Complexity. The Central Concepts of Automata Theory. Deterministic Finite Automata; Nondeterministic Finite Automata, An Application: Text Search, Finite Automata with Epsilon-Transitions. Text Book: Sections 1.1, 1.5, 2.2, 2.3, 2.4, 2.5	
Module-2	10 Hours
Regular Expressions, Finite Automata and Regular Expressions, Proving Languages not to be Regular. Closure Properties of Regular Languages, Equivalence and Minimization of Automata. Text Book: Sections 3.1, 3.2 (Except 3.2.1), 3.3, 4.1, 4.2	
Module-3	10 Hours
Context-Free Grammars, Parse Trees, Ambiguity in Grammars and Languages, Ambiguity in Grammars and Languages, Definition of the Pushdown Automaton, The Languages of a PDA, Equivalence of PDA's and CFG's, Deterministic Pushdown Automata. Text Book: Sections 5.1, 5.2, 5.4, 6.1, 6.2, 6.3.1, 6.4	
Module-4	10 Hours
Normal Forms for Context-Free Grammars, The Pumping Lemma for Context-Free Languages, Closure Properties of Context-Free Languages. Case Study: Transforming Context-Free Grammars into Chomsky Normal Form Text Book: Sections 7.1, 7.2, 7.3	
Module-5	10 Hours
Introduction to Turing Machines: Problems That Computers Cannot Solve, The Turing Machine, Programming Techniques for Turing Machines, Extensions to the Basic Turing Machine, Undecidability: A Language That Is Not Recursively Enumerable. Case Study: Halting Problem, Real-World Implications of Turing Machines Text Book: Sections 8.1, 8.2, 8.3, 8.4, 9.1, 9.2	