Curriculum Planner

B.Sc. (Hons) Vth Semester
Department of Computer Science
DISCIPLINE SPECIFIC CORE- Theory of Computation
Name of the Teacher: - Dr. Dharmendera Kumar Meena

Unit	Topic	Chapter	Reference	Month
1. Introduction	Alphabets, string, language, basic operations on language, concatenation, union, Kleene star.	2	[1]	August 2024
2. Finite Automata and Regular Languages	Regular expressions	4	[1]	September 2024
	Deterministic Finite Automata (DFA)	5	[1]	
	Transition graphs (TG)	6	[1]	
	Non-deterministic finite automata (NFA), Relationship between NFA and DFA	7	[1]	
	The relationship between regular languages and finite automata (Converting RE into FA and vice-versa), Kleene's Theorem	7	[1]	
	Properties of regular languages (Proof of Theorem 12 using De Morgan's law is to be done intuitively only)	9 (Excluding Pages 175-179)	[1]	
	Pumping lemma for regular grammars (Excluding Myhil-Nerode theorem & Quotient Languages) **Class Test-1**	10 (Till Page 195)	[1]	
3. Context-Free Languages (CFL)	Context-free grammars (CFG), Parse trees (Excluding Lukasiewicz notation), Ambiguities in grammars	12 (except pages 246-249)	[1]	October 2024
	Deterministic and non-deterministic Pushdown Automata (PDA)	14		
	Chomsky Normal Form, Leftmost derivation,	13 (Page 275 onwards)		
	Properties of CFL (Excluding mixing context-free and regular languages)	17 (upto Pg 388)		
	Pumping lemma for CFL **Class Test-2**	16 (Till page 370)		
4. Turing Machines and Models of Computations	Turing machine as a model of computation, configuration of Turing machine, Recursive and recursively enumerable languages	4 (upto 4.2)	[2]	November 2024
	Church Turing Thesis, Universal Turing Machine, decidability, Halting problem **Revision, Doubt solving, Mock Practical**	5 (upto 5.3 except page 252)		

References

1. Cohen, D. I. A. (2011). **Introduction to Computer Theory**. 2nd edition. Wiley India.

2. Lewis, H.R. & Papadimitriou, H. R. (2002). **Elements of the Theory of Computation**. 2nd edition. Prentice Hall of India (PHI)