PES UNIVERSITY, BENGALURU

(ESTABLISHED UNDER KARNATAKA ACT 16 OF 2013)

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

SESSION: **JAN – MAY, 2020**

THEORY OF COMPUTATION – UE18CS254 (3:0:0:0:3)

Textbook:

1. **An Introduction to Formal Languages and Automata**, Peter Linz, 5th Edition, Jones and Bartlett, New Delhi, India, 2011.
2. **Theory of Computation: A Problem–Solving Approach**, Kavi Mahesh, Wiley India, New Delhi, 2012

Hours	Unit	Topic	Chapter & Section	% Coverage	
				Unit	Total
1	1	T1: **Mathematical Preliminaries**: Sets, Graphs and Trees, **Three Basic Concepts:** Languages, Grammar (Till Example 1.11), Automata Definition T2: **Introduction:** Computers, computation, computability and Languages	T1- 1.1, 1.2 T2 - 1.1, 1.2, 1.3, 1.7, 1.8	21.15	21.15
2		T2: Automata for Vending machine, T1: **Deterministic Finite Automata/ Accepters:** Definition, start state, final state, transition function, transition graph, string acceptance, Language of DFA, construction of DFA and string acceptance DFA Problems	T1 – 2.1 T2 - 2.1, 2.3, 2.9		
3					
4		T1: Non–Deterministic Finite Automata: Definition, Transition Function, Extended Transition Function, String Acceptance/ rejection, Language of NFA, Difference in DFA and NFA, Why Non-Determinism? T2: Idea of Non-Determinism, Construction of NFA Problems	T1 – 2.2 T2 - 3.1 – 3.2		
5					
6		Equivalence of Deterministic and Non–Deterministic Finite Automata Problems	T1 - 2.3		
7					
8		Minimizing Finite Automata Problems	T2- 3.5		

Textbook:

T1 - An Introduction to Formal Languages and Automata, Peter Linz, 5th Edition, Jones and Bartlett, New Delhi, India, 2011.

T2 - Theory of Computation: A Problem–Solving Approach, Kavi Mahesh, Wiley India, New Delhi, 2012.

References:

Introduction to Automata Theory, Languages, and Computation, John E. Hopcroft, Rajeev Motwani, Jeffrey D. Ullman, 3rd edition, Pearson Education, Delhi, India, 2009.

Theory of Computation, Michael Sipser, Cengage Learning, New Delhi, India, 2008.