



B. P. PODDAR INSTITUTE OF MANAGEMENT & TECHNOLOGY

Poddar Vihar : 137, V. I. P. Road, Kolkata – 700 052

Lesson Plan – cum – Execution Report

Academic Year: .2024-2025.....

Semester: 4th

Stream: CSE (Sec C)

Paper with Paper Code: **Formal Language & Automata Theory (PCC-CS403)**

Faculty: NAYANA DEY.....

Lectures per week (with Day & Period): Tuesday (5th), Thursday (3rd), Friday (1st)

Report for the period 06.02.2025 to 22.05.2024 [to be submitted directly by the Faculty member concerned, to the office of the Principal

(Use separate form) for each subject].

I. LESSON PLAN (Breakup of Lecture materials in modules)		II. EXECUTION REPORT				
Lecture Number	Topics to be covered in the Lecture	Scheduled dates & periods as per routine	Whether the class was taken, if not – reason	Actual date of taking classes including exchange, extra classes with period	Topics covered	No. of students present in the class
1.	Introduction: Alphabet, languages and grammars, productions and derivation with examples, Chomsky hierarchy of languages , types of grammar with examples, Transition systems , concept of transition table and transition diagram	06.02.2025 3rd period	Yes, Taken	06.02.2025 3rd period	Introduction: Alphabet, languages and grammars, productions and derivation with examples, Chomsky hierarchy of languages , types of grammar with examples, Transition systems , concept of transition table and transition diagram	19
2.	Regular languages and finite automata: Regular expressions and languages, Deterministic finite automata (DFA), how to construct a DFA with examples	07.02.2025 1st period	No, due to medical issue (I.A mam had taken that class)	11.02.2025 5th period



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Lecture Number	Topics to be covered in the Lecture	Scheduled dates & periods as per routine	Whether the class was taken, if not – reason	Actual date of taking classes including exchange, extra classes with period	Topics covered	Notes
3.	Regular languages and finite automata: DFA equivalence with regular expressions, Introduction to non deterministic finite automata (NFA)	11.02.2025 5th period	Yes, Taken	11.07.2024 6th period (Extra Class)	Regular languages and finite automata: Regular expressions and languages, Deterministic finite automata (DFA), how to construct a DFA with examples	40
.....	.....	11.02.2025 6th period (Extra Class)	Yes, Taken	.....	Regular languages and finite automata: DFA equivalence with regular expressions, Introduction to non deterministic finite automata (NFA)	40
4.	Non deterministic finite automata (NFA) and equivalence with DFA with examples	15.02.2025 1st period	Yes, Taken	15.02.2025 1st period	Nondeterministic finite automata (NFA) and equivalence with DFA with examples	50
5.	Regular languages and finite automata: DFA equivalence with regular expressions, Introduction to nondeterministic finite automata (NFA)	18.02.2025 5th period	Yes, Taken	18.02.2025 5th period	Regular languages and finite automata: DFA equivalence with regular expressions, Introduction to nondeterministic finite automata (NFA)	64



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Lecture Number	<i>Topics to be covered in the Lecture</i>	Scheduled dates & periods as per routine	Whether the class was taken, if not – reason	Actual date of taking classes including exchange, extra classes with period	Topics covered	I st p
.....	.....	18.02.2025 6th period (Extra Class)	Yes, Taken	.....	How to construct NFA with more examples, equivalence with DFA with examples class test for CA1 offline (5 Marks), PPT presentation groups (1-8)	64
6.	Non deterministic finite automata (NFA) and equivalence with DFA with examples	20.02.2025 3rd period	Yes, Taken	18.02.2025 6th period (Extra Class)	Regular grammars and equivalence with finite automata, properties of regular languages PPT presentation groups (9 to 17)	43
7.	Regular grammars and equivalence with finite automata, properties of regular languages	21.02.2025 1st period	Yes, Taken	20.02.2025 3rd period	Properties of regular languages, introduction to pumping lemma	29
8.	Properties of regular languages, introduction to pumping lemma	25.02.2025 5th period	Yes, Taken	21.02.2025 1st period	Pumping lemma for regular languages (more examples), minimization of finite automata (introduction)	27
9.	Pumping lemma for regular languages (more examples), minimization of finite automata (introduction)	27.02.2025 3rd period	Yes, Taken	25.02.2025 5th period	Minimization of finite automata with examples, Minimization of finite automata with multiple states , minimization of finite automata using Epsilon closure	39



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Lecture Number	Topics to be covered in the Lecture	Scheduled dates & periods as per routine	Whether the class was taken, if not – reason	Actual date of taking classes including exchange, extra classes with period	Topics covered	st p
10.	Minimization of finite automata with examples	28.02.2025 4th period <small>(Switched with BM, IA)</small>	Yes, Taken	27.02.2025 3rd period	Minimization of finite automata: My-hill Nerode theorem & minimization of Automata	26
11.	Minimization of finite automata: My-hill Nerode theorem & minimization of Automata	04.03.2025 5th period	No, No students found	28.02.2025 4th period	.....	...
12.	Finite Automata with output: Construction of Mealy Machine, Construction of Moore Machine (With Examples) Finite Automata with output: Conversion of Moore to Mealy Machine with examples , Conversion of Mealy to Moore Machine with examples	06.03.2025 3rd period	Yes, Taken	06.03.2025 3rd period	Finite Automata with output: Construction of Mealy Machine, Construction of Moore Machine (With Examples) Finite Automata with output: Conversion of Moore to Mealy Machine with examples , Conversion of Mealy to Moore Machine with examples	40
13.	Epsilon NFA, Conversion of Epsilon NFA to NFA with examples, Regular expression (Identities), Identities of Regular expression	07.03.2025 1st period	Yes, Taken	07.03.2025 1st period	Epsilon NFA, Conversion of Epsilon NFA to NFA with examples, Regular expression (Identities), Identities of Regular expression	34



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14.	Arden's Theorem with examples, Designing of Regular Expression, NFA to Regular Expression, DFA to Regular Expression with examples	11.03.2025 5th period	Yes, Taken	11.03.2025 5th period	Arden's Theorem with examples, Designing of Regular Expression, NFA to Regular Expression, DFA to Regular Expression with examples	44
Lecture Number	Topics to be covered in the Lecture	Scheduled dates & periods as per routine	Whether the class was taken, if not – reason	Actual date of taking classes including exchange, extra classes with period	Topics covered	st p
.....	.....	11.03.2025 5th period (Extra Class)	Yes, Taken	.....	Regular Expression to Finite Automata with examples, Equivalence of Two Finite Automata with examples Pumping Lemma for regular language, introduction and explanation with examples	44
15.	Regular Expression to Finite Automata with examples, Equivalence of Two Finite Automata with examples Pumping Lemma for regular language, introduction and explanation with examples	13.03.2025 3rd period	Yes, Taken	11.03.2025 5th period (Extra Class)	Regular Grammer , Derivation of Regular Grammer, String generation from grammer, string is the part of grammer, Context Free Grammer (Derivation)	12
16.	Regular Grammer , Derivation of Regular Grammer, String generation from grammer, string is the part of grammer, Context Free Grammer (Derivation)	20.03.25 3rd period	NO, no students found	13.03.2025 3rd period



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17.	Context Free Language, Derivation Tree , Ambiguity in Context Free Grammer	21.03.25 1st Period	NO, due to medical issues (Adjusted with I.A)	25.03.25 5th Period
Lecture Number	Topics to be covered in the Lecture	Scheduled dates & periods as per routine	Whether the class was taken, if not – reason	Actual date of taking classes including exchange, extra classes with period	Topics covered	Page No.
18.	Simplification Of Context Free Grammer (UNIT & NULL Production Removal with examples)	25.03.25 5th Period	Yes, Taken	03.04.25 2nd Period (Extra Class)	Context Free Language, Derivation Tree , Ambiguity in Context Free Grammer	06
.....	.....	03.04.25 2nd Period (Extra Class)	Yes, Taken	.....	Simplification Of Context Free Grammer (UNIT & NULL Production Removal with examples)	16
19	Chomsky Normal Form (Introduction), Context Free Grammer to Chomsky Normal Form with examples	03.04.25 3rd Period	Yes, Taken	03.04.25 3rd Period	Chomsky Normal Form (Introduction), Context Free Grammer to Chomsky Normal Form with examples	16



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20	Greibach Normal Form (Introduction) , Context Free Grammer to Greibach Normal Form with examples	04.04.25 1st Period	No, due to school connect event . Adjusted with I.A	08.04.25 5th Period
21.	Pumping Lemma for Context Free Grammer with examples, Ogden's lemma, closure properties of CFL	08.04.25 5th Period	Yes, Taken	08.04.25 6th Period (Extra class)	Greibach Normal Form (Introduction) , Context Free Grammer to Greibach Normal Form with examples	17
Lecture Number	Topics to be covered in the Lecture	Scheduled dates & periods as per routine	Whether the class was taken, if not – reason	Actual date of taking classes including exchange, extra classes with period	Topics covered	st p
.....	.....	08.04.25 6th Period (Extra class) Exchanged with I.A	Yes, Taken	.....	Pumping Lemma for Context Free Grammer with examples, Ogden's lemma, closure properties of CFL	
22.	Pushdown Automata with examples (Formal Deination), Definition, moves, instantaneous descriptions, construction of PDA	11.04.25 1st Period	NO, due to medical issues	17.04.25 3rd Period	



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			exchanged with I.A			
23.	Acceptance by final state and acceptance by empty store and its equivalence. DPDA, NDPDA, Acceptance of CFL	17.04.25 3rd Period	Yes, Taken	22.04.25 5th Period	Pushdown Automata with examples (Formal Deination), Definition, moves, instantaneous descriptions, construction of PDA	
24.	Equivalence of Context Free Grammer (CFG) and Push-down Automata with examples, interconversion. Introduction of DCFL and DPDA	22.04.25 5th Period	Yes, Taken	24.04.25 3rd Period	Acceptance by final state and acceptance by empty store and its equivalence. DPDA, NDPDA, Acceptance of CFL Equivalence of Context Free Grammer (CFG) and Push-down Automata with examples	
Lecture Number	Topics to be covered in the Lecture	Scheduled dates & periods as per routine	Whether the class was taken, if not – reason	Actual date of taking classes including exchange, extra classes with period	Topics covered	Page No.
25.	Context Sensitive Language : Introduction to Context Sensitive grammar, Definition, moves, instantaneous, descriptions, construction of CSL	24.04.25 3rd Period	Yes, Taken	25.04.25 3rd Period (Extra Class)	Equivalence of Context Free Grammer (CFG) and Push-down Automata with more examples, inter conversion. Introduction of DCFL and DPDA Context Sensitive Language : Introduction to Context Sensitive grammar, Definition, moves	03
.....	25.04.25 3rd Period (Extra	Yes, Taken	Context Sensitive Language : instantaneous, descriptions, construction of CSL Definition, moves, instantaneous, descriptions, construction of Linear Bounded Automata,	12



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		Class)				
26.	Definition,moves,instantaneous,descriptions,construction of Linear Bounded Automata, equivalence with CSG	25.04.25 1st Period 4th period exchange IA	Yes, Taken	25.04.25 1st Period 4th period exchange IA	Construction of Linear Bounded Automata with more examples, equivalence with CSG Turing machine definition and model , recognizable (recursively enumerable) and turing decidable (recursive) language and their property	12
27.	Turing machine definition and model, recognizable (recursively enumerable) and turing decidable (recursive) language and their property, Design of TM, Computable functions	29.04.25 5th Period	Yes, Taken	29.04.25 5th Period	Turing machine : Design of TM with examples, Computable functions, Church's hypothesis, counter machine	09
Lecture Number	Topics to be covered in the Lecture	Scheduled dates & periods as per routine	Whether the class was taken, if not – reason	Actual date of taking classes including exchange, extra classes with period	Topics covered	1st p
.....	29.04.25 6th Period (Extra Class)	Yes, Taken	Turing machine : Different Types of Turing machine (deterministic and non deterministic TM) and their equivalence Unrestricted grammar and equivalence with Turing Machine TM as enumerators with examples Universal Turing machine, Halting problem	09



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28.	Turing Machine: Church's hypothesis, counter machine Different Types of Turing machine (deterministic and non deterministic TM) and their equivalence	02.05.2025 1st period	NO, due to class suspended (Mock Interview)	29.04.25 6th Period (Extra Class)
32.	Turing Machine: Unrestricted grammar and equivalence with Turing Machine, TM as enumerators with examples Universal Turing machine, Halting problem	13.05.2025 5th period	Yes, Taken	29.04.25 6th Period (Extra Class)	Turing Machine: Undecidability and Turing Machine Reduction between languages and Rice's Theorem, undecidable problems about languages	02
33.	Turing Machine: Undecidability and Turing Machine Reduction between languages and Rice's Theorem, undecidable problems about languages	15.05.2025 3rd period	NO, no students found	13.05.2025 5th period	.....	..
Lecture Number	Topics to be covered in the Lecture	Scheduled dates & periods as per routine	Whether the class was taken, if not – reason	Actual date of taking classes including exchange, extra classes with period	Topics covered	st p



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34.	Previous year question analysis	16.05.2025 1 st period	No, due to medical emergency	20.05.2025 1 st period
35.	Previous year question analysis	20.05.2025 1 st period	Yes, Taken		Previous year question analysis
36.	Previous year question analysis	23.05.2025 1 st period	Yes, Taken		
Total no. of Planned Lectures (Use extra page, if required)		36		Total no. of Lectures (actually) taken 31	Signature of the Faculty Member With Date