Lesson Teaching Plan

Subject: Automata Theory	Branch: Computer Application
Semester: 4 th Sem	Faculty name: Bighnaraj Naik

1 Introduction to Automata: The Methods Introduction to Finite Automata, Structural Representations, Automata and Complexity. Proving Equivalences about Sets Image: Complexity of	Module	Торіс	No. of classes
Automata, Structural Representations, Automata and Complexity. Proving Equivalences about Sets Proof by Contradiction, Inductive Proofs: General Concepts of Automata Theory. Alphabets Strings, Languages, Applications of Automata Theory. 2 Finite Automata: Definition of a Deterministic Finite Automata How a DFA Processes Strings, Simpler Notations for DFA's, Extending the Transition Function to Strings The Language of a DFA, Nondeterministic Finite Automata: An Informal View. The Extended Transition Function, The Languages of an NFA, Equivalence of Deterministic and Nondeterministic Finite Automata. Finite Automata With Epsilon-Transitions: Uses of e-Transitions I The Formal Notation for an e-NFA, Epsilon-Closures, Extended Transitions and Languages for e-NFA's Eliminating e-Transitions. I Regular Expression and Languages: Regular Expressions Precedence of Regular-Expression Operators, Precedence of Regular-Expression Operators, Finite Automata and Regular Expressions: From DFA's to Regular Expressions Converting DFA's to Regular Expressions by Eliminating States Converting DFA's to Regular Languages: The Pumping Lemma for Regular Languages Applications of the Pumping Lemma Closure Properties of Regular Languages Applications of the Pumping Lemma Closure Properties of Regular Languages Applications of the Pumping Lemma	1	Introduction to Automata: The Methods Introduction to Finite	1
Proving Equivalences about Sets Proof by Contradiction, Inductive Proofs: General Concepts of Automata Theory: Alphabets Strings, Languages, Applications of Automata Theory: Alphabets Strings, Languages, Applications of Automata Theory: Alphabets Strings, Simpler Notations for DFA's, Extending the Transition of a Deterministic Finite Automata How a DFA Processes Strings, Simpler Notations for DFA's, Extending the Transition Function to Strings 1 The Language of a DFA, Nondeterministic Finite Automata: An Informal View. 1 The Extended Transition Function, The Languages of an NFA, Equivalence of Deterministic and Nondeterministic Finite Automata. 1 Finite Automata With Epsilon-Transitions: Uses of ∈-Transitions 1 The Formal Notation for an ∈-NFA, Epsilon-Closures, Extended Transitions and Languages for ∈-NFA's 1 Eliminating ∈-Transitions. 1 3 Regular Expressions and Languages: Regular Expressions Precedence of Regular-Expressions Operators, Precedence of Regular-Expression Operators, Finite Automata and Regular Expressions: From DFA's to Regular Expressions 1 Converting DFA's to Regular Expressions by Eliminating States 1 Converting Regular Languages: The Pumping Lemma for Regular Languages 1 Applications of the Pumping Lemma Closure Properties of Regular Languages 1 Applications of the Pumping Lemma Closure Properties of Regular Languages 1		Automata, Structural Representations, Automata and Complexity.	
Proof by Contradiction, Inductive Proofs: General Concepts of Automata Theory. 1 2 Finite Automata: The Ground Rules, The Protocol, Deterministic Inite Automata Theory. 1 2 Finite Automata: Definition of a Deterministic Finite Automata 1 How a DFA Processes Strings, Simpler Notations for DFA's, Extending the Transition Function to Strings 1 The Language of a DFA, Nondeterministic Finite Automata: An Informal View. 1 The Extended Transition Function, The Languages of an NFA, Equivalence of Deterministic and Nondeterministic Finite Automata. 1 Finite Automata With Epsilon-Transitions: Uses of ∈-Transitions 1 The Formal Notation for an ∈-NFA, Epsilon-Closures, Extended 1 1 Transitions and Languages for ∈-NFA's 1 Eliminating €-Transitions. 1 Operators of regular Expressions Building Regular Expressions 1 Precedence of Regular-Expression Operators, Fracedence of Regular-Expressions Operators, Finite Automata and Regular Expressions: From DFA's to Regular Expressions 1 Converting DFA's to Regular Expressions by Eliminating States 1 Converting Regular Expressions to Automata. Algebraic Laws for Regular Expressions 1 Regular Expressions 1 1 Converting Regular Expressions to Automata. Algebraic Laws for Regular Languages <th></th> <th>Proving Equivalences about Sets</th> <th></th>		Proving Equivalences about Sets	
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4 Context-Free Grammars and Languages: Definition of Context-Free Grammars, Derivations Using a Grammars, Leftmost and Rightmost Derivations, The Languages of a Grammar, Parse Trees: Constructing Parse Trees, From Inferences to Trees, 1		Converting DFA's to Regular Expressions	1
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From Trees to Derivations From Derivation to Recursive 1		From Trees to Derivations From Derivation to Recursive	1

	Inferences,	
	Applications of Context-Free Grammars: Parsers	
	Ambiguity in Grammars and Languages: Ambiguous Grammars,	1
	Removing Ambiguity From Grammars, Leftmost Derivations as a	
	Way to Express Ambiguity, Inherent Ambiguity	
5	Pushdown Automata: Definition Formal Definition of Pushdown	1
	Automata, A Graphical Notation for PDA's, Instantaneous	
	Descriptions of a PDA,	
	The Languages of a PDA: Acceptance by Final State, Acceptance by	1
	Empty Stack	
	From Empty Stack to Final State, From Final State to Empty Stack	1
	Equivalence of PDA's and CFG's:	1
	From Grammars to Pushdown Automata,	1
	From PDA's to Grammars	1
	Deterministic Pushdown Automata: Definition of a Deterministic	1
	PDA, Regular Languages and Deterministic PDA's, DPDA's and	
	Context-Free Languages, DPDA's and Ambiguous Grammars	
6	Properties of Context-Free Languages: Normal Forms for Context-	1
	Free Grammars, The Pumping Lemma for Context-Free Languages,	
	Closure Properties of Context-Free Languages, Decision Properties	2
	of CFL's	
7	Introduction to Turing Machines: The Turing Machine: The	2
	Instantaneous Descriptions for Turing Machines	
	Transition Diagrams for Turing Machines, The Language of a	2
	Turing Machine	
	Turing Machines and Halting, Programming Techniques for Turing	1
	Machines, Extensions to the Basic Turing Machine	
	Restricted Turing Machines, Turing Machines and Computers	1
8	Undecidability: A Language That is Not Recursively Enumerable,	1
	Enumerating the Binary Strings, Codes for Turing Machines	
	An Un-decidable Problem That Is RE: Recursive Languages,	1
	Complements of Recursive and RE languages	
	The Universal Languages, Un-decidability of the Universal	1
	Language	
	Un-decidable Problems About Turing Machines: Reductions, Turing	
	Machines That Accept the Empty Language	
	Post's Correspondence Problem: Definition of Post's	1
	Correspondence Problem, The "Modified" PCP, Other Un-decidable	
	Problems: Un-decidability of Ambiguity for CFG's	
	Total no. of classes:	42