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| **LESSON PLAN** |  |
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| **Discipline : Computer Engineering** |  |
| **Semester : 5th**  |  |
| **Subject : Formal Language & Automata Theory** |  |
| Lesson Plan Duration : 15 weeks (from Sept. 2022 to Dec. 2022) |  |
| \*\*Work Load(Lecture) per week(in hours)::**03** |  |
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| **Week** | **Theory** | **Remark if any** |
| **Lecture Day** | **Topic(including assignment/test)** |  |
| 1st | 1st | Study and Central Concepts of Automata Theory, Applications of Finite Automata |  |
| 2nd | Deterministic Finite Automata(DFA) |  |
| 3rd | Non-Deterministic Finite Automata(NFA) |  |
| 2nd | 4th | Finite Automata with Epsilon (€) Transitions |  |
| 5th | Regular Expression and Languages:-Regular Expressions (RE), Finite Automata and Regular Expressions, Applications of Regular Expressions |  |
| 6th  |  Algebraic Laws of Regular Expressions. Closure Properties of Regular Languages |  |
| 3rd | 7th  | RE to NFA, DFA  |  |
| 8th  | Conversion and DFA to RE |  |
| 9th  | Equivalence of NFA and DFA automata |  |
| 4th | 10th |  Minimization of NFA and DFA automata(hit & trail, partition) |  |
| 11th |  Minimization of NFA and DFA automata (table filling method) |  |
| 12th | Revision |  |
| 5th | 13th | Parse Trees, Context Sensitive Grammar, Applications of Context Free Grammars, Regular Grammar |  |
| 14th | Ambiguity in Grammars and Languages,Normal forms of context free grammars, Subfamilies of Context Free Languages (CFL) |  |
| 15th | Closure Properties of CFL, Chomsky Theorem, Chomsky Hierarchy |  |
| 6th | 16th | Chomsky Normal Form, Greibach Normal Form. |  |
| 17th | Introduction to Pumping Lemma, pumping lemma for context free languages |  |
| 18th | Revision |  |
| 7th |   | Minor Test |  |
| 8th | 19 | Applications of Pumping Lemma and Recursive Language. |  |
| 20 | Definitions, Representation of Mealey Machines and Moore Machines  |  |
| 21 | Designing of Mealey Machines  |  |
| 9th | 22 | Designing of Moore Machines  |  |
| 23 | Equivalence of Moore and Mealey Machines  |  |
| 24 | Introduction of Push Down Automata (PDA), Language of PDA |  |
| 10th | 25 | Equivalence of PDA’s and CFG’s |  |
| 26 |  Designing of PDA |  |
| 27 |  Deterministic Push Down Automata,, Applications of PDA |  |
| 11th | 28 | Revision |  |
| 29 | The Turing Machine, Programming Techniques for Turing Machine |  |
| 30 |  Extensions of Turing Machine, Restricted Turing Machines |  |
| 12th | 31 | Universal Turing Machines and Designing of Turing Machines |  |
| 32 | Time and Tape Complexity Measures of Turing machines |  |
| 33 | Post's Correspondence Problem (PCP),Rice's Theorem |  |
| 13th | 34 | Decidability and undecidability of properties |  |
| 35 | P-NP class and Completeness |  |
| 36 | Revision |  |
| 14th |   | Minor Test |  |
| 15th | 37 | Revision |  |
| 38 | Revision |  |
| 39 | Revision |  |