

# Lesson Plan of Mrinal Kanti Bhowmik

Name of the Subject: Language Translator

Subject Code: CSE 1002C TH

| Topics   | Contact Hours | Contact Occurred On | Remarks |
|--|---------------|---------------------|---------|
| <b>Introduction:</b> Introduction to Language Theory, Tokens. Alphabets, Definition of Grammar Production Rules, Sentences, Sentential Forms, Language Definitions, Derivations.   | 2             |                     |         |
| <b>Regular Languages:</b> Pumping Lemma of Regular Sets, Minimization of Finite Automata, Chomsky Hierarchy of Languages.  | 2             |                     |         |
| <b>Finite Automata:</b> Finite Automaton, Deterministic, Non-Deterministic and Equivalence, Transition Diagrams, Epsilon Transitions, Equivalence of Regular Expressions and Finite Automata, Moore And Mealy Machines.  | 4             |                     |         |
| <b>Context Free Language:</b> Relations between Classes of Languages, Context Free Grammar, Derivation Trees, Ambiguity Simplification, Normal Forms, Applications.  | 4             |                     |         |
| <b>Lexical Analysis:</b> Interface with Input, Parser and Symbol Table, Token, Lexeme And Patterns, Difficulties in Lexical Analysis, Error Reporting and Implementation. Regular Definition, Transition Diagrams, LEX.  | 4             |                     |         |
| <b>Syntax analysis:</b> Context Free Grammars, Ambiguity, Associativity, Precedence, Top Down Parsing, Recursive Descent Parsing, Transformation on the Grammars, Predictive Parsing, Bottom Up Parsing, Operator Precedence Grammars, LR parsers (SLR, LALR, LR), YACC. | 6             |                     |         |
| <b>Pushdown Automata:</b> Pushdown Automata, Definitions, Context Free Languages, Construction of PDA for Simple CFLs, Linear Bounded Automata.  | 4             |                     |         |
| <b>Turing Machines:</b> Turing machines, Introduction to computability, Universal Turing Machines, Types of Turing Machines , Techniques for construction of Turing machines , Halting problem. Assembler, Loader.   | 4             |                     |         |
| <b>Linker:</b> Basic Concept, Absolute and Relocatable, Assemblers and Macroprocessors Linkers- Concept And Design; Loaders, Different Types. Editors And Debuggers. Interpreters.   | 4             |                     |         |
| <b>Compilers:</b> Various Phases, Lexical Analyzers, Top Down Parsing (L.L. (1) and recursive descent ), Bottom-Up Parsing, ( Shift – reduce concept to L.R. (1) Symbol Tables, Error Handling,  | 4             |                     |         |
| Syntax Directed Translation, Attributes and Intermediate Codes, Optimization Concepts and Machine Code, Generation use of LEX and YACC.  | 2             |                     |         |
|  | <b>40</b>     |                     |         |

## Consulted/ Prescribed Books:

1. Compilers : Principles, Techniques, & Tools: A.V. Aho , R. Sethi , D.J. Ulman , M.S. Lam (Pearson Education Asia)
2. Compiler Design: K. Muneeswaran (Oxford University Press)
3. Compiler Design: O.G. Kakde (Laxmi Publications (P) Ltd, New Delhi)
4. Electronic materials from internet.