

MCA- E311 Compiler Design				
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Course objective:				
<ol style="list-style-type: none"> 1. To understand and list the different stages in the process of compilation. 2. Identify different methods of lexical analysis 3. Design top-down and bottom-up parsers 4. Identify synthesized and inherited attributes 				
Course outcomes:				
<ol style="list-style-type: none"> 1. For a given grammar specification develop the lexical analyzer 2. For a given parser specification design top-down and bottom-up parsers 3. Develop syntax directed translation schemes 4. Develop algorithms to generate code for a target machine 				
Introduction to Compilers: Compilers and Translators; Need of Translators; Structure of Compiler; Lexical Analysis; Syntax Analysis; Intermediate Code Generation; Optimization; Code Generation; Book Keeping; Error Handling; Compiler Writing Tools.				
Finite Automata (FA) and Lexical Analyzer (LA): Role of LA, design of LA, Regular Expression, FA, Regular Expression to FA, Minimizing the number of states in a DFA.				
Syntactic Specification of Programming Languages: Context Free grammars, Derivation and Parse Trees, Capabilities of context free grammars.				
Basic Parsing Techniques: Parsers, Shift-reduce Parsing, Operator-Precedence Parsing, Top Down Parsing, Predictive Parser.				
Automatic Construction of Efficient Parsers: LR Parsers, Canonical Collection of LR (0) items, Constructing SLR Parsing Tables, Constructing Canonical LR Parsing Tables, Constructing LALR Parsing Tables.				
Syntax-Directed Translation: Syntax-Directed Translation Schemes, Implementation of Syntax Directed Translators, Intermediate Code, Postfix Notation, Parse Trees & Syntax Trees, Three- address code, quadruples and triples.				
Symbol Tables (ST): Contents of ST, Data Structures for STs.				
Error Detection and Recovery: Errors, Lexical Phase Errors, Syntactic Phase Errors, Semantic Errors.				
Introduction to Code Optimization: Sources of Optimization, Loop optimization.				
Code Generation: Object Programs, Problems in Code Generation.				
Recommended Books:				
<ol style="list-style-type: none"> 1. A.V.Aho, R.Sethi & J.D. Ullman, Principles of Compiler Design, Narosa Publishing House 2. A.V. Aho, R. Sethi & J.D. Ullman, Compilers - Principles, Techniques & Tools, Addison Wesley. 				