VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

B.Tech. VI Semester

(22PC2CB303) AUTOMATA AND COMPILER DESIGN LABORATORY

TEACHING SCHEME		
L	T/P	C
0	2	1

EVALUATION SCHEME					
D-D	PE	LR	CP	SEE	TOTAL
10	10	10	10	60	100

COURSE OBJECTIVES:

- To understand the various phases in the design of a compiler
- To understand the design of top-down and bottom-up parsers
- To understand syntax directed translation schemes
- To introduce lex and yacc tools

COURSE OUTCOMES: After completion of the course, the student should be able to

CO-1: Understand the concept of abstract machines and their power to recognize the languages

CO-2: Analyze phases of compilation, particularly lexical analysis, parsing, semantic analysis and code generation

CO-3: Construct parsing tables for different types of parsing techniques and syntax directed translations

CO-4: Apply code optimization techniques to different programming languages

CO-5: Generate object code for natural language representations

COURSE ARTICULATION MATRIX:

*(Correlation of Course Outcomes with Program Outcomes and Program Specific Outcomes using **mapping levels 1 = Slight, 2 = Moderate and 3 = Substantial**)*

CO	PROGRAM OUTCOMES (PO)												PROGRAM SPECIFIC OUTCOMES (PSO)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3
CO-1	3	2	2	2	-	2	2	2	-	-	1	1	3	2	2
CO-2	2	2	3	2	1	-	-	1	-	-	2	1	2	1	2
CO-3	2	3	2	2	2	2	2	1	-	-	1	2	3	2	3
CO-4	2	3	2	2	1	-	-	-	-	-	1	2	2	3	2
CO-5	3	3	3	2	2	2	2	2	-	-	2	2	3	2	3

LIST OF PROGRAMS / EXPERIMENTS / EXERCISES:

WEEK 1-3:

- Closure of Epsilon-NFA
- Conversion of Epsilon-NFA to NFA
- Conversion of NFA to DFA

WEEK 4-8:

- Lexical Analyzer for a given language

- Lexical Analyzer Using Lex Tool
- Arithmetic Expression Validator using YACC
- Identifier Validator using YACC
- Calculator using YACC
- Convert the BNF rules into Yacc form and Write code to generate abstract syntax tree.

WEEK 9-12:

- First & Follow of Expression Grammar (Without Left Recursion)
- Custom Recursive Descent Parser for Grammar (Without Left Recursion)
- Predictive Parser for Expression Grammar
- Shift Reduce Parser

WEEK 13-14:

- Creating a Symbol Table
- Write program to generate machine code from the abstract syntax tree generated by the parser.

TEXT BOOKS:

1. K. L. P Mishra, N. Chandrashekaran (2003), Theory of computer science- Automata Languages and computation, 2nd edition, Prentice Hall of India, New Delhi, India
2. Compilers Principles, Techniques and Tools Aho, Ullman, Ravisethi, Pearson Education

REFERENCES:

1. Introduction to Theory of Computation, Sipser,2nd Edition, Thomson., 2009.
2. Modern Compiler Construction in C, Andrew W.Appel Cambridge University Press Kenneth C. Louden (1997), Compiler Construction– Principles and Practice, 1st edition, PWS Publishing
3. Elements of Compiler Design, A. Meduna, Auerbach Publications, Taylor and Francis Group
4. Principles of Compiler Design, V. Raghavan, TMH