Academic Plan for VI Semester 2016-2017

Subject: Compiler Design

Class: 3rd Yr. **Credits: 4** **Subject Code: ETCS -302**

Total Lecture Classes Available: 44

S.No.	Topics	Subtopics	Lectures
			L/T
FIRST TERM			
1	**Introduction to Compilers**	Brief overview of the compilation process, structure of compiler	L1
		Phases of Compiler, cross compiler, Bootstrapping, quick & dirty compiler	L2-L4
2	**Lexical Analysis/ Scanners**	Concept of Input Buffer, tokens, Patterns, Lexemes	L5
		Regular Expression, Finite Automata	L6-L7
		NDFA, DFA, Conversion of Regular Expession to NFA, Conversion of NFA to DFA and Minimization of DFA, LEX Tool	L8-L10
3	**Syntax Analysis/Parsers**	Grammars: their Classification (Chomsky Classification), Context Free Grammars	L11
		Derivations and Parse Trees	L12
		Parsers: Shift-reduce parsing, operator-precedence parsing	L13-L15
		Top down Parsing, Predictive Parsing, LL Grammar	L16-L17
		LR Parsers: SLR, LALR, CLR, LR Grammar	L18-L19
4	**Syntax Directed Translation/ Intermediate Code Generation**	Syntax-directed translation schemes, implementation of syntax directed translations	L20
		Intermediate code, postfix notation, three address code, quadruples, and triples , Parse Trees and Syntax Trees	L21
		Translation of assignment statements, Boolean expressions, control statements, Semantic Analysis, Type Systems, Type Expressions, Type Checker, Type Conversion	L22

SECOND TERM			
5	**Symbol Table**	Symbol table: Contents, Data Structures used	L23-L24
		Implementation of symbol tables, representing scope information.	L25-26
6	**Error Handling**	Errors, Error Detection and Recovery, Lexical-phase errors, syntactic-phase errors, semantic errors.	L27-29
7	**Run Time Storage Administration**	Activation Record, Blocks, , implementation of a simple stack allocation scheme, storage allocation in block structured languages and non block structured languages	L30-L33
8	**Code Optimization**	The principle sources of optimization, loop optimization, the DAG representation of basic blocks	L34-L36
		Value number and algebraic laws, global dataflow analysis	L37-L39
9	**Code Generation**	Object programs, problems in code generation, a machine model	L40-L42
		A single code generator, register allocation and assignment, code generation from DAGs, peephole optimization.	L43-L44

Text Books:

1 Alfred V. Aho & J.D. Ullman, "Compiler Principles ,Techniques& Tools", Pearson

2 Kenneth C. Louden, "Compiler Design",Cengage Publication

Reference Books:

1 Kakde O.G., "Complier Design", Laxmi Publication

2 Trembley and Sorenson, "Theory and Practice of Compiler Writing", McGraw

3 Vinu V. DAS, "Compiler Design Using FLEX and YACC , PHI

4 Jhon R. Levine, Tony Mason and Doug Brown, "Lex &Yacc", O'Reilly.pdf

5 Andrew W. Appel, Maia Ginsburg, "Modern Compiler Implementation in C", Cambridge University Press