CS-603: COMPILER DESIGN

Teaching and Examination Scheme:

Teaching Scheme			Credits	Marks			Duration of End Semester Examination
L	T	P/D	C	Sessional	End Semester Exams	Total	
3	1	0	4	40	60	100	3Hrs

COURSE OBJECTIVE:

The course should enable the students to understand the basic principles of compiler, compiler construction tools, context free grammars and various parsing techniques.

COURSE CONTENT:

UNIT	CONTENT	No. of Hrs.
I	**Introduction to compliers:** A simple traditional modular compiler, compiler architecture, frontend and backend of compiler, compiler writing tools, properties of good compiler, translators, types of compilers, bootstrapping, regular expressions, finite automata, closure algorithm.	10
II	**Parsing:** Context free grammar, derivation & parse trees, bottom-up parsers: shift reduce, operator precedence, top-down parsers: prediction and backtracking, recursive decent and predictive parser, efficient parsers; LR parsers: LR(0), SLR, LALR, implementation of parsers	10
III	**Syntax Directed Translation:** Syntax directed program evaluation, different schemes &implementation, immediate code generation, syntax-trees, three address code generation, quadruples triple, translation of assignment statements. **Code Optimization:** Sources of optimization, optimizing transformations: compile time evaluation, common sub expression elimination, dead code elimination, loop optimization, strength reduction, DAG representation of basic blocks, value number & algebraic laws, global data-flow analysis, dominators, reducible flow graphs.	10
IV	**Code Generation:** Major tasks, issues in designing code generators, object programs, basic blocks and flow graphs, a simple code generator, register allocation & assignment code generation from DAG's., peephole optimization.	9

Text Books:

1. Alfred V. Aho, J.D. Ullman , ***"Principles of Compiler"***, Narosa Publishing Design.
2. Rajesh K. Maurya, ***"Compiler Design"***, Dreamtech Press.

Reference Book:

1. D.M. Dhamdhere , ***"Compiler Construction"***, Macmillan India Ltd.

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