AMITY UNIVERSITY

UTTAR PRADESH

L	T	P/S	SW/FW	TOTAL CREDIT UNITS
3	-	-	-	3

Course Title: Principles of Compiler Design

Course Code: CSIT807

Credit Units: 3

Course Objectives: This course studies the principles of programming languages with an emphasis on programming language implementation and compiler design. This includes various techniques for describing and defining a language, as well as techniques for implementing compilers. The course is centered on a large programming project-the construction of a complete compiler for a small programming language.

Pre-requisites: Theory of Automata, Computer Programming Using C Language, Data Structures Using C Language

Course Contents/Syllabus:

	Weightage (%)
Module I	**30**
Introduction to Compliers; structure of compiler; lexical analysis: role, regular expressions; Classification of grammars: type 0, 1, 2, 3; Context free grammars,; regular grammars; Deterministic finite State Automata (DFA) & Non-DFA; lexical analyzer generator- LEX.	
Module II	**25**
Scanners; Top down parsing; LL grammars; Bottom up parsing; Polish expression; Operator Precedence grammar; LR grammars; Comparison of parsing methods; Parser generator: YACC; Error handling.	
Module III	**15**
Contents of symbol table; Data structures for representing symbol table; Symbol table handling techniques; Organization for non-block and block structured languages.	
Module IV	**15**

Run time storage administration: Implementation for stack oriented and block languages; Static and dynamic allocation; Intermediate forms of source program: three address code, quadruples, triples, indirect triples, syntax trees; Intermediate code generation of Boolean expressions, assignment statement; Semantic analysis.	
Module V	**25**
Code optimization; Folding, redundant sub-expression evaluation, Optimization within iterative loops, dead code elimination, copy propagation, code motion; DAG representation of basic block; code generation: Issues and machine model used; Case study for applying compiler phase on algorithms .	

Student Learning Outcomes:

1. Students will be able to define and discuss how to translate a language into some intermediary or object language.
2. The course will help the students to relate knowledge of Compiler Design with ongoing events when executing programs written in high level language.
3. The course will enable students to design a compiler for a language defined by a certain grammar.

Pedagogy for Course Delivery:

The class will be taught using theory and case based method. The instructor will spend time in understanding and illustrating the working og compiler in variety of computer languages.

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	Total(%)
100	**-**	**100**

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment					End Term Examination
Components (Drop down)	**Mid-Term Exam**	**Assignment**	**Case Study**	**Attendance**	
Weightage (%)	10	5	10	5	70