

Compiler Design

- 1.1 Course Number: CS312
- 1.2 Contact Hours 3-0-2 Credits: 11
- 1.3 Semester-offered: 3rd Year-Even
- 1.4 Prerequisite: Discrete Maths, Data structures, Programming
- 1.5 Syllabus Committee Member: Dr. Sushum Biswas, Dr. Daya Sagar Gupta & Dr. Gargi Srivastava

2. **Objective:** The objective of this course is to provide basic definitions that are associated with compiler design and to give an overview, applications, environment of compiler.

3. **Course Content:**

Unit-wise distribution of content and number of lectures

Unit	Topics	Sub-topic	Lectures
1	Introduction	Language and Syntax, Regular Language, Analysis of Context-free Language, Attributed Grammars and Semantics, Problem of Compilation i.e. Translation, Analysis-Synthesis Technique for Language Processing, Natural and Programming Languages, Compiler, Assembler and Interpreters, passes of a compiler/interpreter.	6
2	Lexical analysis	Lexical or Tokens Symbol Table, Hashing.	4
3	Parser	Formal Grammar and Languages, BNF and Syntax diagram. Notation for Formal Grammar, Shift Reduce Parser- (SLR, LALR etc.). Precedence Parsing Techniques, Recursive Descent parsing etc.	12
4	Semantic Analysis	Internal Form, Polish Strings, Syntax Trees Quadruples Triples and Indirect Triples.	10
5	Code optimization and generation	Synthesis, Code Optimization and Generation, Run Time Storage Handling, Error Detection, Correction and Reporting.	10
		Total	42

4. **Readings**

4.1 Textbook: *Compiler Design, Aho-Ullman-Sethi, Pearson Education*

4.2 Reference books: *Compiler Construction Niklaus Wirth. Zurich*

5 **Outcome of the Course:** After completing this course/subject the students will be able to understand the concepts of compiler design and will be able to design a compiler for a high-level language.