

# Syllabus

## Course

CSC 300 Programming Languages

**Credits:** 3-0-0-3

## Text Books

- Daniel P. Friedman and Mitchell Wand. *Essentials of Programming Languages*, Third Edition, MIT Press 2008.

## References

- Daniel P. Friedman and Matthias Felleisen. *The Little Schemer*, Fourth Edition.
- Kenneth C. Louden. *Programming Languages: Principles and Practice*, 2<sup>nd</sup> Edition

## Prerequisite:

- CSC-220 Data structures and Algorithms

## Course Description

This course covers list-processing, string-processing, and other types of high-level programming languages. The course also introduces fundamental concepts of data types, control structures, operations, and programming environments of various programming languages. The course discusses the analysis, formal specification, and comparison of language features.

## Objectives:

- Understand the principles and components of programming language design, such as control structures, names, types, exceptions, etc.
- Become familiar with the various schools or paradigms of programming languages, for instance functional languages.
- Use several programming languages.
- Learn how to specify syntax and semantics for a language.

- Develop a rudimentary understanding of programming language implementation, especially insofar as the implementation impacts language design.
- Evaluate the tradeoffs between the different paradigms, considering such issues as space efficiency, time efficiency

## Course Outline

<i>Week</i>	<i>Lecture Topics</i>
1	Introduction, Formal Syntax and Compiling
2	Formal Syntax and Lexical Analysis
3	Parsing , Attribute Grammar
4	Dynamic Semantics, Functional Programming Languages
5	Denotational Semantics
6	Logic Programming Languages
7	Axiomatic Semantics
8	Names, Bindings, Type Checking, and Scopes
9	Data Types
10	Expressions and Assignment Statements
11	Statement Level Control Structures
12	Subprograms
13	Implementing Subprograms
14	Abstract Data Types
15	Object-Oriented Programming and Concurrency
16	Review, Final exam

## Grading

### Assessment/Evaluation:

1. Class work.	(10)
2. Quizzes (5)	(10)
3. Midterm-1 Exam.	(20)
4. Midterm-2 Exam.	(20)
5. Final Exam.	(40)
<b>Total</b>	<b>(100%)</b>

### Method of Teaching:

- Lectures - 15 weeks (3 hrs per week).
- Individual exercises.
- In-class discussion
- Selection of Readings