

CSE 325/CSE 425 Concepts of Programming Language

Department of Electrical Engineering and Computer Science

North South University

Summer 2025

Course Code : CSE 325/CSE 425
Course Title : Concepts of Programming Language
Credit Hours : 3.0
Prerequisite : CSE225
Instructor : **Dr. Md. Ezharul Islam (EzM)**
Adjunct Professor
Contact : ezharul.islam@northsouth.edu
Office : TBA
Office Hours : MW 1:00 PM –2:30 PM

Course Objectives:

- Learn fundamental concepts of programming languages
- Learn key paradigms of programming language design and issues of language constructs
- Understand how important programming concepts are handled in major programming languages
- Provide sufficient formal theory to show where programming language design fits within the general computer science research agenda

Course Description:

This course covers the fundamental concepts of programming languages by discussing the design issues of the various language constructs, examining the design choices for these constructs in some of the most common languages, and critically comparing design alternatives. Specifically, the course covers - Language categories, Language design, Programming languages evolution, Syntax, Semantics, Lexical and syntax analyzers, Names, Bindings, Type checking, Scoping, Data types, Abstract data types, Expressions, Statements, Statement-level control structures, Subprograms, Object-Oriented programming paradigm, Concurrency, Functional and Logic programming languages etc.

Course Objectives:

The objectives of this course are to

1. Illustrate the programming paradigms, principles, fundamental concepts and techniques involved in design and implementation of major programming languages

2. Elaborate key programming concepts of major imperative, declarative, and object-oriented programming languages, their merits and limitations
3. Familiarize concurrency control, and exception handling.
4. Demonstrate key concepts of functional and logic programming languages, their purpose and applications.

Course Outcomes:

- **CO1-Explain** different implementation details of syntax & semantic analysis for significant programming languages
- **CO2 - Differentiate** aspects among various programming language paradigms
- **CO3 - Examine** operations, control-structures, and program structure in imperative, declarative and object-oriented programming languages
- **CO4 -Evaluate** behaviors of programs written in imperative languages using concepts such as binding, scope, control structures, subprograms, concurrency control and exception handling mechanisms

Text and Reference Books:

1. **Concepts of Programming Languages**, 10th Edition, By Robert W. Sebesta, Pearson
2. **Comparative Programming Languages**, 3rd Edition, By Leslie B. Wilson, Robert G. Clark, Addison-Wesley
3. **Programming Language Concepts and Paradigms**, By David Watt, Prentice Hall

Grading:

Att+ClassPerf+Viva	: 10 %
Assignments	: 15 %
Quizzes	: 20 %
Midterm Exam	: 25 %
Final Exam	: 30 %

Grading Scale:

93 and above	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
60-66	D
Below 60	F

* Class text/topics and grading policy might be updated over time.