CSE 325/CSE 425 Concepts of Programming Language

Department of Electrical Engineering and Computer Science

North South University

Fall 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
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Office Hours	:	MW 1:30 PM –2:30 PM Room SAC 1141

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

Sl.	CO Description	Weightage (%)
CO1	**Explain** different implementation details of syntax & semantic analysis for significant programming languages	25
CO2	**Differentiate** aspects among various programming language paradigms	25
CO3	**Examine** operations, control-structures, and program structure in imperative, declarative and object-oriented programming languages	25
CO4	**Evaluate** behaviors of programs written in imperative languages using concepts such as binding, scope, control structures, subprograms, concurrency control and exception handling mechanisms	25

Mapping of CO-PO

Sl.	CO Description	POs	Bloom's taxonomy domain/level	Delivery methods and activities	Assessment tools
CO1	**Explain** different implementation details of syntax & semantic analysis for significant programming languages	**a**	Cognitive/ Understand	Lecture, notes	Quiz, Exam

CO2	**Differentiate** aspects among various programming language paradigms	**a**	Cognitive/ Analyze	Analyze	Quiz, Exam
CO3	**Examine** operations, control-structures, and program structure in imperative, declarative and object-oriented programming languages	**c**	Cognitive/ Analyze	Lecture, notes	Quiz, Exam, Assignment
CO4	**Evaluate** behaviors of programs written in imperative languages using concepts such as binding, scope, control structures, subprograms, concurrency control and exception handling mechanisms	**b**	Cognitive/ Evaluate	Lecture, notes	Quiz, Exam, Assignment

Resources

Text books:

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher's Name	ISBN
1	Robert W. Sebesta	2015	Concepts of Programming Languages	10th	Pearson	ISBN-13: 978-0133943023
2	Leslie B. Wilson, Robert G. Clark, Addison-Wesley	2000	Comparative Programming Languages	3rd	Addison-Wesley	ISBN-13: 978-0201710120

Weightage Distribution among Assessment Tools

Assessment Tools	**Weightage (%)**
Class Performance	10%
Assignment	15%
Quizes	20%
Midterm Exam	25%
Final Exam	30%
Total	100%

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.