Department of Electrical and Computer Engineering
North South University (NSU)

Course Outline
CSE 425: Concepts of Programming Language

Instructor: Md. Shahriar Karim, Assistant Professor, ECE Department, NSU

Course Summary:

This course covers the fundamental concepts of different programming languages by discussing the design issues of the various language constructs, examining the design choices for this construction in some of the most common languages, and critically comparing language design alternatives. Specifically, the course covers – Programming Paradigm and Language Categories, Language Design & Evolutions, Syntax & Semantics, Lexical & Syntax analyzers, Names, Scopes & Bindings, Datatypes & Type checking, abstract data types, Statements & Expressions, Subprograms, Object-Oriented Programming, Concurrency, Exception Handling, Functional and Logic programming languages etc.networks. Concept of object orientation as a data abstraction technique will be introduced.

Course Objectives: The objectives of this course are to

a. illustrate the programming paradigms, principles, fundamental concepts and techniques involved in design and implementation of major programming languages
b. elaborate key programming concepts of major imperative, declarative, and object-oriented programming languages, their merits and limitations
c. familiarize , concurrency control, and exception handling
d. demonstrate key concepts of functional and logic programming languages, their purpose and applications

Course Credit: 3 credits

Pre-Requisites: CSE 225: Data Structures and Algorithms

Textbook: Concepts of Programming Languages by Robert W Sebesta, Pearson (10th edition)

Reference Text & Materials:

- Concepts of Programming Languages by Robert W Sebesta, Pearson (10th edition)
- Comparative Programming Languages by Leslie Wilson, Robert, Addison-Wisley
- Programming Languages: Principles and Practices by Kenneth C. Louden and Kenneth A. Lambert, Course Technology, Cengage Learning, 2012 (3rd Edition).

Contents Overview:

The course material is divided into five units where each unit consists of a series of learning activities including attending classes, reading from class notes and textbook, programming practices, and completion of works for evaluation.

Unit	Topic(s)	Lectures
1	Review, History, Efficient Design Criteria	5
2	Basics of Fortran	3
3	Syntax and Basic Semantics, Syntax & Semantics, Lexical & Syntax analyzers	7
4	Names, Scopes & Bindings	5
5	Datatypes & Type checking	3
6	Statements & Expressions, Subprograms	2
7	Object-Oriented Programming, Concurrency	2
8	Functional Programming	2
9	Basics of Python	4
10	Logic Programming	3

Assessment Scheme:

Assessment Tools	Weightage (%)
Class Performance	10%
Quizzes	15%
Assignments	15%
Midterm	30%
Final Exam	30%
Total	**100%**

Grading Scheme:

Scores (in %)	Letter Grade	Grade Points
93 & above	A Excellent	4.0
90 to <93	A-	3.7

87 to <90	B+	3.3
83 to <87	B Good	3.0
80 to <83	B-	2.7
77 to <80	C+	2.3
73 to <77	C Average	2.0
70 to <73	C-	1.7
67 to <70	D+	1.3
60 to <67	D Poor	1.0
00 to <60	F*	0.0
	I** Incomplete	0.0
	W** Withdrawal	0.0
	R** Retaken	0.0

Course Policies:

This course will strictly follow the "NSU Code of Conduct, Revised- 2018". However, a few important points you all should always remember, and follow, are as below:

- Students should attend class lectures and take necessary notes. Unless specified otherwise, homeworks are generally due at the beginning of the class.
- Failure to attend an exam or failure to submit an assignment on time receives zero except when it is unavoidable because of some genuine emergency (requires proofs). In case of emergency, students should contact the instructor before the exam or before the stipulated date of assignment.
- Copying assignments are strictly prohibited; instead, discussion among students are encouraged. Please note down names of your peer classmates who you discussed during homework assignments. However, as the exams will largely follow the pattern of questions being asked in HW, solving those problems alone would help you during exams.
- Regarding requests for quiz, midterms should be conveyed within the 6 hours of the papers being returned in class.
- Unless the final grade is incorrectly computed, grade will NOT be changed once it is posted. There are no scopes of assigning additional works to improve your final grade.
- No electronic device during exams; if needed, calculator is allowed.