University/Academy: Arab Academy for Science and Technology & Maritime Transport
Faculty/Institute: College of Computing and Information Technology
Program: B. Sc. In Computer Science

Course title	Structure of Programming Languages
Course code	**CS445**

Form no. (11A)
Knowledge and skills matrix for a course

Course content	Week study	Knowledge	Intellectual skills	Professional skills	General skills
Introduction to the course	1	• Know the aims of the course • Know the reasons for studying concepts of programming languages • Know the programming environments	• Differentiate between the implementation methods • Be able to evaluate programming languages	• Determine the programming domains and the language categories of programming languages • Explain the language design trade-offs	• Explain the influences on language design
Preliminaries	2				
Describing Syntax and Semantics	3	• Understand the general problem of describing syntax • Describe the formal methods of describing syntax • Understand the attribute grammars	• Resolve ambiguous grammars	Write formal syntax descriptions using BNF and EBNF	

Course content	Week study	Knowledge	Intellectual skills	Professional skills	General skills
Describing Syntax and Semantics continued	4				
Lexical and Syntax Analysis	5	• Understand the lexical analysis • Describe the parsing problem • Understand the recursive descent parsing • Understand the bottom up parsing	• Develop a finite automata for a subset of a language grammar	• Write a lexical analyzer • Write recursive descent parsing routines	• Be able to think critically
Lexical and Syntax Analysis (continued)	6				
7th week exam	7				
Names, Bindings, Type Checking, and Scopes	8	• Understand various variable attributes and the concepts of binding • Differentiate static and dynamic scoping • Describe referencing environments	• Analyze variable scopes	• Check variable scopes and referencing environments	
Data Types	9	• Understand the primitive data types, string types, user-defined ordinal types, array types, record and union types, pointers and reference	• Use different data types in problem abstraction	•	• Learn about problem abstraction

Course content	Week study	Knowledge	Intellectual skills	Professional skills	General skills
		types - Understand the type checking, strong typing, and type compatibility			
Data Types continued	10				
Expressions and Assignment Statements	11	- Write arithmetic and Boolean expressions - Understand precedence and associativity - Know the type conversions and mixed-mode assignments	- Evaluate short-circuit expressions - Analyze operator overloading	- Write various types of expressions in different programming languages	
12th Week exam	12				
Statement-Level Control Structures	13	- Describe Selection Statements - Describe Iterative Statements	- Evaluate Unconditional Branching	- Write structured programs	- Appreciate structured programming
Subprograms	14	- Learn Fundamentals of Subprograms - Understand how Subprograms could be passed as parameters - Define User-Defined Overloaded Operators	- Analyze the design issues of subprograms - Analyze Design Issues for Functions		
Project Defense	15	Learn a new programming language	Analyze concepts of a new programming language	Develop a complete application in a new programming language	

Course Instructor

Name:

Signature:

Head of Department

Name:

Signature: