Course Specification

(Bachelor)

Course Title:	Concepts of Programming Languages
Course Code:	CS270
Program:	Computer Science
Department:	Computer Science
College:	Collage of Computer and Information Science
Institution:	Dr. Hadeel Bin Amer
Version:	1
Last Revision Date:	15-10-2023

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (.....)					
3 (3,0,1)					
2. Course type					
A.	☐ University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (…Level 6 / Year 3…….)					
4. Course general Description:					
This course gives students a set of formal mathematical tools for defining and implementing the semantics of a language and demonstrates them in the context of important real-world programming languages, with emphasis on theoretical properties of type systems.					
5. Pre-requirements for this course (if any)**:**					
CS120					
6. Pre-requirements for this course (if any)**:**					
7. Course Main Objective(s):					
To acquire the fundamental concepts of programming languages and techniques to discuss and compare features of several popular programming paradigms such as imperative, object oriented, functional, and logic programming. Understand how to examine modern programming languages and features: abstract data and control structures, procedures, parameter passing mechanisms, block structuring and scope rules, input/output, and storage management.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	48
2.	**Laboratory/Studio**	
3.	**Field**	
4.	**Tutorial**	12
5.	**Others (specify)**	
Total		60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	CLO1- Describe the evolution of modern	**K1**	Classroom Teaching	Quiz, Assignment, Mid Exam, Final Exam
1.2	CLO2- Identify the basic aspects of various programming paradigms.	**K1**	Classroom Teaching	Quiz, Assignment, Mid Exam, Final Exam
...				
2.0	**Skills**			
2.1	CLO2- Identify the basic aspects of various programming paradigms.	**S3**	Classroom Teaching	Quiz, Assignment, Mid Exam, Final Exam
2.2	CLO3- Demonstrate facility of BNF specifying programming language syntax and semantics.	**S1**	Classroom Teaching	Quiz, Assignment, Mid Exam, Final Exam
2.3	CLO4- Show understanding of issues involving variables and subprograms	**S3**	Classroom Teaching	Quiz, Assignment, Mid Exam, Final Exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.4	CLO5- Describe features of functional and logic programming languages	**S1**	Classroom Teaching, Classroom Demonstration	Quiz, Assignment, Mid Exam, Final Exam
2.5				
3.0	**Values, autonomy, and responsibility**			
3.1				
3.2				
.....				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction • Reasons for studying concepts of programming languages • Language evaluation criteria • Language Categories	**4**
2.	Describing Syntax and Semantics • The general problem of describing syntax • Formal methods of describing syntax • Attribute grammars	**4**
3	Lexical and Syntax Analysis • Lexical analysis • The parsing problem • Recursive Descent parsing Name, Bindings, Type Checking, and Scopes • Names • Variables • The concepts of binding	**8**
4	Data Types • Primitive data types • Different structures	**8**

	• Character string types • User defined ordinal types	
5	• Arrays types • Record types • Union types • Pointer and reference types	8
6	Expressions and Assignment Statements • Arithmetic expressions • Overloaded operators • Types conversions	8
7	• Relational and Boolean expressions • Short circuit evaluation • Assignment statements Mixed mode assignment	4
8	Statement Level control structures	4
9	Subprograms • Design issues for subprograms • Local referencing environments Parameter passing methods • Parameters that are subprogram names	4
10	Functional programming languages	4
11	Logic programming languages	4
Total		60

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes	Week 4,10	10%
2.	Assignments	Week 5,9	10%
3.	Midterm Exam	Week 8	20%
4.	Exercise	Every Week	10%
5.	Final Exam	Week 14	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Concepts of Programming Languages, Robert W. Sebesta, Prentice Hall, 2018, 12th Edition
Supportive References	
Electronic Materials	
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (projector, smart board, software)	PC with Windows/Linux, LCD Projector, Smart Board
Other equipment (depending on the nature of the specialty)	Internet Connection

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Student Survey
Effectiveness of Students assessment	Students	Peer Review
Quality of learning resources	Students	Student Survey
The extent to which CLOs have been achieved	Instructor/Students	Direct/Indirect
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	COLLEGE COUNCIL
REFERENCE NO.	MEETING #1
DATE	