



Course Specification

(Bachelor)

Course Title: Fundamentals of Programming in Artificial Intelligence

Course Code: APCS3212

Program: Programming and Computer Science Program

Department: Diploma

College: Applied College

Institution: Umm Al-Qura University

Version: 1

Last Revision Date: Jan 2025



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A. General information about the course:

1. Course Identification

1. Credit hours: (4 hours)

2. Course type

A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others
B. ☒ Required ☐ Elective

3. Level/year at which this course is offered: (1st level –1st year)

4. Course General Description

This course will provide:

- Introduction of using programming language with artificial intelligence methods.
- Basics of data science and machine learning techniques.

5. Pre-requirements for this course (if any):

Computer Programming 2

6. Co-requisites for this course (if any):

N.A.

7. Course Main Objective(s):

The main objective of this course is to provide students with an overview of utilizing programming language concepts with artificial intelligence methods.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	5	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4	Distance learning		



3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	3 * 15 = 45
2.	Laboratory/Studio	2 * 15 = 30
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		75

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

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Recall programming concepts.	K3	<ul style="list-style-type: none">▪ Lectures▪ Lab demonstrations	<ul style="list-style-type: none">▪ Written exam▪ Homework assignments▪ Lab assignments▪ Class Activities▪ Quizzes
1.2	Recognize different data science and machine learning techniques.	K1, K2, K3		
2.0	Skills			
2.1	Apply computer science theory and AI fundamentals to produce basic software solutions.	S2	<ul style="list-style-type: none">▪ Lectures.▪ Lab projects.▪ Case studies▪ Individual presentations.▪ Brainstorming	<ul style="list-style-type: none">▪ Written exam▪ Homework assignments▪ Lab assignments.▪ Class Activities▪ Quizzes▪ Practical Exam.
2.2	Design and code software solutions using programming language concepts, data science, and machine learning techniques.	S2, S3		
3.0	Values, autonomy, and responsibility			
3.1	Manage self-learning by collecting and classifying information on a specific topic.	V2	<ul style="list-style-type: none">▪ Small group discussions.▪ Whole group discussions.▪ Brainstorming.▪ Presentations.▪ Case study.	<ul style="list-style-type: none">▪ Practical Exam.▪ Lab assignments.▪ Class Activities.▪ Quizzes.
3.2	Demonstrate commitment to academic values, standards, and ethical code	V1		



Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	of conduct, and represent responsible citizenship.			

C. Course Content

No	List of Topics	Contact Hours	
		Theoretical	Practical
1.	Intro to Artificial Intelligence (AI)	3	2
2.	AI programming language	3	2
3.	Programming Fundamentals	6	4
4.	Data Structures	3	2
5.	Datasets Basics	3	2
7.	Data Science Basics	6	4
8.	Working with Data Science Libraries	6	4
9.	Machine Learning (ML) Types and Algorithms	6	4
10.	Working with Machine Learning Libraries (Classification)	6	4
11.	Using ML Algorithms in Programming	6	4
Total		45	30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes & Assignment	Throughout the term	10 %
2.	Midterm Exam	8	20 %
3.	Practical skills	Throughout the term	20 %
4.	Final Exam	16 - 17	50 % (40% Theoretical Exam, 10% Practical Exam)

*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	Intro to Python for Computer Science and Data Science : Learning to Program with AI, Big Data and The Cloud, 2021
Supportive References	Course notes on the E-learning web-site
Electronic Materials	
Other Learning Materials	Instructor handouts and presentation in ppt.





2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	<ul style="list-style-type: none"> Classroom well equipped with at least 40 adequate seats. Laboratory well equipped with at least 20 adequate seats. Internet connection
Technology equipment (projector, smart board, software)	<ul style="list-style-type: none"> Smart board Data show IDE software for Programming language
Other equipment (depending on the nature of the specialty)	<ul style="list-style-type: none"> Internet inside the classroom. Library: Up to date scientific books, in the library.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Questionnaire of course quality
Effectiveness of Students assessment	Peer reviewers	-Random grading report -Test Completion report for test standards
Quality of learning resources	Students	E-Survey of sufficiency of learning resource
The extent to which CLOs have been achieved	Instructor, program leaders and Course coordinator	Questionnaire of course quality
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Umm Al-Qura University Council
REFERENCE NO.	851141114462/190365
DATE	1446/11/22



