Course Description Form

Course description

This course description provides a concise summary of the main features of the course and the learning outcomes expected of the student.

Demonstrating whether the student has made the most of the learning opportunities available. This must be linked to the program description.

Shatt al-Arab Private University / College of Science	1. Educational institution
Department of Computer Science	.2 Scientific Department/ Center
Advanced Data Structures	**.3 Course Name/Code**
Mandatory attendance	4. Forms of attendance Available
First semester 2023-2024	.5 Semester/Year
4	.6 Number of study hours (total)
	.7 Date this description was prepared

8. Course objectives

1- Study the different methods and techniques through which the logical perception of data is translated.

2. The programmer's interest in the different ways of organizing data.

3. Pay attention to the algorithms and their analysis necessary to process this data in computer memory.

.4 In addition to teaching the student algorithm design, it also increases knowledge and learning programming in the Java language.

9. Course outcomes, teaching, learning and assessment methods

Cognitive objectives A1

- Teaching the student how to interact well with the calculator

A2 - Developing the student's ability to solve problems using the calculator A3

- Developing the student's understanding of determining what the inputs are and the processing method to ultimately obtain the required output A4

- Developing the method of programming thinking using algorithms as a method for solving problems.

A5- Developing the student's programming style using all the main principles

in Java. A6- Developing the student's ability to design and implement programs.

B - Course specific skill objectives. B1 - Using

programming language to solve mathematical problems B2 - Using programming language

A Programming in Electronic Circuit Design

B 3 - Using the programming language to convert many algorithms into programs

Teaching and learning methods

1- Theoretical lectures reinforced with illustrative examples using presentation tools.

2- Laboratories

3- Seminars 4-

Projects

Evaluation methods

-1 Monthly exams -2

Instant exams

-3 Practical exams

-4 Scientific reports

Emotional and value-based objectives

C- C-1 Benefiting from daily experiences and human behaviors in solving problems and transferring them to

the computer C-2 Developing the student's existing skills and employing them in solving

problems C-3 Instilling a spirit of creativity in the student

Teaching and learning methods

-1 Theoretical lectures reinforced with illustrative examples that foster a spirit of interaction and discussion among students. -2 Laboratory experiments that reinforce the theoretical material.
Evaluation methods
11- Continuous evaluation and follow-up of the student 2- Focus on the individual and group skills of the students 3- Evaluation of the completion of homework and other tasks given during lectures
General and Transferable Skills (other skills related to employability and personal development). D1 - The student learns how to use a calculator and its peripherals. D2 - Learns how to communicate in his/her field of expertise. D3 - Through his/her knowledge of programming languages, he/she learns how to build display interfaces to create communication between the calculator and the user. D4 - Learns how to correct programming errors as he/she learns the philosophy of problem solving.

10. Course structure

road	road	Unit name/topic	Required learning outcomes	watches	The week
Oral questions	Theoretical and practical approach	**Search and sort algorithms**	**Search and sort algorithms**	4	1
Oral questions	Theoretical and practical approach	**Analysis of run time**	**Analysis of run time**	4	2
Oral questions	Theoretical and practical approach	**Inheritance and polymorphism sorting and searching**	**Inheritance and polymorphism sorting and searching**	4	2

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Oral questions	For a theoretical and practical approach	• **Graphs**	**Graphs**	4	2
Oral questions	For a theoretical and practical approach	**Tree, binary Tree, balanced tree**	**Tree, binary Tree, balanced tree**	8	2
Oral question	For a theoretical and practical approach	**heap, priority queue, heap sort**	**heap, Priority queue, heap sort**	8	2
Oral question	For a theoretical and practical approach	**Hashing, linear hash table, and chained hash table**	**Hashing, linear hash table, and chained hash table**	8	2

1.1 Infrastructure

Data structure and algorithms in java, Fourth edition, Michael T. Goodnch, Roberto Tamassia	1- Required textbooks
	2- Main references (Sources)

	A- Recommended books and references journalsReports (scientific
	B - Electronic references, websites The Internet....
