



Course Description Form

Description of the location

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 available learning opportunities. It must be linked to the course .description .The program

Shatt al-Arab University	1 Educational institution .
Computer Science	2 Scientific Department / Center .
Intermittent hail	3 Name/Code of the . headquarters
My presence	4 forms of Available . attendance
Second semester/ 2024-2025	5 semester/year .
200	6 Number of study hours (total) .
2026 – 2025	7 Date this description was . prepared

8 Course objectives .

.We can develop our athletic abilities .1

Discrete mathematics is the gateway to more advanced courses in all branches of .2
.mathematics

Discrete mathematics provides the mathematical foundations for many computer .3
.science courses

Discrete mathematics contains the mathematical background needed to solve .4
.problems in operations research, chemistry, and engineering

Course outcomes, teaching, learning and assessment methods .9

.Formulate solutions to a selected mathematical problem .1

.Apply objective mathematical reasoning to systems composed of discrete objects .2

.Evaluating mathematical proofs .3

Interpreting situations that involve a predetermined sequence of actions based on a .4

.limited sequence of events

Classifying all possible outcomes of a series of events, or all possible combinations .5

.of a set of objects

Draw hierarchical relationships between individual entities in a given situation .6

.using relationships

Draw hierarchical relationships between individual entities in a given situation .7

.using the function

Use of mathematical or systematic entity trees as tools in computer science to .8

.solve various real-world problems

Use graphs of mathematical or systematic entities as tools in computer science to .9

.solve various real-world problems

Teaching and learning methods

1- In-person lectures

2- Practical laboratory lectures

3- Reports

4- Seminars

5- rapid tests

Evaluation methods

Module Evaluation					
Course material evaluation					
		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (15)	2, 5, 10	LO #1, 2, 8 and 9
	Assignments	3	15% (15)	3,6,12	LO # 3, 4, 6 and 7
	Projects / Lab .				
	Report	1	10% (10)	13	LO # 5, 7 and 9
Summative assessment	Midterm Exam	2 hours	10% (10)	7	LO #1-8
	Final Exam	2 hours	50% (50)	16	All
Total assessment			100% (100 Marks)		

Teaching and learning methods Convergent .1and divergent thinking. Project .2- based learning. Experiential .3learning . Peer .4teaching . Inquiry .5- based learning. Problem .6- based learning. Reciprocal .7teaching .
Course structure .10 ,Sets, types of sets, operations on sets, set identities, computer representation of sets (multiplexes fuzzy sets), sequences and sums. [12 hours] Properties of integers and applications of number theory, legal and logical operations, conditional sentences. [6 hours] Mathematical reasoning and induction, repetition, mathematical proofs: methods of proving theorems. [12 hours] ,Properties of relations, operations and relations, computer representation of relations, functions properties of functions, types of functions. [12 hours] ,Trees, tree types, trees as models, tree properties, tree traversal, global address systems traversal algorithms, prefix, prefix, and suffix tree notation. [15 hours] Graphs, types of graphs, some special simple graphs, graphic representation, symmetry and formal isomorphism of graphs. [12 hours]

Curriculum plan

	Learning method	Unit name/topic	Required learning outcomes	watches	week
	1- In-person lectures 2- Reports 3- Seminars 4- rapid tests	,Sets, types of sets operations on them			the first
	1- In-person lectures 2- Reports 3- Seminars 4- rapid tests	Set identities, computer representation of sets multiplex sets, fuzzy) (sets			the second
	1- In-person lectures 2- Reports 3- Seminars 4- rapid tests	Sequences and sums			the third

	1- In-person lectures 2- Reports 3- Seminars 5- rapid tests	Properties of integers and applications of number theory			Fourth
	1- In-person lectures 2- Reports 3- Seminars 4- rapid tests	Judicial and logical operations, conditional sentences			Fifth
	1- In-person lectures 2- Reports 3- Seminars 4- rapid tests	Mathematical reasoning and induction, iterative			Sixth
	1- In-person lectures 2- Reports 3- Seminars 4- rapid tests	:Mathematical proofs methods of proving theorems			Seventh
	1- In-person lectures 2- Reports 3- Seminars 4- rapid tests	Midterm exam			The eighth
	1- In-person lectures 2- Reports 3- Seminars 4- rapid tests	:Relationships properties of ,relationships operations, computer representation of relationships			Ninth
	1- In-person lectures 2- Reports 3- Seminars 4- rapid tests	Functions: Properties of functions, Types of functions			tenth
	1- In-person lectures 2- Reports 3- Seminars 4- rapid tests	,Trees: Types of trees ,Trees as models Characteristics of trees			eleventh
	1- In-person lectures 2- Reports 3- Seminars	Tree traversal, global ,address systems traversal algorithms			twelfth

	4- rapid tests				
	1- In-person lectures 2- Reports 3- Seminars 4- rapid tests	Prefix, prefix, and suffix tree encoding			thirteenth
	1- In-person lectures 2- Reports 3- Seminars 4- rapid tests	,Chart: Types of Charts Some Simple Special Charts			fourteenth
	1- In-person lectures 2- Reports 3- Seminars 4- rapid tests	Graphical ,representation symmetry and isomorphism in graphs			fifteenth
	Theoretical lectures	Preparatory week before the final exam			sixteenth

Infrastructure .11	
nothing	Required textbooks -1
Essential Discrete Mathematics for Computer Science , by Harry Lewis and Rachel Zax , Princeton University Press , ASIN: B07H5384J5, 2019.	Main references (sources) -2
Discrete Structures , Logic , and Computability by James L. Hein , Jones & Bartlett Learning ; 4 edition , 2015.	a) Recommended books and ,references (scientific journals (.reports, etc
https://www.cs.cornell.edu	,b) Electronic references, websites .etc

Curriculum development plan .12

