Academic Quality Assurance Department

College	**College of Engineering**		
Department	**Computer Systems Engineering**		
Program	B.Sc.		
Course Title	**Discrete Computational Structures**	**Course Number:**	**12140204**
Year	2023 - 2024	**Semester:**	Summer
Prerequisite(s)	**Computer Programming 12140101**		
Instructor	Dr.Motaz Daadoo; Anas Melhem		
Instructor's e-mail	a.melhem@ptuk.edu.ps		
Office Hours	----------		
Class Time	----------	**Class Room:**	-----
Course description	The course provides a comprehensive study of all important aspects of discrete structures used in computer science starting with propositions, logical operations, truth tables, Set Theory, Sequences, Matrices, Methods of proofs, properties of relations, Functions definitions, types of functions, Ordered Relations (partially ordered set, linearly ordered, Hasse diagrams), Lattices, Trees (rooted tree, subtree) and ending with Graph Theory.		
Course Intended Learning Outcomes (CILOs)	**A- Knowledge and Understanding :** A1) Know the basic logical operations Structure.(A1) A2) Understand the concept of set theory.(A1) A3) Know the concept properties of relations and Functions (A1) A4) Gain the concept of Lattices, Trees and graph theory (A1) **B- Intellectual Skills :** B1) Distinguish between different logical operators.(B1) B2) Analyze and select Methods of proof,(B1,B2) B3) Analyze and compare different Relations.(B1, B2) B4) Analyze and list different techniques implemented in graph theory (B1,B2) **C) Subject Specific Skills :** C1) Present work both in written and oral for different discrete Mathematical structures.(C4) C2) Implement solutions of different relations and functions (C3, C4). C3) Learn a specific issues about Trees and graph theory (C2, C3, C4) **D) Transferable Skills :** D1) Discuss and work in a group in order to find solutions of several discrete Mathematical structures (D1) D2) Discuss and work in a group in order to study discrete structures used in computer science.(D2) D3) Communication skills.		
Textbook(s)	Discrete Mathematics and its Applications , by Kenneth H. Rosen, 7th. Edition, Mc. Graw Hill, 2012		

Other required material (References):	1. Discrete Mathematical Structures, by B. Kolman, R. Busby,S. Ross. Prentice Hall. 2. Discrete Mathematics. S. Washburn, T. Marlowe, T.Ryan, Addision Wesley. 3. Kenneth H. Rosen, Discrete Mathematics and Its Applications, 6th edition 2007, McGrawHill
Other Resources used (e.g. e-learning, field visits, periodicals, software, etc.)	

Course Teaching Methods	
Teaching Method	**CILOs**
Classroom discussion sessions	A, B, C, D
Homework assignments and quizzes	A, B, C, D
Independent study	D
Students' presentations	D

Assessment Type	**Weight**	**Date(s)**
Mid Exam	35%	**TBA**
Quizzes/ Assignments/Discussion Forum	20%	**TBA**
Final Exam	45%	**TBA**
Total	100%	

Course Intended Learning Outcomes (CILOs)										
CILOs	**Mapping to Program ILOs**									
On successful completion of the course, students will be able to:	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**I**	**j**
A, B, C, D	✓	✓		✓						
A, B, C, D		✓	✓	✓						
A, B, C, D										
A, B, C, D			✓							

Week	Topics Covered
1	Introduction to Logic
1	Mathematical logic
2	Set Theory
3	Functions, Sequences, Summations
4	Algorithms
5	Number Theory
6	Counting
7	Relations
7	Graph, Tree

Prepared by:	**Dr. Anas Melhem**	**Signature**	**Dr. Anas Melhem**
Head of Department		**Signature**	
Date			