



Jordan University of Science and Technology
Faculty of Science & Arts
Mathematics Department

MATH241 Discrete Mathematics

Summer Semester 2019-2020

Course Catalog

3 Credit Hours. Introduction to discrete mathematical structures that form the basis for computing. Sets, functions and sequences. Propositional calculus, formal proofs, quantifiers, predicted calculus, mathematical induction. Matrices, groups, semigroups, homomorphism and isomorphism. Relations, partitions, equivalence relations, trees, directed and undirected graphs.

Text Book

Title	Discrete Mathematical Structures
Author(s)	Kolman, Busby, and Ross
Edition	5th Edition
Short Name	Text
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref 1	An Introduction to Discrete Mathematics and its Applications	Kenneth Kalmanson	1st Edition	
Ref 2	Discrete Mathematics and Its Applications	Kenneth H. Rosen	7th Edition	
Ref 3	Mathematics with Computer Science Applications	Skvarcius, Robinson	1st Edition	

Instructor

Name	Mrs. Hiyam Al-Bataineh
Office Location	NA

Office Hours	Sun : 08:30 - 10:00 Mon : 08:30 - 10:00 Tue : 08:30 - 10:00 Wed : 08:30 - 10:00
Email	hiym@just.edu.jo

Instructor	
Name	Prof. Mahmoud Alrefaei
Office Location	D1 Level 0
Office Hours	Sun : 11:30 - 13:00 Mon : 11:30 - 13:00 Tue : 11:30 - 13:00 Wed : 11:30 - 13:00
Email	alrefaei@just.edu.jo

Class Schedule & Room
<p>Section 1: Lecture Time: Sun, Mon, Tue, Wed : 10:00 - 11:30 Room: منصة الكترونية</p> <p>Section 2: Lecture Time: Sun, Mon, Tue, Wed : 13:00 - 14:30 Room: منصة الكترونية</p>

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Sets and Subsets	1.1 From Text
Week 2	Operations on sets, Sequences	1.2, 1.3 From Text
Week 3	Properties of Integers, Matrices	1.4, 1.5 From Text
Week 4	Propositional and Logical Operations, Conditional Statements	2.1, 2.2 From Text
Week 5	Mathematical Induction	2.4 From Text
Week 6	Product sets and Partitions, Relations and Digraphs	4.1, 4.2 From Text
Week 7	Paths in Relations and Digraphs, Properties of Relations	4.3, 4.4 From Text
Week 8	Equivalence Relations, Computer Representation of Relations and Digraphs	4.5, 4.6 From Text
Week 9	Operations and Relations	4.7 From Text
Week 10	Functions, Functions for Computer Science	5.1, 5.2 From Text
Week 11	Growth of Functions, Permutation Functions	5.3, 5.4 From Text
Week 12	Trees, Labeled Trees	7.1, 7.2 From Text
Week 13	Tree Searching	7.3 From Text

Week 14	Undirected Trees	7.4 From Text
Week 15	Minimal Spanning Trees	7.5 From Text
Week 16	Final Exams	

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
To familiarize with sets and their operations and realize the properties of division on the set of positive integers. [3SLO1, 1SLO3]	15%	
Recognize the logical format of statements, determine the truth value of the compound statements, be able to use mathematical induction to prove functional statements on integers. [1SLO1]	10%	
Understand relations and their types and matrix representation of relations. [1SLO1]	20%	
realize relations and their graphs, and functions including specialized topics such as growth Functions and Boolean Algebras. [1SLO1]	20%	
Familiarize with trees, directed and undirected graphs, perform tree search, and find minimal spanning trees. [2SLO1, 1SLO3]	20%	
Be able to do operations on matrices and Boolean matrices, and to be familiar with sequences. [1SLO1, 1SLO2]	15%	

Relationship to Program Student Outcomes (Out of 100%)					
SLO1	SLO2	SLO3	SLO4	SLO5	SLO6
82.08	7.50	10.42			

Evaluation	
Assessment Tool	Weight
First	30%
Course Work	20%
Final Exam	50%

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