



Course No.: 0901200
Course Name: Discrete Mathematics
Semester: Spring
Course Description: (3 Credit Hours, Prerequisite: N/A)

Course Classification: Compulsory
Time Division: 3 Lectures
Academic Year: 2018-2019

This course is an introduction to the formal mathematical concepts of computer science for the beginning student and covers a wide variety of diverse topics that serve as the mathematical framework for the design and analysis of algorithms. Topics include elementary logic, set theory and sequences, induction and recursion, permutations and combinations, probability theory, relations and functions, tree structures, and an introduction to graph theory and finite state machines.

Course Objectives:

By the end of this course the student is expected to be able to describe and integrate basic definitions and theorems concerning sets, functions, and relations, be able to use mathematical tools of logic and induction and show the application of these tools to computer science, be able to create and understand a formal proof, be able to use combinations and probability theory required in the design and analysis of algorithms, and be able to create state and transition diagrams.

Tentative Course Outline/Schedule:

No.	Topic	Hours	No.	Topic	Hours
1	Sets & Sequences	3	8	Relations & Diagraphs	3
2	Division in the Integer & Matrices	3	9	Equivalence Relations & Operations on Relations	3
3	Propositions & Logical Operations	3	10	Functions & Functions for Computer Science	3
4	Conditional Statements & Methods of Proof	3	11	Labeled, Searching & Minimal Spanning Trees	3
5	Mathematical Induction	3	12	Euler & Hamiltonian Paths/Circuits	3
6	Permutations & Combinations	3	13	Finite State Machine	3
7	Elements of Probability	3	14	Experiments in Discrete Mathematics	3

Textbook:

Discrete Mathematical Structures, B. Kolman , RC. Busby and SC Ross, Prentice Hall, 6th Edition, 2008

Grading:

Mid-term Exams (2): 50% **Final Exam: 50%**
 The instructor encourages everyone to participate in class activities, discussions, and respond to questions from other students and complete in/out-class writing assignments.

Academic Success Support:

As your instructor, I am personally committed to supporting your academic success in this course. For that reason, if you demonstrate any academic performance or behavioral problems which may impede your success, I will personally discuss and attempt to resolve the issue with you.

Instructor's Information:

Name: Dr. Najah Al-shanableh **Office hours:** Sunday and Tuesday : 9:30 -11:00 am
 Monday and Wednesday: 11:00 am – 12:00 pm
E-Mail: najah2746@aabu.edu.jo **Office Tel.:** 3395

Sunday, Tuesday		
Class	Hall	Time
02	201 IT	11:00-12:30

Monday, Wednesday		
Class	Hall	Time
03	104 IT	12:30-2:00

Chapter 1: Fundamentals

- Section 1.1: Examples {1,5,6,8,9,10,11}
- Section 1.2: Examples {1,2,3,4,6,7}
- Section 1.3: Examples {1,2,3,4,5,6,7,12}
- Section 1.4: Examples {7}
- Section 1.5: Examples {12,13}

Chapter 2: Logic

- Section 2.1: Examples {1,2,3,4,5,}
- Section 2.2: Examples {1,2,3,4}
- Section 2.4: Examples {1,2}

Chapter 3: Counting

- Section 3.1: Examples {8,9,10}
- Section 3.2: Examples {3}

Chapter 4: Relations & Digraphs

- Section 4.1: Examples {1,2,6}
- Section 4.2: Examples {1,2,3,4,10,11,18,19,22,23,24}
- Section 4.3: Examples {5,6}
- Section 4.4: Examples {1(c),4,10}
- Section 4.5: Examples {2}
- Section 4.7: Examples {1,3,4,5,6,10,12,13}

Chapter 5: Functions

- Section 5.1: Examples {1,2,9,12,14}
- Section 5.4: Examples {2,3,4,5,6,7,9,10}

Chapter 7: Trees

- Section 7.1: Theorem 1
- Section 7.2: Examples {3,4}
- Section 7.3: Examples {1,2,3,4}
- Section 7.5: Examples {1,2,5,6}

Chapter 8: Topics in Graph Theory

- Section 8.1: Examples {1,2,3}
- Section 8.2: Examples {1,2,4}
- Section 8.3: Examples {1}

Chapter 10: Languages & FSMs

- Section 10.3: Examples {1,2,3,4}
- Section 10.4: Examples {1}