



**BIRZEIT UNIVERSITY**

Faculty of Engineering and Technology

**Department of Computer Science**

COMP233 – Discrete Mathematics

Course Outline – Fall 2022/2023

### Course Description:

The goal of this course is to introduce students to ideas and techniques from discrete mathematics that are widely used in computer science. Ultimately, students are expected to understand and use (abstract) discrete structures that are the backbones of computer science. In particular, this class is meant to introduce logic, proofs, sets, functions, relations, counting, graphs, and trees and with an emphasis on applications in computer science.

### Course Objectives:

By the end of the course the students will be able:

1. Understand logical statements and avoid logical errors.
2. Learn how to prove mathematical arguments.
3. Apply math in programing, using counting, sets, induction and others.

فهم الجمل المنطقية وتجنب الأخطاء المنطقية تعلم كيف تثبت نظريات رياضية استعمال الرياضيات وربطها بالبرمجة، خاصة المجموعات، الاستقراء، طرق العد وغيرها.

Prerequisites: MATH1411 – Calculus II

### Instructors:

Sec.#	Instructor Name	Email
1 & 8	<b>Ruba Awadallah</b>	rawadallah@birzeit.edu
2	<b>Mohammad Mor'eb</b>	mmoreb@birzeit.edu
3 & 4	<b>Ahmed Abusnaina</b>	aabusnaina@birzeit.edu
5 & 6	<b>Radi Jarrar (Coordinator)</b>	rjarrar@birzeit.edu
7	<b>Wahbeh Mousa</b>	wahbeh@birzeit.edu

### Office hours:

Please check your instructor's office hours on Ritaj. If you want to meet your instructor outside their public office hours please request an appointment through email/Ritaj.

### Course Material:

#### - Text book:

**Title:** Discrete Mathematics with Applications (4<sup>th</sup> Edition)

**Author:** by Susanna S. Epp

**Publisher:** Brooks/Cole

#### - References:

Discrete Mathematics with applications by Barnier & Chan

1. Lecture Notes and slides given by the instructors

2. Discrete Mathematics with applications by Barnier & Chan
3. Discrete Mathematics and its Applications by Kenneth H. Rosen
4. Foundations of Computer Science by Aho and Ulman

**Evaluation:**

- Quizzes 30%
- Midterm exam 30%
- Final exam 40%

**Schedule:**

# Lectures	Reading	Topic	Sections
1		Outline and Motivations to Discrete Mathematics	
3	Ch. 2	The Logic of Compound Statements (Propositional Logic)	2.1, 2.2, 2.3
3	Ch. 3	The Logic of Quantified Statements (First Order Logic)	3.1, 3.2, 3.3
4	Ch. 4	Number Theory and Methods of Proof	4.1, 4.2, 4.3, 4.4
3	Ch. 5	Sequences and Mathematical Induction	5.1, 5.2, 5.3
4	Ch. 6	Set Theory	6.1, 6.2, 6.3 (+6.4 Algebra)
2	Ch. 7	Functions	7.1, 7.2
4	Ch. 8	Relations	8.1, 8.2, 8.3
5	Ch. 9	Counting Theory	9.1, 9.2, 9.3, 9.5, 9.6
3	Ch. 10	Graphs and Trees (if time permits)	10.1, 10.2

**Student responsibilities:**

- **Class participation and independent work.** Students are expected to actively participate in all classes and perform independent work.
- **Attendance.** Attendance is mandatory. University regulations regarding this matter will be strictly enforced.
- **Academic Honesty.** Individual work must be each student's own work. Plagiarism or cheating will result in official University disciplinary review.
- **Missed Exams.** There are no makeup exams.
- **Class Etiquette.** Please keep all cell phones and other electronic devices turned off during class. If your activities during class are deemed disruptive, you will be asked to leave. Use of a personal computer during class is prohibited except for note taking with the permission from your instructor.