

# CHAPTER 0: INTRODUCTION

## Discrete Mathematics 2

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<http://www.ptit.edu.vn>



## Contents

### Chapter 1: Basic Concepts in Graph Theory

- ★ Graph definitions
- ★ Basic terms in undirected graphs
- ★ Basic terms in directed graphs
- ★ Some special types of graphs

### Chapter 2: Graph Representation in Computers

- ★ Graph representation using adjacency matrix
- ★ Graph representation using incidence matrix
- ★ Graph representation using edge list
- ★ Graph representation using adjacency list

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### Chapter 3: Searching in Graphs

- ★ Depth-First Search (DFS)
- ★ Breadth-First Search (BFS)
- ★ Applications of DFS and BFS

### Chapter 4: Euler and Hamilton Graphs

- ★ Euler graphs
- ★ Hamilton graphs

### Chapter 5: Trees and Spanning Trees

- ★ Trees and properties of trees
- ★ Spanning trees
- ★ Minimum spanning tree problem

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### Chapter 6: Shortest Path Problem

- ★ Problem statement
- ★ Dijkstra algorithm
- ★ Bellman-Ford algorithm
- ★ Floyd algorithm

### Chapter 7: Maximum Flow Problem

- ★ Problem statement
- ★ Ford-Fulkerson algorithm

## References

1. Nguyen Duy Phuong, Lectures on Discrete Mathematics 2, PTIT, 2013 (in Vietnamese)
2. Kenneth H. Rosen, Discrete Mathematics and Its Applications, Seventh Edition, 2012.
3. Lecturer's slides, 2024.

## Subject evaluation

### ✱ Component scores

- ▶ Attendance 10%
- ▶ Exercises 10%
- ▶ Mid-term projects/exam 10%
- ▶ Final exam 70%

**Missing one component score or more than 20% of the class sessions will NOT be allowed to take the final exam**