EE305: Discrete Mathematics
Course Syllabus

Dr. Mohammad H. Awedh

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Course Overview

This is an introductory course in discrete mathematics. The goal of this course is to introduce students to ideas and techniques from discrete mathematics that are widely used in science and engineering. This course teaches the students techniques in how to think logically and mathematically and apply these techniques in solving problems. To achieve this goal, students will learn logic and proof, sets, functions, as well as algorithms and mathematical reasoning. Key topics involving relations, graphs, trees, and formal languages and computability are covered in this course.

Goals:

- Understand and construct mathematical arguments
- Prove simple arguments
- Develop recursive algorithms based on mathematical induction
- Know basic properties of relations
- Know essential concepts in graph theory and related algorithms
- Understand basic concepts in formal languages and computability
- Apply knowledge about discrete mathematics in problem solving

List of course topics:

- Propositional Logic
- Predicate Logic and Quantification
- Methods of Proof
- Sets and Functions

- Arithmetic Algorithms
- Growth of Functions
- Computational Complexity of Algorithms
- Integer properties and Matrices
- Mathematical Induction
- Recursion
- Sequences and Summations
- Program Correctness
- Graphs and its Applications
- Trees and its Applications
- Languages and Grammars
- Finite-State Machines
- Automata and Language Recognition
- Turing Machines

Course Information

Instructor	Dr. Mohammad H. Awedh Department of Electrical and Computer Engineering King Abdulaziz University
Office Location	Building 42B, Room 412
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Office Hours	Saturday, Wednesday 9:30 to 11:00 or by Appointment
E-mail	mhawedh@kau.edu.sa mhawedh@gmail.com
Meeting	Lectures: Saturday, Monday 11:00 – 12:20 Tutorial: Wednesday 11:00 – 12:50 Building 22, Room 103

We will cover the following chapters/sections: