

KS141203 MATEMATIKA DISKRIT (*DISCRETE MATHEMATICS*)

COURSE OVERVIEW

Ahmad Muklason, PhD.

Lecturer

Ahmad Muklason, Ph.D

Office

Ged. Sistem Informasi Lt.2 TC 206 / Ged. Pascasarjana ITS Lt. 2

Social

E : ahmad.muklason@gmail.com

H : 0812 2825 6102

W : <http://www.cakshon.com>

Twitter : @cakshon

IG : @cakshon

Outline

Course Description

Objectives

Materials

Textbooks

Useful Links and Resources

E-Learning

Lecture Regulations

Discussions



Course Description

Mathematical foundations needed for further studies in computer related courses.

The topics include logic, sets, functions, matrices, counting, probability, and graph theory.

This course covers **3** credits of your 144 credits studies workload.



Objectives

1. Students understand **mathematical reasoning** in order to read, comprehend, and construct mathematical arguments.
2. Students are able to use and apply **mathematical logic** for problem solving
3. Students understand how to **work with discrete structure** which are the abstract mathematical structures used to represent discrete objects and relationships between these objects. These discrete structures include sets, permutations, relations, and graphs.
4. Students are able to solve certain problems by implementing the **algorithmic thinking**.



Materials

The Foundations: Logic and Proofs → Propositional Logic, Propositional Equivalences, Predicates and Quantifiers, Nested Quantifiers, Rules of Inference, Introduction to Proofs, Proof Methods and Strategy

Basic Structures: Sets, Functions, Sequences, Sums, and Matrices → Sets, Set Operations, Functions, Sequences and Summations, Cardinality of Sets, Matrices

Number Theory → Divisibility and Modular Arithmetic, Integer Representations and Algorithms, Primes and Greatest Common Divisors, Congruence

Induction and Recursion → Mathematical Induction, Strong Induction and Well-Ordering, Recursive Definitions and Structural Induction, Recursive Algorithms

Counting → The Basics of Counting, The Pigeonhole Principle, Permutations and Combinations

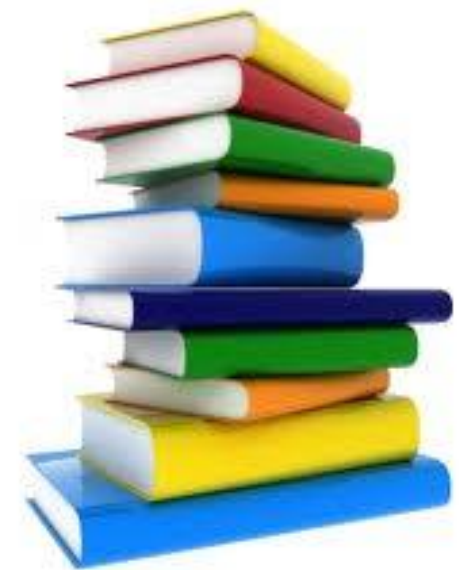
Relations → Relations and Their Properties, Representing Relations, Equivalence Relations, Partial Orderings

Graphs → Graph Terminology and Special Types of Graphs, Representing Graphs and Graph Isomorphism, Connectivity, Shortest-Path Problems

Textbooks

Kenneth H. Rosen, *Discrete Mathematics and its Applications*, Seventh edition, McGraw-Hill International Edition. 2012.

Richard Johnsonbaugh, *Discrete Mathematics*, Seventh Edition, Pearson Education, Inc., 2009.



Useful Links and Resources

1. The Rosen companion website, <http://www.mhhe.com/rosen>
2. The Richard companion website,
<http://condor.depaul.edu/~rjohnson/dm7th/>
3. The Mathematical Zone, <http://www.mathzone.com>

E-Learning

All materials will be uploaded in e-learning after each class meeting.

<http://share.its.ac.id/>

Username : NRP

Password : DoB [yyyymmdd]

Enrolment key:

KS141203A, KS141203B, KS141203C, KS141203D



Class Regulations

Attendance

Class attendance is **required**.

You are responsible for all materials and assignments given in the class whether or not you are present. It is your responsibility to pick up any missed quizzes, assignments or handouts.

Every class is important. For student whose attendance less than **80%**, his/her grade will be reset to zero (failed).

Students who came **30 minutes** after the class started is not allowed to join the class

Class Regulations (cont.)

Academic Honesty:

- **No Cheating!**
- Be aware of **plagiarism!**

Diciplines:

- Class: come **on time, do not disturb** other/make noise
- Assignment: **minus grade** for late submission

Class Representative :

Class Regulations (cont.)

Assessment

Refreshment quiz	20%
Coursework	25%
Midterm Test	25%
Final Exam	30%

Discussion

Do you think Math is
useless for Information
Systems Students?



