

# Introduction to Discrete Structures I

**CS 205 – Fall 2004**

**Sections 06 and 07**

Lecture times: Tuesday and Thursday 7:40 pm – 9:00 pm at HH-A7

Recitation class:

Section 06: Tuesday 9:10-10:05 pm HH-A7

Section 07: Thursday 9:10-10:05 pm HH-A7

**Instructor:** Dr. Ahmed Elgammal

**Email:** [elgammal@cs.rutgers.edu](mailto:elgammal@cs.rutgers.edu)

**Email policy:** you have to include “CS205” in your subject to get a response.

**Office hours:** Wed 2-4pm CoRE Building- room 316, Busch Campus.

Class webpage: <http://www.cs.rutgers.edu/~elgammal/cs205.html>

Class webpage will contain: Class Calendar, HWs, Quiz dates, Quiz Solutions, Grades and announcements.

Always check class web page for the latest announcement.

**TA:** ROHAN FERNANDES

**TA Email:** rohanf@paul.rutgers.edu

**TA office hours:** TBA

**Prerequisite:** CS 111

**Text Book:** Kenneth Rosen, “Discrete Mathematics and Its Applications”, *Fifth Edition*, WCB/McGraw-Hill. ISBN: 0-07-242434-6

Additional useful text: The Student Solutions Guide (ISBN 0-07-247477-7). A copy of the textbook and the solution manual will be available on reserve at the SERC library at Busch Campus.

## **Topics:**

- Logic, Set Theory, Relations, Functions, Mathematical Reasoning, Elementary Number Theory, Sequences and Mathematical Induction, Finite Automata and Regular expressions, Computability, Applications.

## **Tentative Course Outline**

- Basics and motivation; set notation; relations; functions (Sections 1.6 - 1.8)
- Propositional Logic (Sections 1.1 - 1.2)
- Tautologies, Normal Forms, Hardware Implementations (Sections 10.1 - 10.3)
- First-Order Logic; quantifiers, predicates, truth and validity (Sections 1.3 - 1.5)
- Methods of Proof (Sections 3.1 - 3.2)

- Induction; Recursive definitions; Recurrence Relations; Graphs (Sections 3.3 - 3.5)
- Regular Expressions; Finite Automata; Computability (Sections 11.1 - 11.5)
- Preliminaries for Algorithm Analysis, Cryptography (Sections 2.2 and 2.6)

**Homework:** about 10 homework assignments (one weekly or biweekly) . HWs are typically due on Tuesdays.

**Quizzes:** about 10 short quizzes to be given in class after submission of each homework. Quizzes will be typically on the Thursdays.

**Midterms:** Two midterms. Will be given on class at lecture time. The first midterm will be on week 5 (on or around 10/5/2004). The second midterm will be about week 9 (on or around 11/2/2004). Each midterm will cover a part of the course topics.

**Final exam:** Comprehensive final exam. Tuesday Dec 21<sup>st</sup> at 8-11pm HH-A7

Final exam schedule: <http://scheduling.rutgers.edu/examfall.htm>

### **Grading Policy:**

- Homework: 25 %
- Quizzes: 15 %
- Midterm 1: 15 %
- Midterm 2: 15 %
- Final Exam: 30 %

### ***Academic Integrity***

All students are expected to adhere to the [university policy on academic integrity](#). Copying and Cheating will not be tolerated.