

# CSC8-151 Discrete Mathematics for Computer Science

April - May 2016

## Course Syllabus

**Instructor:** Professor Tony deLaubenfels

**Office:** Law 222

**Office Hours:** 2:30 p.m. - 3:30 p.m. Monday through Friday

**Office Phone:** Extension 4295 Home/cell Phone: 895-8336

**E-mail address:** tdelaubenfels (tdelaubenfels@cornellcollege.edu from off campus)

**Text:** Discrete Mathematics and Its Applications, 7E, by K. Rosen (McGraw-Hill 2012). We will all or part of chapters 1-6, 9, and 10.

**Class meetings:** There will be Lecture/ Discussion each morning from 9 a.m. until around 11 a.m. in our Law Hall classroom. Four days a week, we will have afternoon class from 1:15 p.m. to 2:30 p.m.

**Evaluations:** Your grade will be based on your performance on homework, projects, and exams according to the following schedule:

Exam 1	100 points
Exam 2	100 points
Final Exam	125 points
Assignments, Quizzes, and Projects	100 points
TOTAL possible	425 points

### Exam schedule:

Exam 1 Chapters 1-3 Wednesday, April 20

Exam 2 Chapters 4-6 Wednesday, April 27

Final Exam Chapters 9, 10 + comprehensive Wednesday, May 4

## **Course Objectives:**

Students will develop knowledge and skills in the following areas of discrete mathematics:

### **Logic**

Propositional, predicate, formal proofs using inference rules in both

### **Sets, functions, sequences and series**

### **Algorithms**

Basic algorithms—search (linear, binary), sort, greedy

Complexity—Big O, Big Theta

### **Proofs**

Proof strategies

Experience proving in several elementary genres: Set identities, 1-1 and onto functions, Big-O, number theory, properties of relations

Mathematical Induction (emphasis)

### **Recursion**

Functions, algorithms, structures

### **Basic number theory**

Primality, gcd including Euclid's algorithm, mod (both congruence and function), divisibility

Public key encryption

### **Basic combinatorics**

Combinations, permutations, pigeonhole principle, binomial theorem

Finite probability

### **Relations**

Relation representation (digraph, matrix)

Properties of relations: reflexive, symmetric, transitive, anti-symmetry (esp. for partial order), equivalence relations and equivalence classes

### **Basic graph theory**

Terminology, introduction to graph algorithms

This course supports the Educational Priorities and Outcomes of Cornell College with emphasis on knowledge, inquiry, reasoning, and communication.

1) **Assignments.** I expect students to spend about 25 - 30 hours a week, outside of class, reading the text and working exercises. Homework exercises will be assigned daily, but will not normally be handed in. The solutions to most of the odd numbered exercises are in the back of the text.

2) **Attendance and classroom protocols.** Class attendance and participation is expected. I do not take attendance, but many days there will be some sort of work (quizzes or activities) that you will need to be in class to complete. During class you are allowed to use computers to take notes (this is difficult in a mathematics course) or if you are using a e-text, but you should not use e-mail, browsers, ims, etc. No texting in class, please.

3) **Drop Policy.** I follow the official college drop policy; i.e. in order to be eligible for a third Friday drop, you must attend class and complete all course work.

4) **Academic Integrity.** Cornell College expects all members of the Cornell community to act with academic integrity. An important aspect of academic integrity is respecting the work of others. A student is expected to explicitly acknowledge ideas, claims, observations, or data of others, unless generally known. When a piece of work is submitted for credit, a student is asserting that the submission is her or his work unless there is a citation of a specific source. If there is no appropriate acknowledgment of sources, whether intended or not, this may constitute a violation of the College's requirement for honesty in academic work and may be treated as a case of academic dishonesty. The procedures regarding how the College deals with cases of academic dishonesty appear in The Compass, our student handbook, under the heading "Academic Policies – Honesty in Academic Work."

5) **Accommodation.** Students who need accommodations for learning disabilities must provide documentation from a professional qualified to diagnose learning disabilities. For more information see [cornellcollege.edu/disabilities/documentation/index.shtml](http://cornellcollege.edu/disabilities/documentation/index.shtml)

Students requesting services may schedule a meeting with the disabilities services coordinator as early as possible to discuss their needs and develop an individualized accommodation plan. Ideally, this meeting would take place well before the start of classes. At the beginning of each course, the student must notify the instructor within the first three days of the term of any accommodations needed for the duration of the course.