Course Syllabus
Discrete Mathematics and Its Applications, Spring 2019

Textbook and Resources:

- *Discrete Mathematics and its Applications*, Sixth Edition, ISBN-13 978-0-288008-3 (by Kenneth H. Rosen)

Course Description:

This course covers the basic principles of discrete mathematics with the objective of covering material needed in high-level computer science courses. Class topics include logic, sets, functions, mathematical induction and recursion, proof techniques, permutations and combinations counting techniques, and discrete probability

Chapters of Book Covered:

The principal chapters that will be covered are listed next. Of course, some topics are covered at a greater depth than others.

- **Chapter 1 -** *The Foundations: Logic and Proof*
- **Chapter 2 -** *Basic Structures: Sets, Functions, Sequences, and Sums*
- **Chapter 4 -** *Induction and Recursion*
- **Chapter 5 -** *Counting: Pigeonhole Principle, Permutations, Combinations*
- **Chapter 6 -** *Discrete Probability: Introduction, Expected Value and Variance*
- **Chapter 3 –** Some Number theory topics, if time permits
- **Chapter 8 -** *Relations (perhaps cover briefly)*
- **Chapter 9 -** *Graphs and Graph Models (perhaps cover briefly)*

Homework Policy and Format

- Homework assignments will be assigned regularly (e.g., weekly, at the end of a section or chapter, etc.).
- Your submitted homework should reflect your understanding of the material. Ask questions if you have trouble with any assigned problem. I will provide some time for this in class. You can also use the grader and my office hours to ask questions.
- Don't wait until the last minute to start your homework. Instead, work on it every day after it is assigned until you have completed the assignment.
- It is OK to discuss the problems with others, but you **MUST** write up solutions on your own and understand what you are writing. You may not copy any part of someone else's homework!
- Homework Submission Policies
  - Assignments will normally be collected at the beginning of class on the day they are due. Homework handed in after the homework is collected, but on the same day, will be graded; however, it may receive only half-credit.
  - Homework of more than one page should be stapled
  - At the top of the first page of each assignment, you should give **your name** (at least your last name), the **course name**, the **assignment number**, and **the date.**
  - Homework should always be done neatly and legibly and you should **always show your work.**
  - Homework should in order, with one problem below the previous problem – and not in two or more columns.
  - If you use a pen that bleeds through the paper, then don't work on both sides of the paper.
  - will be handed in, presented by students, or discussed in class (or a combination of these)

Course Grade

- Based on homework, in-class tests, classroom participation, and attendance.
- Approximate weights, assuming that we are assigned a grader
  - Attendance
  - Cold Start Questions, board work, pop quizzes
  - Homework
  - Early Term Exam
  - Late Term Exam
  - Final Exam

- The distribution/percentages that will be used in grading is as follows:
  - 100-93 A, 92-90 A–, 89-87 B+, 86-83 B, 82-80 B–, 79-77 C+, 76-73 C, 72-70 C–, 69-67 D+, 66-60 D, 59-0 F.

Homework and Collaboration:

- You will need to devote a considerable amount of time to homework.
- The goal of the homework is to master the material.
- This can best be accomplished by working through problems by yourself.
- However, if you are truly stuck, working with someone else may help.
  - You owe it to yourself and the person you are working with to spend some time trying to solve the problem prior to meeting.
  - You must write your solutions independently.
  - Any study group should be limited to 2-3 so that each collaborator can participate in the solution.
- If you obtain a solution through research, (e.g., from books, journal, or the web), you are expected to acknowledge your sources in your write up and to not copy the solution but instead to write your solution independently.
- Your understanding of homework assignments will be tested on examinations, cold-start questions, and pop tests.

Milestones for successful completion of the course

- Regular attendance is important in this class. There is a strong correlation between class attendance and grade performance. On the rare occasions that you cannot avoid being absent, you are responsible for getting class notes and assignments. While class slides posted on the class website will provide information about the material covered in class, they will not include some important information such as discussion of points on slides, class discussions, and information written on the board.
- Perform the homework thoroughly and independently
- Read the book carefully and several times.

Set Number	***Date Assigned***	***Problems***	***Presentation/Due Date***
1		Section 1.1, Problems 2, 4(a-e), 8(a-d), 11, 15, 18(a-d), 24a, 28(a,c,e)	
2		Section 1.2, Problems 4a, 8,10a,14, 24,34a,60a Section 1.3 Problems 6(a,c,e), 8(a,c),10(a,c,e),14,16	

3		Section 1.3, Probs. 32,36,42,44,48,50,52,62	
4		Section 1.4, Probs. 1, 2, 8(a,c,e), 10(a,c,e,g), 14(a,c), 20(a, b, c), 28(a,c,e), 36(a,c,e), 40,46	
		Section 1.5 Suggested Study Probs: 3,9,13, 15, 19, 23, 25,27,29,31	
5		Section 1.6, Probs 2, 6, 9, 12, 18, 20, 24, 28, 32, 42.	
6		Section 1.7, Problems 4, 5, 6, 9, 11, 12, 14, 18, 27, 32,	
7		**Section 2.1**: Probs 8,12,16,19,27,29,35 & **Section 2.2**: Probs 3,9,12,23,27,33,37 Only even numbered problems have to be handed in.	
8		**Section 2.3**: Probs 2,6,7,12,15,18,19,29,32.	
9		**Section 2.4** Problems 2,3,9,15,19,31, 34,42.	
10		**Section 4.1:** Probs 3,4,6,13,14,20,38,47	
11		**Section 4.2:** Probs 4,7,14,17,29	
12		**Section 4.3:** Probs 3, 9, 25,35, 39	
13		**Section 4.4** Probs 7,9,11	
14		**Sec 5.1** Probs 3,7,15,29,39,41,43,55 **and Sec 5.2** Probs 3,5,7,10,15,19,25	
15		**Sect 5.3** Probs 11,19,21,23,31,40,41 **and Sect 5.4** probs 3,7,13,15	
16		**Sect 6.1,** Probs 1,3,5,7,9,11,13,23,25,29	
17		**Sect 6.2,** Probs 1,3,5,19,23,25,27	