



# CSCI2511 - Spring 2021 - Syllabus

## Catalog Description

Covers the fundamentals of discrete mathematics, including: logic, sets, functions, asymptotics, mathematical reasoning, induction, combinatorics, discrete probability, relations and graphs. Emphasis on how discrete mathematics applies to computer science in general and algorithm analysis in particular.

## Instructor

**Javier Pastorino.** [Website](#)

**Email:** *name.last\_name* **at** *ucdenver.edu*

**Office:** Working Remote

**Office Hours:** T-R 12:30pm-2pm; appointments are required. [Schedule an appointment here.](#)

## Teaching Assistants

- To Be Announced

## Textbook

- Goodaire and Parmenter, ***Discrete Mathematics with Graph Theory***, 3rd edition, Pearson/Prentice Hall, 2006. **Required**
  - Links: [Amazon](#), [Pearson](#)

## Learning Objectives

### Expected Knowledge at the Start of the Course

Basic mathematical maturity at the level of a first semester calculus course.

### Prerequisites

- **Math 1401** - Sign ***prerequisite agreement form*** by 5pm on 01-18-2021.

### Learning Outcomes

A substantive knowledge of mathematical proof/reasoning and how that is applied to discrete problems. For example, the modeling of problems with discrete tools including but not limited to algorithm design and analysis.

### Course Objectives

To gain proficiency in each of the three areas below.

- Proof Design and Writing
- Fundamental Concepts of Discrete Mathematics
- Preparation for Algorithm Design and Analysis

## Class Details

### Course Delivery

During the course we will review the theory of Discrete Structures and we will be conducting practice sessions.

- **Theory Lectures:** will be pre-recorded weekly for the student to review during the week.
  - Lectures and Lecture notes will be complementary to the required readings from our textbook. Students should read the selected chapters/sections before reviewing the notes and recorded
- **Practice Session:** will be conducted over Zoom, accordingly with the course schedule during either Monday or Wednesday 12:30p - 1:45p. *Check the Zoom Tab on Canvas and the Schedule.*
- **Assigned Class Time:** Mondays and Wednesdays 12:30 PM - 01:45 PM
- **Course Pace:** Although students can review the lecture recordings any time of their choosing, the course pace will be defined by the posted schedule and assignment deadlines. Therefore, it is highly recommended that students keep the pace on reading and reviewing the materials weekly.

## Assessments

The learning will be assessed by two main type of evaluations: **Quizzes** and **Exams**.

### Practice Assignments Sets

A.k.a. *homework assignments*. There are a total of six sets during the course. These are recommended exercises in order to prepare for quizzes and exams. These assignments are not handed in nor graded. Work with your partner/study group. These assignments include the "*minimum*" set to review to prepare for the quizzes. It is however, recommended for the student to review the problems and exercises proposed in our textbook for the covered sections.

### Quizzes

For each **Practice Assignments**, there will be a **graded quiz**. A total of six quizzes will be conducted during the semester.

Quizzes count toward twenty five percent (25%) of your grade.

These assessment will evaluate your mastery of material; it will be assessed by way of an *open book, open notes and open internet examinations*. **You will work in teams of two people** (assigned) throughout the semester. You will scan and hand in one copy of the quiz with both or your names. Assignment of teams will be completed by second week of the semester.

Quizzes are given only once and must be handed in by the date specified on Canvas. **Quizzes are posted about one week before the deadline.**

Each practice assignment will have an assortment of straightforward problems as well as challenging problems. The quizzes contain one or more of the practice problems or similar problems that test your knowledge of the problems and material covered in class.

When writing your solution to a quiz problem, write your ideas even if you do not believe you have a complete solution. Be sure to be neat, write in complete sentences, and do not leave out any steps: **clarity of exposition may contribute toward a positive score.**

*Please talk to one another about the assignments: study groups can be fun and productive.*

**There are no makeup quizzes or late quizzes so plan accordingly.**

**Missed Quizzes:** One missed quiz is allowed. The quiz with the lowest score (one) will be dropped. This means that you may choose to miss a quiz (not recommended!) and the score of 0 marks will be dropped.

## Exams

There will be **three** individual **Examinations** counting towards seventy five percent (75%) of your grade.

- There will be three open book, open notes and open internet examinations, each worth twenty five percent (25%) of your grade.
- **Exams are to be completed individually.**
- **The exams due date is posted on Canvas. The schedule below has an overall distribution of both exams and quizzes. Check it out!**
- **NO EXCEPTIONS:** A missed exam will be assigned a failing grade.

# Schedule

The following is a tentative schedule for the semester.

CSCI2511 - Spring 2021

Week	Date	Topic	Readings	Quiz	Practice	Practice On
Week01	Jan 18, 2021 → Jan 24, 2021	Introduction, Logic	0.1, 0.2, 1.1, 1.2, 1.3	Calc I Assessment	Set #0	
Week02	Jan 25, 2021 → Jan 31, 2021	Sets and Relations, Functions	2.1, 2.2, 2.3, 2.4, 3.1, 3.2, 3.3			
Week03	Feb 1, 2021 → Feb 7, 2021	Functions. Integers	4.1, 4.2	Quiz #0	Set #1	Mon
Week04	Feb 8, 2021 → Feb 14, 2021	Integers, Congruences, Fermat's Little Theorem	4.3, 4.4			Wed
Week05	Feb 15, 2021 → Feb 21, 2021	Induction and Recursion	5.1	Quiz #1		Wed
Week06	Feb 22, 2021 → Feb 28, 2021	<b>Midterm Exam #1</b>	<b>Exam: ch0 - 4.2</b>		Set #2	
Week07	Mar 1, 2021 → Mar 7, 2021	Sequences; Solving Recurrence Relations	5.2, 5.3			Wed
Week08	Mar 8, 2021 → Mar 14, 2021	Principle of Inclusion/Exclusion, Counting; Addition and Multiplication Rules; Pigeonhole Principle	6.1, 6.2, 6.3	Quiz #2	Set #3	
Week09	Mar 15, 2021 → Mar 21, 2021	Permutations and Combinations, Repetitions, Derangements	7.1, 7.2, 7.5, 7.6			Wed
Week10	Mar 22, 2021 → Mar 28, 2021	Binomial Theorem; Complexity	7.7, 8.2	Quiz #3	Set #4	Wed
Week11	Mar 29, 2021 → Apr 4, 2021	<b>Midterm Exam #2</b>	<b>Exam: 4.3 - 6.3</b>			
Week12	Apr 5, 2021 → Apr 11, 2021	Introduction to Graph Theory, Paths and Cycles	9.1, 10.1, 10.2			Wed
Week13	Apr 12, 2021 → Apr 18, 2021	Adjacency Matrix, Adjacency List, Trees	10.3, 12.1	Quiz #4	Set #5	Wed
Break	Apr 19, 2021 → Apr 25, 2021	Spring Break - No classes				
Week14	Apr 26, 2021 → May 2, 2021	Planar Graphs and Graph Coloring	13.1, 13.2	Quiz #5		
Week15	May 3, 2021 → May 9, 2021	<b>Midterm Exam #3</b>	<b>Exam: 7.1 - 13.2</b>			Mon
Finals Week	May 10, 2021 → May 16, 2021					

## Communications & Announcements

All communications will be conducted through Canvas. Make sure you have your Canvas settings properly in place not to miss notifications. You can set email notifications or use the Canvas app in your mobile device with push notifications.

If you need to contact me, you can email me through Canvas or directly to my university email. Please note that I usually reply within 24-48 hours. However, to discuss exercises, please schedule an appointment during my office hours, as I will usually not be able to answer those questions over email.

## Code of Conduct

I encourage you to review material and discuss ideas with other students while preparing for quizzes. Moreover, I strongly recommend you to set a study group to go over practice assignments and problems from the textbook.

However, **make sure you then create your own work** when taking quizzes and examinations and follow the guidelines depicted in each one. It's important that you go through the analysis and implementation of your own solution to develop

the required skills and achieve the best understanding of the topic. “Working together” does not mean that one student does the majority of the work and other students put their names on it! If you have any questions about what this means, please meet with me.

We reserve the rights to use automated similarity metrics in order to detect plagiarism in this course as **All students must create their own work on their own!**

Any instances of cheating will result in a zero for the assignment, a grade of zero (an “F”) in the course, or sanctions determined by the college (including probation, suspension and expulsion).

All students must follow the College of Engineering, Design and Computing - Student Honor Code.

*Last Updated on: Jan. 17th, 2021.-*