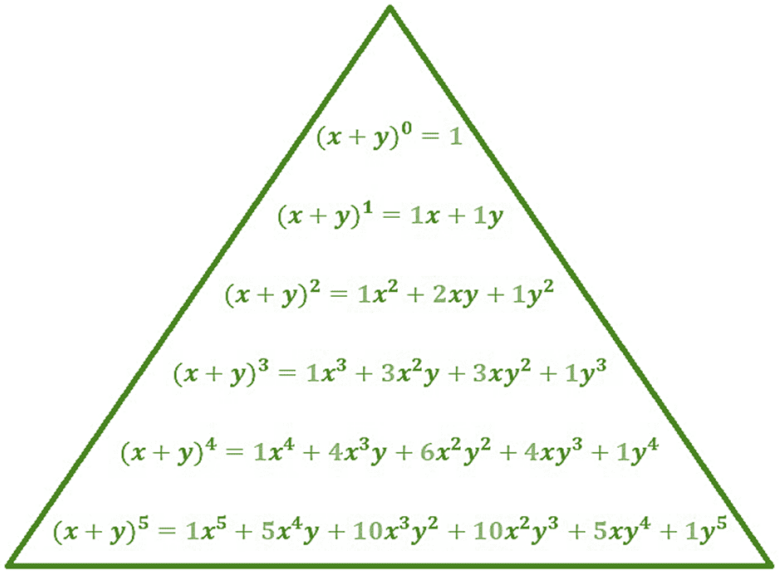
CALIFORNIA STATE UNIVERSITY
SAN BERNARDINO
Mathematics Department

Math 2720-04 - Discrete Mathematics

Instructor:	Bronson Lim
Office location:	JB 316
E-mail:	BLim@csusb.edu
Office hours:	T 1:00-2:15pm, W: 4:00-5:00pm by appointment
Office hours link:	https://csusb.zoom.us/j/93578396731
Class days and times:	T-Th: 4:00-5:15pm
Classroom:	JB-254
Prerequisites:	Quantitative Reasoning GE Requirement.



Course Learning Outcomes (CLOs)

CLO 1: Use **logical notation** to define and reason about **fundamental mathematical concepts** such as sets, relations, functions, and integers.

CLO 2: Perform computations using **recursively defined functions and sequences** including **solving recurrence relations**.

CLO 3: Synthesize proofs and **construct proofs** using symbolic logic and various proof-writing techniques including direct, contraposition, contradiction, and **mathematical induction**.

CLO 4: Apply combinatorial methods, including the **principles of inclusion and exclusion** and the **pigeonhole principle**, to solve counting problems.

Class Communications

Canvas: The syllabus, assignments, course videos, text, and discussion boards may be found on Canvas. Announcements will be sent out by email over Canvas. You are responsible for reading these announcements, either by email, or by logging into Canvas.

Email: The best way to reach me is to message me by email through Canvas. I try to respond to messages within 24 hours on weekdays. I generally do not respond on weekends.

Software

Web Hosting: You will be required to use one of the hosting platforms: Google Sites, WordPress, or Github with Jekyll.

Edfinity: Weekly homework will be given using Edfinity. You can sign up for Edfinity by starting the first Edfinity Setup Assignment in the Start Here Module on Canvas.

Textbook

Discrete Mathematics: An Open Introduction, (link to html and pdf is on Canvas)
This textbook is free and open-source. The link is here:
http://discrete.openmathbooks.org/dmoi3.html

We will cover Chapters 0-3 and Section 4.1 on Graph Theory.

Course Description

From the Bulletin of Courses: Introduction to the study and use of discrete mathematical structures including number systems and bases, propositional logic, sets, Boolean algebra, functions and relations, and induction. Additional topics may include graph theory and asymptotic notation as time permits. May not be counted toward fulfilling requirements in the mathematics major. Formerly Math 272; students may not earn credit for both.

Class Protocol

This is an asynchronous course.

Assignments and Grading Policy

Classroom Participation (15%)

We will do group work every day and a group quiz on Thursdays.

Learning Videos (15%)

There are interactive learning videos in each Canvas Module. Completing them are a required part of the course.

Group Quizzes (15%)

Every Thursday, in the last fifteen minutes of class, we will have a group quiz. The group quiz will be based off the homework problems we worked on in class.

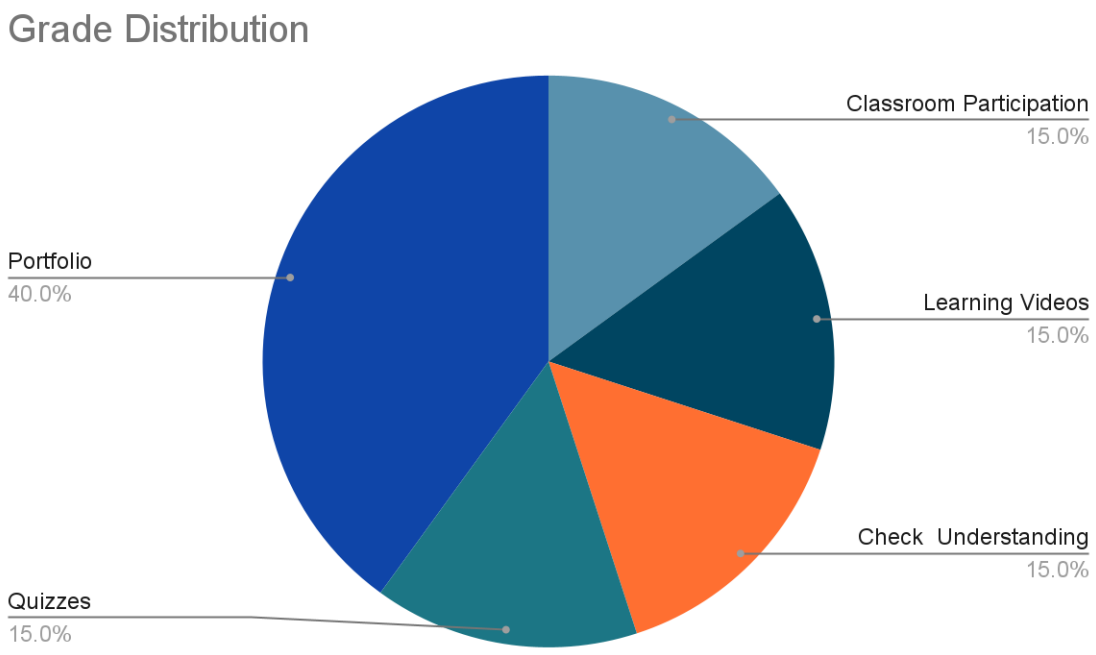
Check Your Understanding (15%)

Check Your Understanding Assignments are due every Friday by 11:59 pm. These assignments will be submitted through the online homework platform *Edfinity*. You are required to purchase a license for the semester. You can sign up by starting the first Edfinity Setup Assignment in the Start Here Module.

Portfolio (40%)

Students will be required to create a portfolio in this course. The portfolio will consist of your mathematics journal, worked problems, programming assignments, and a course summary. You will submit a portfolio entry at the end of each chapter. Details are available in the corresponding Module on Canvas. The final portfolio entry is due Friday of finals week (at 11:59pm).

Grading Scale



A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: 59 and below

+/- grades may be given in the upper/lower ends of each grade range with the exception of A+/F.

University Policies and Campus Resources

Dropping and Adding

You are responsible for understanding the policies and procedures for add/drops, withdrawal, etc. which can be also be found in the CSUSB Bulletin of Courses. See http://bulletin.csusb.edu/academic-regulations/

Academic Integrity

Students are expected to be familiar with University policy on cheating and plagiarism in ``Academic Regulations and Standards'' in the CSUSB Bulletin of Courses. See: http://bulletin.csusb.edu/academic-regulations/

You may not consult any unauthorized source (such as internet websites or chats) during oral quizzes. Homework solutions must be written in your own words and components of solutions may not be copied word-for-word from any source. Penalties for academic dishonesty on an assignment range from getting a zero grade on that assignment, to getting a grade of **F** in the course. Incidents of suspected academic dishonesty will be reported to the university. If any student suspects academic dishonesty in the class, the student is encouraged to share these concerns with me.

Diversity Statement

In our commitment to the furthering of knowledge and fulfilling our educational mission, California State University, San Bernardino seeks a campus climate that welcomes, celebrates, and promotes respect for the entire variety of human experience. In our commitment to diversity, we welcome people from all backgrounds and we seek to include knowledge and values from many cultures in the curriculum, and extra-curricular life of the campus community. Dimensions of diversity shall include, but are not limited to, the following: race, ethnicity, religious belief, sexual orientation, sex/gender, disability, socioeconomic status, cultural orientation, national origin, and age. (from the CSU San Bernardino University Diversity Committee Statement of Commitment to Diversity, 1995)

Support for Students with Disabilities

In keeping with the university's Commitment to Diversity, the faculty of the College of Natural Sciences fully supports the Americans with Disabilities Act (ADA). Faculty will provide reasonable accommodation to any student with a disability who is registered with the Office of Services to Students with Disabilities and who needs and requests accommodation. If you are in need of an accommodation for a disability in order to participate in this class, please see the instructor and contact Services to Students with Disabilities at UH-183, (909) 537-5238.

If you require assistance in the event of an emergency, you are advised to establish a buddy system with a buddy and an alternate buddy in the class. Individuals with disabilities should prepare for an emergency ahead of time by instructing a classmate and the instructor.

Emergency Management
For information regarding campus emergency management and safety guidelines see <https://www.csusb.edu/emergency-management>.

Addendum

At some point in the class it may be necessary to make certain changes to the syllabus to benefit students. Any changes will be announced via Canvas.

Discussion of Academic Honesty

Using the internet or looking in the back of the book to find solutions can easily lead to, perhaps unintentional, cases of plagiarism, otherwise known as ``cheating'' or ``academic dishonesty''. It may seem that you are learning how to do assigned homework when you use the internet and/or book solutions; however, this practice is very strongly discouraged since this approach often gives a false illusion of learning.

Have faith in yourself. Some homework problems are intended to be challenging. True learning occurs when you engage in a productive struggle with a problem and discover how to make use of the problem-solving tools you have developed during your studies. The only way to learn concepts deeply is to work thoughtfully and engage your brain. Did you know that when we learn a new idea, an electric current fires in our brains, crossing synapses and connecting different areas of the brain? (From Jo Boaler – *Mathematical Mindsets*.) You are growing your brain when you struggle with new ideas.

If you choose to use content from an outside resource, it is imperative to give credit in order to avoid a plagiarism offense. If you used the source extensively, the work may not earn full credit, but this is better than the penalty for plagiarism. Note that outside resources include the internet, tutors, and peers.

When acknowledging the use of a source, you should both cite the source and indicate to what extent you used it. Here are some sample sentences:

- My (*classmate/parent/sibling/friend, include name*) showed me how to do this problem and my argument is very similar to theirs. I did try to write it in my own words. I think I mostly understand the problem, but I may need more review.

- I looked up the solution to this problem here: (*give link or reference*). Although I got an idea of how to do the problem from this source, I adapted the method and rewrote in my own words. I feel I have a very strong understanding of the structure of this problem.

- I looked up this result at the following website: (*copy link here*). This solution is essentially the same as the one on the site because I couldn't figure out a way to rewrite it differently. My understanding of this problem isn't quite solid yet.

(This portion of the syllabus has been adapted from work of Dr. McMurran and Dr. Aikin.)