TOPICS IN MATHEMATICS
COMBINATORICS

MEETING INFORMATION

Meeting Times	MWF 2:00 - 2:50
Location	Hirt 209
Website	math.mercyhurst.edu/~lwilliams/math400
Prerequisite(s)	Math 265
Instructor	Lauren Williams, PhD
Email	lwilliams@mercyhurst.edu
Office	Old Main 404
Office Hours	Mon 4:30 - 5:15
	Tues 10:00 - 10:45
	Wed 10:00 - 11:00
	Thurs 2:00 - 4:00
	Fri 10:00 - 11:45

COURSE DESCRIPTION

This course will introduce students to the principles and strategies of combinatorics and other areas of discrete mathematics. Topics to be covered include basics of enumeration, set theory, functions and relations, permutations and combinations, inclusion and exclusion, graph theory. Additional topics that may be covered include generating functions and combinatorial design.

COURSE OBJECTIVES

On successful completion of this course, students will:

- be familiar with fundamental combinatorial techniques.
- be able to apply common enumeration formulas to a variety of applications.
- further develop their ability to write logical, efficient proofs, including direct, indirect, cases, and induction arguments.
- understand how combinatorics and discrete mathematics can be applied to fields outside mathematics.

REQUIRED MATERIALS

No textbook or other materials are required for this course. Suggestions for additional readings and relevant links will be posted on the course website.

IMPORTANT DATES

January	**18**	First Class Meeting
	23	Last Day to Add/Drop
March	**6-11**	Mid-Semester Break - No Class
	17	Midterm Exam
April	**7**	MAA Meeting - No Class
	11	Advising Day - No Class
	14-17	Easter Break - No Class
May	**5**	Last Class Meeting
	8	Reading Day - No Class
	10	Final Exam 1:00 - 3:00

GRADING

Homework	55%
Midterm Exam	20%
Final Exam	25%

F	D	D+	C	C+	B	B+	A
0-59	60-64	65-69	70-77	78-83	84-89	90-93	94-100

HOMEWORK

You will typically have at least one week to complete an assignment, which will be a mix of computation/counting problems and formal proofs. You are permitted to work together on assignments, but you are required to submit your own work. Be sure that you fully understand all solutions you've turned in, as homework problems will likely reappear on exams. Formal proofs will be graded for correctness as well as style, efficiency, and written expression. Extra credit will be given for neatness; the use of LaTeX is encouraged. Late assignments will be accepted with a 10% per day penalty.

You should plan to spend approximately 6-9 hours per week, outside of the classroom, on homework and studying for this course. While not all assignments will take this much time, do not wait until the last minute to begin working. Combinatorics problems have a tendency to be deceptively difficult: a question that appears trivial may actually be quite challenging, so plan ahead to dedicate the required time to each assignment.

ATTENDANCE

Attendance is not required, and is not part of your grade calculation. However, your success in the course depends on keeping up with the material. If you are unable to attend class, please make arrangements with a classmate to obtain a copy of the notes. I will help clarify any questions that you have during office hours, but it is your responsibility to get caught up. Please see me if you will not be able to take an exam on the day it is scheduled.

LEARNING DIFFERENCES

In keeping with college policy, any student with a disability who needs academic accommodations must call Learning Differences Program secretary at 824-3017, to arrange a confidential appointment with the director of the Learning Differences Program during the first week of classes.