

# Math 3700 - Discrete Mathematics

Syllabus

Fall 2018

## 1 Course Information

<b>Instructor:</b>	Alex Cameron
<b>Email:</b>	alexander.cameron@vanderbilt.edu
<b>Office:</b>	SC 1224
<b>Office Hours:</b>	Mondays 10-12, Wednesdays 10-11, or by appointment
<b>Course Webpage:</b>	Brightspace
<b>Meeting Time:</b>	MWF 9-10
<b>Meeting Location:</b>	SC 1312
<b>Textbook:</b>	<i>Applied Combinatorics</i> by Alan Tucker (6th Ed)
<b>Prerequisites:</b>	MATH 2410, 2600, or 2501

## 2 Course Objectives

In this course, the students will

1. learn about fundamental mathematical concepts and structures including permutations, combinations, graphs, recurrence relations, and basic counting principles;
2. solve a ton of problems, both individually and collaboratively;
3. pose their own problems and develop theory;
4. gain exposure to some interesting topics in combinatorics and theoretical computer science.

### 3 Grade

The final grade for the course will be based on the following:

Participation	15%
Project	15%
Problem Sets	20%
Midterm Exam	20%
Final Exam	30%

Letter grades are assigned on the following scale:

A	90-100	B+	82-84	C+	72-74	D+	62-64	F	0-49
A-	85-89	B	78-81	C	68-71	D	55-61		
		B-	75-77	C-	65-67	D-	50-54		

### 4 Participation

This will be an active-learning course. I will lecture on topics here and there as needed, but much of the time spent in class will be devoted to group work. So students should be prepared to work on problems.

Formal attendance will *not* be taken for this course. However, most days I will ask for each group to turn something in to me at the end of class. I will give each of these assignments either a Satisfactory or Unsatisfactory mark based on the quality of the attempt. At the end of the semester any student with an ‘S’ on at least 80% of the assignments will get full credit for participation. This calculation is meant to account for a few natural absences regardless of the reason. If a student needs to be absent so many times as to affect this score, then we will need to discuss a separate arrangement.

### 5 Problem Sets

There will be around 6-7 problem sets assigned during the semester. I will drop the lowest score in calculating the grade for this category. Students may choose to work these sets in groups of up to three people and turn in one write-up.

Students are very much encouraged to collaborate with each other on these problem sets even if they would prefer to turn in their own solutions and not be part of a group. However, in this case please write the solutions in your own words even if the idea came from another student.

Also, please do not look up solutions to the assigned problems on the internet (or anywhere else other than the textbook) before you turn the assignment in. If you are still stuck on a problem after thinking it over and talking to other students or me, then write down a brief description of attempted solutions and why they didn't work.

## 6 Exams

There will be two exams given for this course. The midterm will be a one hour in-class exam with the exact date to be determined (probably on or around October 5th). It will be worth 20% of the course grade. The final exam will be held according to Vanderbilt's final exam schedule on December 10th from 3pm - 5pm. It will be comprehensive and worth 30% of the course grade.

The exams will be graded for correctness. However, my hope is that anyone who has been actively working the other assignments will find these exams straight-forward. If you absolutely have to miss either of the exams please let me know in advance.

## 7 Project

The project will be a semi-guided but largely open-ended assignment that will be aimed at getting students to pose their own mathematical questions and start thinking like a researcher. Hopefully it will be fun!

The project will most likely be carried out in a series of small assignments during the last half of the semester. I will send more details around the beginning of October.

## 8 Honor Code

*Vanderbilt's Honor Code definitely applies to this course!*

## 9 A Message from the Math Department

“The Open Enrollment Period ends on Wednesday, August 29th. This is the deadline for students to add a course or to make other changes in YES. Between August 30th and September 5th, any withdrawals or adjustments in level or in grading status must be completed using the add/drop form. If only the “DROP” section of the form is filled out, the instructor may sign the form. If a student wishes to make any change that involves filling in the “ADD” section of a drop/add form (whether or not it also involves filling in the “DROP” section), then the student must see the DUS (John Rafter) or the Assistant DUS (Jakayla Robbins) in person. Per Math Department policy, the only change to a math course that will be approved is a change to the level of the course (e.g. switching from Math 1301 to Math 1300 or vice versa). ”