MATH 315.001 - Applied Combinatorics - Fall 2023

Instructor/Class Information

Instructor	Dr. Vince Guingona vguingona@towson.edu YR 226
Class Times	Monday and Wednesday, 9:00am - 10:50am, YR 130
Office Hours	Monday and Wednesday, 2:00pm - 3:30pm or by appointment
Exam Dates (tentative)	Wednesday, September 27, 9:00am - 9:50am Wednesday, October 25, 9:00am - 9:50am Wednesday, November 29, 9:00am - 9:50am
Final Exam	Wednesday, December 13, 8:00am - 10:00am, YR 130

Course Information

Prerequisites. MATH 274 and (MATH 263 or MATH 267).

Course Description. General counting methods, pigeonhole principle, inclusion-exclusion principle, generating functions, recurrence relations, summation techniques, partitions, permutations and pattern avoidance, Polya's enumeration, asymptotics, select topics from graph theory.

Course Objectives. Applied Combinatorics is a course about understanding various counting techniques and studying discrete mathematical structures. Much like Math 263 or Math 267, this is a "proof based" course, so most of the exams, quizzes, and homework assignments will require you to create mathematical proofs.

Textbook. The recommended primary source is: A Walk Through Combinatorics, Fourth Edition by Miklos Bona.

Calculator Policy. Calculators will not be allowed on exams and quizzes.

Grading Policy

Your course grade will be based on the following assessments:

Component	Homework	Quizzes	Exam 1	Exam 2	Exam 3	Final Exam
Value	15%	15%	15%	15%	15%	25%

The course average will then be used to determine your course grade from the table below.

Percent	0-59%	60-66%	67-69%	70-76%	77-79%	80-82%	83-86%	87-89%	90-92%	93-100%
Grade	F	D	D+	C	C+	B-	B	B+	A-	A

Exams, Quizzes, and Homework

Exams. There are a total of three midterm exams, each worth 15% of your overall grade. Exams will fall on Wednesdays and cover the first half of the class period (the other half is usual lecture). The exact date of each exam as well as its coverage can be found on the *Timeline*. The use of external resources during exams, such as calculators, cell phones, computers, smart watches, and so on, are prohibited.

Quizzes. During weeks on which there is no exam, we will have a 15-minute quiz at the beginning of class. There are a total of 10 quizzes, each worth 1.5% of your course grade, for a total of 15%. The exact date and coverage of each quiz can be found on the *Timeline*. As with exams, the use of external resources during quizzes is prohibited.

Homework Assignments. We will have weekly homework assignments, posted on Blackboard. These will be due at the beginning of class on Mondays, and can be turned in in one of three ways: through Blackboard, over email, or in person. There will be a total of 14 homework assignments throughout the semester, totaling 15% of your overall course grade (so each assignment is approximately 1%). You may work with other students on your homework assignments, but each student must turn in their own copy. The exact due date and coverage of each homework assignment can be found on the *Timeline*

***TeX* Bonus.** Although not required, I strongly recommend using *LaTeX* to type up your homework solutions. I will give you 1 point (out of 10) in extra credit on each homework assignment for using *LaTeX*. *LaTeX* is a type-setting program for mathematics. One easy way to get started is to visit [Overleaf](#) and make a free account. They even have nice [tutorials](#) for using *LaTeX*. Alternatively, you can see the videos I made for my MATH 267 Spring 2022 class: [Video 1](#), [Video 2](#)

Other Policies

Attendance. As in all TU classes, regular class attendance is expected. If you are absent from class, it is your responsibility to get any missed information from your classmates.

Make-ups and Late Work. Late homework assignments will not be accepted, and no make-up quizzes will be given. In case of a documented excused absence that covers a homework assignment, or a quiz, you will be exempted from that assessment and the respective grade simply will not be a part of your grade record. If you have a documented excused absence that covers an exam, I will work with you to find a reasonable alternative accommodation.

It is TU policy to excuse student absences for the following reasons: illness or injury when the student is unable to attend class; death of a family member (see the [Student Bereavement Procedure](#) on the website); religious observance where the nature of the observance prevents the student from attending class; participation in University activities at the request of University authorities; and compelling verifiable circumstances beyond the control of the student. Absences that do not fall in any of these five categories are unexcused. In case of a scheduled excused absence, the student must provide documentation at least one week prior to the date of the absence for it to be excused; otherwise, documentation must be provided as soon as possible.

Academic Integrity. Exams and quizzes are to be completed strictly individually using only the material provided by your instructor. Students are expected to be familiar with TU's [Student Academic Integrity Policy](#), especially the sections that define plagiarism, cheating and complicity (II.B-II.E) and describe the possible grade penalties (V.C). You may work with other students in the course on the homework assignments, but each student must submit their own version.

Accessibility and Disability Services (ADS): This course is in compliance with Towson University policies for students with disabilities. Students with disabilities are encouraged to register with ADS at:

Cook Library, Academic Commons, Suite 321
410-704-2638
https://www.towson.edu/accessibility-disability-services/

Students who suspect that they have a disability but do not have documentation are encouraged to contact ADS (see the ADS website) for advice on how to obtain appropriate evaluation. A memo from ADS authorizing your accommodation is needed before any accommodation can be made.

Diversity. In accordance with TU, FCSM, and departmental objectives, everyone in this course is expected to be respectful of each other without regard to race, class, linguistic background, religion, political beliefs, sex, gender identity or expression, sexual orientation, ethnicity, age, veterans status, or physical ability. If you feel that these expectations have not been met, please, contact Dr. Felice Shore.

Version: Aug. 22, 2023