

MATH 375 Applied Modern Algebra, Section 001
TTh 1:00-2:15pm at Collaborate Ultra

Instructor Tony Se
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Office Hours MTWTh 2:15-3:10 pm at Collaborate Ultra, or by appointment

General Course Information

Method of Instruction: Lecture
Credit Hours: 3
Course Prerequisites: MATH 156

Course Materials

Textbook

Discrete and Combinatorial Mathematics – An Applied Introduction, 5th edition, by Ralph P. Grimaldi (optional)

Calculators

If calculators are allowed on a quiz or exam, you may only use a basic or scientific calculator.

eCampus

Information about this course will be posted on eCampus. Please check eCampus regularly for announcements, classwork, homework and exam solutions, your grade, etc. Any updates to this syllabus will also be posted on eCampus.

Technology Requirements

Internet Connection

You must have a computer with reliable and continuous Internet access, and a webcam for this course.

Online Proctoring

Quizzes and the Final Exam will be given via Zoom or via Lockdown Browser with Respondus Monitor. More details will be given during the semester.

Attendance Policy

You are expected to attend the lectures. Your attendance will affect your classwork grade, which is directly related to your course grade. See Appendix (C). You do not need to attend class on a University sanctioned absence, but you need to provide the instructor with documentation in a timely fashion.

Mastery Grading

This course will use Mastery Grading. In Mastery Grading, students earn their course grade by demonstrating competence in a list of course objectives, instead of by accumulating points on an exam. The standards for meeting course objectives are high. See Appendix (A) to (C). However, students will have multiple chances to meet each objective during the semester.

Quizzes and Final Exam

Achievement of course objectives is assessed in quizzes and the Final Exam. Quizzes will be given every week. You will have at least two times during the semester to demonstrate competence in each objective. Questions in quizzes and the Final Exam are graded on a 0-3 scale. See Appendix B(i).

Your achievement of each objective is given by your latest grade on the objective, except that for the objectives assessed on the Final Exam, your achievement of the objective is the average of your grade on the Final Exam and your grade immediately before it.

Extra Attempts on Course Objectives

If you are unsatisfied with your current objective grade and would like to reattempt the objective, you can wait for the objective to appear on the next quiz. If the objective has already appeared twice, you may reattempt the objective during office hours, or by appointment. Please try to notify me **24 hours** in advance if you would like to reattempt an objective during office hours or by appointment. You can just walk in to an office hour without notifying me, but then you will need to wait for me to prepare a question for the objective.

You may reattempt the objectives in **one** office hour visit per week. You may reattempt multiple objectives per visit.

Homework, Classwork, and Class Notes

You will need to submit homework, classwork, and class notes regularly. These are graded on a 1-2 scale. See Appendix B(ii).

Calendar

08/26	Wednesday	First day of classes
09/01	Tuesday	Last day to add a class
11/20	Friday	Withdrawal deadline
11/25	Wednesday	Fall Recess begins
11/30	Monday	Classes resume online
12/04	Friday	Last day of classes
12/11	Friday	Final Exam, 11:00am-1:00pm

Academic Integrity

The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, instructors will enforce rigorous standards of academic integrity in all aspects and assignments of their courses. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the West Virginia University Academic Standards Policy (<http://catalog.wvu.edu/undergraduate/coursecreditstermsclassification/>). Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see your instructor before the assignment is due to discuss the matter.

Notice of Class Recording Policy

Meetings of a course at West Virginia University (WVU), whether online or in-person, may be recorded. Recordings are not guaranteed, and are intended to supplement the planned class session. Recordings will be made available to class participants, which may include students, assistants, guest lecturers, and co-facilitators. Recordings may be shared by the instructor or institution in accordance with WVU Rules and policies. The Recordings are owned by and contain intellectual property of WVU. The Recordings may not be shared, copied, reproduced, redistributed, transferred, or disseminated in any form or by any means without the prior written consent of authorized officials of WVU.

Inclusivity Statement

The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in your classes, please advise your instructors and make appropriate arrangements with the Office of Accessibility Services. (<https://accessibilityservices.wvu.edu/>) More information is available at the Division of Diversity, Equity, and Inclusion (<https://diversity.wvu.edu/>) as well.

Sale of Course Material Statement

All course materials, including lectures, class notes, quizzes, exams, handouts, presentations, and other course materials provided to students for their courses are protected intellectual property. As such, the unauthorized purchase or sale of these materials may result in disciplinary sanctions under the Student Conduct Code. (<https://studentconduct.wvu.edu/campus-student-code>)

Sexual Misconduct Statement

West Virginia University does not tolerate sexual misconduct, including harassment, stalking, sexual assault, sexual exploitation, or relationship violence [BOG Rule 1.6 (<https://policies.wvu.edu/finalized-bog-rules/bog-governance-rule-1-6-rule>)]. It is important for you to know that there are resources available if you or someone you know needs assistance. You may speak to a member of university administration, faculty, or staff; keep in mind that they have an obligation to report the incident to the Title IX Coordinator (<http://titleix.wvu.edu/what-is-title-ix/who-is-the-title-ix-coordinator>).

If you want to speak to someone who is permitted to keep your disclosure confidential, please seek assistance from the Carruth Center (<http://carruth.wvu.edu/>), 304-293-9355 or 304-293-4431 (24-hour hotline), and locally within the community at the Rape and Domestic Violence Information Center (RDVIC, <http://www.rdvic.org/>), 304- 292-5100 or 304-292-4431 (24-hour hotline).

For more information, please consult WVU's Title IX Office (<https://titleix.wvu.edu/resources-offices>).

Student Evaluation of Instruction Statement

Effective teaching is a primary mission of West Virginia University. Student evaluation of instruction provides the university and the instructor with feedback about your experiences in the course for review and course improvement. Your participation in the evaluation of course instruction is both strongly encouraged and highly valued. Results are strictly confidential, anonymous, and not available to the instructor until after final grades are released by Admissions and Records. Information about how you can complete this evaluation will be provided by your instructor.

Last updated: November 10, 2020

Appendix

(A) Course Objectives

I. Basic Counting (Combinatorics)
B.1 I can apply the Addition Principle and the Multiplication Principle appropriately to counting problems.
II. Logic and Proof
L.1 I can prove the logical equivalence of two propositions using a truth table and using rules of logic.
L.2 I can write equivalent forms of a mathematical statement that involve quantifiers and negation.
L.3 I can give a direct proof of a mathematical statement.
L.4 I can prove a mathematical statement using mathematical induction.
III. Set Theory
S.1 I understand and can perform basic set operations.
S.2 I can determine and prove whether one set is a subset of or is equal to another set.
S.3 I understand properties of relations such as reflexivity, symmetry and transitivity.
S.4 I understand the definition of an equivalence relation and of equivalence classes.
S.5 I understand the relationship between equivalence relations and partitions.
IV. Group Theory
G.1 I understand the definition of a group.
G.2 I can find the cosets of a subgroup of a group.
V. Coding Theory
C.1 I can use basic methods to decode messages.
C.2 I can use a parity-check matrix to decode messages.
C.3 I can use coset leaders to decode messages.

(B) Grade Rubrics

(i) The questions in the quizzes and the Final Exam will be graded on a 0-3 scale.

Score	Meaning
3	<p>Excellent</p> <ul style="list-style-type: none"> • The student follows the instructions in the question, and • the student shows all required work, and • the student presents the solution very clearly, and • the student gives a correct or nearly correct final answer, and • the student makes no conceptual errors and no logical errors, and • the student makes at most one (1) minor mistake in all of mathematics, notation, and arithmetic combined.
2	<p>Passing</p> <ul style="list-style-type: none"> • The student follows the instructions in the question, and • at most one (1) minor step is missing in the student's work, and • the student presents the solution rather clearly, and • the student gives a correct or nearly correct final answer, and • the student makes no conceptual errors and no logical errors, and • the student makes at most three (3) minor mistakes in all of mathematics, notation, and arithmetic combined.
1	<p>Needs improvement</p> <ul style="list-style-type: none"> • The student shows some understanding of the problem. However, • the student fails to follow some instructions in the question, or • at least one (1) important step, or at least two (2) minor steps are missing in the student's work, or • the presentation of the solution requires the reader to guess the student's intent, or • the student gives an incorrect final answer which is not a minor mistake, or • the student makes a conceptual error or a logical error, or • the student makes at least four (4) minor mistakes in all of mathematics, notation, and arithmetic combined.
0	<p>Not gradable</p> <ul style="list-style-type: none"> • The student shows a lack of understanding of the problem, or • the student fails to follow important instructions in the problem, or • the student did not attempt the problem, or • the student gives an irrelevant answer.

(ii) Homework, classwork and class notes will be graded on a 1-2 scale.

Score	Meaning
2	<p>Passing</p> <p>The student shows understanding of the material and made a serious attempt in the assignment.</p>
1	<p>Not passing</p> <p>The student did not make a serious attempt in the assignment, or the student's work is not gradable (similar to a 0 on a quiz).</p>

(C) Course Grade

Grade	Meaning
A	<ul style="list-style-type: none"> • The student achieves a 3 in at least 50% of the objectives, and • the student achieves at least a 2 in at least 90% of the objectives, and • the student achieves at least a 2 in all categories of course objectives, and • the student achieves a 2 in at least 90% of the classwork assignments (excluding University sanctioned absences), and • the student achieves a 2 in at least 90% of the homework assignments, and • the student achieves a 2 in at least 90% of the class notes.
B	<ul style="list-style-type: none"> • The student achieves a 3 in at least 30% of the objectives, and • the student achieves at least a 2 in at least 80% of the objectives, and • the student achieves at least a 2 in all categories of course objectives, and • the student achieves a 2 in at least 80% of the classwork assignments (excluding University sanctioned absences), and • the student achieves a 2 in at least 80% of the homework assignments, and • the student achieves a 2 in at least 80% of the class notes.
C	<ul style="list-style-type: none"> • The student achieves a 3 in at least 10% of the objectives, and • the student achieves at least a 2 in at least 70% of the objectives, and • the student achieves at least a 2 in all categories of course objectives, and • the student achieves a 2 in at least 80% of the classwork assignments (excluding University sanctioned absences), and • the student achieves a 2 in at least 70% of the homework assignments, and • the student achieves a 2 in at least 70% of the class notes.
D	<ul style="list-style-type: none"> • The student achieves at least a 2 in at least 60% of the objectives, and • the student achieves at least a 2 in all categories of course objectives, and • the student achieves a 2 in at least 80% of the classwork assignments (excluding University sanctioned absences), and • the student achieves a 2 in at least 60% of the homework assignments, and • the student achieves a 2 in at least 60% of the class notes.
F	The student does not meet the requirements of a D.