

College of Dupage
Math 1218-VCM02: General Education Mathematics
Monday, Wednesday 8:00 AM– 9:55 AM

Contact Information:

Dr. Matt Wechter
Office: BIC 3530A
Email: wechterm@cod.edu
Phone: (630) 942-4405

Course Objectives and Topic Outline:

Course description to appear in catalog:

Students will learn mathematical reasoning and the solving of real-life problems, rather than routine skills. Four topics will be studied: set theory, logic theory, counting techniques and probability, and mathematics of finance. The course is designed to fulfill general education requirements, and not designed as a prerequisite for any other college mathematics course.

Repeatable for credit: No

Pre-Enrollment Criteria: MATH 0465 or MATH 0482 with a grade of C or better, or equivalent, or a qualifying score on the mathematics placement test, or a qualifying ACT math sub-score, or a qualifying SAT math sub-score, or a qualifying high school GPA with successful completion of a 4th year high school math class.

Course Objectives:

1. Perform operations with sets
2. Use Venn diagrams to display set relationships
3. Use Venn diagrams in problem solving
4. Represent logical statements symbolically
5. Construct truth tables with 2 and 3 simple statements
6. Determine the validity of arguments
7. Solve problems involving simple and compound interest
8. Solve simple and compound interest formulas for present value, rate, and time
9. Calculate the future and present value of an annuity
10. Calculate loan payment and amortization schedules
11. Solve problems involving permutations and combinations
12. Compute empirical and theoretical probabilities
13. Calculate odds
14. Compute the probability of the complement of an event
15. Compute the probability of the union of events
16. Compute the probability of the intersection of events
17. Compute conditional probabilities
18. Solve problems involving expected value

B. Topical Outline:

1. The following are to be studied in depth (all topics are required).
2. Set theory
 - a. Roster and set-builder notation
 - b. Cardinality of a set
 - c. Equality of sets
 - d. Equivalency of sets
 - e. Number of subsets of a finite set
 - f. Set operations
 - g. Complement ii. Union iii. Intersection
 - h. Venn diagrams with three sets
 - i. DeMorgan's Laws
 - j. Cardinality of the union of sets
 - k. Use of Venn diagrams to prove or disprove statements involving sets
 - l. Use of Venn diagrams to solve survey problems with three sets
3. Logic Theory
 - a. Logical statements
 - b. Negation of simple, compound, and quantified statements
 - c. Simple and compound statements and their symbols, including
 - d. Negations ii. Conjunctions iii. Disjunctions iv. Conditionals
 - e. Biconditionals
 - f. Construct truth tables with two or three simple statements, including
 - g. Negations ii. Conjunctions iii. Disjunctions iv. Conditionals
 - h. Biconditionals
 - i. Logically equivalent statements
 - j. DeMorgan's Laws
 - k. Converse, inverse, and contrapositive of a conditional statement
 - l. Validity of an argument through use of truth tables
 - m. Common forms of valid arguments
 - n. Common fallacies
 - o. Validity of a syllogism
4. Counting techniques and probability
 - a. Fundamental Counting Principle
 - b. Counting problems involving permutations
 - c. Counting problems involving combinations
 - d. Sample space of an experiment
 - e. Theoretical probabilities
 - f. Empirical probabilities
 - g. Probability of the complement of an event
 - h. Mutually exclusive events
 - i. Probability of the union of events
 - j. Conditional probabilities
 - k. Independent and dependent events
 - l. Probability of the intersection of events
 - m. Odds
 - n. Expected value
5. Mathematics of Finance

- a. Percent calculations
- b. Percent change
- c. Simple interest
- d. Maturity value for simple interest formula solved for
- e. Present value ii. Interest rate iii. Time
- f. Maturity value for compound interest formula solved for
- g. Present value ii. Interest rate (using exponents) iii. Time (using logarithms)
- h. Future value of an ordinary annuity
- i. Present value of annuity
- j. Future value of an annuity due
- k. Loan amortization payments
- l. Total interest paid over the term of a loan
- m. Amortization schedules

Textbook & Course Materials:

- *Mathematics All Around, 7th Edition* by Pirnot
- MyMathLab Access Code

Standalone code with digital textbook has ISBN 9780136966104. Access code with physical copy of the textbook has ISBN 9780137383900. View more details at www.cod.edu/bookstore

- A steady internet connection.
- A web-camera (can be a camera connected to a smartphone)
- Notebook + pens/pencils

Classtime:

Students are expected to attend class and PARTICIPATE. Students are responsible for all material covered in each class, even if they missed that day. Exams will be held during class time.

While in class, students should be respectful of other students as well as the instructor. All students are welcome to share their thoughts and the classroom will be an inclusive space.

Students should not distract others with their computers or cell phones. Any distractible cell phone use should be done outside the classroom. All communication between instructor and students will be conducted either through Blackboard or via a COD email account. *Make sure you check your COD email regularly.*

Homework:

Homework will be assigned for every lecture. Students need to spend time and complete every assigned homework problem to master the material and be prepared for quizzes and exams. Homework problems may appear on quizzes and exams.

Solution guides and online step-by-step solutions should not be overused when doing homework. Students who rely on these resources tend to underperform on exams. When stuck on a problem, take the time to read class notes the textbook for related examples. Working with study partners or groups is highly recommended.

The two lowest homework grades will be dropped before the final course grade is computed.

Quizzes:

Quizzes will be assigned in MyMathLab and students have until Friday at 11:59PM of the week the quiz is assigned to complete it. The timer on the quiz is always running, even if the connection to MyMathLab is dropped. Students must make sure they will not be interrupted and their internet connection is strong before starting a quiz.

MyMathLab may require lockdown software for quizzes. More information can be found at https://help.pearsoncmg.com/xl/student/student_help/Content/take_locked_down_tests.htm. A quiz assigned with the lockdown software cannot be taken using a tablet or smartphone.

The lowest quiz grade will be dropped before the final course grade is computed.

Quiz and Homework Extensions:

Each student will receive two 24-hour extensions on homework, no questions asked. The extension must be requested at least 24 hours before the homework is due.

Each student will receive one 24-hour extensions on quizzes, no questions asked. The extension must be requested at least 24 hours before the quiz and the quiz must then be taken in the COD Testing Center during its regular hours of operation.

If there is *any* doubt that you will not be able to make a homework or quiz deadline (and you still have unused extensions), ask for an extension!

Exams:

There will be two (2) midterms and a cumulative final exam given in the course. Every exam will be comprehensive and questions might cover any material from earlier in the semester. Each midterm may cover new as well as old material, so understanding mistakes made in previous units will be beneficial.

The exams will be taken in-class. They will be proctored by video. Students **MUST** have a web camera that will allow the proctor to see both the student and their computer screen. Computers with forward-facing built-in cameras cannot be used to take the exam.

Calculations may be allowed on exams, and students will be told in the days before an exam whether they are allowed.

Students will be *required* to submit their exam scratch work through Blackboard after completing the exam. Scratch work **MUST** be submitted as pdf. Students are responsible for knowing how to submit such work before the exam. There are many apps that allow somebody to take a photo of their work and clean up the image. One such app is **Office Lens**. It is free and easy to use.

The final exam will take place on Monday, May 16, as shown on the calendar. The final exam is a cumulative exam.

Attendance Policy:

Students are expected to attend every class and to understand material for classes they miss. Attendance and participation will make up a portion of the final grade. This includes being on time for lecture,

staying through most of the lecture, and answering any questions asked to the entire class where answers should be typed in or submitted through electronic polling.

See the Quiz and Homework Extensions section for the policy regarding late work for quizzes and homework.

The exam dates are all posted on the calendar. If a student knows in advance they will not be in class that day, they must plan to take the exam on an earlier day in the Testing Center. These situations are planned on an individual basis and the instructor should be notified at least two days in advance. Any exam missed without consulting the instructor beforehand will receive 0 points.

NO exam will be given after the exam day except as an accommodation required by the Center for Access and Accommodations. If the student has a valid emergency with a valid written note explaining their emergency (at the instructor's discretion) for missing an exam, then a make-up exam may be given with different questions from the original. Regardless of the emergency, documentation must be provided. Quizzes cannot be made up after their due date unless an extension request is made in a timely manner (See Quiz and Homework Extensions section of the syllabus). This is not an ideal situation and should be avoided. Do not miss class!

Grade Calculation:

Graded Assessment	Percentage of Final Grade
Attendance/Participation	5%
Homework	16%
Quizzes	14%
Exam 1	20%
Exam 2	20%
Final Exam	25%

Letter Grade	A	B	C	D	F
Percentage	90% and Up	80%-89%	70%-79%	60%-69%	Below 60%

Written Style:

Student should practice and use good style when answering problems to receive any partial credit, if scratch work is turned in. That means that any answer which requires an explanation should be written in complete sentences, all mathematical notation should be consistent and make sense, and anybody reading the solutions for the first time (namely, the grader) should have no confusion as to both the final answer and the work involved to get there. For example, “ $1 + 1 = 2$ ” is a complete sentence. It has a subject ($1+1$), a verb ($=$) and an object (2). Well-written solutions on exams, even if incorrect, may net partial credit, so clear presentation is requested.

Academic Integrity:

Students should be aware of the Code of Academic Conduct and know the consequences should the code be violated. The document can be found at

[Code of Academic Conduct](#)

If a student is caught violating the Code they will receive a grade penalty and will be reported through COD's academic integrity reporting system.

Student academic dishonesty includes but is not limited to:

- Dishonest use of course materials, such as student papers, examinations, reports and material posted on the Internet.
- Knowingly posting course materials of any kind on Internet sites such as (but not limited to) Course Hero and Chegg without the consent of the instructor.
- Knowingly assisting others in the dishonest use of course materials such as student papers, examinations and reports.
- Knowingly providing course materials such as papers, lab data, reports and/or electronic files to be used by another student as that student's own work.
- Plagiarizing, i.e., using language or ideas from materials without acknowledgement and/or copying work from other sources and submitting it as one's own.
- Examples of plagiarism include but are not limited to:
 - § Copying a phrase, a sentence, or a longer passage from a source (including an Internet source) and submitting it as one's own.
 - § Summarizing or paraphrasing someone else's ideas without acknowledging the source.
 - § Submitting group assignments individually as one's own independent work.
 - § Copying or taking pictures of course materials such as videos, exams, quizzes or assignments and posting the copied items and/or pictures on the Internet **or** sharing these copied items and/or pictures with other students who have not yet completed the assignments.
 - § Taking pictures or copying course materials that are considered confidential by the instructor such as exams or quizzes.

If an exam is being proctored, students should comply with the proctor's instructions. If a proctor accuses a student of violating the Code of Academic Conduct or not conforming to the

assessment's instructions, and the student does not agree with the accusation, the student should provide countervailing written or video evidence to support their case. The student may be required to have a one-on-one Zoom or Blackboard Collaborate meeting with the instructor to explain this discrepancy. If the student cannot satisfactorily justify their suspect behavior during an exam, disciplinary action will be taken in this event, which may include a 0 on that assignment, a letter grade deduction on their course grade, or a failing grade in the course. This meeting, if requested by the instructor, must happen within 3 days of receiving the exam grade.

Center for Access and Accommodations:

The College of DuPage is committed to the equitable access of educational opportunities for students with disabilities in accordance with The Americans with Disabilities Act, As Amended and Section 504 of the Rehabilitation Act of 1973. Any student who feels they may need an accommodation on the basis of an illness, injury, medical condition, or disability should contact the Center for Access and Accommodations to determine eligibility for accommodations and to obtain an official Letter of Accommodation. The Center for Access and Accommodations can be reached via email at access@cod.edu. Students may also initiate a request for services by going to www.cod.edu/access and clicking on the green box labeled "complete form to request accommodations." If you are already registered with the Center for Access and Accommodations, please email me your Letter of Accommodation as soon as possible. Please DO NOT send any private health documentation or Doctor's notes to the course instructor.

Covid-19 Policy

Students should adhere to COD's Covid-19 safety protocols throughout the semester if visiting campus. All relevant policies regarding masking, vaccinations, reporting can be found on the COD website at

<https://www.cod.edu/coronavirus/index.aspx>

If you have been exposed to Covid-19 or have been diagnosed with Covid-19, please fill out the Student Self-Reporting form at

https://cm.maxient.com/reportingform.php?CollegeofDuPage&layout_id=9

Withdrawal Policy:

The final day for a student to withdraw from any course will be equal to 75% of the time for the respective academic session (see the [Registration Calendar](#)) through myACCESS <https://myaccess.cod.edu> or in person at the Registration office, Student Services Center (SSC), Room 2221.

After the deadline, students will be required to appeal for late withdrawal and provide appropriate documentation to the Student Registration Services Office for all requests. Students who are granted approval to withdraw by petition will not be eligible for refunds of tuition or fees and will receive a 'W' grade on their transcript. Appeals must be submitted prior to the designated final exam period for 16-week classes and before the last class meeting for all other session classes

Tentative Course Schedule:

Quizzes may be taken any time during the week (through Friday at 11:59PM). Exams are taken in class, proctored using Zoom.

Week 1 (Monday, Feb. 21): Introduction, Sets Introduction

Sections: 2.1-2.2

Week 2 (Feb. 28) : Comparing Sets, Set Operations, Venn Diagrams

2.2-2.4

Week 3 (Mar. 7) : Infinite Sets, Statements, Negations, Connectives, and Quantifiers, *Quiz #1*

Sections 2.5, 3.1

Week 4 (Mar. 14) : Truth Tables, Conditionals, Verifying Arguments, *Quiz #2*

Sections 3.2-3.4

Week 5 (Mar. 21): Syllogisms, Logic with Probability, **Exam 1 (Wednesday, Proctored through Zoom)**

Sections 3.5-3.6

Week 6 (Mar. 28): *Spring Break Monday, March 29 through Sunday, April 4*

Week 7 (Apr. 4): Percentage, Interest, Consumer Loans

Sections 8.1-8.3

Week 8 (Apr. 11): Annuities, Amortized Loans, *Quiz #3*

Sections 8.4-8.5

Week 9 (Apr. 18): Annual Percentage Rate, Counting Introduction, Fundamental Counting Principle, *Quiz #4*

Sections 8.6, 12.1-12.2, *Last Day to Withdraw is Sunday, April 24!*

Week 10 (Apr. 25): Permutations & Combinations, Probability Introduction

Sections 12.3-12.4, 13.1

Week 11 (May. 2): Complements and Unions, Conditional Probability, **Exam 2 (Wednesday, Proctored through Zoom)**

Sections 13.2-13.3

Week 12 (May. 9): Expected Value, Binomial Experiments, Final Exam Review, *Quiz #5*

Sections 13.4-13.5

Week 13: Cumulative Final Exam (Monday, May 16, 8:00AM – 10:50AM, Proctored through Zoom)