


MATH 0025 COLLEGE ALGEBRA (CRN: 10682)

SYLLABUS & SCHEDULE

FALL TERM 2023-2024

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Location: 103 Alexander J. Allen Hall

Office: 620 Thackeray Hall
Office Hours:
M & W 4:30 PM – 5:30 PM (in my office)
T & Th 4:00 PM – 5:00 PM (Zoom)
Zoom Appointments available  Bookings

About the course

This course is intended for students who are non-math, non-science majors and are not planning on taking scientific calculus. This course is intended to fulfill the CAS/CGS Algebra Requirement when a grade of C- or higher is attained.

Applied College Algebra is intended to allow students to become comfortable describing the world quantitatively, using mathematical reasoning and traditional algebraic tools. This course emphasizes mathematical modeling of real-world situations. The student will learn how to use and interpret graphs, data, charts, and algebraic functions, all skills that can be used throughout a lifetime. This is a three-credit course and meets for three 50-minute lecture periods and one recitation per week.

Prerequisites

To be prepared for this course, you should have had High School Algebra 1, Algebra 2, and Geometry, and obtained an appropriate score on the CAS Algebra Placement Test. If your background suggests that you are not academically prepared for this course, it is strongly recommended to take the slower paced College Algebra I (Math 0010) followed by either College Algebra II (Math 0020) or this course. Consult your advisor before making any course changes.

Pitt Health Guidelines

- This course will follow the University guidelines for in-person meetings. Face coverings may be worn at your own discretion unless guidelines require them.
- I will be simulcasting and recording all class meetings to allow as much flexibility in dealing with any health issues needed.

Text

The text for this course is *Explorations in College Algebra* (6th ed.). Authors are Kime, L. A., Clark, J., Michael, B. K., & Agras, N. M. (2018). Published by John Wiley & Sons, Inc.

This course covers chapters 1-9.

The textbook is available through RedShelf Inclusive Access. Make sure you opt in by 9/11/2023.

Materials

In addition to the textbook/e-textbook, you will need **at least** a scientific calculator with logarithms, exponentials, roots, etc.

However in this course **I require that you use a TI-83 Plus or TI-84 graphing calculator.** In fact, **you will be shown how to use these and they will be helpful on the 2 midterm exams.**

- They can be rented for 8 hours at a time from the [Hillman library](#).
- There are also sites that rent one for \$6.95 per month.
- Although they can cost \$85 - \$150 brand new, sites like Amazon and eBay will have used ones that can be as little as \$40 - \$50.

Recitations

An integral part of this course is the problem-solving recitation. Students should come prepared to ask and answer questions about the practice problems from WileyPlus and the syllabus. Recitation time will be used to review problems. Recitations will meet once a week with **Glenn Ferry** who has been assigned as the Undergraduate Teaching Assistant assigned to this course for additional practice.

- **You should have signed up for recitation:**
 - CRN 10922 – Recitation: Wednesdays, 6:00 PM – 6:50 PM; Cathedral of Learning 204

Participation

Before each session you will be expected to complete the following:

- **Reading summaries** which contain videos of what would be presented in a typical lecture. These will also give you opportunities to complete example problems and take any notes that you would take in lecture (with the aid of guided notes that are supplied to you).
- **Suggested practice exercises** to give you opportunities to practice. Math cannot be learned by studying, it requires trying and retrying problems until you gain understanding. These will often be given during class sessions
- **Started and/or continued work on your homework.** The MyMathLab assignments typically have a large number of problems, so completing these a little at a time is the best way to go.

We will spend class time going over any questions that you have on the problems from these. So, it is important that you keep up with this work.

This work, how well you participate in our class sessions, as well as a general sense of meeting your deadlines, is all factored into a participation grade. This grade does not make up a major part of your final grade, but it will give both you and I an indication of potential issues that may develop if certain things are not addressed.

Homework

There will be assigned computer homework problems in WileyPlus (through Canvas). These contribute directly toward your final course grade.

This resource is required and is available through RedShelf Inclusive Access.

There are additional practice problems throughout the textbook (suggested ones are listed later in this document). These are not collected nor graded. However, they are there should you feel the need for additional practice in order to better understand the material of the course. Many of your quiz and exam problems will be modeled after these problems.

Grading Weights

Your course grade will be determined as follows:

- Participation 5%
- WileyPlus assignments 10%
- Quizzes 15%
- Two midterm exams 40%
- Final exam 30%

Final Exam Policy

All sections will take a final exam at a time and place to be scheduled by the registrar. Calculators will not be permitted on the departmental final exam.

Final Grading Policy

This course follows the math department One-Letter Grade Rule: *"The end-of-course grade assigned to each student should not exceed his/her final exam grade by more than one letter grade except under unusual circumstances."* This is math department policy and is meant to encourage students to study for the final exam.

It is the instructor's discretion as to how to scale grades and award +/- grades. Because of this, final grades will be based on the following scale:

A+	99% to 100%
A	91% to 98.9%
A-	90% to 90.9%
B+	89% to 89.9%
B	81% to 88.9%
B-	80% to 80.9%
C+	79% to 79.9%
C	71% to 78.9%
C-	70% to 70.9%
D	60% to 69.9%
F	Below 60%

Non-standard Grades (G Grade)

The "G" grade is applied only when students who have been attending a course and making regular progress are prevented from completing the course by circumstances beyond their control, such as a major medical emergency. These grades will only be given in very rare, documented circumstances governed by the current University G Grade Policy.

Exam Dates

See the class schedule for the dates of the two midterm exams.

The date, time and room of the final exam will be announced by your instructor later in the term.

Make-Up Policy

Missed exams cannot be made up unless missed due to a conflict with an official university sponsored event or a verifiable illness with a doctor's excuse. Consideration may be given in the event of an extreme emergency. Please contact your instructor immediately if you are unable to attend an exam!

- **Arrangements for an alternate exam date must be made and scheduled to occur prior to the exam date.**
- **In the cases of an emergency illness, injury, etc., arrangements for an alternate exam date must occur before exams are returned in class.**

Quizzes in Canvas and MyMathLab homework are due on the dates indicated in the calendar and posted in Canvas. Arrangements can be made in emergency situations, however, it is solely at the instructor's discretion whether or not extensions will be given and if there are any conditions for those extensions.

WileyPlus Homework is due on the dates indicated in the calendar, posted in Canvas, and in WileyPlus itself. After that date, they may be completed for half credit on each remaining problem up 2 days following the posted due date.

Study Skills:

This is a very demanding course. Do not get behind. When difficulties arise, please see your instructor or teaching assistant during his or her office hours. It is generally accepted that you will be doing 2-3 hours of homework for every hour in class. That translates into 5 - 8 hours of math homework per week. Depending on your previous math background, you may require more.

Since understanding develops over time, it would be much better if you spent 1- 2 hours daily doing math, rather than spending long hours attempting to complete your assignments all at once. Set up a schedule and always do math when you are most alert.

Getting Help

Tutoring

Free tutoring is available through the [Math Assistance Center \(MAC\)](#).

Office Hours

Fall term: Tuesdays and Thursdays, 4:30 PM – 5:30 PM
[Zoom Appointments available](#).

Disability Resource Services

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and [Disability Resources and Services](#) (DRS), 140 William Pitt Union, (412) 648-7890, drsrecep@pitt.edu, (412) 228-5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

Academic Integrity

Students in this course will be expected to comply with the [University of Pittsburgh's Policy on Academic Integrity](#). Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and programmable calculators.

To learn more about Academic Integrity, visit the [Academic Integrity Guide](#) for an overview of the topic. For hands-on practice, complete the [Understanding and Avoiding Plagiarism tutorial](#).

Suggested Practice Problems from Textbook

CHAPTER 1: AN INTRODUCTION TO DATA AND FUNCTIONS

- 1.1 DESCRIBING SINGLE VARIABLE DATA
Exercises 1, 2, 6, 14, 20
- 1.2 DESCRIBING THE RELATIONSHIP BETWEEN TWO VARIABLES
Exercises 2, 4, 7, 13, 16
- 1.3 AN INTRODUCTION TO FUNCTIONS
Exercises 6, 10, 13
- 1.4 THE LANGUAGE OF FUNCTIONS
Exercises 2, 5, 6, 9, 14, 16, 17
- 1.5 VISUALIZING FUNCTIONS
Exercises 3, 8, 9, 11, 15, 20, 21, 24

CHAPTER 1 REVIEW PROBLEMS: 2, 4, 7, 14, 16, 20, 26

CHAPTER 2: RATES OF CHANGE AND LINEAR FUNCTIONS

- 2.1 AVERAGE RATES OF CHANGE
Exercises 4, 6, 10, 14
- 2.2 CHANGE IN THE AVERAGE RATE OF CHANGE
Exercises 6, 7, 8, 11
- 2.3 THE AVERAGE RATE OF CHANGE IS A SLOPE
Exercises 3, 7, 8, 12, 15, 19
- 2.4 PUTTING A SLANT ON DATA
Exercises 2, 4, 6, 10
- 2.5 LINEAR FUNCTIONS: WHEN RATES OF CHANGE ARE CONSTANT
Exercises 4, 6, 12, 13, 16, 19, 24
- 2.6 VISUALIZING LINEAR FUNCTIONS
Exercises 3, 6, 11
- 2.7 FINDING GRAPHS AND EQUATIONS OF LINEAR FUNCTIONS
Exercises 9, 10, 17, 18, 22, 23
- 2.8 SPECIAL CASES
Exercises 2, 5, 10, 12, 24
- 2.9 BREAKING THE LINE: PIECEWISE LINEAR FUNCTIONS
Exercises 5, 6, 9, 12, 13
- 2.10 CONSTRUCTING LINEAR MODELS FOR DATA
Exercises 5, 8, 10, 11, 15, 18
- 2.11 LOOKING FOR LINKS BETWEEN EDUCATION AND EARNINGS
Exercises 2, 4, 9

CHAPTER 2 REVIEW PROBLEMS: 3, 5, 7, 9, 15, 24

CHAPTER 3: WHEN LINES MEET: LINEAR SYSTEMS

- 3.1 INTERPRETING INTERSECTION POINTS: LINEAR AND NONLINEAR SYSTEMS
Exercises 1, 4, 7, 11, 14, 16, 21
- 3.2 VISUALIZING AND SOLVING LINEAR SYSTEMS
Exercises 1, 6, 7, 9, 19, 24
- 3.3 READING BETWEEN THE LINES: LINEAR INEQUALITIES
Exercises 8, 20, 25, 26
- 3.4 SYSTEMS WITH PIECEWISE LINEAR FUNCTIONS: TAX PLANS
Exercises 2, 3, 4

CHAPTER 3 REVIEW PROBLEMS: 3, 4, 13, 16, 18

EXAM 1 – CHAPTERS 1, 2, 3

CHAPTER 4: THE LAWS OF EXPONENTS AND LOGARITHMS: MEASURING THE UNIVERSE

- 4.1 THE NUMBERS OF SCIENCE: MEASURING TIME AND SPACE
Exercises 9, 11, 12, 14
- 4.2 POSITIVE INTEGER EXPONENTS
Exercises 15, 19, 22, 25
- 4.3 ZERO, NEGATIVE, AND FRACTIONAL EXPONENTS
Exercises 9, 10, 18, 22, 23, 28, 35
- 4.4 CONVERTING UNITS
Exercises 2, 6, 13, 20, 21, 23
- 4.5 ORDERS OF MAGNITUDE
Exercises 2, 7, 8, 10, 11, 12, 13
- 4.6 LOGARITHMS AS NUMBERS
Exercises 9, 14, 19, 20, 23

CHAPTER 4 REVIEW PROBLEMS: 7, 8, 9, 10, 14, 15, 16, 18, 22

CHAPTER 5: GROWTH AND DECAY: AN INTRODUCTION TO EXPONENTIAL FUNCTIONS

- 5.1 EXPONENTIAL GROWTH
Exercises 3, 4, 7, 8, 10, 12, 13
- 5.2 LINEAR VS. EXPONENTIAL GROWTH FUNCTIONS
Exercises 3, 4, 6, 8, 9, 10, 12, 13, 18
- 5.3 EXPONENTIAL DECAY
Exercises 2, 5, 7, 8, 9, 14
- 5.4 VISUALIZING EXPONENTIAL FUNCTIONS
Exercises 4, 5, 7, 9, 12, 14, 15
- 5.5 EXPONENTIAL FUNCTIONS: A CONSTANT PERCENT CHANGE
Exercises 4, 5, 7, 9, 13, 14, 19, 22
- 5.6 EXAMPLES OF EXPONENTIAL GROWTH AND DECAY
Exercises 3, 7, 14, 17, 21, 25
- 5.7 COMPOUND INTEREST AND THE NUMBER e
Exercises 4, 6, 9, 12, 16, 19

CHAPTER 5 REVIEW PROBLEMS: 2, 3, 7, 11, 13, 15, 19

CHAPTER 6: LOGARITHMIC LINKS: LOGARITHMIC AND EXPONENTIAL FUNCTIONS

- 6.1 USING LOGARITHMS TO SOLVE EXPONENTIAL EQUATIONS
Exercises 4, 7, 9, 12, 13, 17, 18, 22, 25, 29
- 6.2 USING LOGARITHMS TO SOLVE EXPONENTIAL EQUATIONS
BASE e
Exercises 4, 7, 9, 10, 13, 17, 19, 23, 32, 35
- 6.3 VISUALIZING AND APPLYING LOGARITHMIC FUNCTIONS
Exercises 1, 2, 3, 6, 9

CHAPTER 6 REVIEW PROBLEMS: 1, 2, 5, 6, 7, 8, 9, 14, 15, 20

EXAM 2 – CHAPTERS 4, 5, 6

CHAPTER 7: POWER FUNCTIONS

- 7.1 THE TENSION BETWEEN SURFACE AREA AND VOLUME
Exercises 1, 2, 4, 8, 11, 14
- 7.2 DIRECT PROPORTIONALITY: POWER FUNCTIONS WITH POSITIVE POWERS
Exercises 5, 6, 8, 11, 13, 15
- 7.3 VISUALIZING POSITIVE INTEGER POWERS
Exercises 1, 3, 4, 7, 9, 12, 15
- 7.4 COMPARING POWER AND EXPONENTIAL FUNCTIONS
Exercises 3, 8, 9, 12
- 7.5 INVERSE PROPORTIONALITY: POWER FUNCTIONS WITH NEGATIVE INTEGER POWERS
Exercises 3, 6, 9, 12, 15
- 7.6 VISUALIZING NEGATIVE INTEGER POWER FUNCTIONS
Exercises 3, 5, 6, 9, 14, 19

CHAPTER 7 REVIEW PROBLEMS: 2, 6, 9, 13

CHAPTER 8: QUADRATICS, POLYNOMIALS, AND BEYOND

- 8.1 AN INTRODUCTION TO QUADRATIC FUNCTIONS: THE STANDARD FORM
Exercises 3, 4, 7, 8, 11, 16, 23
- 8.2 VISUALIZING QUADRATICS: THE VERTEX FORM
Exercises 2, 4, 5, 11, 16, 17
- 8.3 THE STANDARD FORM VS THE VERTEX FORM
Exercises 4, 7, 10, 11, 14
- 8.4 FINDING THE HORIZONTAL INTERCEPTS: THE FACTORED FORM
Exercises 7, 9, 15, 28
- 8.5 AVERAGE RATE OF CHANGE OF A QUADRATIC FUNCTION
Exercises 4, 8, 9

CHAPTER 8 REVIEW PROBLEMS: 1, 5, 7, 8, 9, 13

CHAPTER 9: NEW FUNCTIONS FROM OLD

- 9.1 NEW FUNCTIONS FROM OLD
Exercises 3, 10, 12, 15, 17, 21
- 9.2 THE ALGEBRA OF FUNCTIONS
Exercises 3, 5, 9, 11, 14, 16
- 9.3 POLYNOMIALS: THE SUM OF POWER FUNCTIONS
Exercises 7, 9, 13, 22, 25
- 9.4 RATIONAL FUNCTIONS: THE QUOTIENT OF POLYNOMIALS
Exercises 6, 8, 17, 20
- 9.5 COMPOSITION AND INVERSE FUNCTIONS
Exercises 3, 7, 8, 18, 19

CHAPTER 9 REVIEW PROBLEMS: 10, 11, 13, 16, 18, 21

FINAL EXAM – CUMULATIVE CHAPTERS 1-9