

Math 111: College Algebra

The University of Oregon
CRN 23600
Winter 2020

Class Meetings: MTWF, 11–11:50, in Deady 307

Instructor: Cruz Godar

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Office: Deady 3 — Wednesdays 4–4:50 and Thursdays 11–12:50, and by appointment

Learning Outcomes

A successful student can:

- evaluate functions at numeric or symbolic inputs
- identify the largest possible domain of functions containing division, radicals, or logarithms
- compute the average rate of change in functions on an interval (including an interval of arbitrary constants, e.g. the difference quotient)
- fit linear functions to data
- fit exponential functions to data
- find real solutions to exponential and logarithmic equations
- compute the composition of two functions given formulas, table, or graphs of the functions
- find the inverse of a function (when it exists)

- interpret the result of mathematical processes in a non-mathematical context
- express written descriptions between variables as the graph of or formula for a function
- solve equations resulting from setting a function output equal to a value
- determine the practical domain of functions described in a non-mathematical context
- model equations relating two variables in which proportionality or inverse proportionality are described
- evaluate piecewise-defined functions and solve for input, given an output
- construct elementary piecewise-defined functions
- identify increasing and decreasing behavior in a function
- determine from a formula, words, or a table if the function described is exactly linear or exponential
- fit a quadratic, rational, power, or logarithmic function to data
- find the location or value of the extremum of a quadratic function
- identify long-term ($t \rightarrow \infty$) behavior of polynomial or rational functions
- identify long-term ($t \rightarrow \infty$) behavior of exponential or logarithmic functions
- identify the relative or continuous growth rates of exponential models
- combine two functions (defined by formula, table, graph, or words) using arithmetic operations on functions
- identify whether or not functions are one-to-one
- **and most importantly**, model the mathematical topics described among the learning outcomes in words, then solve or simplify the relevant equations and/or expressions, and finally write a summary statement of the solution.

Materials

Textbook: *Modern Precalculus*, AY2018-19 edition, by Mike Price

Calculator: A scientific calculator will save you time doing simple computations. You will only be allowed to use one of the following calculators on quizzes and exams: Casio fx-260, Casio fx-300MS (or Plus), Casio fx-300ES (or Plus), TI-30X (a, S, or IIS), TI-34. **No graphing calculators will be allowed.** The Casio fx-300MS is available from the UO Bookstore for about \$13.

Assignments and Grading

Your total grade in the class is determined by your scores on the queries, homework, quizzes, midterm exams, and the final exam, weighted in the following manner:

Daily Queries: 2%

Weekly Written Homework: 7%

Twice-Weekly WeBWork: 7%

Weekly Quizzes: 14%

Midterm Exams: 20% each (40% total)

Final Exam: 30%

| | |
|-----------|---|
| 90 – 100% | A |
| 80 – 89% | B |
| 70 – 79% | C |
| 60 – 69% | D |
| 0 – 59% | F |

Your total grade in the class will be rounded up to the next whole number. For example, a total grade of 79.2% will be rounded up to 80% and awarded a B.

Plus/minus grading is not used in this class.

Daily Queries: At the beginning of each lecture on Tuesday, Wednesday, and Friday, two students' names will be drawn (without replacement, so all students will be called a roughly equal number of times over the quarter). Each student called will be asked to answer a simple question from the previous lecture's material. If you were present and paying attention at the last lecture, these questions shouldn't be difficult. All students start with 2% in this category and lose 1% for each missed query.

Written Homework: The written homework is split into two parts: a handful of book problems, which are graded on completeness (only on whether you attempted the problems), and two additional problems written by me, which are graded on correctness. The two parts are each worth half of the homework credit. Homework will be assigned every Friday and due at the start of class the following Friday. Every homework assignment covers the previous week's material. Working with others is strongly encouraged, but the final work you submit must be your own. To facilitate this group work, we will spend the first 30 minutes of Friday classes in groups, working on the newly assigned homework. I will have the problems projected so that everyone can see them, but you may want to print yourself a copy of the homework beforehand. Your lowest written homework score will be dropped. **No late work will be accepted unless there is a documented, excusable circumstance.** Such circumstances include sports events in which you are involved in an official capacity (competing or playing in the band, for example), or illnesses with doctor's notes. If this is the case and you are given a make-up opportunity, the late work must be submitted no more than one

week after its original due date.

WeBWorK: WeBWorK is an online homework system. Two WeBWorK assignments will be due each week — one Monday evening and one Wednesday evening. The Monday assignment will cover topics from the Tuesday and Wednesday lectures of the previous week and the Wednesday one topics from the Monday lecture of the current week. Again, **no late work will be accepted unless there is a documented, excusable circumstance.**

Quizzes: The last 20 minutes of lecture on Friday will be spent taking a quiz on the material from the past week — the same material that you'll have been thinking about over the past half hour for the homework. Each quiz will be roughly one page, front and back. Your lowest quiz score will be dropped.

I am always happy to let you take a quiz early — just let me know at least a day in advance. However, as with homework, **no makeup quizzes will be given unless there is a documented, excusable circumstance.** If this is the case and you are given a make-up opportunity, the quiz must be taken as soon as possible, and no more than a week after it was originally given.

Exams: Our class will have two midterms on the Fridays of weeks 4 and 8. They will take up all 50 minutes, replacing both the group work and quiz for that week. Each midterm will cover multiple sections of material, and the final exam will cover all of the sections covered in the course. **No make-up or early exams will be offered, except in the case of a documented, excusable circumstance.** If this is the case, the exam must be taken as soon as possible, and no more than a week after it was originally given.

- Midterm 1: Friday, January 31
- Midterm 2: Friday, February 28
- Final: 10:15 AM on Monday, March 16

A note on grading: the vast majority of problems in this class are graded on a four-point scale that is curved to an eight-point one:

- 8: Work that shows command of the material and has only a few small mistakes, if any.
- 7: Work that shows a strong understanding of the relevant material, but contains enough errors that they get in the way of the demonstration of that understanding.
- 5: Work that shows elements of understanding, but is too clouded with mistakes to be considered on the right track.
- 3: Work that demonstrates a very small amount of understanding — but still some.

0: No work shown for any problem where work is required or work that demonstrates no understanding at all of the relevant material.

Course Schedule

This schedule is tentative, and may change slightly throughout the quarter.

| Week | Material |
|------|----------------------|
| 1 | Section 1 |
| 2 | Section 2 |
| 3 | Section 3 |
| 4 | Sections 3 and 4 |
| 5 | Section 4 |
| 6 | Section 7 |
| 7 | Section 8 |
| 8 | Section 5 |
| 9 | Sections 5 and 6 |
| 10 | Section 6 and Review |

Other Things

Accessibility: For those of you who are currently registered with Accessible Education Center for a documented disability, please present your paperwork to me during the first week of the term (or earlier) so that we can design a plan for you. Those of you with a disability, or who think they might have one, but are not registered with AEC should contact them as soon as possible. It is much more likely that measures can be taken to provide adequate special accommodation if the organization is done through AEC. Please let me know if you need additional accommodations.

Prohibited Discrimination and Harassment Reporting: I am a student-directed employee. For information about my reporting obligations as an employee, please see [Employee Reporting Obligations](#). Students experiencing any form of prohibited discrimination or harassment, including sex or gender based violence, may seek information on [safe.uoregon.edu](#), [respect.uoregon.edu](#), [titleix.uoregon.edu](#), or [aaeo.uoregon.edu](#) or contact the non-confidential Title IX office (541-346-8136), AAEO office (541-346-3123), or Dean of Students offices (541-346-3216), or call the 24-7 hotline 541-346-SAFE for help. I am also a mandatory reporter

of child abuse. Please find more information at [Mandatory Reporting of Child Abuse and Neglect](#).

Conduct: This university exists for your benefit. If you believe something is not as it should be, don't hesitate to let me know.

And as you should hold the university to a high standard, I will hold all of you to one in return. Academic dishonesty, including looking at other students' quizzes or tests or using any materials other than those allowed during a testing period, submitting others' work as your own, or altering returned work and resubmitting it, will be met with the strictest disciplinary action possible.

A word on learning: Math is not a subject that is learned passively. It is one thing to understand examples from lecture and another thing entirely to work through problems by yourself. Students who come to lecture expecting it to be enough on its own to pass the tests — and therefore don't put much or any effort into the homework — typically end up with very poor grades in the class. For your own benefit, it's crucial to stay on top of the homework, to follow along with lecture, and to seek help — from a friend, from my office hours, from the textbook, or from a tutor — when that becomes difficult.