

Math 2: College Algebra for Calculus  
MWF 10-12:30pm on Zoom

Instructor: Ryan Pugh

Email: [rypugh@ucsc.edu](mailto:rypugh@ucsc.edu)

Office hours: Wednesdays and Fridays, 1:30-2:30pm, or by appointment. Subject to change, we can talk about it during the first week.

Note about office hours: Office hours are a chance for you to come in and ask any questions you may have about the material. I'm very happy to chat with you about the course or about math/life in general. This time is for you – please come! All are welcome.

**Course description:** This course provides an introduction to the math concepts that will prove to be of utmost importance in future math courses and in daily life. We'll solidify our foundations in algebra and arithmetic and develop the language and tools to discuss functions and their relationship to real life. We will start with algebraic topics that may be familiar with the goal of strengthening our procedural fluency and cultivating conceptual understanding. We'll then turn to relations and functions and explore polynomials in great depth.

Your success in this course is important to me. One of my beliefs is that everyone is a mathematician, and this includes every single one of you. You will be challenged, but you will also be supported. In addition to learning math, accessibility and inclusivity are our top priorities. If there is ever an aspect of this course that makes it inaccessible for you or that you feel excludes you, please reach out to me immediately. Just because we are online doesn't mean that we can't develop a real sense of community here. Our lectures should be an environment where everybody feels comfortable to ask questions, take up space, and be themselves.

**Textbook:** We'll be using College Algebra at OpenStax, freely available here:  
<https://openstax.org/details/books/college-algebra>

**Learning Objectives:** By the end of this class, students will be able to:

1. Manipulate and simplify expressions involving exponents
2. Define polynomials and perform algebraic operations on them
3. Factor polynomials, including those of quadratic-type
4. Perform algebraic operations on rational expressions
5. Solve linear, quadratic, and absolute value equations and inequalities
6. Model real life situations with equations and apply solution methods to solve them
7. Define a relation and a function (and give examples)
8. Provide examples of the different ways to represent a function
9. Determine the domain and range of a function
10. Calculate rates of change and connect it to a graph
11. Compose functions and determine the resulting domain and range
12. Explore different functional transformations and apply them to different parent functions

13. Graph piecewise functions
14. Apply knowledge of end behavior and zeros in order to graph/sketch polynomials
15. Divide polynomials and interpret the result
16. Read mathematical texts and self-evaluate understanding
17. Present mathematical ideas orally and in writing
18. Work collaboratively on math problems

**Grading Policy:**

Pre-Lecture Reading 10%, Homework 20%, Quizzes 20%, Weekly Reflections 10%, Worksheets 15%, Math Autobiography 5%, Final Portfolio 20%

Grades will be assigned on the following scale:

Grade	Percentage
A+	97+
A	90-96
B+	87-89
B	80-86
C+	77-79
C	70-76
D	60-69
F	Less than 60

Note: At the end of the class I will apply the ceiling function to your grade in order to determine your final grade. This means we round up to the nearest whole number, so a grade of 89.01 would turn into a 90 for example.

**Pre-Lecture Reading:** Before each lecture, you will be asked to complete readings either from the textbook or a document I upload. After reading, you will post on the day's discussion forum with any questions or curiosities that arose from the reading or answering some questions I pose. The goal of this activity is to help me get a better idea of which topics need deeper discussion in class and to get you comfortable with reading mathematical texts. Post this by 9am before each lecture. The sooner you post it the better so that I can incorporate specific questions into our lectures.

**Homework:** Each week you will have a homework assignment due on Mondays before lecture. They are to be submitted on Gradescope. I will grade the homework in one of two ways each week: I will either grade every single problem for correctness, or I will grade only a few of the problems on correctness and the rest on completion. In either case, I will give you feedback on your work. In my opinion, homework is the best place to really see what you do and don't understand and can sometimes be more informative than lecture. With this in mind, please take the time to fully understand the homework problems and seek help/collaborate with others! If you work with other people, list their names at the top of your assignment.

**Quizzes:** We'll end (or begin) each lecture with a short quiz on Gradescope. The quiz will cover topics covered from the previous day's lecture (or things from even further back!). The purpose of these quizzes is to encourage daily studying and to provide a way for you to continually assess your level of understanding. Quizzes may become more infrequent as the quarter goes on, but we'll try to start strong. I'll drop some of the lowest quiz scores, the exact amount will be determined based on how many quizzes we end up taking.

**Weekly Reflections:** Every week you will be asked to reflect on the course content and your own experiences in the course. The reflections will be on Canvas in the format of a quiz containing several free response questions. They will be available every Monday and close on the following Sunday night at 11:59pm. You are welcome to open and close it as often as you want, so if inspiration strikes you can type something there and later add more things. You will be asked to synthesize the topics covered that week in lecture, reflect on your mastery of these topics, and provide feedback about how lecture is going for you (and offer any suggestions!). The very last reflection will be due on the last day of lecture rather than the following Sunday.

**Worksheets:** Short worksheets will be posted throughout the quarter that contain problems related to the topics we've discussed in lecture. We'll work on them during class time in groups and during our problem solving sessions. These will be graded based on completion; however, it is still important that you understand how to solve them and are able to explain your processes. I'll drop the lowest worksheet score.

**Mathematical Autobiography:** The first assignment of this course will be a mathematical autobiography. You'll be asked to write a page or two about your past experiences with math and sharing your attitudes towards it, including what you think math is.

**Final Portfolio:** Instead of a final exam, you'll be creating a final portfolio. The portfolio will consist of several pages that synthesize each of the topics we've covered throughout the course. Think of this as a booklet or pamphlet that covers the different concepts in the class. You will be expected to explain each topic in your own words, do some examples, and to provide some drawings/illustrations for each topic. On the last day of class you will have the opportunity to share and present a few selected pages from your portfolio with everyone else. To keep us on track, you'll be submitting drafts every week starting on Week 2. More information will be provided later on.

**Tentative Schedule:**

Below is a tentative schedule for our 5 week course.

Date	Sections/Topics Covered	Learning Objectives Covered	Things Due
Monday, June 20	Holiday (see you soon!)		
Wednesday, June 22	Introductions, Syllabus overview, 1.2 (Exponents), 1.3 (Radicals and Rational Exponents)	1	
Friday, June 24	1.1? 1.4 (Polynomials), 1.5 (Factoring Polynomials)	2, 3	Suggestion: Practice factoring for Monday's lecture
Monday, June 27	1.6 (Rational Expressions), 2.2 (Linear Equations), 2.3 (Linear Applications)	4, 5, 6	Homework 1 by 10am, All worksheets so far by 10am
Wednesday, June 29	2.3 (continued), 2.5 (Quadratic Equations), 2.6 (Other types of equations)	5, 6	Math Autobiography
Friday, July 1	Lines and circles, Review + Problem Solving Sesh	5, 7, 18	Final Portfolio Draft #1 by 11:59pm
Monday, July 4	Holiday		
Wednesday, July 6	2.7 (Linear & Absolute Value Inequalities), 3.1 (Functions and Function Notation), 3.2 (Domain and Range)	5, 7, 8, 9	Homework 2 by 10am, All worksheets up to date
Friday, July 8	3.3 (Rates of Change), 3.4 (Composition of functions)	10, 11	Final Portfolio Draft #2 by 11:59pm

Monday, July 11	Piecewise functions, 3.6 (Absolute Value Functions), Problem Solving Sesh	13, 18	Homework 3 by 10am, All worksheets up to date
Wednesday, July 13	3.5 (Transformations)	12	
Friday, July 15	5.1 (Quadratic Functions), 5.2 (Polynomial Functions)	2, 14	Final Portfolio Draft #3 by 11:59pm
Monday, July 18	5.3 (Graphs of Polynomials), 5.4 (Dividing Polynomials)	14, 15	Homework 4 by 10am, All worksheets up to date
Wednesday, July 20	5.5 (Zeros of Polynomials), Final Portfolio Workshop	14, 17	
Friday, July 22	Final Portfolio Presentations	17	Final Portfolio Final Draft due by 11:59pm

Not included under the “Things Due” column are the weekly reflections (due every Sunday by 11:59pm on Canvas) and the pre-lecture readings (due by 9am every day we meet).

**2022 Deadlines:**

Add – Thursday, June 23

Drop – Monday, June 27 (tuition reversed)

Request “W” Grade – Sunday, July 10 (no tuition reversal)

Change Grade Option – Sunday, July 17

Grades Due – Thursday, July 28

Summer is unique. You will not be dropped for non-attendance or non-payment. You must drop yourself. Dropping before the deadline results in a full-tuition reversal/refund. Withdraw posts a W for the grade and full tuition is charged (no refund).

For all dates and deadlines, including ‘change of grade option’ (P/NP) and grades due, here is the summer academic calendar: <https://summer.ucsc.edu/studentlife/index.html>

For questions about dropping, requesting a W grade for a course, or withdrawing from the summer quarter, email [summer@ucsc.edu](mailto:summer@ucsc.edu).

**Small Group Tutoring:** Our course is supported by small group tutoring (SGT). This is a small study space for students to engage in critical thinking around key themes of the course with their undergraduate tutor. SGT’s weekly commitment helps students build community and practice study skills outside of the classroom. Most tutoring groups vary in size between 2-10\* students per session. You can access the [schedule and sign up for SGT sessions](#) by logging into [Tutor Trac](#) with your CruzID and Gold password. Students can begin signing up for SGT on **Monday, June 21st** and sessions will begin **Wednesday, June 23rd**.

**DRC Accommodations:** The Disability Resources Center reduces barriers to inclusion and full participation for students with disabilities by providing support to individually determine reasonable academic accommodations. If you have questions or concerns about exam accommodations or any other disability-related matter, please contact the DRC office at 831-459-2089 or [drc@ucsc.edu](mailto:drc@ucsc.edu).

**Academic Integrity:** Academic integrity is the cornerstone of a university education. Academic dishonesty diminishes the university as an institution and all members of the university community. It tarnishes the value of a UCSC degree. All members of the UCSC community have an explicit responsibility to foster an environment of trust, honesty, fairness, respect, and responsibility. All members of the university community are expected to present as their original work only that which is truly their own. All members of the community are expected to report observed instances of cheating, plagiarism, and other forms of academic dishonesty in order to ensure that the integrity of scholarship is valued and preserved at UCSC.

In the event a student is found in violation of the UCSC Academic Integrity policy, he or she may face both academic sanctions imposed by the instructor of record and disciplinary sanctions imposed either by the provost of his or her college or the Academic Tribunal convened to hear the case. Violations of the Academic Integrity policy can result in dismissal from the university and a permanent notation on a student's transcript.

For the full policy and disciplinary procedures on academic dishonesty, students and instructors should refer to the [Academic Integrity page](#) at the Division of Undergraduate Education.

**Title IX:** The university cherishes the free and open exchange of ideas and enlargement of knowledge. To maintain this freedom and openness requires objectivity, mutual trust, and confidence; it requires the absence of coercion, intimidation, or exploitation. The principal responsibility for maintaining these conditions must rest upon those members of the university community who exercise most authority and leadership: faculty, managers, and supervisors.

The university has therefore instituted a number of measures designed to protect its community from sex discrimination, sexual harassment, sexual violence, and other related prohibited conduct. [Information about the Title IX Office](#), the [online reporting link](#), applicable campus [resources](#), reporting responsibilities, the [UC Policy on Sexual Violence and Sexual Harassment](#), and the UC Santa Cruz Procedures for Reporting and Responding to Reports of Sexual Violence and Sexual Harassment can be found at [titleix.ucsc.edu](http://titleix.ucsc.edu).

The Title IX/Sexual Harassment Office is located at 105 Kerr Hall. In addition to the [online reporting option](#), you can contact the Title IX Office by calling 831-459-2462.