

# Math 255: Calculus for Biological Scientists II

## Spring 2024 Syllabus

### 1. Course Details

#### 1.1. Course Meetings

Course Instructor: Kyle Salois (kyle.salois@colostate.edu)

Course LA: Miles Hopkins (mia.hopkins@colostate.edu)

Time & Place: MTWF: 10:00 a.m. - 10:50 a.m. in Engineering E105.

#### 1.2. Office Hours

Office hours will be held at the following times:

**Kyle:** Mondays 11:00 a.m. - 12:00 p.m. & Tuesdays 1:00 p.m. - 2:00 p.m.

**Miles:** Tuesdays 11:00 a.m. - 12:00 p.m. & Wednesdays 9:00 a.m. - 10:00 a.m. & Wednesdays 11:00 a.m. - 12:00 p.m.

#### 1.3. Communication

E-mail is the best way to get in touch with me outside of class. You can expect a response within 24 hours on weekdays which either answers your question, or to set up a meeting to further discuss your question. You are expected to check your university email and our Canvas course regularly and respond in a timely manner.

#### 1.4. Prerequisites

This course requires MATH 126 (Analytic Trigonometry) and MATH 155 (Calculus for Biological Scientists) or MATH 160 (Calculus for Physical Scientists)

#### 1.5. Textbook

We will use the electronic edition of the textbook “The Chemistry Maths Book” 2nd Edition, by Erich Steiner. This textbook is available for you for free download on the [bookstore’s OER page](https://www.bookstore.colostate.edu/oer)<sup>1</sup>.

#### 1.6. Course Website

We will use [Canvas](https://canvas.colostate.edu/)<sup>2</sup> for all course materials and grades.

#### 1.7. Course Ethos

Roughly speaking, mathematics has two essential components: creative ideas and effective communication. In this course, we will work to learn the content while valuing both of these components. This means you should expect to ask (and be asked) lots of questions, explain your thought processes and ideas through discussion and writing, and be stretched to think about problems you may have not seen before. Not only are these components the essence of mathematics, but they are also skills that will continue to help you succeed long after this class. Further, making mistakes is a necessary component in learning something new, and everyone has valuable insights that can help deepen our understanding of a concept.

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<sup>1</sup><https://www.bookstore.colostate.edu/oer>

<sup>2</sup><https://canvas.colostate.edu/>

### 1.8. Course Structure

Research shows that people learn mathematics best when they are actively engaged in the material with their peers. In other words, you learn by doing and interacting, not by watching. Our daily classes will be split between lectures, giving you the steps for working through a problem with a couple examples, and time for you to work through problems on your own or in groups.

You will have access to our daily lecture notes on Canvas, which you can reference when studying or doing homework. You can also always reference the textbook for definitions, although we will not cover content linearly from the book.

### 1.9. Course Content

This course explores derivatives and integrals of functions of several variables, differential equations, matrices and linear algebra, and applications in the biosciences.

### 1.10. Calculators & Technology

You should have access to technology that can graph functions to explore ideas inside and outside of class. Examples of such technology include a calculator such as a TI-83 or better, a graphing calculator application for a smartphone, and web sites such as [Wolfram Alpha](https://www.wolframalpha.com/)<sup>3</sup> and [Desmos](https://www.desmos.com/)<sup>4</sup>. Desmos is often used for illustrations, class activities, and homeworks, so we recommend becoming familiar with this software.

## 2. Assignments, Assessments, & Grades

### 2.1. Academic Integrity

We learn best together, which is why there is a large amount of collaboration built into our course structure. However, there is a difference between learning together and using someone else's work. Submitting someone else's work, or copying solutions from the internet constitutes plagiarism. Do not use "post-and-solve" resources (such as Chegg.com and Slader.com) to post or view problems from our course. This course will adhere to the CSU Academic Integrity Policy as found in the Colorado State University General Catalog and the Student Conduct Code. At a minimum, violations will result in a grading penalty in this course and a report to the Office of Conflict Resolution and Student Conduct Services. See more details at [the catalog](#)<sup>5</sup>.

If you are ever stuck on a homework problem, and not sure where to start, you can always (1) look at the lecture notes from that lesson on Canvas, (2) send me an email with a specific question about the problem, or (3) come to any of the posted office hours for assistance.

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<sup>3</sup><https://www.wolframalpha.com/>

<sup>4</sup><https://www.desmos.com/>

<sup>5</sup><https://catalog.colostate.edu/general-catalog/policies/students-responsibilities/#academic-integrity>

## 2.2. Written Practice

You will be assigned written problems on most weeks. It is expected that you put multiple days worth of thought into these assignments, and start early in case you have questions. You are expected to write up complete, legible, and logical solutions to these problems. Each problem should be written using the necessary arguments and work to explain your reasoning and steps when necessary.

Written practice assignments are an opportunity to make mistakes and learn from them. If you submit the assignment by the due date, you will receive a score and feedback from me as to what can be improved. You will have opportunities to make corrections and earn back points on homework during office hours. Details for this will be shared in class. You must complete corrections for a homework before the exam which covers that content.

Written practice will be collected on a weekly basis; typically, it will be collected on Wednesday via an upload to Gradescope, which can be accessed through Canvas. You may work together on these assignments to understand the problems and even to solve them, and may also request a question be addressed in office hours. However, when you write up your solutions, this should be done independently, and in your own words.

## 2.3. In-Person Assessments

We will have three exams covering the three main topics of our course: multivariable calculus, differential equations, and linear algebra. The exams will take place during our normal scheduled class time. Assessments will be written so that technology is not required. If you would prefer to have a calculator, please bring something that does not have access to the internet. The exam dates are listed below, but are tentative and subject to change:

- Friday, February 23
- Friday, April 5
- Friday, May 3

## 2.4. Letter Grades

Overall grade percentages will be calculated based on the following weighting:

- Written Practice (60%)
- In-Person Assessments (40%)

Final letter grades will be assigned according to a scale no stricter than the following:

F	D	C	C+	B-	B	B+	A-	A	A+
[0,60)	[60,70)	[70,78)	[78,80)	[80,82)	[82,88)	[88,90)	[90,92)	[92,98)	[98,100]

### 3. Course and University Policies & Standards

#### 3.1. COVID-19 Resources

For the most up-to-date information regarding COVID-19 at CSU, see [this link](#)<sup>6</sup>.

#### 3.2. Resources and Policies

The Institute for Learning and Teaching has compiled a list of CSU policies relevant to your courses, and of resources to help with various challenges you might encounter during your time at CSU at [this link](#)<sup>7</sup>. This includes detailed statements regarding food insecurity, interpersonal violence, religious observances, student caregivers, and mental health resources. Take the time to familiarize yourself with the resources available for you.

#### 3.3. Accommodations for Disabilities

If you are a student who will need accommodations in this class due to a disability or chronic health condition, I will need an accommodation letter from the Student Disability Center (SDC) before they are implemented. Please email me or meet with me during my office hours to give me the letter and/or to further discuss your needs.

#### 3.4. Classroom Behavior, Respect for Diversity and Inclusion

Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, color, culture, religion, creed, politics, veteran's status, sexual orientation, gender, gender identity and gender expression, age, disability, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. For more information, see the policies on classroom behavior and the student code at [the catalog](#)<sup>8</sup> and at [the SRC](#)<sup>9</sup>.

We acknowledge that many students have had experiences that have left them feeling excluded from the field of mathematics. We also acknowledge that students from minority groups have been disproportionately impacted. We are making this explicit statement because this unfortunate reality is inconsistent with the truth that you can be successful in mathematics, regardless of your race, ethnicity, gender, or sexual orientation. We are committed to decolonizing mathematics into a field where every student feels supported in accomplishing the hard work necessary to become better problem solvers. We learn more by listening to diverse perspectives, and we hope you will be ready and willing to share yours in this course.

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<sup>6</sup><https://covidrecovery.colostate.edu/>

<sup>7</sup><https://tilt.colostate.edu/syllabus-resources-and-policies/>

<sup>8</sup><https://catalog.colostate.edu/general-catalog/policies/students-responsibilities>

<sup>9</sup><https://resolutioncenter.colostate.edu/student-conduct-code/>

Here are several resources that highlight the past and current contributions to the mathematics community from underrepresented groups:

- (i) [Meet A Mathematician](#)
- (ii) [Mathematically Gifted and Black](#)
- (iii) [Lathisms](#)
- (iv) [Indigenous Mathematicians](#)
- (v) [Spectra](#)
- (vi) [Association for Women in Mathematics](#)
- (vii) [Mathematicians of the African Diaspora](#)