

# Math 261 Syllabus – Summer 2024

## Basic Info

**Instructor:** Natalie Wijesinghe, she/her (natwijes@colostate.edu)

**Course Coordinator:** Dr. Philip Kopel, he/him (philip.kopel@math.colostate.edu)

**Office Hours:** Tuesday 12:30- 2:30p, Wednesday 3:30-4:30p,

**Meeting Times:** Online

**Textbook:** Thomas' Calculus, 13<sup>th</sup> edition. Here is a link to the online version:

[https://rodrigopacios.github.io/mpacios/download/Thomas\\_Calculus.pdf](https://rodrigopacios.github.io/mpacios/download/Thomas_Calculus.pdf) (The materials on Canvas are sufficient for completing the assignments, but the textbook or another complete reference on multivariable calculus can help fill in gaps.)

**Prerequisite:** Calculus II (Math 161)

## Course Content

### Ch 12- Vectors and the Geometry of Space

- 12.1 Three-Dimensional Coordinate Systems
- 12.2 Vectors
- 12.3 The Dot Product
- 12.4 The Cross Product
- 12.5 Lines and Planes in Space
- 12.6 Cylinders and Quadric Surfaces

### Ch 13- Vector-Valued Functions and Motion in Space

- 13.1 Curves in Space and Their Tangents
- 13.2 Integrals of Vector Functions; Projectile Motion
- 13.3 Arc Length in Space
- 13.4 Curvature and Normal Vectors of a Curve
- 13.5 Tangential and Normal Components of Acceleration
- (13.6 is not included in this course.)

### Ch 14- Partial Derivatives

- 14.1 Functions of Several Variables
- 14.2 Limits and Continuity in Higher Dimensions
- 14.3 Partial Derivatives
- 14.4 The Chain Rule
- 14.5 Directional Derivatives and Gradient Vectors
- 14.6 Tangent Planes and Differentials
- 14.7 Extreme Values and Saddle Points
- 14.8 Lagrange Multipliers
- 14.9 Taylor's Formula for Two Variables
- (14.10 is not included in this course.)

### Ch 15- Multiple Integrals

- 15.1 Double and Iterated Integrals over Rectangles
- 15.2 Double Integrals over General Regions
- 15.3 Area by Double Integration
- 15.4 Double Integrals in Polar Form
- 15.5 Triple Integrals in Rectangular Coordinates
- 15.6 Applications (moments, and center of mass)
- 15.7 Triple Integrals in Cylindrical and Spherical Coordinates
- 15.8 Substitutions in Multiple Integrals

### Ch 16- Integrals and Vector Fields

- 16.1 Line Integrals of Scalar Functions
- 16.2 Vector Fields and Line Integrals: Work, Circulation, and Flux
- 16.3 Path Independence, Conservative Fields, and Potential Functions
- 16.4 Green's Theorem in the Plane
- 16.5 Surfaces and Area
- 16.6 Surface Integrals
- 16.7 Stoke's Theorem
- 16.8 The Divergence Theorem and a Unified Theory

## Course structure

This course consists of 36 modules, which you will access through Canvas, the CSU teaching website. Each module has video lectures and other helpful material on one of the sections of Thomas' Calculus, chapters 12 through 16, inclusive. (Sections 13.6 and 14.10 are not part of this course.) In the modules they may be numbered a little differently. You will study each module on your own schedule by internet, preparing for each week's homework assignments and tests. The pace of the course is fast, and most of the weeks you will need to prepare five modules (equals five sections of the book.)

## Grading

In this course, there will be weekly homework assignments and weekly tests according to the schedule in Canvas. The homework assignments will be 40% of your grade, and the weekly tests will be 60% of your grade. Each homework assignment will be worth 20 points, and each test will be worth 30 points. There are eight weeks in this course, so there are 400 points total.

**Homework Assignments:** The weekly homework assignments must be uploaded in a single pdf file with your answers before 11:59 PM of the due date. (Homework is due on **Tuesdays**, *except* the first week, when it is due on a Thursday.) You must show all your work to receive credit. If you can't upload in time, in an emergency you may email me the answers, but it must be within five minutes of the homework closing time.

**Exams:** The weekly tests will be available for you to take on **Fridays** from 6:00 AM to 11:59 PM. Once you open the test, you will have 120 minutes (2 hours) to answer the questions including uploading a single pdf with the answers. You must show all your work to receive credit. The upload must be finished by 11:59 PM. The exams will be taken in a lockdown browser, and you will be required to show your ID to the camera. If you can't upload in time, in an emergency you may email me the answers, but it must be within five minutes of the closing time of the test. You can use the canvas page, textbook, and calculator during exams. However, please note that ***the lockdown browser will not allow you to go to other websites on the device you are using***. Therefore, to access the canvas page and online book, you will need another device. It is okay to take the exam on campus at the library if you need to be there to access a second device.

**Grading Errors:** If you spot a grading error on a homework or test (e.g., you believe you lost points without reason or there was some arithmetic error with calculating the total grade), you have one week to bring this potential error to my attention. Please check your grades on Canvas as soon as they appear to make sure they were recorded accurately and so you have time to ask for a correction.

**Final Grades:** Letter grades for the course will include plus/minus grades and will be initially assigned as follows, which is similar to the standard CSU grading scheme. Depending on the overall performance of the students in the course, it could be that I will curve the grades upwards a little bit at the end of the course, but that is not guaranteed.

Grade	Range
A+	100% to 98.5%
A	< 98.5% to 93.33%
A-	< 93.33% to 90.0%
B+	< 90.0% to 86.67%
B	< 86.67% to 83.33%
B-	< 83.33% to 80.0%
C+	< 80.0% to 76.67%
C	< 76.67% to 70.0%
D	< 70.0% to 60.0%
F	< 60.0% to 0.0%

## Important Dates:

**June 10:** Term begins

**June 17:** Last day to add or drop course

**June 19:** Juneteenth observed

**July 4:** Independence Day holiday

**June 18 – July 23:** Withdrawal window

**August 2:** Term ends

## **Policies:**

**Academic integrity:** The University has an Academic Integrity Policy and Student Conduct Code (see the CSU General Catalog) which is enforced in Math 261. Those found in violation will have their grades lowered significantly, possibly including being assigned a grade of 'F' in the homework, test, or course, with possible referral to the university judicial system.

**SDC- Student Disability Center:** For students with physical, cognitive, systemic, learning, and psychiatric disabilities, and other special needs, the university has established the SDC or Student Disability Center so that your special needs can be considered privately. Once the SDC evaluates a student's particular needs, then the SDC will email the instructor with a list of suggested accommodations, but without revealing the nature of the disability--that keeps things more private for the student involved. If you are interested in learning more, or signing up, please visit the SDC website at <https://disabilitycenter.colostate.edu/>

**ADA:** The American with Disabilities Act requires that reasonable accommodations be provided for students with physical, cognitive, systemic, learning and psychiatric disabilities. Please contact your instructor at the beginning of the course to discuss any such accommodations you may require for the course. Most often, these accommodations are handled initially by the SDC- Student Disability Center.

**Make-up tests:** Make-ups for tests will be given only in cases of university-approved absence and well-documented emergencies. Inform one of your instructors about any such absences as soon as you know about it.

**Life Circumstances:** If you are experiencing a serious, unexpected life circumstance that is affecting your ability to participate in the course fully, the best thing to do is to confer with the CSU Student Case Management. They will help you deal with these situations in a safe and professional manner. You are also more than welcome to talk to me directly and I am happy to help point you toward the right resources, if needed. The URL for CSU Student Case Management is: <https://studentcasemanagement.colostate.edu/>

## **Disclaimer:**

While unlikely, I reserve the right to make changes to the syllabus (especially the scheduling of exams and homeworks) if deemed necessary for the course. Any changes implemented will occur with the intent of making the course more effective for the learning of the students.