

Math 202 – Calculus III

Johns Hopkins University

Course Syllabus

Instructor

Erich Goldstein

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Office hours: Online, by appointment.

Course Description

This is a course in the differential and integral calculus of several variables. Topics include vectors in two and three dimensions, analytic geometry of three dimensions, parametric curves, partial derivatives, the gradient, optimization in several variables, multiple integration with change of variables across different coordinate systems, line integrals, surface integrals, Green's Theorem, Stokes' Theorem, and Gauss' Divergence Theorem.

Prerequisites

Successful completion of AP Calculus BC, Calculus II, or equivalent.

Credits

4 credits

Textbook

Vector Calculus (6th Edition) J. Marsden & A. Tromba, ISBN-13: 9781429215084. The eBook is available though [MacMillan Achieve](#).

Homework

Online homework assignments will be completed in each module, due on the last day of that module at 11:59 PM Eastern Time. You have an unlimited number of attempts to complete each problem up until the due date. *Your lowest homework grade will be dropped.*

Quizzes

There will be a short 30-minute online quiz due for each module, due on the last day of that module at 11:59 PM Eastern Time. You will have two attempts for each quiz, and only the highest grade of those attempts is counted. *Your lowest quiz grade will be dropped.*

Exams

There will be two midterm exams (90 minutes each) and one final exam (120 minutes). Each exam will be taken online using the Respondus Lockdown Browser. Calculators are not allowed nor will they be helpful.

Exam 1 dates: TBD

Exam 2 dates: TBD

Final Exam dates: TBD

Discussion Forum

The course discussion board can be used to ask (and answer) questions. You are encouraged to use the discussion forums so that your classmates can benefit from the discussion. In addition, you can contact Professor Goldstein by email (egolds17@jhu.edu) and appointments can be made to meet over Zoom.

Course Format

Each week, video lectures will be provided to explain the topics being covered. In addition to watching these recordings, you should read the corresponding textbook sections. Practice exercises from the textbook are listed in Canvas – working those problems can help you to verify that you understand the concepts and that you are able to apply any solution techniques being taught.

You should complete the online homework first – and ask questions on any problems you struggle with – before moving on to take the weekly quiz.

Grading

Your final grade for the class will be given as a weighted average with the weights given as follows:

- Homework Assignments (lowest score dropped): 20%
- Quizzes (lowest score dropped): 10%
- Exam 1: 20%
- Exam 2: 20%
- Final exam: 30%

The letter grades are assigned as follows based on your final weighted average:

- A: 90-100
- B: 80 - 89
- C: 70 - 79
- D: 55 - 69
- F: < 55

"+" and "-" will be determined at the end of the semester.

Support

There are many sources of help and support if you are having difficulty with the class, material or anything else. These include:

- office hours: Online, by appointment
- The Learning Den: <http://www.advising.jhu.edu/>
- Office of Academic Support: <http://academicsupport.jhu.edu/>- See the support page for more info

Please do not feel shy about asking for help or just checking that you understand something correctly.

Make Up Policy

There will be no make-up exams. If you have a valid excuse to miss an exam, you must provide a letter from the Office of Academic Advising verifying this. In this case, your grade for the exam will be the weighted average of your grades in the other exams. If you miss an exam without a valid excuse, your grade will be zero.

Short extensions on homework and quizzes (1-2 days) can be requested via email PRIOR to the due date by emailing the instructor. Your dropped scores are intended to account for unavoidable situations that may occur (illness, family emergency, etc.)

Special Aid/Students with Disabilities

Students with documented disabilities or other special needs who require accommodations must register with the Office of Student Disability Service (<https://studentaffairs.jhu.edu/disabilities/>) After that, remind the instructor of the specific needs at least one week prior to each exam; the instructor must be provided with the official letter stating all the needs from the Office of Student Disability Services.

Collaboration

Collaboration on homework is allowed and encouraged. However, each student must complete his/her online assignment individually - copying from another student (or having another student complete your assignment) is prohibited. Homework is an essential part of learning the course material. Failing to give it proper attention will significantly harm your performance on the exams and your overall grade for the class. Quizzes and exams should be completed individually, with no collaboration or assistance from anyone other than the course instructor or TA.

Use of Artificial Intelligence

Academic integrity is a cornerstone of the Krieger School of Arts and Science. Generative artificial intelligence (AI) tools such as ChatGPT are widely available; however, in this course, you are personally expected to complete the assignments, assessments, and exams without the use of any generative AI tool. The use of generative AI to complete any graded material will be considered a violation of the Academic Ethics Policy.

JHU Ethics Statement

The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition.

Report any violations you witness to the instructor. You may consult the associate dean of students and/or the chairman of the Ethics Board beforehand. Read the "Statement on Ethics" at the [Ethics Board](#) website for more information.

Class Modules

Module	Section	Module	Section
1	1.1 Vectors in Two and Three Dimensional Space 1.2 The Inner Product, Length, and Distance 1.3 Matrices, Determinants, and Cross Products 1.4 Spherical and Cylindrical Coordinates	5	6.1 The Geometry of Maps from \mathbb{R}^2 to \mathbb{R}^2 6.2 The Change of Variables Theorem 6.3 Applications of Double and Triple Integrals 4.1 Acceleration and Newton's Second Law 4.2 Arc Length
2	2.1 The Geometry of Real-Valued Functions 2.2 Limits and Continuity 2.3 Differentiation 2.4 Introduction to Paths 2.5 Properties of the Derivative 2.6 Gradients and Directional Derivatives	6	4.3 Vector Fields 4.4 Divergence and Curl 7.1 The Path Integral 7.2 Line Integrals 8.1 Green's Theorem
3	3.1 Iterated Partial Derivatives 3.2 Taylor's Theorem 3.3 Extrema of Real Valued Functions 3.4 Constrained Extrema and Lagrange Multipliers	7	7.3 Parametrized Surfaces 7.4 Area of a Surface 7.5 Integrals of Scalar Functions Over Surfaces 7.6 Surface Integrals of Vector Functions
4	5.1 Introduction 5.2 The Double Integral Over a Rectangle 5.3 The Double Integral Over More General Regions 5.4 Changing the Order of Integration 5.5 The Triple Integral	8	8.2 Stokes' Theorem 8.3 Conservative Fields 8.4 Gauss' Theorem