Math 241: Calculus III. Sections AL1 and AL2

Lectures: Monday, Wednesday, and Friday
AL1: 10:00-10:50 am, 314 Altgeld
AL2: 11:00-11:50 am, 314 Altgeld

Discussion sessions: Tuesday and Thursday.
ADA: 08:00AM - 08:50AM, 145 Altgeld Hall
ADB: 09:00AM - 09:50AM, 147 Altgeld Hall
ADC: 10:00AM - 10:50AM, 243 Altgeld Hall
ADD: 11:00AM - 11:50AM, 447 Altgeld Hall
ADE: 12:00PM - 12:50PM, 106B6 Engineering Hall
ADF: 01:00PM - 01:50PM, 445 Altgeld Hall
ADG: 02:00PM - 02:50PM, 143 Henry Administration Bldg
ADH: 03:00PM - 03:50PM, 445 Altgeld Hall
ADI: 04:00PM - 04:50PM, 243 Altgeld Hall
ADK: 09:00AM - 09:50AM, 347 Altgeld Hall
ADL: 10:00AM - 10:50AM, 147 Altgeld Hall
ADM: 02:00PM - 02:50PM, 147 Altgeld Hall
ADO: 12:00PM - 12:50PM, 149 Henry Administration Bldg
ADP: 01:00PM - 01:50PM, 106B6 Engineering Hall

Prerequisite: Math 231.

Credit: 4 undergraduate hours (Credit not given for both Math 241 and Math 292)

Instructor:
Dr. Aldo J. Manfroi
e-mail: amanfroi@illinois.edu (**strongly** preferred contact method)
Office: 235 CAB
Phone: 333-0217 (**not** recommended)

Office hours: on Zoom, TBA
or set an appointment by e-mail.

Tutoring: TBA

Web pages:
Main Web Page with Class info: http://learn.illinois.edu

Online Textbook and Homework: WebAssign. Follow the link from the class main web page

Class Forum on Campuswire: https://campuswire.com/c/G1B245AB4/feed

Online Textbook: James Stewart, *Calculus: Early Trascendentals*, 8th Ed., with enhanced WebAssign

Please note that this course uses the 8th edition rather than the 9th. You will also need WebAssign access to do the homework. (Note: WebAssign gives you access to an electronic version of the textbook.) For complete information on purchasing options for both, see

https://www.cengage.com/coursepages/UIUC_Calculus_Moodle1. If you have the standard text and WebAssign package from Math 220, 221, or 231 from last semester, then you already have everything you need for this course. Even before you purchase WebAssign, you can freely use it for the first two weeks of class and so not miss any homework assignments.

Course description and goals

The focus of this course is vector calculus, which concerns functions of several variables and functions whose values are vectors rather than just numbers. In this broader context, we will revisit notions like continuity, derivatives, and integrals, as well as their applications (such as finding minima and maxima). Well explore new geometric objects such as vector fields, curves, and surfaces in 3-space and study how these relate to differentiation and integration. The highlight of the course will be theorems of Green, Stokes, and Divergence, which relate seemingly disparate types of integrals in surprising ways. For most people, vector calculus is the most challenging term in the calculus sequence. There are a larger number of interrelated concepts than before, and solving a single problem can require thinking about one concept or object in several different ways. Because of this, conceptual understanding is more important than ever, and it is not possible to learn a short list of problem templates in lecture that will allow you to do all the HW and exam problems. Thus, while lecture and discussion section will include many worked examples, you will still often be asked to solve a HW problem that doesnt match up with one that youve already seen. The goal here is to get a solid understanding of vector calculus so you can solve any such problem you encounter in mathematics, the sciences, or engineering. That requires trying to solve new problems from first principles, if only because the real world is complicated.

Attendance and class preparation

Class attendance is expected. While attendance will not constitute part of your grade, coming to lecture regularly can increase your chances for success in the course. You can assume that anything that is covered in class may be tested in the written exams (unless we say otherwise). The time in class will be divided between lecturing (mostly for proofs or important concepts) and discussion and problem solving. Therefore your participation is encouraged. We will inform you in advance of the material that will be covered and strongly encourage you to read ahead. That way you can come to class prepared for the discussion and know which topics you want to have further clarified.

COVID-19 related policies

Following University policy, all students are required to engage in appropriate behavior to protect the health and safety of the community. Students are also required to follow the campus COVID-19 protocols.

Students who feel ill must not come to class. In addition, students who test positive for COVID-19 or have had an exposure that requires testing and/or quarantine must not attend class. The University will provide information to the instructor, in a manner that complies with privacy laws, about students in these latter categories. These students are judged to have excused absences for the class period and should contact the instructor via email about making up the work.

All students, faculty, staff, and visitors are required to wear face coverings in classrooms and university spaces. This is in accordance with CDC guidance and University policy and expected in this class.

Students who fail to abide by these rules will first be asked to comply; if they refuse, they will be required to leave the classroom immediately. If a student is asked to leave the classroom, the non-compliant student will be judged to have an unexcused absence and reported to the Office for Student Conflict Resolution for disciplinary action. Accumulation of non-compliance complaints against a student may result in dismissal from the University.

Inclusivity

The effectiveness of this course is dependent upon the creation of an encouraging and safe classroom environment. Exclusionary, offensive or harmful speech (such as racism, sexism, homophobia, transphobia, etc.) will not be tolerated and in some cases may be subject to University harassment procedures. We are all responsible for creating a positive and safe environment that allows all students equal respect and comfort. At minimum, we expect every student, instructor, and TA to help establish and maintain an environment where you and your peers can contribute without fear of ridicule or intolerant or offensive language.

Homework, tests, final exam, and grading

You will receive a numerical score rather than a letter grade on assignments and tests, and your final score will then be converted to a letter grade.

Homework on WebAssign

Following most lectures a WebAssign assignment will be posted designed to develop the computational skills and understanding for that lecture. It must be completed within 5 days of the time it is assigned. The due time will always be 11:59 pm.

You are free to discuss the homework with your classmates, but we strongly encourage you to understand the solution yourself. Do not assume you understand something just because someone told you how to do it. Remember that no collaboration will be allowed during in-class tests and exams.

Your three homework assignments with the lowest score will be dropped. Your homework average makes up 10% of your final grade.

Quizzes on PrairieLearn

Quizzes will be periodically posted on PrarieLearn. This will tend to test more your understanding of the concepts than your computational skills. You will also have 5 days to complete them and the due time will always be 11:59 pm.

Your quiz with the lowest score will be dropped. The PrairieLearn quizzes will count for 10% of your final grade.

Worksheets

Worksheets are done as part of the discussion sessions. The TAs will score your worksheets based on your effort on them. The three worksheets with the lowest scores will be dropped. The remaining worksheets will count for 10% of your final grade.

Midterms

There will be four written midterm tests, given during regular class times. You may **not** use notes, books, calculators or computers during any of the tests. You may be provided with a formula sheet if it seems necessary for the test. You cannot bring your own. The test with your lowest score will be dropped. If you miss a test, that will count as your lowest graded test. Each of the remaining midterms will be worth 15% of your final grade.

Final

There will be one cumulative final at the end of the semester at the day and time specified by the University. You may **not** use notes, books, calculators or computers during the final. You may be provided with a formula sheet if it seems necessary for the test. You cannot bring your own. The final will be worth 25% of your final grade.

Make up tests will be given **only** if you present written evidence, as soon as possible, that you did (or will have to) miss an exam for a legitimate reason. Medical conditions, religious time conflicts and university related sports competition are examples of reasons for a justified absence. A note that you have visited McKinley is **not** proof of a legitimate reason. Travel and leisure plans are not a legitimate reason.

Grading

Letter grades will be assigned at the end of the semester based on your combined score in the class (from graded homework, quizzes, worksheets, midterms, and final). However, at any time during the semester you are welcome to ask us what grade your performance so far corresponds to so that you have an idea of how you are doing.

Suggestions for success in the class

- Please come to class prepared. This does not mean you have to understand everything. In fact, if you don't understand something you will have the opportunity to ask about it and we can discuss it in class.
- Please let us know if you are having trouble with something, and do so **before** it becomes an issue on a test or exam. Do make use of office hours.
- While reading your text we strongly encourage you to work through the proofs and examples yourself on paper. This is a very useful way to increase your understanding of the material.
- After reading something, try to summarize the important concepts. This will help create a mental framework into which to fit the problems you will be working on.