MATH 411, FALL 2023, SECTION 0101

MWF 11:00pm - 11:50pm PHY 2213 (corrected)

Dr. M. Machedon, email: matei@umd.edu

Office hours: Mondays and Wednesdays 2-2:50 in MTH 3311.

Mid-term exam: Monday, October 9. This will be in-person, taking place during the regular class time.
Final exam: Friday, December 15 8am - 10am

Textbook: Advanced Calculus, Second Edition, by P.M. Fitzpatrick, ISBN 0-534-37603-7

Course description: We will cover Chapters 10-17 of Advanced Calculus by P.M. Fitzpatrick. These chapters cover, roughly, three types of topics: some point-set topology in $\mathbb{R}^n$, derivatives of functions of several variables, and the inverse and implicit function theorems.

We will also go quickly over some of the topics on integration in chapters 18-20, with additional lectures on concepts not in the textbook, such as Lebesgue measure 0 and integration on $n-1$ dimensional "surfaces" (manifolds) in $\mathbb{R}^n$, and the divergence theorem. Chapters 18-20, and these additional topics will not be on the final exam.

The prerequisite for this course is Math 410.

Policies and Resources for Undergraduate Courses

It is our shared responsibility to know and abide by the University of Maryland's policies that relate to all courses, which include topics like:

Academic integrity
Conduct
Accessibility and accommodations
Harassment
Attendance and excused absences
Grades and appeals
Copyright and intellectual property

Date: October 28, 2023.

Please visit www.ugst.umd.edu/courserelatedpolicies.html for the full list of campus-wide policies prepared by the Office of Undergraduate Studies, and follow up with me if you have questions.

Communication with the instructor

Email: If you need to communicate with me, please email me at matei@umd.edu. This works better than sending messages through Canvas. Email is best for academic, administrative and confidential matters (such as excused absences), while math questions are best answered in person, during office hours or right after class. I will do my best to answer emails within 24 hours.

ELMS: I will send important announces via ELMS messaging. You must make sure that your email and announcement notifications are enable in ELMS. You are responsible for checking your email and Canvas/ELMS inbox regularly.

Grading: Homework = 30%, one mid-term exam 30%, final exam 40%. Students who get less than 55% of the maximum possible score will receive an F, and 55% and higher will be at least a C-. There will be a "curve" for the other grades, but the precise numbers will be determined at the end of the course. The A/B cutoff will be somewhere between 85% and 90%, and the B/C cutoff between 70% and 75%. I don't expect to give any Ds. Once the exact cut-offs are set, they are firm. To be fair to everybody, I have to establish clear standards and apply them consistently.

We will use + and − for A, B and C grades.

All scores will be posted on the course ELMS page. If you have questions about any of your grades, please email me. If I have made a mistake, I will immediately correct it. After the in-class exam students have one week from when the exam is returned to appeal the grading. Similarly, students have one week after a homework grade is posted to appeal the grading.

Appeals for the final grade must be made in writing. No appeals for regrading work done during the semester can be made after the day of the final exam.

Make-up policy: Make-up exams will be offered only in case of illness, religious observance, participation in a University activity at the request of University authorities, or other compelling circumstances.

Late homework will not be accepted. In case of illness, religious observance, participation in a University activity at the request of University authorities, or other compelling circumstances, students will

not be penalized for missed homework. In such cases, you should see a blank rather than a 0 in Canvas.

The University's policy on religious observance and classroom and tests states that students should not be penalized for participation in religious observances. Students are responsible for notifying the instructor of projected absences within the first two weeks of the semester. This is especially important for final examinations.

Academic integrity

The exams will be in-class, closed book, closed notes.

On exams students must write by hand and sign the following pledge:

I pledge on my honor that I have not given or received any unauthorized assistance on this examination.

This does not apply to homework, where it is acceptable to exchange ideas with other people, in person or electronically. However, AI generated content is not allowed.

During exams, students are expected to apply the ideas they learn to some problems that are significantly different from the examples and homework they have seen.

Resources and Accommodations

Students who require special examination conditions must register with the office of Accessibility and Disability Services (ADS) in Shoemaker Hall. Documentation must be provided to the instructor. Proper forms must be filled and provided to the instructor before every exam.

You should also know there are a wide range of resources to support you with whatever you might need (UMD's Student Resources and Services website may help). If you feel it would be helpful to have someone to talk to, visit UMD's Counseling Center or one of the many other mental health resources on campus.

Link to other policies, suggestions, and information regarding the following topics:

https://www-math.umd.edu/images/CoursePolicies.pdf

Tips for Success

Participation

Names/Pronouns and Self-identifications

Communication with Peers

Notice of Mandatory Reporting

Assigned homework

Homework should be scanned and entered in Canvas as a PDF files (rather than individual pictures). Many free phone apps will convert

pictures to PDF files. The files should be legible. If the quality is too low, the assignment may not be graded.

All problem sets are due in Canvas at 11:59 PM.

Problem set 1, due Wednesday, September 6
10.1: 2 (use Cauchy-Schwarz), 4, 7 (use C-S), 13
10.2: 1, 2, 3, 8
10.3: 1 (no need to give reasons), 3

Problem set 2, due Wednesday, September 13
11.1: 6, 7, 11
11.2: 6, 7
11.3: 2, 4
For class discussion, **not to be turned in**: Supplemental problems 1), 2), 6) from "Math 411 practice problems" available as a PDF file on Canvas.

Problem set 3, due Wednesday, September 20 11.4: 1, 4, 5
12.1: 2a, 3, 4, 11

Problem set 4, due Wednesday, September 27
12.2: 1, 9, 10, 11
12.3: 8
For class discussion, not to be turned in: Supplemental problems 8)

Mid-term exam: Monday, October 9

Problem set 5, due Friday, October 13
13.1: 1, 4, 9
13.2: 4, 6 (hint: you may (but don't have to) use homogeneity, as discussed in class. What is the homogeneity of the partial derivatives of g?)
13.3: 6, 11

Problem set 6, due Monday, October 23
14.1: 11
14.2: 1, 10
14.3: 5, 7
For class discussion: Practice problems 17, 18.

Problem set 7, due Wednesday, November 1
15.2: 2, 4
15.3: 1, 5

Problem set 8, due Friday, November 10
16.1 : 5, 13
16.2: 2, 8
16.3 : 3, 11

Problem set 9, due Monday, November 20
17.1: 2, 7
17.2: 1

Problem set 10, due Monday, December 4
17.3: 1a, 5
17.4: 2, 12