

Essential Information

Website: olhasus.github.io/MATH-F253X-FXA-/

Instructor Information:

Name: Olha Sus
Email: osus@alaska.edu
Office: Chapman 210C

Online Office hours: scheduled Zoom office hours or by appointment (see course website)

Appointments: Email your instructor to make an appointment

Class Time

This is a 4 credit WEB synchronous course. There are six hours of class meetings every week, 1.5 hour on MTWR from 3:00 PM to 4:30 PM. Classes will meet over Zoom. Classes will include traditional lectures as well as group work.

Tentative Schedule

The course website contains a schedule for the semester listing the topics to be covered each class, the dates each assignment is due. You should consult this schedule routinely. Any minor adjustments to the schedule will be announced in advance.

Office Hours and Communication

Instructors will schedule formal office hours, which will be listed on the course webpage.

We will use Campuswire for text-based questions, answers, and calculus-based chat. Sign up with the link on the Calculus III website. We will use the Blackboard for announcements.

Online Course Materials

Most course materials (e.g., this syllabus, schedule, quizzes/exams solutions, study materials) will be posted on the course webpage. Certain course materials, namely grades, class Zoom videos and written HW solutions are available on Blackboard, which you can access also via the main course website.

Catalog Description & Materials

Multivariable calculus. Topics include vectors in 2- and 3-dimensions; differential calculus of functions of several variables; multiple integration; vector calculus, including Green's and Stokes' Theorem; and applications.

Required text: Calculus (standard or "early transcendentals") or Multivariable Calculus, 8th ed., by J. Stewart, Brooks/Cole, Chapters 12-16 only

Required Online Access: WebAssign Class Key: [uaf 2845 8766](#)

Prerequisites: Math 252X.

Course overview and goals

Though you have must have completed a year of college-level calculus to be in this course, you have only seen the subject used in very special circumstances. Most importantly, you

have dealt with derivatives and integrals only of functions of one variable. In the real world, most things do not depend on just one variable. For instance, the temperature at any point in space might depend on the 3 variables giving the coordinates of the point. Moving from point to point in any of the x-, y-, or z-directions may produce a change in temperature. For a situation such as this, what do we mean by a derivative?, an integral?

In a slightly different direction, consider a planet orbiting the sun. While the planet's position is a function of time, it really has three components (the x-, y-, and z- coordinates), so we need three functions of the sort appearing in Calculus I and II to in order to talk about 'the' position function. What should a derivative mean for this sort of three-fold function, and how might it occur in an integral?

Our goal for the semester is to extend your knowledge of calculus into the two- and three-dimensional settings that naturally occur in many situations in the sciences. This builds strongly on the material from Math 251 and 252, as we will ultimately see all the methods of calculating derivatives and integrals learned there can be used in this new multidimensional setting. However, understanding how these methods apply requires developing new conceptual frameworks.

This material is essential for further study in mathematics, the physical sciences, and engineering. It also appears often in some branches of economics and the biological sciences as well.

Finally, be warned that understanding two and three dimensions mathematically is harder for many people than they might at first expect. You will have to think hard about the material. It is challenging, but also very rewarding.

Mechanics of the course

Homework

Homework in this class comes in two varieties: online homework via WebAssign, and weekly homework on paper.

Written Homework

Each week there will be a selection of problems to write up by hand and submit. The point of this exercise is to practice presenting your solution to a human being. You want your solution to be clearly presented, neatly written, and easy to read.

Written homework should be uploaded to Gradescope by 11:00 PM the day it is due as shown in the schedule (typically Mondays). Your lowest written homework score will be dropped.

WebAssign Homework

WebAssign homework will be assigned multiple times each week and is graded by the computer. These problems allow you to receive immediate feedback on correctness. You are welcome to use your textbook and a calculator to help solve these problems, but the use of more sophisticated tools (e.g., Wolfram Alpha) will undermine the benefit to you of the homework, and may leave you unprepared for the quizzes and exams.

You can request an automatic extension in WebAssign up to 7 days after the due date. Your extension will be for 5 days, and you will be assessed a mild penalty (10 %) on all problems

submitted after the due date.

Logistics:

- You will need a WebAssign code. Texts purchased from the UAF bookstore include one; otherwise, a code can be purchased from WebAssign directly. WebAssign can be used for two weeks in a "trial" period, which you can take advantage of if you are uncertain about your placement in this class.
- Log in to WebAssign from Blackboard (link on sidebar on left-hand side)
- You (usually) get 5 chances to get a problem correct.
- Each assignment is due at 11:00 PM.
- You may request an automatic 5-day extension on each WebAssign assignment with a mild penalty (10 %).
- Each WebAssign assignment will be equally weighted in the final grade computation.
- Your lowest assignment is dropped.

Quizzes

Short quizzes will be given Thursdays, one per week. These will typically take 10-15 minutes and be similar to recent homework. You will download them and upload them to Gradescope independently at any time you like on Thursday after 8 am. You must submit your quiz by 11:00 PM on the day it becomes available. The primary goals of these are 1) a check that you have understood recent concepts, and 2) some direct feedback on your written solution skill.

Midterm Exams

There are two midterm exams this semester, to be held on the dates in the schedule on the course website. The same calculator policy as for the quizzes will apply, unless otherwise noted. Any other aids allowed, if any, will be announced on a per-exam basis. Make-up midterms will be given only in negotiation with your instructor.

Final Exam

The cumulative final exam will be held at the day/time listed in the online schedule. A make-up or early final exam will be given only in extenuating circumstances, for documented reasons and at the discretion of the instructors. The same calculator and aids policy as the midterms will apply.

Learning in the time of COVID

We recognize that this semester is unlike any semester in the last 100 years. Frequent bi-directional communication will be the key to our joint success.

- If some way the class is set up isn't working for you, please let your instructor know!
- If something goes sideways for you, please email or call your instructor and we can sort out how to help.

- If you get sick and can't finish something, let your instructor know as soon as possible and we'll see what we can work out.
- If you need someone to talk to about non-mathematical questions, Student Mental Health Services offers folks to talk to, with free options. In particular, they offer Telehealth check-ins “for times when you feel you could use a little support, want to learn about skills you can use to maintain or improve your mental health, or you aren't sure if you're coping well and could use a professional perspective”. Call 907-474-7043 to schedule.

Calculator Policy

I have no strong feelings on whether you use a calculator when doing homework. As long as you are sure you have the skills to do all calculations by hand, it is fine for you to use technology as a time saver. However, no calculators will be allowed on any examinations or quizzes. This will ensure that testing conditions are equal for everyone.

Evaluation and Grades

Grades are determined as follows. (Each component of the grade is discussed below.)

| | |
|--------------------|------|
| Written Homework | 10% |
| WebAssign Homework | 10% |
| Quizzes | 10% |
| Midterm Exam I | 20% |
| Midterm Exam II | 20% |
| Final Exam | 30% |
| total | 100% |

Letter grades will be assigned according to the following scale. This scale is a guarantee; the instructors reserve the right to lower the thresholds.

| | | | |
|---|-----------|---|---------|
| A | 90 - 100% | F | 0 - 59% |
| B | 80 - 89% | | |
| C | 70 - 79% | | |
| D | 60 - 69% | | |

with $+/-$ assigned to the lowest and highest 3 points in each grade range.

I reserve the right to move the grade cutoff points downward if particular exams turn out to be unexpectedly difficult.

Tutoring and Resources

Free tutoring is available Monday - Saturday! This service is available to any UAF student registered in a MATH or STAT course. Tutoring is accessible through Zoom. Appointments can be made for 30 minutes or an hour and can be scheduled up to two weeks in advance. To schedule an appointment students can sign up for an appointment at <https://fairbanks.go-redrock.com>. If you have issues with or questions about tutoring, please contact uafmathstatlab@gmail.com.

Additional Support

I am here to help you succeed, however if you do not ask questions and do not seek assistance you will not do well in this course. Students can contact me through email osus@alaska.edu.

Rules and Policies

Zoom Classtime

Classtime for the synchronous sections, and recitations for both synchronous and asynchronous sections, will be held via Zoom.

- Please mute your audio when you are not speaking so that background noise does not disrupt the class.
- You may choose to turn off your video; please present an avatar unique to you, however.
- I will stop for questions regularly. Politely interrupt me if necessary.
- I will call on students by name to answer questions in class. You can always say “pass” if you don’t want to answer.
- I don’t mind chit-chat in the chat window, but keep it focused on class, and please ask questions out loud.
- Everyone should participate in the small group discussions.

Participation and Attendance

Class attendance is expected. Students who stop participating in the course may be withdrawn. If you have technological limitations to participating in class you need to email/call your instructor to sort things out as soon as you can. Examples of inadequate participation include, but are not limited to:

- not completing or not turning in multiple homework assignments
- failing to participate in classroom activities
- repeatedly failing tests and quizzes with no attempt at remediation

Recordings

Our zoom sessions will be recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the “chat” feature, which allows students to type questions and comments live. Recordings will only be made available on Blackboard to other students in the class and will be deleted at the end of the semester.

Disability Services

The Office of Disability Services implements the Americans with Disabilities Act (ADA), and ensures that UAF students have equal access to the campus and course materials. The instructors will work with the Office of Disability Services (208 Whitaker, 474-5655) to provide reasonable accommodations to students with disabilities.

Student Protections and Services

Every qualified student is welcome in our classes. As needed, we are happy to work with you, Disability Services, Military and Veteran Services, Rural Student Services, etc. to find reasonable accommodations. Students at this university are protected against sexual harassment and discrimination (Title IX), and minors have additional protections. As required, if we notice or are informed of certain types of misconduct, then we are required to report it to the appropriate authorities. For more information on your rights as a student and the resources available to you, please go to the following site: www.uaf.edu/handbook.

COVID-19

Students should keep up-to-date on the university’s policies, practices, and mandates related

to COVID-19 by regularly checking this website:

<https://sites.google.com/alaska.edu/coronavirus/uaf/uaf-students>.

Further, students are expected to adhere to the university's policies, practices, and mandates and are subject to disciplinary actions if they do not comply.

Incomplete Grade

Incomplete (I) will only be given in DMS courses in cases where the student has completed the majority (normally all but the last three weeks) of a course with a grade of C or better, but for personal reasons beyond his/her control has been unable to complete the course during the regular term. Negligence or indifference are not acceptable reasons for the granting of an incomplete grade. If you have issues (e.g., with COVID), please communicate early and often with your instructor.

Late Withdrawals

A withdrawal after the deadline (currently 9 weeks into the semester) from a DMS course will normally be granted only in cases where the student is performing satisfactorily (i.e., C or better) in a course, but has exceptional reasons, beyond his/her control, for being unable to complete the course. These exceptional reasons should be detailed in writing to the instructor, department head and dean.

Academic Dishonesty

Academic dishonesty, including cheating and plagiarism, will not be tolerated. It is a violation of the Student Code of Conduct and will be punished according to UAF procedures.