## Essential Information

| | |
|---|---|
| **Course main website:** | https://olhasus.github.io/MATH-F253X-FXA-/ |
| **Instructor Information:** | |
| **Name:** | Olha Sus |
| **Email:** | osus@alaska.edu |
| **Office:** | Chapman Bld., room # 210C |
| **Office hours:** | MWF & 11:00 AM - 12:00 PM via Zoom<br>*(for more information see CANVAS)* |
| **Appointments:** | Book your appointment via Calendly: calendly.com/osus |

## Course Description

An introduction to multivariable calculus, including vectors and vector-valued functions, partial derivatives and applications of partial derivatives (such as tangent planes and Lagrange multipliers), multiple integrals, volume, surface area, and the classical theorems of Green, Stokes and Gauss.

## Course Information

| | |
|---|---|
| **Credits** | 4.0 credits |
| **Prerequisites** | The prerequisite for MATH 253X is MATH 252X with a grade of C or better.<br>Students not meeting this prerequisite are not eligible to take this course and will be dropped. |

## 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.

## Course Reading Materials

- **Textbook:** Calculus (standard or 'early transcendentals') **or** Multivariable Calculus, 8th ed., by J. Stewart, Chapters 12-16 only
- *WebAssign Access Code.* You will be doing a significant portion of your homework online. To do this you must have a WebAssign access code. If you purchase your textbook from the UAF bookstore this code will come packaged with your text. If not, you can purchase one on `www.webassign.net`. If you have not yet purchased a code, don't fret! WebAssign grants you a two-week "trial" period where you can use the service without paying. You also have access to an eBook on WebAssign.

## Course overview and learning outcomes

Multivariable calculus is concerned with functions of many variables. Whereas in MATH 251 and MATH 252 you study functions of a single variable (height as a function of age $h(a)$, $f(x)$), in multivariable calculus functions will have more input variables (temperature of a particle in 3-space) or be vector-valued functions (position in 3-space $(x(t), y(t), z(t))$.

Our goal this semester is to extend your knowledge of calculus into the 2-, 3-, and $n-$dimensional realms. All of the techniques you learned from single variable calculus come into play here. Indeed, taking derivatives and computing integrals in the multivariate setting depends intimately on the ability to apply skills from univariate calculus.

Other interesting topics like vector fields and alternative coordinate systems appear. Multivariate calculus is essential for further study in physics, chemistry, engineering, economics, statistics and many other fields, as well as in mathematics. Though visualization in three dimensions can be hard at first, the benefit is well worth the effort.

Students will become competent in multivariable calculus, and gain some experience of its applications to other fields. Students will be able to visualize surfaces in three dimensions, and compute double and triple integrals, and multivariate derivatives.

## Instructional Methods

This course is designed for online instruction primarily through UAF CANVAS, but active participation from the students is expected. This is not an independent study course. Regularly scheduled assignments and assessments with firm due dates will pace the course. All exams will be proctored and run via Zoom, closed book, closed notes and no calculators.

## Homework

**Online Assignments** are done through the on-line WebAssign system, and can be expected to take about 1 hour per lecture. This is the primary way you practice the material to learn it. Problems are multiple choice or fillin-the-blank, and are computer graded. Online homework is due before midnight. You will be allowed five attempts on each question. You will be able to make at most 5 attempts on each problem. After the due date/time you may request an automatic 2-calendar-day extension for any assignment with a 25% penalty on your score. We are going to access WebAssign directly from CANVAS. To do so your browser must be configured to accept third-party cookies. If you are having technical troubles contact OIT (`https://www.alaska.edu/oit/`) or WebAssign directly (`https://webassign.com/support/student-support/`).

Here are the steps to access WebAssign from CANVAS.

- Log in to CANVAS.
- Click on the **Courses** tab.
- Click on our course, Math 253X.
- In the course modules menu, click **Stewart Calculus Early Transcendentals 8e WebAssign**.

- Click Access WebAssign.

The first time you access WebAssign from CANVAS, a new linked WebAssign account is automatically created for you. If you already have an account you may have to contact WebAssign's student tech support to link your accounts. If you are having trouble with WebAssign, please let your instructor know **and** contact WebAssign's student tech support.

(`https://webassign.com/support/student-support/`)

**Written problems:** In addition, I will assign a set of problems to be done by hand. You need to show all work leading to the solution. Written homework is due on Monday, 11:00 PM each week. You will submit the written homework as a single PDF file on **Gradescope**. You may not collaborate or use any form of online help (solution manuals, question/answer boards, etc.). But you are encouraged to ask me questions about assignments (during office hours, or by email) or use the services of the UAF MathLab (online tutors are available). Late written homework is accepted but at a potential penalty. The grade for a late written homework will be the minimum between the grade your work would have earned if turned in on time and the total possible number of points minus two points per day late (including weekends). Also, each problem will be worth 4 points (2 points for presentation and 2 points for correctness).

**Unproctored 45 minutes Quiz** will be given weekly on Thursday (see schedule). No form of collaboration or help is allowed on quizzes. In particular, quizzes are closed book, closed notes, and calculator-free. Material from quizzes will be similar to those in lecture notes and homework assignments. On the designated day of the quiz, you will log in to **Gradescope** past 5 pm to take the quiz, and you will have 45 minutes total to work out the problems and enter your PDF file with the solutions. The deadline to complete the quiz (not start it) is midnight. No make-up for quizzes is allowed. Please honestly follow the rules on these, as cheating will not increase your grade substantially. You are encouraged to work with others on the written homework, but you must write up solutions independently. You will learn nothing from simply copying someone's solution. The best approach is 1) make a first attempt at all problems alone, 2) work with a classmate on any difficulties, 3) write up complete solutions alone.

## Examinations

**Midterm:** There will be two two-hour midterm exams on Tuesday, June 14 (1:00 PM -3:00 PM) and on July 12 (1:00 PM -3:00 PM). Midterm Exams will be proctored and held via Zoom at the indicated by instructor time.

**Final:** There will be a cumulative two-hour proctored final exam on August 5 (1:00 PM -3:00 PM). Final Exam will be held via Zoom at the indicated by instructor time.
No form of collaboration or help is allowed on the exams. The exams should be proctored on the indicated days either at the eCampus center (COVID-permitting) or via video conferencing.

**Missed examinations or assignments** that are not approved in advance will result in a zero grade on that exam or assignment. No make-ups will be allowed except in unforeseeable circumstances (e.g., documented illness, quarantine, family emergencies, etc.). Notifying me by email or a note that you will miss an exam or due date is not sufficient for advance approval; you must speak with

me via Zoom if you believe you have a valid excuse.

**Calculators** or similarly capabilities on smart phones or computers may be used on any homework, but not on quizzes or exams.

**Auditing** of this course will only be allowed for those who agree to participate fully, as evidenced by completion of homework, midterm exam, and class participation.

## Evaluation

In this course you will be evaluated based on your performance in WebAssign, Written Homework, Unproctored Quizzes, three midterm exams and the final exam. These components will be weighted as follows:

| | | |
|---|---|---|
| WebAssign Homework | | 10% |
| Written Homework | | 10% |
| Unproctored Quizzes | | 10% |
| Proctored Midterms | (20% each) | 40% |
| Proctored Final Exam | | 30% |

## Grading

The grading scale used will be the plus/minus letter grades (97-100%=**A+**, 93-96%=**A**, 90-92%= **A-**, 87-89%=**B+**, 83-86%= **B**, 80-82%= **B-**, 77-79%=**C+**, 70-76%=**C**, 67-69%=**D+**, 63-66%= **D**, 60-62%= **D-**, and below 60%=**F**). The instructor reserves the right to make the brackets of this scale wider. An incomplete will be given due to extreme circumstances beyond your control (you will need to provide verifiable proof). After the drop date, students who do not wish to continue with the course will be responsible for withdrawing themselves. If a student chooses to stop participating in the course after the withdrawal deadline, this will result in a grade of **F**.

## Communication

CANVAS will be used extensively in this class to communicate with students. All announcements, handouts, solutions, and grades will be posted in CANVAS. It is the responsibility of the student to check CANVAS regularly and report any issues to their instructor. Additionally, the student must check their `@alaska.edu` e-mail daily. If you prefer to use another e-mail it is best to set up your `@alaska.edu` account to forward to your preferred account.

## Some Important Information

**University and Department Policies:** Your work in this course is governed by the UAF Honor Code. The Department of Mathematics and Statistics has specific policies on incompletes, late withdrawals, and early final exams: http://www.dms.uaf.edu/dms/Policies.html.

**UAF Math & Statistics Lab:** Free tutoring or occassional help. See

https://www.uaf.edu/dms/mathlab/math-and-stat-lab/.

**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:** UAF embraces and grows a culture of respect, diversity, inclusion, and caring. Students at this university are protected against sexual harassment and discrimination (Title IX). Faculty members are designated as responsible employees which means they are required to report sexual misconduct. Graduate teaching assistants do not share the same reporting obligations. For more information on your rights as a student and the resources available to you to resolve problems, please go to the following site:

https://catalog.uaf.edu/academics-regulations/students-rights-responsibilities/.

**Student Academic Support:**

- Speaking Center (907-474-5470, uaf-speakingcenter@alaska.edu, Gruening 507)
- Writing Center (907-474-5314, uaf-writing-center@alaska.edu, Gruening 8th floor)
- UAF Math Services, uafmathstatlab@gmail.com, Chapman Building (for math fee paying students only)
- Developmental Math Lab, Gruening 406
- The Debbie Moses Learning Center at CTC (907-455-2860, 604 Barnette St, Room 120, https://www.ctc.uaf.edu/student-services/student-success-center/)
- For more information and resources, please see the Academic Advising Resource List (https://www.uaf.edu/advising/lr/SKM_364e19011717281.pdf)

**Student Resources:**

- Disability Services (907-474-5655, uaf-disability-services@alaska.edu, Whitaker 208)
- Student Health & Counseling [6 free counseling sessions] (907-474-7043, https://www.uaf.edu/chc/appointments.php, Whitaker 203)
- Center for Student Rights and Responsibilities (907-474-7317, uaf-studentrights@alaska.edu, Eielson 110)
- Associated Students of the University of Alaska Fairbanks (ASUAF) or ASUAF Student Government (907-474-7355, asuaf.office@alaska.eduasuaf.office@alaska.edu, Wood Center 119)

**Nondiscrimination statement:**

The University of Alaska is an affirmative action/equal opportunity employer and educational institution. The University of Alaska does not discriminate on the basis of race, religion, color, national

origin, citizenship, age, sex, physical or mental disability, status as a protected veteran, marital status, changes in marital status, pregnancy, childbirth or related medical conditions, parenthood, sexual orientation, gender identity, political affiliation or belief, genetic information, or other legally protected status. The University's commitment to nondiscrimination, including against sex discrimination, applies to students, employees, and applicants for admission and employment. Contact information, applicable laws, and complaint procedures are included on UA's statement of nondiscrimination available at www.alaska.edu/nondiscrimination. For more information, contact:

UAF Department of Equity and Compliance
1760 Tanana Loop, 355 Duckering Building, Fairbanks, AK 99775
907-474-7300
uaf-deo@alaska.edu

#### 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.