MATH 2210-001 Calculus III, Fall 2020

Class Meetings: MWF 9:40am - 10:30am through Interactive Video Conferencing (IVC - Synchronous Online)

Instructor: Prof. Yekaterina Epshteyn

Email: epshteyn@math.utah.edu

Contact: Questions and concerns should be communicated in office hours or via email. In most cases, I will reply to emails before 11:59pm the next business day (business days = all days except Saturdays, Sundays, and university holidays).

Meetings, Course Materials and Office Hours: Classes and office hours will be held on Zoom; meeting information will be posted on Canvas at the start of the semester. I expect to post slides of the lectures in Canvas after IVC lectures, but students are strongly recommended to attend each IVC lecture. Students are not allowed to distribute any course materials/resources without instructor permission.

Office hours are TBD.

Zoom: You will need to use Zoom for lectures and office hours. If you don’t have Zoom you can download it for free from zoom.us/download. It is strongly encouraged that you have a webcam and microphone to fully participate in the class during lectures but you should not need anything else. It is possible to dial in to hear the audio with just a phone. I will set up Zoom meetings for lectures and office hours. During class time I ask that everyone keep their microphones muted to eliminate background noise. You can unmute yourself if you would like to ask question, but please mute yourself back after the question. When speaking, please turn on your video if possible, if it wasn’t already on.

Technical requirements: To attend the IVC lectures (live lectures online) you will need a computer with the Zoom software and a relatively strong internet connection. A microphone and camera are strongly recommended for class attendance but not strictly required.

If you don't have a laptop, you can loan one from the Marriott library and you can also learn about different wifi options. Please check for the detailed information at:
https://lib.utah.edu/coronavirus/checkout-equipment.php

Text: Calculus with Differential Equations, by Varberg, Purcell, and Rigdon (9th edition)

For information on purchasing the textbook, go to http://www.math.utah.edu/schedule/bookInfo/

Course Information: Math 2210 Calculus III is a 3 credit course.

Prerequisite Information: "C" or better in (MATH 1220 OR MATH 1250 OR MATH 1320) OR AP Calculus BC score of at least 4.

Course Description: Vectors in the plane and in 3-space, differential calculus in several variables, integration and its applications in several variables, vector fields and line, surface, and volume integrals. Green’s and Stokes’ theorems.

Canvas: Canvas will be used for lectures, office hours, exams, posting course announcements, files and relevant information. You can access the Canvas page through CIS or by logging in at utah.instructure.com. Students should check the Canvas page regularly for course information and resources. Email notifications and correspondence will be sent to the student’s UMail address ([u-number]@utah.edu); this email account must be checked regularly.

Reading and Lectures: Prior to class meetings, students are expected to read, and to be prepared to discuss, course material in the text.

Grading: The following are the grade components and the percentage each contributes to a student’s final grade:
• **Homework Assignments (50%)** - WeBWork assignments. Homework will be assigned regularly and you will have about a week or so to complete it. The first/introductory assignment (Demo) is important and will get you started on Webwork. In general, no late homework will be accepted. The lowest two homework scores will be dropped. However, students are strongly encouraged to start working on the homework, as soon as the assignment is available in Webwork and complete all the assignments, since it provides an important practice of the material discussed during lectures.

Brief Webwork Info: Students will have access to WebWork through Canvas. For any questions about Webwork, Webwork tutorial, etc. students should either e-mail to Webwork Coordinator Hsiang-Ping Huang at hphuang@math.utah.edu, or consult resources posted at:

http://www.math.utah.edu/online/ww/classes.php,

or visit Virtual Math Tutoring Center & Computer Lab.
Note, that tutoring center provides help with WebWork Assignments.

Virtual Math Tutoring Center Info:
https://utah.instructure.com/courses/613503/
http://www.math.utah.edu/undergrad/mathcenter.php

Use Homework as a Tool - You should view the WebWork homework as a tool for accessing and evaluating your understanding of the course material. Getting a high homework score is desirable, of course. However, that should not be your only goal. WebWork questions vary in difficulty and relevance, but they will often follow an example in the book quite closely. All you are required to input is the answer, and it may be possible to get that answer by shortcut methods (following computations in the book, finding a pattern in previous answers, etc). It is not in your best interest to take shortcuts since you should work on mastering lectures’s materials by working out solutions to problems in details. There is nobody looking over your shoulder to make sure you are doing the WebWork problems honestly, so you need to police yourself. If you get a correct answer but are not totally confident of the method, go back and work it again.

• **Exams (50%, 25% each)** - Three 50-minute exams will be given on select Fridays during regular classtimes via Canvas. You will have the whole class period to complete the exam. A practice exam will be posted roughly a week prior to the exam that will cover similar material. Dates of the exams will be Friday Sept. 25th, Friday Oct. 30th and Friday Nov. 20 via Canvas during our classtime. However, one lowest score for the Exam will be dropped: only two higher scores will count towards a final grade.

Important: Exam Dates are Fixed. Please plan your schedule around these dates now. There will be NO MAKE-UP EXAMS except in extenuating circumstances.

Final course letter grades will be determined as follows: If X is your course percentage weighted according to the above, then \{ X ≥ 93% ⇒ A, X ≥ 90% ⇒ A−, X ≥ 87% ⇒ B+, X ≥ 83% ⇒ B , X ≥ 80% ⇒ B− , X ≥ 77% ⇒ C+, X ≥ 73% ⇒ C, X ≥ 70% ⇒ C− , X ≥ 67% ⇒ D+, X ≥ 63% ⇒ D , X ≥ 60% ⇒ D− , X < 60% ⇒ E \}.

The instructor retains the right to modify this grading scheme during the course of the semester; students will, of course, be well notified of any adjustments.

Additional Resources

• **Tutoring Center & Computer Lab** - There is free virtual tutoring:

https://utah.instructure.com/courses/613503/

Note, that the tutoring center provides help with WebWork Assignments. For more information see http://www.math.utah.edu/ugrad/tutoring.html
• **Private Tutoring:** There is also a list of tutors at the math department office JWB 233.

• **Departmental Videos:** The math department has a full set of lecture videos which you are welcome to use to supplement our course material. These can be found at http://www.math.utah.edu/lectures/

**Calculators:** Calculators will be allowed on homework and exams. However, it is in your best interest not to become too dependent on your calculator.

**Expected Learning Outcomes:** Upon successful completion of this course, a student should be able to:

1. Compute dot and cross products of two vectors, projection of one vector onto another vector.

2. Convert between cylindrical, rectangular and spherical coordinates. Understand when it’s prudent to switch to one coordinate system over another in computing an integral.

3. Determine the equation of a plane in 3-d, including a tangent plane to a surface in 3-d.

4. Find the parametric equations of a line in 3-d.

5. Perform calculus operations on functions of several variables, including limits, partial derivatives, directional derivatives, and gradients; understand what the gradient means geometrically.

6. Find maxima and minima of a function of two variables.

7. Understand divergence and curl of a vector field.

8. Compute double and triple integrals in rectangular, spherical and cylindrical coordinates; proper use of double or triple integrals for finding surface area or volume of a 3-d region.

9. Compute line and surface integrals.

10. Determine if a vector field is conservative and if so, find the corresponding potential function.

11. Use and understand when to apply Green’s Theorem (if time will permit)

**Course Roadmap Week-by-Week:** Below is an outline and rough schedule of the sections and topic covered in this course.

*Note: the weekly schedule is subject to change during the semester depending on the lectures progress.*

**Week 1** Introduction, Chapters 11.1, 11.2

**Week 2** Chapters 11.3, 11.4 **Note, Friday Sept 4th is the last day to drop**

**Week 3** Chapters 11.5, 11.6, 11.7 (Self-study)

**Week 4** Chapters 11.8, 11.9, 12.1

**Week 5** Chapters 12.2, review, Exam 1 (Sep. 25)

**Week 6** Chapter 12.3, 12.4,

**Week 7** Chapters 12.5, 12.6

**Week 8** Chapters 12.7, 12.8, 12.9 (Self-study) **Note, Friday Oct. 16th is the last day to withdraw**

**Week 9** Chapters 13.1-13.2, 13.3

**Week 10** Chapters 13.4, review, Exam 2 (Oct. 30)

**Week 11** Chapters 13.5, 13.6, 13.7
Week 12 Chapters 13.8, 13.9

Week 13 Chapters 14.1, review, Exam 3 (Nov. 20)

Week 14 Chapters 14.2, 14.3, 14.4 (Section 14.4 if time will permit)

Week 15 Chapters 14.5-14.7 (if time will permit) Note, Thursday Dec. 3rd is the last day of classes

COVID-19 Considerations: Students must self-report if they test positive for COVID19 via http://coronavirus.utah.edu

Student Responsibilities: All students are expected to maintain professional behavior in the classroom online setting, according to the Student Code, spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, and I will do so, beginning with verbal warnings and progressing to cancelling the class, dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee. http://regulations.utah.edu/academics/6-400.php

ADA Statement: The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, 801-581-5020. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.

University Safety Statement: The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu

Addressing Sexual Misconduct: Title IX makes it clear that violence and harassment based on sex and gender (which Includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veterans status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

Student Names and Personal Pronouns: Class rosters are provided to the instructor with the students legal name as well as Preferred first name (if previously entered by you in the Student Profile section of your CIS account). While CIS refers to this as merely a preference, I will honor you by referring to you with the name and pronoun that feels best for you in class, on papers, exams, group projects, etc. Please advise me of any name or pronoun changes (and update CIS) so I can help create a learning environment in which you, your name, and your pronoun will be respected. If you need assistance getting your preferred name on your UIDcard, please visit the LGBT Resource Center Room 409 in the Olpin Union Building, or email bpeacock@sa.utah.edu to schedule a time to drop by. The LGBT Resource Center hours are M-F 8am-5pm, and 8am-6pm on Tuesdays.

Diversity and Inclusivity: It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students’ learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. Your suggestions are encouraged and appreciated.
**Undocumented Student Support Statement:** Immigration is a complex phenomenon with broad impact on those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members, friends, and loved ones. If your immigration status presents obstacles to engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center. Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of your residence. The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. To learn more, please contact the Dream Center at (801) 213-3697 or https://dream.utah.edu.

**Wellness Statement:** Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student’s ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at www.wellness.utah.edu or 801-581-7776.

**Syllabus:** This syllabus is meant to serve as an outline and guide for our course. Please note that I reserve the right to modify it with reasonable notice to you. Any changes will be announced in class and posted on Canvas under Announcements.