MATH 2210-004 Calculus III, Fall 2019

Class Meetings: MWF 11:50am - 12:40pm in AEB 350
Instructor: Prof. Yekaterina Epshteyn
Email: epshteyn@math.utah.edu
Office Hours (tentative, it may be some changes): M 12:50pm-1:35pm, F 12:50pm - 1:35pm or by appointment.
Office: LCB 337.
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 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 (25%)**: 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 three 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.html,
or visit Tutoring Center & Computer Lab.
Note, that tutoring center provides help with WebWork Assignments.

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; any additional points you get by these methods will be negated by points you miss on an exam where the problems will be different and you will be expected to show all of your work. 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.

- **Midterm Exams (50%, 25% each)**- Two 50-minute midterm exams will be given on select Fridays. You will have the whole class period to complete the exam. A practice exam will be posted a week prior to the midterm that will cover similar material. Dates of the midterm exams will be Friday Sep. 27th and Friday Nov. 8th in AEB 350.

- **Final Exam (25%)**- A two-hour comprehensive exam will be given. As with the midterms, a practice final will be posted a week prior. Our final exam is scheduled for Friday Dec. 13th from 10:30am-12:30pm in AEB 350.

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

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

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 tutoring in the T. Benny Rushing Mathematics Student Center (room 155, the lower level between JWB and LCB), as well as a computer lab. *Note, that the tutoring center provides help with WebWork Assignments.* For more information see http://www.math.utah.edu/ugrad/tutoring.html

- **Private Tutoring**- University Tutoring Services, 330 SSB. 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 not be allowed on exams. They may be used on homework, but you should still write out the details of your computation. It is in your best interest not to become too dependent on your calculator since they will not be allowed on exams.

**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

**Student Responsibilities:** All students are expected to maintain professional behavior in the classroom 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 dismissal from and 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](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](http://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.

**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](http://wellness.utah.edu) or 801-581-7776.

**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 August 30th is the last day to drop

Week 3 Chapters 11.5, 11.6, 11.7

Week 4 Chapters 11.8, 11.9, 12.1

Week 5 Chapters 12.2, 12.3, 12.4, 12.5

Week 6 Chapter 12.6, review, Exam 1 (Sep. 27)

Week 7 Chapters 12.7, 12.8, 12.9

Week 8 Fall Break

Week 9 Chapters 13.1-13.2, 13.3 Note, Friday Oct. 18th is the last day to withdraw

Week 10 Chapters 13.4, 13.5, 13.6

Week 11 Chapters 13.7, 13.8, 13.9

Week 12 Chapters 14.1, review, Exam 2 (Nov. 8)

Week 13 Chapters 14.1, 14.2, 14.3

Week 14 Chapters 14.3,14.4

Week 15 Chapters 14.5 and 14.6 (if time will permit)

Week 16 Chapter 14.7 (if time will permit), review

Week 17 Final Exam Friday Dec. 13th from 10:30am-12:30pm in AEB 350.