Math 2210 – 4   Calculus III   April 15, 2019

Credit Hours: Three

Meeting Time: MWF 11:50 – 12:40 AM   in   CSC 208

Homepage: http://www.math.utah.edu/~treiberg/M2210.html

Instructor: Prof. A. Treibergs, JWB 224, 581 – 8350.
                 Office Hours: MWF 12:45 – 1:45 (tent.) & by appt.
                 E-mail: treiberg@math.utah.edu

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

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 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.

Topics: We cover chapters 11–14, with a brief review of parametric
                 equations from chapter 10.

                 Chapter 10 – Parametric Representation of Curves. 10.4
                           (1–2 classes)

                 Chapter 11 – Geometry in Space and Vectors. 11.1–11.6, 11.7,
                           11.8, 11.9 (10–12 classes)

                 Chapter 12 – Derivatives for Functions of Two or More
                           Variables. 12.1–12.9 (8–10 classes)

                 Chapter 13 – Multiple Integrals. 13.1–13.4, 13.5$_*$, 13.6–13.9
                           (9–11 classes)

                 Chapter 14 – Vector Calculus. 14.1–14.7 (8–10 classes)

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

1. Perform basic vector computations, as well as dot and cross products of two vectors and
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 3d.

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

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; use Lagrange Multipliers for
constrained optimization problems.

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 3d 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, Gauss' Divergence Theorem and Stokes Theorem.

Evaluation Methods and Grading

Homework: To be assigned weekly.

             Written homework will be due Fridays and will be collected in
             class. Papers turned into my mailbox in the math mail room
             (JWB 228) by 3 PM Fridays will be regarded as being turned in
             on time. Homework that is late but not more than one week
             late will receive half credit. Homework that is more
             than one week late will receive no credit at all.

Webwork: Students will do weekly on-line homework using Webwork which
             focuses on routine calculation and short answer problems.

Exams: Exams will be closed book. Your calculators, text, notes,
             homework papers, other books, laptops, tablets, phones and
             text messaging devices will not be allowed.

Midterms: There will be two in-class one-hour midterm exams
             on Feb. 6 and Mar. 20.

Final Exam: Fri., Apr. 26, 10:30 am - 12:30 pm. Half of the final
             will be devoted to material covered after the second
             midterm exam. The other half will be comprehensive.
             Students must take the final to pass the course.

Course grade: Two midterms 40% + HW 25% + Webwork 5% + final 30%.
               Grades will be assigned "on the curve."

Withdrawals: Last day to register is Jan.11. Last day to drop class
               is Jan 18. Until Mar. 8 you can withdraw from class with
               no approval at all. After that date you must petition
               your dean's office to be allowed to withdraw.

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. For more information see
 http://www.math.utah.edu/undergrad/mathcenter.php

• 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/

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

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.

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 students 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.

Note

The syllabus is not a binding legal contract. It may be modified by the instructor when the student is given reasonable notice of the modification.