MATH 1430 : APPLICATIONS OF CALCULUS I
Room A127, Section 501 (T/R 3:00 - 4:15), CRN 51713
Spring 2020

Instructor: Ian Burch
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Office and Hours: A123   T/Th 10:00 - 10:30
                                STEM Center M/W 10:00 - 11:45 & T/Th 12:00 - 1:20

Course Description

This course will introduce and explore concepts of calculus, with a particular emphasis on real-world applications. By the end of the course, students should develop a deep understanding of derivatives and their myriad of uses and interpretations, as well as how they are used in applied scenarios. In addition, the basic concepts of integration will be introduced and explored as well.

Course Goals

By the end of the course, students will be able to -
- Find limits algebraically and graphically, and use limits to analyze continuity.
- Find the derivative of a function by applying appropriate techniques
- Perform implicit differentiation. Use implicit differentiation to solve related rate application problems
- Use the derivative to describe the rate of change and slope of a curve in general and at particular points. Compare and contrast average rates of change to instantaneous rates of change.
- Find the maxima, minima, points of inflections, and determine concavity of a function by applying the first and second derivatives. Use these results to sketch graphs of functions and to solve optimization problems in context.
- Find the antiderivative and indefinite integral functions to include integration by substitution. Apply the Fundamental Theorem of Calculus in computing definite integrals of functions.
- Approximate the area under the curve using Riemann sums.
- Use the integral to determine the area under a curve and to find the accumulated value of a function in context.

- Solve contextual problems by identifying the appropriate type of function given the context, creating a formula based on the information given, applying knowledge of algebra and calculus, and interpreting the results in context.
- Communicate mathematical information using proper notation and verbal explanations.

Materials:
- Lial, Greenwell, & Ritchey, *Calculus with Applications, 10th or 11th Edition*
- Scientific or Graphing calculator
- Homework Folder

Late Work:
Homework past the due date will not be accepted without an emailed or written request prior to the deadline.

Grade Breakdown:

Final Exam	25%
2 Midterm Exams	25% (12.5% each)
Homework & Projects	30%
Weekly Quizzes	15%
Attendance	5%

Letter grades will be given as follows, with + or - given for the highest and lowest 3% in each range, respectively. Incomplete (I) grades will not be assigned without documented, extenuating, circumstances

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

Tentative Schedule:

Week 1: Limits & Continuity

Week 2: Difference Quotients

Week 3: Derivatives

Week 4: Advanced Derivatives

Week 5: Review & Test #1

Week 6: Critical Points

Week 7: Graphing

Week 8: Economic Applications

Week 9: Implicit Differentiation

Week 10: Related Rates

Week 11: Review & Test #2

Week 12: Optimization

Week 13: Indefinite Integrals

Week 14: Definite Integrals

Week 15: Area

Week 16: Review for Final

Expectations:

Students are expected to conduct themselves in a professional and collegial manner. Please refrain from using cell phones during class unless approved in advance by instructor. Absences may be excused only with a documented reason, preferably given in advance. Students with more than 4 absences may be dropped from the course

Disability Statement:

In accordance with University Policy 2310 and the Americans with Disabilities Act (ADA), academic accommodations may be made for any student who notifies the instructor of the need for an accommodation. It is imperative that you take the initiative to bring such needs to the instructor's attention, as I am not legally permitted to inquire. Students who may require assistance in emergency evacuations should contact the instructor as to the most appropriate procedures to follow. Contact Accessibility Resource Center at 277-3506 or arc.unm.edu for additional information.

If you need an accommodation based on how course requirements interact with the impact of a disability, you should contact me to arrange an appointment as soon as possible. At the appointment, we can discuss the course format and requirements, anticipate the need for adjustments and explore potential accommodations. I rely on the Disability Services Office for assistance in developing strategies and verifying accommodation needs. If you have not previously contacted them I encourage you to do so.

Academic Integrity:
Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or otherwise fails to meet the standards. Any student judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course.

Academic dishonesty includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records.

Credit-hour Statement:
This is a three credit-hour course. Class meets for two 75-minute sessions of direct instruction for fifteen weeks during the Spring 2020 semester. Students are expected to complete a *minimum* of six hours of out-of-class work (or homework, study, assignment completion, and class preparation) each week.

Title IX :
In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered "responsible employees" by the Department of Education (see pg 15 - http://www2.ed.gov/about/offices/list/ocr/docs/qa-201404-title-ix.pdf). This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct and sexual violence made to a faculty member, TA, or GA must be reported to the Title IX Coordinator at the Office of Equal Opportunity (oeo.unm.edu). For more information on the campus policy regarding sexual misconduct, see: https://policy.unm.edu/university-policies/2000/2740.html

Citizenship and/or Immigration Status: All students are welcome in this class regardless of citizenship, residency, or immigration status. Your professor will respect your privacy if you choose to disclose your status. As for all students in the class, family emergency-related absences are normally excused with reasonable notice to the professor, as noted in the attendance guidelines above. UNM as an institution has

made a core commitment to the success of all our students, including members of our undocumented community. The Administration's welcome is found on our website: http://undocumented.unm.edu/.