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Course Syllabus
Mathematics 1210, Section 013, Spring 2019
Calculus I

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Class Hours: MWF 1:25PM-2:45PM, ST 205

Lab Meetings: Section 014: Th 12:55PM-01:45PM in LCB 225, Section 015: Th 02:00PM-02:50PM in LCB 225.

Instructor: Pinches Dirnfeld, Office: 331 JWB
E-mail: Dirnfeld at math dot utah dot edu

Office Hours: Wednesdays 12-1 PM, Fridays 10-11 AM in JWB 331 (Or Email me to meet at another time)

Learning Assistant: Jackson Sponaugle

LA Office Hours Thursdays 10:45-12:45 at Two Creek (lobby of WBB)

Course Webpage: I will post all course materials on Canvas. It will be filed under 'Modules'; every week will have its own module to make it easier to navigate. I teach using a document camera which allows me to save time writing down problems on the board and helps me avoid long awkward pauses. I will make an effort to post my pre-lecture notes a day in advance on canvas so you would have the option to print them out and bring them to class. I will also scan my completed lecture notes and post them to Canvas after each lecture.

Prerequisites: "C" or better in (((MATH 1050 AND 1060) OR MATH 1080 OR (MATH 1060 AND Accuplacer CLM score of 80+)) OR AP Calc AB score of 3+ OR Accuplacer CLM score of 90+ OR ACT Math score of 28+ OR SAT Math score of 630+.

Textbook: *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/
You are required to read every section that we cover.

Course Description: Functions and their graphs, differentiation of polynomial, rational and trigonometric functions. Velocity and acceleration. Geometric applications of the derivative, minimization and maximization problems, the indefinite integral, and an introduction to differential equations. The definite integral and the Fundamental Theorem of Calculus.

Learning Expectations: By the end of the semester every student should be able to:

1. Take limits of algebraic and trigonometric expressions of the form 0/0 (that simplify), non-zero number over 0, including limits that go to (positive or negative) infinity, limits that don't exist and limits that are finite.

2. Use and understand the limit definitions of derivative for polynomial, rational and some trigonometric functions; understand the definition of continuity and consequences.

3. Differentiate all polynomial, rational, radical, and trigonometric functions and compositions of those functions; perform implicit differentiation and compute higher order derivatives.

4. Use differentiation to find critical points and inflection points, the signs of the first and second derivatives, and domain and limit information to determine vertical and horizontal asymptotes. Then use all of that information to sketch the graph of $y = f(x)$.

5. Apply differentiation to optimization, related rates, linear approximation, and problems involving differentials.

6. Compute indefinite integrals and find antiderivatives, including finding constants of integration given initial conditions.

7. Compute definite integrals using the definition for simple polynomial functions. Compute definite integrals using the power rule, basic u-substitution, and the Fundamental Theorems of Calculus.

8. Apply the definite integral to compute area between two curves, volumes of solids of revolutions, arc length, surface area for surfaces of revolution, and work problems.

Course Work and Evaluation

Grading Policy:

- **Homework Assignments (15%)**- Roughly three textbook sections are due most Fridays at the beginning of class (including days of exams, but not the week following). The homework will typically cover material covered up to and including the preceding Monday. I will post the problems in the weekly modules. Three of the problems will be pseudo-randomly selected for grading by the grader, each graded out of 5 points. There will also be 5 points given for completion. The two lowest homework scores will be dropped.
I encourage students to work together, however, you must write up the solutions yourself. You should understand how the do every problem and show your work. No one can learn math by reading a book or watching someone solve a problem. The only way to learn math is to work out problems. If you are just copying solutions from your friends you are unlikely to do well on exams.
If you have trouble doing a problem you should come to my office hours, the LA's office hours, go to the tutoring lab, or bring your problem to class.
Late homework will not be accepted. I will drop the lowest two homework scores.
Homework must be stapled. Unstapled homework will be deducted 5 points. Additionally, you bear the risk of losing points if some of your papers are misplaced.

- **Labs (10%)**- Every Thursday a Learning Assistant- (LA) directed lab section will be held. These lab sections will have smaller class sizes, consisting of working on lab worksheets in groups. The LA will be there to help guide students through the problems. The worksheets will typically be due at the end of the lab period. One half of the lab grade (5% of the total course grade) will be given for timely attendance, the remaining grade (5% of the total course grade) will be based on completion of the lab reports. The lowest two lab scores will be dropped. Labs cannot, in general, be made up if missed.

- **Midterm Exams (50%, 16.6% each)**- Three 50-minute midterm exams will be given on select Fridays. Since some sections of this course have lectures 4 times a week of 50 minutes each, you will have 50 minutes to complete the exam. The remaining time will be used to start new material, unless students bring questions to class in which case I will answer those for 30 minutes. You MUST bring a valid ID to the exam. Absence from an exam will be excused only if you can provide verifiable and convincing evidence that you have a significant illness or serious family crisis that will prevent you from attending. Except under extremely unusual circumstances, you must inform me in advance of the missed test. You are expected to promptly make arrangements with me to make up the test.

  A practice exam will be posted a week prior to the midterm that will cover the same material. Dates of the midterm exams will be Friday Feb. 1st, Friday Mar. 1st, and Friday Apr. 5th.

  I will not return physical copies of the midterms but instead you will be able to see it on gradescope.com. You will receive an email inviting you to open an account (or add this class to your account if you already have one) during the third or fourth week of class. Don't worry, it is completely free to you. I use gradescope because it makes it easier to grade, doesn't take away from class time to return exam, and I don't run the risk of accidentally revealing your score to other students.

- **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 Tuesday Apr. 30th from 1:00-3:00 pm in ST 205.

Students with university excused absences (band, debate, student government, inter-collegiate athletics) should make alternate arrangements with me as soon as possible if the absence interferes with any course components.

Grades (Evaluation and criteria): Final letter grades will be determined by overall percentage as follows:

A	93% − 100%	B-	80% − 82.9%	D+	67% − 69.9%
A-	90% − 92.9%	C+	77% − 79.9%	D	63% − 66.9%
B+	86% − 89.9%	C	73% − 76.9%	D-	50% − 62.9%
B	83% − 85.9%	C-	70% − 72.9%	E	below 50%

Other Policies and Resources

The Americans with Disabilities Act:: 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 Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations. All information in this course can be made available in alternative format with prior notification to the Center for Disability Services.

LGBT Resource Center:: If you are a member of the LGBTQIA* community, I want you to know that my classroom is a safe zone. Additionally, the University of Utah has an LGBT Resource Center on campus. They are located in Room 409 in the Olpin Union Building. Hours: M-F 8-5pm. You can visit their website to find more information about the support they can offer, a list of events through the center and links to additional resources: http://lgbt.utah.edu/. Please also let me know if there is any additional support you need in this class.

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).

Veterans Center:: If you are a student veteran, the University of Utah has a Veterans Support Center located in Room 161 in the Olpin Union Building. Hours: M-F 8-5pm. Please visit their website for more information about what support they offer, a list of ongoing events and links to outside resources: http://veteranscenter.utah.edu/. Please also let me know if you need any additional support in this class.

Math Department Video Lectures:: Video lectures are available at: http://www.math.utah.edu/lecture

Tutoring: The Rushing Math Center offers free drop-in tutoring, a computer lab, and study 2 areas for undergraduates. The Rushing Student Center is adjacent to the LCB and JWB. The hours for the Spring semester are: 8 am – 8 pm Monday to Thursday and 8 am – 6 pm on Friday. The tutoring center will open the second week of classes.

Private Tutoring- University Tutoring Services, 330 SSB. There is also a list of tutors at the math department office JWB 233.

Calculators: Calculators will not be allowed on exams. I find it that exams are have too heavy on numerical computations a lot of time is spent crunching numbers. I want to test you on your mathematical understanding not on your efficiency using a calculator. Calculators 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.

Other Policies:

- It's your responsibility to check canvas for homework assignments and other announcements, as well as your university email.

- Please be respectful in class. We are adults and I expect you to behave accordingly. Examples of disrespectful behaviors include texting or talking on your phone, reading newspapers, listening to music, or talking while I am talking.

- I do not allow computers in my classroom. It has been my experience that having a computer will eventually cause distractions to your neighbors. You can have a tablet as long as you keep it flat on your desk. If I feel that a student's tablet is causing distractions I will have to ban it from my classroom.

- My office hours are merely a guarantee that I will be there. If you want to talk to me you can always email me to set an appointment and I will do my best to accommodate you.

- If a student is caught cheating on an assignment they will receive a zero on that assignment. I may also decide to fail a student depending on the severity of the misconduct. In any case of academic dishonesty, I will report it to the Dean of Students as required by the university rules. **Please note that having a cellphone out or wearing a smart watch during an exam will automatically count as cheating.**

- If you believe that any quiz or exam was graded incorrectly you have to bring it to me within one week after I returned it to the class.

- I reserve the right to make changes to the syllabus as I see fit. If that should occur, I will notify you via email and in class announcements.

Course Roadmap Week-by-Week: Below is an outline of the sections and topic covered in this course. Schedule and lab topics subject to change.

Week 1 Introduction, Chapters 1.1-1.3 (Lab: algebra review)

Week 2 Chapters 0.7, 1.4, 1.5 (Lab: limit basics) **Note, Friday Jan. 18th is the last day to drop**

Week 3 Chapters 1.6, 2.1, 2.2 (Lab: limits and infinities)

Week 4 Chapters 2.3, review, Exam 1 (Feb. 1) (Lab: exam review)

Week 5 Chapters 2.4-2.6 (Lab: derivative as a limit)

Week 6 Chapters 2.7-2.9 (Lab: derivative rules)

Week 7 Chapters 3.1-3.3 (Lab: linearization and differentials)

Week 8 Chapters 3.4, review, Exam 2 (Mar. 1) (Lab: exam review)

Week 9 Chapter 3.5-3.7 (Lab: optimization) **Note, Friday Mar. 8th is the last day to withdraw**

Week 10 Spring Break (Mar. 10- Mar. 17)

Week 11 Chapters 3.8-4.1 (Lab: graphing functions & MVT)

Week 12 Chapters 4.2-4.4 (Lab: antiderivatives and applications)

Week 13 Chapters 4.5, 4.6, review, Exam 3 (Apr. 5) (Lab: exam review)

Week 14 Chapters 5.1-5.2 (Lab: evaluating definite integrals)

Week 15 Chapters 5.3-5.4 (Lab: applications of integration)

Week 16 Chapter 5.5, review

Week 17 Final Exam April 30th from 1:00-3:00 PM.