



MATH 12010-016

Calculus 1

MWF 10:45-11:35 AM LCB 215
T 10:45-11:35 AM WEB 1230

Instructor: James Farre
Email: farre@math.utah.edu

Course Website: <http://www.math.utah.edu/~farre/teaching/1210/S18>

Office: JWB 307

Instructor Office Hours (Subject to change): Tuesdays 11:45-12:45 PM and Fridays 9:30-10:30 AM, and by appointment in JWB 307

Learning Assistant: Sawson Gholami
Email: sawsongholami@gmail.com

Learning Assistant Office Hours (Subject to change): Tuesdays and Thursdays 2:30-3:30 PM in LCB Loft
Labs: H at 10:45-11:35 AM (section 017) in LCB 222 or 9:40-10:30 AM (section 018) in ST 216

Prerequisite(s): "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+.

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/>
The text **is** mandatory.

Course Information: Math 1210 Calculus I is a 4 credit course.

Course Description: We will consider the following topics: 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.

Email: I will send you emails periodically throughout the semester, and you are responsible for accessing, reading, and understanding the content of each email. Email will be sent to your UMail address ([u-number]@utah.edu); check this email account regularly.

Homework: I will assign homework problems from our textbook on Wednesdays, and they will be due the following Friday at the beginning of class. There will be 11 homework sets, and your lowest score will be dropped. No late work will be accepted. I strongly encourage you to work in groups to understand how to solve the homework questions. I also hope that you will come to my office hours to talk about any homework questions that you find challenging or interesting.

Canvas: Homework assignments and grades will be posted to canvas.

Labs: Every Thursday a Learning Assistant- (LA) directed lab section will be held. The lab portion of the course will constitute 15% of your total grade. 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 third of the lab grade (5% of the total course grade) will be given for attendance, the remaining grade (10% of the total course grade) will be based on the quality of the lab reports. The lowest lab score will be dropped.

Exams: Three 50-minute midterm exams will be given on select Fridays. You will have the whole class period to complete the exam. Dates of the midterm exams will be Friday Feb. 2, Friday Mar. 2, and Friday Apr. 6.

Final Exam: The final exam for this class is comprehensive; the exam will take place Friday, April 27, 2018, 10:30AM-12:30PM in LCB 215. It will cover all material covered in this class.

Grading: Grades will be calculated as follows:

Homework	Lab	Exam 1	Exam 2	Exam 3	Final Exam	Total
15%	15%	15%	15%	15%	25%	100%

>= 90	A	60-65	C
85-90	A-	55-60	C-
80-85	B+	50-55	D+
75-80	B	45-50	D
70-75	B-	40-45	D-
65-70	C+	<= 39	E

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/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. 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.

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.

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. 19th 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. 2) (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. 2) (Lab: exam review) **Note, Friday Mar. 2nd is the last day to withdraw**

Week 9 Chapter 3.5-3.7 (Lab: optimization)

Week 10 Chapters 3.8-4.1 (Lab: graphing functions & MVT)

Week 11 Spring Break (Mar. 18- Mar. 25)

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

Week 13 Chapters 4.5, 4.6, review, Exam 3 (Apr. 6) (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, Final Exam Friday, April 27, 2018, 10:30AM-12:30PM in LCB 215.

The contents of this syllabus are subject to change. If a change occurs, I will announce it in class and communicate the change electronically.