Mathematics 1210, Sections 10 and 15 Calculus I Fall 2020

Class Times and Place:
1210−10, MTWF, 10:45 AM − 11:35 AM, Zoom: https://utah.zoom.us/j/8273394412
1210−15, MTWF, 11:50 AM −12:40 PM, Zoom: https://lms-utah.zoom.us/j/5949192336

CLASS FORMAT: Mathematics 1210 Sections 10 and 15 will be taught as Interactive Video Classes (IVC). Professor Golden will give live Zoom lectures during the class times above. Notes created on a virtual blackboard during class will be posted on Canvas as PDF files. Both classes will be recorded and posted to Canvas each day. Attendance, as well as class participation, is strongly encouraged.

NOTE: You will need access to a stable internet connection to participate in the class and labs, as well as access to a webcam for exam proctoring. Ideally, each student will have access to a laptop or tablet with a webcam and a good internet connection.

Instructor: Ken Golden, Distinguished Professor of Mathematics
801-750-8555 (mobile), 801-581-6176 (office), LCB 328
golden@math.utah.edu, kenatmath@gmail.com
website: www.math.utah.edu/∼golden

Instructor Office Hours (Zoom): Mondays 1:30 PM – 2:30 PM, Tuesdays 4:00 PM – 5:00 PM, and by appointment. Zoom link: https://utah.zoom.us/j/7127392457
Times and Zoom location subject to change.

Text: *Calculus with Differential Equations, 9th Edition*, Varberg, Purcell, and Rigdon

Course Materials: Practice exams and their solutions, the syllabus, help schedules, extra resources and interesting items on calculus, science, etc. will be available on Canvas.

Course Description: Mathematics 1210 is an introduction to differential and integral calculus. Limits, derivatives, and integrals are developed as tools to analyze the properties of functions. Applications include motion and rates of change, optimization and approximation methods, differential equations, and the calculation of areas, volumes, and lengths.

Teaching Assistants (TAs):
Delaney Mosier, delaney@math.utah.edu, delaney.mosier@gmail.com, 719-355-4551.
Kenzie McLean, u0672082@umail.utah.edu, mckenzie.mclean2@gmail.com, 385-226-7038.

Learning Assistants (LAs), Sections 10 and 15: Liz Cowgill, Liz.cowgill@utah.edu, Marina Gerton, u0639053@umail.utah.edu, Michael Delgado, michael.e.delgado@gmail.com

Discussion Hours (Zoom): There will be optional discussion sessions conducted by the TAs. During these sessions you can get help with webwork problems, exams, etc. Schedule of times and Zoom link will be posted on Canvas.

Labs (Zoom): Every Thursday Learning Assistant (LA) directed lab sections will be held via Zoom. These lab sections are **required**, they will have much smaller class sizes, and you will work 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. The lowest lab score will be dropped.

Getting Help:

- **Using WeBWorK:** You will access the webwork system through your Canvas login. In class we will briefly go over how the webwork system works. If you encounter any problems, please contact TA Delaney Mosier, and give your full name, course number and section, and student ID number.
- **WeBWorK feedback button:** When you use the feedback button within an exercise, please state your question clearly. All relevant data about your question and answer attempts are sent to your TA. Please use this very helpful tool as needed, but don't over-use it, the TAs will be getting lots of emails.
- **Tutoring Center & Computer Lab:** The T. Benny Rushing Mathematics Student Center and the Computer Lab are closed until further notice, but free online tutoring is available at https://utah.instructure.com/courses/613503/. 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/

Grades and Exams:

- (50%) Your two best scores on three on-line midterm exams taken during your class time. The lowest of your three exam scores is dropped automatically in calculating the final grades. There are NO MAKE-UP EXAMS. You may have one sheet of notes (front and back) and a calculator during any exam, but there is to be NO communication with anyone during the exam except possibly the TAs.
- (20%) Final exam.
- (15%) WeBWorK assignments.
- (15%) Lab participation and worksheets.
- **Path to success in this class.** **1.** Complete your WeBWorK assignments – you can try as many times as is needed in answering any question, and get as much help as you need, so you should be able to get most of the points on every assignment. **2.** Prepare for and actively participate in the Labs. **3.** Take the practice exams seriously: know how to solve the problems there, as well as problems like them. Make sure you attend Professor Golden's review session before each exam. He will solve all the problems on the practice exam and answer any questions relevant to the real exam. **4.** There are 6 dedicated people (Ken, Delaney, Kenzie, Liz, Marina, and Michael) who really care, and who are there to help you, answer your questions, and help facilitate your success. Please use these valuable resources, that's what we're here for!

Student Integrity Policy:

- We expect that you will take exams honestly. We expect that you will submit your own work; exams should be taken by yourself, and without finding answers online.

Course Outline:

August	24-28	0.1-0.7, 1.1	Real Numbers, Functions, Limits	
September	31-4	1.3-1.5	Limit Theorems	
	8-11	1.6, 2.1-2.2	Continuity, The Derivative	
	14-18	2.3-2.4	Finding Derivatives	EXAM I (Sept. 18)
	21-25	2.5-2.6	Chain Rule; Motion	
October	28-2	2.7-2.9	Applications of Derivatives	
	5-9	3.1-3.3	Maxima and Minima	
	12-16	3.4	Practical Optimization Problems	EXAM II (Oct. 16)
	19-23	3.5-3.7	Graphing, Mean Value Theorem	
	26-30	3.8-3.9	Antiderivatives; Differential Equations	
November	2-6	4.1-4.2	Area, Riemann Sums and Integrals	
	9-13	4.3-4.5	Fundamental Theorem of Calculus	EXAM III (Nov. 13)
	16-20	4.6, 5.1-5.2	Applications of Integrals	
	23-25	5.3-5.4	Volumes, Arc Length	
December	30-3	5.5-5.7	Work, Moments, Probability	
	7-11			FINAL EXAMS

FINAL EXAM SCHEDULE
1210-010: Tuesday, December 8, 10:30 AM – 12:30 PM, Online
1210-015: Monday, December 7, 10:30 AM – 12:30 PM, Online

Statement on Learning Assistants: This class is supported by Learning Assistants (LAs) who you will meet in your lab sections. LAs are undergraduates who have completed this class (or similar), and who are here to help you learn. Their job is not to offer you answers, but rather to help you figure out how to problem solve, and how to learn from your classmates. Discussion is an efficient learning strategy, and LAs help our discussions stay on track.

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

1. Take limits of algebraic and trigonometric functions, including expressions of the form 0/0 and a non-zero number over 0; be able to explain why certain limits exist and others do not.

2. Understand the limit definition of the derivative; be able to use the limit definition to find the derivatives of polynomial, rational and some trigonometric functions; understand the definition of continuity and its consequences.

3. Differentiate all polynomial, rational, radical, and trigonometric functions and compositions of those functions; perform implicit differentiation and compute higher order derivatives. Understand that in the context of one dimensional motion the time derivative of the position is the velocity and its second derivative is acceleration.

4. Understand that Newton's famous second law of motion $F = ma$, as well as many other fundamental laws in science and engineering, are differential equations; in the

case of a falling object know how to solve Newton's law for the position and velocity of the object and find the basic parameters of the motion.

5. Be able to find and use the following information to sketch the graph of a given function: use differentiation to find critical points, inflection points, and the signs of the first and second derivatives; use domain and limit information to determine vertical and horizontal asymptotes.

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

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

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

9. Apply the definite integral to compute area between two curves, volumes of solids of revolution, 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, veteran's 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 student's 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 or 801-581-7776.

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.

Contact Information:

Name:	Email:	Phone number:
Ken Golden (he/him)	golden@math.utah.edu, kenatmath@gmail.com	801-750-8555 (mobile) 801-581-6176 (office)
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Liz Cowgill (she/her)	Liz.cowgill@utah.edu	N/A
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