

# **Mathematics 1210**

**Summer, 2020**

**Instructor:** Kelly A. MacArthur  
she/her/hers pronouns  
preferred name/address: Kelly

**Class Mission Statement:** This is a kind, inclusive, brave and failure-tolerant class.

**Class Time and Place:** 9:30 a.m. - 1:30 p.m.  
Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays  
via zoom (see zoom link in the Canvas home page)

**Office Hours:** Monday through Friday 8:50 to 9:20 a.m. (via zoom)  
or right after class or by appointment.

**Office Location:** JWB 218

**E-mail address:** [macarthur@math.utah.edu](mailto:macarthur@math.utah.edu)

**Text:** (1) *Calculus with Differential Equations*, 9th edition,  
by Varberg, Purcell and Rigdon. ISBN: 0-13-230633-6  
  
(2) My class notes which will be posted in Canvas.  
You will need to print those out and bring them to class, because I'll refer  
to them regularly.

**Course Information:** Math1210, Calculus 1 is a 4-credit semester course.

**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.

**Prerequisite:** At least a C grade in Math1050 (College Algebra) AND Math1060 (Trigonometry) OR in Math1080 (Precalculus) or an Accuplacer score of 90 on the College Level Math test or at least a 3 on the AB Calculus AP exam

*Important Note:* The mathematics department DOES enforce prerequisites for all our undergraduate courses. If you were able to register for this class based on your enrollment in the prerequisite course last semester, and you did not receive the minimum grade in that course to continue on with your math classes, then you will be dropped from this class on Friday of the first week of classes. If that is the case for you, then it is in your best interest to drop yourself from this class before you are forcibly dropped and get into a class for which you have the prerequisites.

### Expected Learning Outcomes:

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

- 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.
- Use the limit definitions of derivative and definite integral for polynomial, rational and some trigonometric functions; understand definition of continuity.
- Differentiate all polynomial, rational, radical, and trigonometric functions and compositions of those functions; perform implicit differentiation and compute higher order derivatives.
- Use differentiation to find stationary, singular and inflection points, as well as domain and limit information to determine vertical and horizontal asymptotes, and then use all of that information to sketch the graph of a curve,  $y = f(x)$ .
- Apply differentiation to optimization and related rates problems.
- Compute indefinite and definite integrals, using the power rule and basic u-substitution and the Fundamental Theorems of Calculus.
- Apply the definite integral to compute area between two curves, volumes of solids of revolutions, arc length, surface area for surfaces of revolution and center of mass.

### Additional Learning Outcomes (for this particular course instructor):

- Collaborate, analyze and address mathematical problems with colleagues.
- Articulate and discuss mathematical ideas, via written, oral and/or video expression.
- Engage in diverse problem-solving with other classmates.
- Expand your knowledge, skills and attitudes about how mathematics can prepare you to be global citizens.

**Tutoring Lab:** T. Benny Rushing Mathematics Student Center (adjacent to JWB and LCB), Room 155  
M - Th 8 a.m. - 8 p.m. And F 8 a.m. - 6 p.m.  
The tutoring is happening online right now:  
<https://utah.instructure.com/courses/613503/>

**Private Tutoring:** University Tutoring Services, Marriott Library (they offer inexpensive tutoring). There is also a list of tutors at the Math Department office in JWB233.

**Grading:** The grades will be calculated as follows:

|                              |     |
|------------------------------|-----|
| Daily Quizzes                | 20% |
| Attendance and participation | 5%  |
| Breakout room leader         | 5%  |
| Midterm                      | 20% |
| Midterm                      | 20% |
| Midterm                      | 5%  |
| Final Exam                   | 25% |

*(Note: There will be 3 midterms. Your lowest midterm score will count for 5% of your grade and your top two midterm scores will each count for 20% of your final grade.)*

**Course Structure Overview:** There is much research to date regarding active-learning classrooms in STEM courses, at the collegiate level, that suggests strongly that active-learning classrooms can provide a more equitable class, particularly for typically underserved students, including womxn, students of color and first-generation students. The research I've read, and my own experience from teaching with active-learning classrooms for many years now, also is suggestive that no one is not well-served in this way. In other words, an active-learning classroom, statistically, serves students much better than traditional lecture courses. Compared to a traditional lecture format, literally any amount of active, engaged learning that happens in class is better, for STEM courses. Much research continues to prove that claim. Due to this research and my own experiences in teaching for many years, our class will be one where you are doing mathematics every day in class, not just copying down what I write.  
*(Note: womxn is spelled that way intentionally, to include cis-women, trans-women, women of color, Native women, etc. It's intended to be an inclusive term.)*

**Growth Mindset, Making Mistakes and Failure:**

The best mathematicians, engineers and scientists fail big and fail often. I strive to kindly challenge you in class and to push you into perhaps an uncomfortable zone, in order to help you grow mathematically. Sometimes you'll be able to solve the problems we are working on and sometimes you won't. Sometimes you'll be able to solve the problems on your own and other times, you'll need the support of your class colleagues to get the work done. This is the nature of doing mathematics. I ask that you don't get discouraged by that process and instead consider having a growth mindset, focusing on your own growth and improvement. Always remember this motto: mathematics is not an innate ability; it is a skill we learn and refine through work and persistence.

**Student Rights in a Mathematics Classroom:** Every student in this class has a right to (1) be confused, (2) claim a mistake, (3) speak, listen and be heard, and (4) write, do, and represent only what makes sense.

(These student rights are taken from Kalinec-Craig, C. A. (2017). The Rights of the Learner: A Framework for Promoting Equity through Formative Assessment in Mathematics Education. *Democracy and Education*, 25 (2), Article 5.

Available at: <https://democracyeducationjournal.org/cgi/viewcontent.cgi?article=1298&context=home>)

**Suggested Homework:** There are suggested homework problems assigned for each section of the book that we cover. You can access that list of problems in Canvas. It is important to do at least some of the homework problems even though I will not collect the homework. These problems are provided for you to practice, and maximize your success in the course. This practice is the best way to be prepared for the daily quizzes and weekly exams.

**Attendance & Participation:**

Students will be expected to attend all classes in zoom for this summer online intense course. This is such a shortened course that there really isn't a way to succeed in the course without full involvement on a daily basis. Also your quizzes will be group quizzes and as such your group mates need to know they can count on you and you will likely want to be there for your group, to learn from and contribute learning to the group. If there is a compelling reason that you cannot attend class one day, please email me.

**Breakout Room Leader:**

All students will take 1-3 turns (depending on how many students we have total in the class) being the breakout room leader in the zoom classes. When you are the assigned breakout room leader, you need to take the initiative to lead the discussion about whatever math problem or question we're working on. This does NOT mean you have to know what you're doing with the math, only that you're the one leading the discussion and showing the whiteboard or tablet on your shared screen and possibly also being the scribe.

**Quizzes:**

There will be a total of 15 quizzes. Basically, there will be a 20 to 30-minute quiz every Monday, Tuesday, Wednesday and Thursday with the exception of Memorial Day (since we don't have class). The daily quiz will cover the material presented the previous day in class. Quiz questions will be taken from text examples, class examples, assigned problems or problems very much like those problems. The quizzes will be done in small groups, that I will assign. **I will drop your lowest two quiz scores.**

**Midterm Exams:**

There will be a midterm exam every Friday for the first three weeks of class. I will announce in class every Thursday exactly which sections will be covered on the midterm. They will occur in our normal classroom, split between two one-hour blocks, to accommodate a group portion and solo portion of each midterm exam. Groups will be assigned semi-randomly by me, and put in the People tab in Canvas at least a couple days before each exam.

**Final Exam:**

The final exam for this class is comprehensive and it will occur on the last Friday of class. It will take about two to three hours and will cover all the material covered in the class with an emphasis on the last week's assignments.

**Online Grades:**

I will put your grades online on Canvas. You can get there easily from the main University of Utah website [www.utah.edu](http://www.utah.edu). To log in, you use the same student id and password that you use for Campus Information System. I do my best to update the grades on a regular basis and keep everything accurate. However, I would advise you to check your grades often to make sure there were no data entry mistakes. I'm always happy to correct any mistakes I've made. You just need to let me know about them.

**Gradescope:**

We'll be using a software, Gradescope, to grade all quizzes and exams in this class. You will be able to access your quizzes and exams in Gradescope and request regrades there, directly in Gradescope. You will not receive any written work back on paper, as it will be uploaded to Gradescope instead.

**Calculators:**

You may find it helpful to have a graphing calculator for your own personal use. However, if I allow calculators on exams or quizzes, I will only allow scientific calculators (no graphing or programmable calculators will be allowed ever). Most of the time, you will not have use of a calculator on exams and quizzes. This will be discussed more in class with each quiz and test.

**Grading Scale:** Although I'm not philosophically opposed to curving grades, I find it's rarely necessary. The grade scale will be the usual:  
A (93-100), A- (90-92), B+ (87-89), B (83-86), B- (80-82), C+ (77-79), C (73-76), C- (70-72), D+ (67-69), D (63-66), D- (60-62), E (0-59).  
If I do need to curve the grades, I will simply shift everything down by a few points (whatever is necessary).

**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 (CDA), 162 Olpin Union Building, 581-5020 (V/TDD). CDA will work with you and me to make arrangements for accommodations. All information in this course can be made available in alternative format with prior notification to CDA.

**Veterans Center:** If you are a student veteran, the U 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 for any reason.

**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. You 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, collusion, fraud, theft, etc. Students should read the Code carefully and know you are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, beginning with verbal warnings and progressing to dismissal from 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>

**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).

**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](http://www.wellness.utah.edu) or 801-581-7776.

**Dean of Students Office:** The Dean of Students Office is dedicated to being a resource for students through support, advocacy, involvement, and accountability. It serves as a support for students facing challenges to their success as students, and assist with the interpretation of university policy and regulations. Please consider reaching out to the Office of the Dean of Students for any questions, issues and concerns.  
<https://deanofstudents.utah.edu/> or 801-581-7066

**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](http://safeu.utah.edu).

**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 U-ID card, please visit the LGBT Resource Center Room 409 in the Olpin Union Building, or email [bpeacock@sa.utah.edu](mailto: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.

**Classroom Social Equity:** I strive to be ethical, kind, fair, inclusive and respectful in my classroom and expect students to behave likewise. In this regard, I have these requests of you:

1. Please do tell me, discreetly, if you have any sort of anxiety disorder, TBI, PTSD, C-PTSD, or any other challenge that would cause psychological harm to you by me calling on you in class. I want students to feel a little uncomfortable and stretched during class, while working on problems as a large or small group, but I definitely don't want to cause any human being harm. So, please discreetly tell me if that is the case for you and I will confidentially accommodate your request.
2. If your preferred name is different than your legal first name (*the preferred name you chose does indeed show up in CIS on my roll sheet, but not yet in Canvas*), please log into Canvas and go to Account (on far left)-->Settings and change your Display Name to be the name you prefer to be addressed by. This will help me greatly to know students' names, and to address you correctly when responding to Canvas quiz comments.
3. If there is ever a time that you feel this course or the curriculum is not equitable, please email me, interrupt me in class on the spot, or meet with me to discuss

your concerns so I have a chance to address that.

**Additional Policies:** Due to experience, I have decided to make some additional policies regarding my classroom administration and grading.

- There will be no retakes of exams, for any reason.
- If you have an emergent, extenuating circumstance that makes it necessary to take an alternate exam, it is your responsibility to discuss that with me, before the exam occurs, or as soon as possible. In general, I allow exams to be taken early, but not late.
- If you have crisis-level extenuating circumstances which affect your class performance and you need guidance/advice/ideas, please communicate with me as soon as possible so I can help you in some manner, which I'm truly happy to do. The longer you wait to communicate with me, the less I can and am willing to do to help.
- I will provide and expect respectful behavior in my classroom. Examples of disrespect include, but are not limited to, reading a newspaper or magazine in class, social chatting with your friend in class, text-messaging during class, excessive use of your cell phone, or cuddling someone else in class. If you choose to be disrespectful with distracting behavior during our class, please keep in mind that you put me in a position of choosing between protecting/taking a stand for you OR for the other students or myself whom you are disrupting. I can guarantee I will choose to stand for the students who are there to learn without disruptions and I will thus take action to terminate your distracting behavior, and that action may not be desirable for you.
- There shall be no cursing nor negative ranting (for example, "math sucks") on any written work turned in, as it's unprofessional behavior. The penalty for such things on your written work will be a zero score on that assignment or test.
- I will regularly post announcements to the class in Canvas and will hold you accountable for receiving that information. Be sure to turn on your notifications in Canvas so you are alerted to announcements I make in Canvas as well as grade changes, discussion posts, etc.
- If you have questions about any exam/assignment grade, or you want to appeal the grading of the exam/assignment, you must turn it in to me (in Gradescope) within one week of the exam/assignment being turned back in class. I'm happy to look over your appeal and/or questions and give my feedback in order to benefit your learning. But, it must be done in this timeframe of a week from when I hand back the graded exam/assignment.
- If you cheat on any homework, project, quiz or exam, I will automatically give you a zero for that grade. Depending on the severity of the cheating, I may decide to fail you from the class. Please note that the use (or even just pulling it out of your pocket) of a cell phone or any other electronic device during any in-class exam is considered cheating and cause for receiving an automatic zero. Also, if you exhibit any other behaviors that are unethical, like offering me a bribe to give you a better grade (even if you later claim you were joking), I will report your behavior to the Dean of Students.
- Please make sure you do your best throughout the semester, knowing the grading scheme and

what's expected of you, and come talk to me if you need further study strategies. I will be happy to brainstorm ideas to help you maximize your study strategies and improve your mathematical understanding. I will offer an extra credit opportunity on every midterm and final exam, to help make up for arithmetic or math grammar mistakes for which you lost points. But, I will not offer any additional extra credit at the end of the semester or any other way for you to improve your grade at that time. Please respect this and do not ask for special favors or extra credit or some way to get a higher grade (however you want to word it) when you realize you don't like your grade. Your need to get into a certain program, or needing a specific grade for your work or scholarship or not wanting to upset whomever is paying for your college are all your own personal dilemmas that are truly independent from how I assign grades. The only way to "better your grade" at the end of the semester is to retrieve your final exam, compare it to the solutions, and see if you have any grading appeals. If you do have grading appeals on the final exam, please turn it in to me. I'm happy to look over those and possibly give points back, if it's warranted. Other than that, I consider it disrespectful of me and my time for you to ask for a higher grade than you earned, or for some possible way to increase your grade, at that point.

**I reserve the right to change my policies stated in this syllabus at some point in the semester. If I do make a change to a policy, I will announce it in class and post an Announcement on Canvas about it.**