

Mathematics 1220, Calculus 2

Spring, 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: 9:40 a.m. - 10:30 a.m.
Mondays, Tuesdays, Wednesdays, and Fridays
in JFB 103

Office Hours: Tuesdays 8:00 – 9:30 am, Fridays 1:30-3:00 pm or by appointment.
We will also have a weekly review session, taught by the undergrad TAs
days/times to be announced.

Weekly Help Sessions with TAs:
Thursdays, 9:40-10:30 am in JTB 140
Fridays, 11:30 am-12:30 pm AEB 320

Office Location: JWB 218
E-mail address: macarthur@math.utah.edu
Class Web Page: <http://www.math.utah.edu/~macarthur> (go to Current Teaching and our class)

Text: (1) *Calculus with Differential Equations*, 9th edition,
by Varberg, Purcell and Rigdon. ISBN: 0-13-230633-6
Please go to <http://www.math.utah.edu/schedule/bookInfo/index.html> and
look at the Book Purchasing Information document for
Math1210/1220/2210 to get the best deals.
(2) My class notes which will be posted on the class web page. You will
need to print those out and bring them to class, because I'll refer to them
regularly. (Please note: You can print them in the Math Computer Lab
for no cost.)

Course Information: Math1220, Calculus 2 is a 4-credit semester course.

Prerequisite: At least a C grade in Math1210 or Math1250 or Math1270 or Math1310,
or AP Calculus AB score of at least 4 or AP Calculus BC score of at least
3 (within the last two years)
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.

Course Description: Geometric applications of the integral, logarithmic, and exponential functions, techniques of integration, conic sections, improper integrals, numerical approximation techniques, infinite series and power series expansions, differential equations (continued).

Expected Learning Outcomes:

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

- Compute derivatives and integrals for exponential, logarithmic, hyperbolic functions, and inverse trigonometric functions.
- Integrate integrable functions using integration by parts, u-substitution, trigonometric substitutions, rationalizing substitutions, partial fraction decomposition, and trigonometric identities. This includes knowing which techniques to apply to a given integral.
- Use L'Hopital's Rule to calculate indeterminate-type limits and also know what limits are the non-indeterminate forms and how to compute those limits.
- Compute improper integrals.
- Understand the difference between an infinite sequence and infinite series and determine if a sequence converges or diverges.
- Determine whether or not an infinite series of numbers converges or diverges using a variety of tests.
- Understand what it means for a Power Series to converge or diverge and be able to find the Taylor Series for a given function.
- Differentiate and integrate functions in polar coordinates.

Additional Learning Outcomes (for this particular course instructor):

- Collaborate, analyze and address mathematical problems with colleagues.
- Articulate and discuss mathematical ideas, via written and oral 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.

(closed Saturdays, Sundays and holidays)

They are also offering group tutoring sessions. If you're interested, inquire at the Tutoring Lab. <http://www.math.utah.edu/ugrad/tutoring.html>

Computer Lab: also in the T. Benny Rushing Mathematics Student Center, Room 155C.

M - Th 8 a.m. - 8 p.m. and F 8 a.m.- 6 p.m.

Link to computer lab is <http://www.math.utah.edu/ugrad/lab.html>

Private Tutoring: University Tutoring Services, 330 SSB (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	10%
Weekly Assignments	15%
Midterm	20%
Midterm	20%
Midterm	10%
Final Exam	25%

(Note: There will be 3 midterms. Your lowest midterm score will count for 10% 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.

Suggested Homework: There are suggested homework problems assigned for each section of the book that we cover. You can access that list of problems at our public class web page. 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.

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>)

Daily Quizzes: There will be a 30-minute quiz on Canvas that opens every Monday, Tuesday, and Wednesday morning at 10:45 a.m. and closes the next day by 9:30 am, including exam weeks. You will need to complete that online quiz on your time, outside of class hours, every Monday, Tuesday and Wednesday. Each daily quiz will be one to four questions about the material covered in class/video lecture that day. If you are keeping up with the work, these quizzes should be reasonably straight forward. There will be a total of about 37-40 of these quizzes. **I will drop the lowest eight scores.**

Weekly Assignments:

There will be a total of 11 weekly assignments, posted on Canvas (in the Files tab, under the folder Weekly Assignments) by Wednesday evenings and due on Mondays (or the first class day of the week), by **exactly** the time class starts. The weekly assignment will cover the material presented that week in class. Questions will be similar to text examples, class examples, assigned problems or harder conceptual problems. The weekly assignments will be much harder than the daily quizzes, assessing more of your big-picture learning than just one problem. **I will drop your lowest two assignment scores to create a buffer for any and all types of problems throughout the semester. There will be no additional compensations made for the weekly assignments and no exceptions to my policies regardless of how great your reason is that you cannot turn in your assignment on time. I also will NOT accept late assignments.**

You will upload your Weekly Assignment, as one pdf file with the pages in order and right side up, directly into Gradescope by the due date each week.

IMPORTANT NOTE: You must print the weekly assignment, from Canvas, and do your work directly on the assignment paper. (Or you can download the pdf file onto your tablet/ipad and write directly on the assignment on your tablet/ipad.) We will not grade anything on any other piece of paper, so do NOT turn in other pages with your weekly assignment. The only work that will be graded is the work written directly onto the weekly assignment pages. I cannot stress this fact enough. Additionally, the weekly assignment is due at the beginning of class on the first class day of the week. After that, Gradescope will no longer accept your assignment submission. I will be consistently strict (and thereby fair) about this policy. There will be no late assignments accepted for any reason. Absolutely no exceptions. I am already dropping the two lowest assignment scores to account for any possible mishaps along the semester.

Midterms: There will be three one-hour midterm exams throughout the semester, and the dates are fixed, according to the course outline that is on our class web page. They will be during normal class time, in our usual classroom.

Final Exam: The final exam for this class is comprehensive and it will occur on **Friday, April 24th, from 8:00 to 10:00 a.m.**

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. 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 weekly assignments and exams in this class. You will be able to access your weekly assignments 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. This will be discussed more in class.

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 and 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 <https://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.

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 to schedule a time to drop by. The LGBT Resource Center hours are M-F 8am-5pm, and 8am-6pm on Tuesdays.

Teaching Philosophy: I believe strongly that mathematics, at its core, is the art/experience/science of problem solving and pattern recognition. It is inherently a creative process, one to be struggled with, repeated, and enjoyed. The process requires imagination, persistence, courage, processing time, and ultimately produces experiential, mathematical skill. It is from this perspective that I teach. I'm not as concerned with the destination, i.e. the answer, as I am about the journey of problem-solving and mathematical exploration since it is exactly the entirety of the journey that creates the answer. And, self-confidence and mastery are then natural by-products of the mathematical journey.

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 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.

- I do not allow the use of laptop computers (where the screen is perpendicular to the desk) in my classroom, in order to minimize student distractions. At this point, it's almost impossible to type notes for a math class on a laptop in real time. Thus, it is unnecessary in class. If you are using a tablet or ipad or some similar device to take notes and the screen lies parallel to your desk, that is totally fine.
- 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 submit a regrade request in Gradescope within one week of the exam/assignment being graded and published for you to see. 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 the exam/assignment is graded.
- 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.