

# MATH 1220 Calculus II, Fall 2021

**Class Meetings:** MTWTF at 9:40-10:30AM on Zoom

**Instructor:** Andy Liu (officially Andrew Liu, but call me Andy)

**Email:** [aliu@math.utah.edu](mailto:aliu@math.utah.edu)

**Office Hours:** Monday 2-3pm and Thursday 2-3pm over Zoom, or by appointment.

**Text:** *Calculus with Differential Equations*, by Varberg, Purcell, and Rigdon (9th edition), ISBN:978-0132306331

For information on purchasing the textbook, go to <http://www.math.utah.edu/schedule/bookInfo/>. Homework problems will be selected from the textbook

**Course Information:** Math 1220 Calculus II is a 4 credit course.

**Prerequisite Information:** “C” or better in (MATH 1210 OR MATH 1250 OR MATH 1270 OR MATH 1311 OR MATH 1310) OR AP Calculus AB score of at least 4 OR AP Calculus BC score of at least 3.

**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).

**Canvas:** Canvas will be used for posting course announcements, homework assignments, grades, files and any relevant supplementary material. You are also welcome to make use of the Canvas discussion board to discuss course problems or topics. You can access the Canvas page through CIS or by logging in at [utah.instructure.com](http://utah.instructure.com). Students should check the Canvas page regularly for course information and resources. Email notifications and correspondence will be sent to the student’s UMail address (`[u-number]@utah.edu`); this email account must be checked regularly.

**Lectures:** Lectures will be held over Zoom, and recordings will be posted on Canvas. Attendance is not mandatory, but heavily encouraged. In my experience, students who attend live sessions tend to do much better than those who use recordings. During lectures, there will be time for you to ask questions whether through voice or chat. I encourage you to turn on your cameras so I can put a face to your names!

**Remote Learning Technical Requirements:** Knowledge and navigation of Canvas, Zoom, and Gradescope will be important for this class. A strong internet connection and camera will be important for attending Zoom lectures. If you anticipate any connectivity issues or if you plan to be in a vastly different time zone, you should let me know as soon as possible. It is your responsibility to maintain your computer and related equipment in order to participate in the online portion of the course.

**Exam Requirements:** **Exams will be held during the regular class time, and you will be required to have your camera on during the exam.** I understand that some of you may have selected the online time expecting to watch lectures asynchronously, so if there is sufficient demand I will consider holding an alternate exam period for those that cannot attend synchronously (acceptable reasoning for attending the alternate time will be determined by me).

**Gradescope:** All assignments and exams will be submitted to Gradescope. When submitting, you must assign each question to the corresponding page of your submission. **I will at most grade one incorrectly labeled submission this semester. Further incorrectly labeled submissions will not be graded.**

**Grading:** The following are the grade components and the percentage each contributes to a student’s final grade:

- **Homework Assignments (25%)**- Roughly three textbook sections of homework will be assigned each week. Homework will be due on Thursday each week at 10pm, with submissions being accepted until the start of Friday’s lecture with no penalty. No late homework will be accepted. No homework will be due on weeks with exams (weeks 4, 9, and 13).

The homework will typically cover material up to and including the preceding Monday. If you click on a homework assignment in the Assignments tab in Canvas, you will see the list of assigned problems, which will usually be straight from the textbook. Three of the problems will be selected for grading, each graded out of 5 points (15 points), and the rest of the problems will be checked for completeness

(30 points), so homework will be graded out of 45 points. The lowest 2 homework scores will be dropped.

For completion points, a “reasonable attempt” should be made at all problems. For very short problems, you could just write a final answer, but ideally you should show some or all the working that you did. You will get completion points even if you do not get to a final answer, as long as I see that you made a good attempt at it. Additionally, partial credit will be given on graded problems, so it is in your best interest to show working on all of them just in case!

- **Midterm Exams (45%, 15% each)**- Three 50-minute midterm exams will be given on select Fridays. You will have the whole class period to complete the exam, with up to 5 minutes to correctly upload to Gradescope. 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 Sep. 17th, Friday Oct. 22nd, and Friday Nov. 19th.
- **Final Exam (30%)**- 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 Monday Dec 13th from 8:00-10:00am over Zoom, and there will be no alternate exam period for the final.

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

Final course letter grades will be determined as follows: If  $X$  is your course percentage weighted according to the above, then

$93 \leq X \leq 100 \Rightarrow A$	$73 \leq X < 77 \Rightarrow C$
$90 \leq X < 93 \Rightarrow A-$	$70 \leq X < 73 \Rightarrow C-$
$87 \leq X < 90 \Rightarrow B+$	$67 \leq X < 70 \Rightarrow D+$
$83 \leq X < 87 \Rightarrow B$	$63 \leq X < 67 \Rightarrow D$
$80 \leq X < 83 \Rightarrow B-$	$60 \leq X < 63 \Rightarrow D-$
$77 \leq X < 80 \Rightarrow C+$	$50 \leq X < 60 \Rightarrow E$

The instructor retains the right to modify this grading scheme during the course of the semester; students will, of course, be well notified of any adjustments.

#### 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/undergrad/mathcenter.php>
- **Private Tutoring**- ASUU Tutoring Center, 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. Compute derivatives and integrals for exponential, logarithmic, hyperbolic functions, and inverse trigonometric functions.
2. 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.
3. 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.
4. Compute improper integrals.
5. Understand the difference between an infinite sequence and infinite series and determine if a sequence converges or diverges.
6. Determine whether or not an infinite series of numbers converges or diverges using a variety of tests.
7. Understand what it means for a Power Series to converge or diverge and be able to find the Taylor Series for a given function. Determine how closely a Taylor polynomial approximates a function using Taylor's Remainder Theorem.
8. Differentiate and integrate functions in polar coordinates.

**Course Roadmap Week-by-Week:** Below is an outline and rough schedule of the sections and topic covered in this course.

**Week 1** Introduction, Chapters 6.1, 6.2

**Week 2** Chapters 6.3, 6.4, 6.5 **Note, Friday Sep. 3rd is the last day to drop**

**Week 3** Chapters 6.6, 6.7, 6.8

**Week 4** Chapters 6.9, review, Exam 1 (Sep. 17)

**Week 5** Chapters 7.1, 7.2, 7.3

**Week 6** Chapter 7.4, 7.5, 7.6

**Week 7** Chapters 8.1, 8.2, 8.3

**Week 8** Fall Break

**Week 9** Chapters 8.4, review, Exam 2 (Oct. 22) **Note, Friday Oct. 22nd is the last day to withdraw**

**Week 10** Chapters 9.1, 9.2 9.3

**Week 11** Chapters 9.4, 9.5

**Week 12** Chapters 9.5, 9.6

**Week 13** Chapters 9.7, review, Exam 3 (Nov. 19)

**Week 14** Chapters 9.8, 9.9

**Week 15** Chapters 10.5-10.6

**Week 16** Chapter 10.7, review

**Week 17** Final Exam Monday Dec 13th from 8:00am-10:00am.

**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](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.

**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.

**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).

**University Counseling Center** The University Counseling Center (UCC) provides developmental, preventive, and therapeutic services and programs that promote the intellectual, emotional, cultural, and social development of University of Utah students. They advocate a philosophy of acceptance, compassion, and support for those they serve, as well as for each other. They aspire to respect cultural, individual and role differences as they continually work toward creating a safe and affirming climate for individuals of all ages, cultures, ethnicities, genders, gender identities, languages, mental and physical abilities, national origins, races, religions, sexual orientations, sizes and socioeconomic statuses.

**Office of the Dean of Students** The Office of the Dean of Students is dedicated to being a resource to students through support, advocacy, involvement, and accountability. It serves as a support for students facing challenges to their success as students, and assists with the interpretation of University policy and

regulations. Please consider reaching out to the Office of Dean of Students for any questions, issues and concerns. 200 South Central Campus Dr., Suite 270. Monday-Friday 8 am-5 pm.

**Student Success Advocates:** The mission of Student Success Advocates is to support students in making the most of their University of Utah experience ([ssa.utah.edu](http://ssa.utah.edu)). They can assist with mentoring, resources, etc. Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact a Student Success Advocate for support (<https://asuu.utah.edu/displaced-students>).