

MATH 1220-005 Calculus II, Spring 2022

Class Meetings: MW at 6:00-7:50 in LCB 219

Instructor: Todd Vawdrey

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Office Hours: I'm only on campus in the evenings. Please talk to me after class or email me to make an appointment.

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/resources/bookinfo.php>

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 OR IB Higher Level Math score of at least 5.

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. 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.

Shut Down Equipment: If the university shuts down during the semester, students will be required to take exams at the regularly scheduled time remotely. This will require a computer which can install a university sponsored lockdown browser (currently Respondus) as well as a webcam which can show your hands, face, and work area at all times. If you have a laptop with a built-in webcam, you will likely need access to an external webcam to show everything. If the university does not shut down, exams will be administered on paper in the regular classroom.

Late Work and Emergencies: Things will happen. The internet will turn off right before a deadline. Students will forget to submit assignments. Traffic, sickness, and weddings can all affect the ability to submit quality work on time. Rather than requiring students to report individual emergencies to get work extensions, the instructor will drop low scores at the end of the semester (two webwork assignments, one textbook assignment, and one quiz). These are meant to account for emergencies (including the very serious ones). For exams, exceptions are made if there are extenuating circumstances with documentation.

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

- **Webwork Assignments (12%)**- An online assignment will be assigned following every lecture. The problem set is due 30 minutes before the start of the next class. There are 24 total Webwork assignments. The purpose of these assignments is to check the correctness of your answers. The system will give you immediate feedback so that you can plan your time to study and review.
- **Textbook Assignments (10%)**- A written assignment from the text will be assigned weekly and will cover about three textbook sections. These are due Fridays at 11:59pm. The homework will typically cover material covered 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. Three of the problems will be selected for grading by the grader, each graded on completion (20%), communication (40%), and accuracy (40%). Homework will be turned in electronically in Canvas.

- **Quizzes (8%)**- In the last 15 minutes of every Wednesday class (except for exam days), a short 1-2 problem quiz testing fundamentals will be given. The quiz will cover relevant topics covered in the week's lectures. The lowest quiz score will be dropped.
- **Midterm Exams (45%, 15% each)**- Three midterm exams will be given on select Wednesdays. You will have one hour to complete each midterm exam. 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 Wednesday Feb 16, Wednesday Mar 23, and Wednesday Apr 20.
- **Final Exam (25%)**- 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 May 2 from 6:00-8:00 pm in our regular classroom.

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

$$\begin{array}{lll}
 X \geq 90\% \Rightarrow A & X \geq 87\% \Rightarrow A- & \\
 X \geq 83\% \Rightarrow B+ & X \geq 80\% \Rightarrow B & X \geq 77\% \Rightarrow B- \\
 X \geq 73\% \Rightarrow C+ & X \geq 70\% \Rightarrow C & X \geq 67\% \Rightarrow C- \\
 X \geq 63\% \Rightarrow D+ & X \geq 60\% \Rightarrow D & X \geq 55\% \Rightarrow D- \\
 X < 50\% \Rightarrow E & &
 \end{array}$$

This course is challenging for many students. If the instructor feels the grades do not accurately reflect the learning of the students, the cutoffs may be lowered to raise grades at the end of the semester. All students will have their grades determined by the same cutoffs.

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 <https://www.math.utah.edu/undergraduate/mathcenter.php>
- **Private Tutoring**- Learning Center <https://learningcenter.utah.edu/>.
- **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.

University leadership urges all faculty, students, and staff to model the vaccination, testing, and masking behaviors we want to see in our campus community. These include:

Vaccination: Get a COVID-19 vaccination if you have not already done so. Vaccination is proving highly effective in preventing severe COVID-19 symptoms, hospitalization and death from coronavirus. Vaccination is the single best way to stop this COVID resurgence in its tracks. Visit <http://mychart.med.utah.edu/>, <http://alert.utah.edu/covid/vaccine>, or <http://vaccines.gov/> to schedule your vaccination.

Masking: While masks are no longer required outside of Health Sciences facilities, UTA buses and campus shuttles, CDC guidelines now call for everyone to wear face masks indoors.

Testing: If you are not yet vaccinated, get weekly asymptomatic coronavirus tests. This is a helpful way to protect yourself and those around you because asymptomatic individuals can unknowingly spread the coronavirus to others. Saliva based testing is available at alert.utah.edu/covid/testing

Self-Reporting: All of us, including faculty, students, and staff, must self-report if we test positive for COVID-19 via this website: <https://coronavirus.utah.edu/>.

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, <https://disability.utah.edu/>. 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 on the basis of your sex, office for equal opportunity and affirmative action including sexual orientation or gender identity/expression, you are encouraged to report it to the University's Title IX Coordinator; Director, Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, <https://oeo.utah.edu/contact-us/index.php> or to the Office of the Dean of Students, 270 Union Building, 801-581-7066, <https://deanofstudents.utah.edu/>. For support and confidential consultation, contact

the Center for Student Wellness, 426 SSB, 801-581-7776. To report to police, contact the Department of Public Safety, 801-585-2677(COPS), <https://police.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 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.

Campus Safety: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

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. The UCC staff is committed to supporting the mental health needs of our campus community. Their phone number is 801-581-6826. Their hours are Monday-Friday, 8:00am-5:00pm. For after-hours emergencies, contact the 24/7 Crisis Line: 801-587-3000 . More information is at <https://counselingcenter.utah.edu/>

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. To contact the Office of the Dean of Students, please email deanofstudents@utah.edu or call 801-581-7066. There is more information at <https://deanofstudents.utah.edu/>

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). 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>).

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

Webwork assignments are due on Monday and Wednesday at 5:30pm. Textbook assignments are due on Canvas on Fridays at 11:59pm.

Week 1 Introduction, Chapters 6.1, 6.2, 6.3

Week 2 **No Class Jan 17. (MLK Day)** Chapters 6.4, 6.5 **Friday Jan. 21st is the last day to drop.**

Week 3 Chapters 6.6, 6.7, 6.8

Week 4 Chapters 6.9, 7.1, 7.2

Week 5 Chapters 7.3, 7.4, 7.5

Week 6 Chapter 7.6, review, **Midterm 1 (Feb 16)**

Week 7 **No Class Feb 21. (Presidents Day)** Chapters 8.1, 8.2

Week 8 Chapters 8.3, 8.4, 9.1 **Friday Mar. 4th is the last day to withdraw.**

Week 9 Spring Break (Mar. 6- Mar. 13)

Week 10 Chapters 9.2, 9.3 9.4

Week 11 Chapters 9.5, review, **Midterm 2 (Mar 23)**

Week 12 **Asynchronous Week** Review of Conics, Chapters 10.1-10.4. *The content in this week should be a review of concepts from Math 1050 and 1060. Students can participate at their own pace and do not need to attend regular class. This content will not be directly on the midterm exam 3 or the final, but will be used in Chapters 10.5 through 10.7.

Week 13 Chapters 9.6, 9.7, 10.5

Week 14 Chapters 9.8, 9.9, 10.6

Week 15 Chapters 10.7, review, **Midterm 3 (Apr 20)**

Week 16 Review **No Class Apr 27. (Reading Day)**

Week 17 **Final Exam Monday May 2 from 6:00pm-8:00pm** in regular classroom.

Grades will be posted by 11:59pm on Monday, May 16.