

# Syllabus: MATH 1220-008 – Spring 2025

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## GENERAL DETAILS

### Course

- **Course Number and Title:** MATH 1220-008, Calculus II
- **Semester and Year:** Spring 2025
- **Credits:** 4
- **Lecture:** MTWF 7:30-8:20AM, in-person, CSC 208

### Instructor

- **About:** Abhay Goel (he/they). I am a graduate student interested in number theory.
- **Contact Info:** I reply most quickly via Canvas. I am also reachable at [abhay.goel@utah.edu](mailto:abhay.goel@utah.edu).
- **Teaching Philosophy:** In my experience, mathematics is learned through inquiry, diverse collaboration, and problem-solving; I highly encourage you to ask questions frequently and work with others. To facilitate this, I suggest you attend office hours whenever possible and that you take advantage of the tutoring center and other resources. Feel free to schedule time to chat with me about anything.
- **Office Hours:** TBA on Canvas

## COURSE DETAILS

### Prerequisites

At least one of the following:

- “C” or better in MATH 1210, MATH 1250, MATH 1270, MATH 1311, or MATH 1310
- AP Calculus AB score of at least 4
- AP Calculus BC score of at least 3
- IB Higher Level Math score of at least 5

### Course Concepts

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; and differential equations.

### Course Materials

- **Textbook:** *Calculus with Differential Equations*, by Varberg, Purcell, and Rigdon (9th edition). For details and information on purchasing the textbook, see <http://www.math.utah.edu/resources/bookinfo.php>
- **Other:** The course website is on Canvas.

### Technical Requirements

- **Calculator:** You may find it helpful to have a graphing calculator for your own personal use. However, calculators will not be allowed (nor needed) on exams or quizzes.
- **Internet Access:** Needed to access course materials.
- **Scanning Device:** Needed to turn in assignments.

## Attendance & Punctuality

Students are expected to attend classes and, if missed, to go through the material covered in class by attending office hours, working with other students, reading the textbook, solving exercises, and thinking about course ideas. For exams, exceptions are made if there are extenuating circumstances.

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.

## EXPECTED LEARNING OUTCOMES

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'Hôpital's Rule to calculate indeterminate-type limits and also know what limits are the nonindeterminate 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 DESIGN

### Lectures

Classes will primarily consist of active lectures propelled by your participation.

### Classwork

At least once per week, we will spend a full class day practicing new material. You are encouraged to work in groups and your participation on these days will be graded.

### Homework Assignments

Written assignments will be due weekly. You can access the assignments by clicking on the Assignment listing in Canvas. The purpose of this course component is to practice and get feedback on writing clear and complete solutions. These assignments will be relatively short and you will be expected to upload your written work to Canvas.

### Quizzes

Daily quizzes will be given via Canvas. Each quiz will open after class and be due before the following class.

### Webwork

Online assignments will be due weekly and will utilize the Webwork environment. You can access the Webwork assignments by clicking on the Assignment listing in Canvas. The purpose of these assignments is to focus on computation (as opposed to completeness, as in the written assignments).

### Exams

There will be three 50-minute midterms during the semester each covering approximately one-fourth of the course material. The 2-hour final exam will be cumulative and take place at the time specified by the university calendar, with emphasis on material not covered by the previous midterms. Each exam will be accompanied by a practice exam, posted one week in advance. Your lowest midterm grade will be replaced by the score on your final exam if this improves your grade.

# CLASS SCHEDULE & IMPORTANT DATES

## Weekly Breakdown

Homework will be due on Fridays, except during exam weeks. Here is the tentative schedule of topics:

Week	Date (Monday)	Material covered (textbook sections)
1	1/6	6.1, 6.2, 6.3
2	1/13	6.4, 6.5, 6.6
3	1/20	6.7, 6.8
4	1/27	6.9, 7.1, 7.2
5	2/3	7.3, 7.4
6	2/10	7.5, 7.6, 8.1
7	2/17	8.2, 8.3
8	2/24	8.4, 9.1, 9.2
9	3/3	9.3, 9.4
10	3/17	9.5, 9.6, 9.7
11	3/24	9.8, 9.9, 10.1
12	3/31	10.2, 10.3
13	4/7	10.4, 10.5, 10.6
14	4/14	10.7
15	4/21	

## Important Dates

- **Classes begin:** 1/6
- **Holidays (no class):** 1/20, 2/17, 3/9–3/16
- **Midterm 1:** 2/5
- **Midterm 2:** 3/5
- **Midterm 3:** 4/2
- **Last day to add without a permission code:** 1/10
- **Last day to add/drop:** 1/17
- **Last day to withdraw:** 2/28
- **Last day of class:** 4/22
- **Final exam:** 4/30 (8:00-10:00AM)

# ASSIGNMENTS, ASSESSMENT, GRADING, & LATE POLICY

## Grade Breakdown

Category	Percent of Grade	Adjustments
Homework	10%	Lowest score will be dropped.
Quizzes	20%	Lowest six scores will be dropped.
Webwork	15%	Lowest score will be dropped.
Participation	5%	Two classwork days can be missed.
Midterm 1	10%	Lowest midterm grade can be replaced with final.
Midterm 2	10%	Lowest midterm grade can be replaced with final.
Midterm 3	10%	Lowest midterm grade can be replaced with final.
Final exam	20%	-

## Grading Scale

A	[93,100]	B+	[87,90]	C+	[77,80]	D+	[67,70]	E	[0,50]
A-	[90,93)	B	[83,87)	C	[73,77)	D	[60,67)		
		B-	[80,83)	C-	[70,73)	D-	[50,60)		

## Regrading Policy

If a grade is recorded incorrectly, it is the student's responsibility to let me know in a timely manner (at the latest within 3 weeks of when the grade was recorded). I'm otherwise happy to discuss the reasoning behind grades on individual assignments by appointment.

## Late Policy

I understand that individuals' situations change and that students get busy at different times in the semester. This flexibility is built into the grading via allowing low scores to be dropped. No late work will be accepted.

The only exception here is as follows: just as you have a responsibility to me and your LA to be timely, so I have a responsibility to you to return work and feedback in a timely manner. When I begin grading an assignment, I will close it on Canvas; until this happens, you are free to turn in late work. This ensures that if I am behind on grading, that you are not unfairly penalized.

## Makeup Policy for Exams

For planned absences during exam dates, please inform me 2 weeks ahead of the actual exam date, so that I have time to arrange a makeup exam and you have time to study. If you miss your exam because of illness or another situation which arises suddenly, talk to me as soon as you are aware of your situation and capable to plan for a makeup. If you miss an exam, but it is not due to an extreme situation, also contact me. We will discuss makeup options, but there will be a penalty for taking the exam late.

**Extreme Situations:** If you have an extraordinary situation, contact me. We can discuss adjustments to the above policies.

## Other Grading Policies

For anything not documented here, including CR/NC and incompletes, please refer to the following:

- <https://catalog.utah.edu/policies-and-resources/student-resources/grading-policies>
- <https://www.finearts.utah.edu/images/A-Guide-to-Incompletes.pdf>

## COMMUNICATION

1. For any questions, please first consult this syllabus.
2. All course materials, including assignments, solutions, practice exams, and grades, will be posted on the course Canvas site.
3. Announcements may happen in class, but will also always be done via the Canvas announcements page. You will be responsible for any information contained in them. You are also strongly advised to set up notifications for Canvas so you do not miss any important messages.
4. Feel free to contact me via Canvas or email for questions, I will do my best to answer emails within a business day. If you have questions whose answer would benefit the entire class, I also encourage you to post it to the Canvas discussion board, as your question may be answered more quickly by other students and even if not, my answer will be available to the entire class. Of course, I encourage you to email me anytime you have a personal inquiry that requires individual attention.

## ACADEMIC CODE OF CONDUCT

It is expected that students comply with University of Utah policies regarding academic honesty, including but not limited to refraining from cheating, plagiarizing, misrepresenting ones work, and/or inappropriately collaborating. This includes the use of generative artificial intelligence (AI) tools without citation, documentation, or authorization. Students are expected to adhere to the prescribed professional and ethical standards of the profession/discipline for which they are preparing. Any student who engages in academic dishonesty or who violates the professional and ethical standards for their profession/discipline may be subject to academic sanctions as per the University of Utahs Student Code: Policy 6-410: Student Academic Performance, Academic Conduct, and Professional and Ethical Conduct. Plagiarism and cheating are serious offenses and may be punished by failure on an individual assignment, and/or failure in the course. Academic misconduct, according to the University of Utah Student Code: "...Includes, but is not limited to, cheating, misrepresenting ones work, inappropriately collaborating, plagiarism, and fabrication or falsification of information. It also includes facilitating academic misconduct by intentionally helping

or attempting to help another to commit an act of academic misconduct.” For details on plagiarism and other important course conduct issues, see the U’s Code of Student Rights and Responsibilities <https://regulations.utah.edu/academics/6-400.php>.

## ADDITIONAL POLICIES AND RESOURCES

### Learning Support

- **Math Student Center:** <http://www.math.utah.edu/undergraduate/mathcenter.php>
- **Learning Center:** <https://learningcenter.utah.edu/>
- **Video Lectures:** <http://www.math.utah.edu/lectures/math1220.php>
- **Student Success Coaches:** <https://ssc.utah.edu/>

### Student wellness

Your personal health and wellness are essential to your success as a student. Personal concerns like stress, anxiety, relationship difficulties, depression, or cross-cultural differences can interfere with a student's ability to succeed and thrive in this course and at the University of Utah. Please feel welcome to reach out to your instructor or TA to handle issues regarding your coursework. For helpful resources to manage your personal wellness and counseling options, contact: Counseling Services (801-581-6826 <https://counselingcenter.utah.edu>), Student Services Building, 201 South 1460 East, Rm 426, Salt Lake City, UT 84112 and/or Center for Student Wellness (801-581-7776 <https://wellness.utah.edu>), 2100 Eccles Student Life Center, 1836 Student Life Way, Salt Lake City, UT 84112.

It is my intent that students from all backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the differences that students bring to this class be viewed as a strength. It is my intent to present materials and activities that are respectful of such differences, including: age, disability, gender, gender expression, gender identity, national origin, political affiliation, race, religion, sexual orientation, and other unique identities.

I strongly support the following axioms put forth by Dr. Federico Ardila:

**Axiom 1.** Mathematical potential is distributed equally among different groups, irrespective of geographic, demographic, and economic boundaries.

**Axiom 2.** Everyone can have joyful, meaningful, and empowering mathematical experiences.

**Axiom 3.** Mathematics is a powerful, malleable tool that can be shaped and used differently by various communities to serve their needs.

**Axiom 4.** Every student deserves to be treated with dignity and respect.

### Discrimination and Harassment

If you or someone you know has been harassed or assaulted, you are asked to report it to the Title IX Coordinator in the Office of Equal Opportunity, Affirmative Action, and Title IX (135 Park Building; 801-581-8365), or the Dean of Students Office (270 Union Building; 801-581-7066). To report to the police, contact the Department of Public Safety (801-585-2677). Please see the University Non-Discrimination Policy (<https://regulations.utah.edu/general/1-012.php>). I will listen to and believe you if someone is threatening you or someone you know.

### The Americans with Disabilities Act

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability & Access (CDA). CDA will work with you and I to make arrangements for accommodations. Prior notice is appreciated. To read the full accommodations policy for the University of Utah, please see Section Q of the Instruction & Evaluation regulations (<https://regulations.utah.edu/academics/6-100.php#a.III.Q>). In compliance with ADA requirements, some students may need to record course content. Any recordings of course content are for personal use only, should not be shared, and should never be made publicly available. In addition, recordings must be destroyed at the conclusion of the course. If you will need accommodations in this class, or for more information about what support they provide, contact: Center for Disability & Access (801-581-5020, <https://disability.utah.edu>), 162 Union Building, 200 S. Central Campus Dr., Salt Lake City, UT 84112

## 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 university officials: Title IX Coordinator & Office of Equal Opportunity and Affirmative Action (801-581-8365, <https://oeo.utah.edu>), 135 Park Building, 201 Presidents' Cir., Salt Lake City, UT 84112, and/or Office of the Dean of Students (801-581-7066, <https://deanofstudents.utah.edu>), 270 Union Building, 200 S. Central Campus Dr., Salt Lake City, UT 84112.

To file a police report, contact: Campus Police & Department of Public Safety (801-585-COPS (801-585-2677) <https://dps.utah.edu>, 1735 E. S. Campus Dr., Salt Lake City, UT 84112. If you do not feel comfortable reporting to authorities, the U's Victim-Survivor Advocates provide free, confidential, and trauma-informed support services to students, faculty, and staff who have experienced interpersonal violence. To privately explore options and resources available to you with an advocate, contact: Center for Student Wellness (801-581-7776, <https://wellness.utah.edu>), 328 Student Services Building, 201 S. 1460 E., Salt Lake City, UT 84112.

## Campus Safety

The University of Utah values the safety of all campus community members. You will receive important emergency alerts and safety messages regarding campus safety via text message. For more safety information and to view available training resources, including helpful videos, visit <https://safeu.utah.edu>. To report suspicious activity or to request a courtesy escort, contact: Campus Police & Department of Public Safety, 801-585-COPS (801-585-2677), <https://dps.utah.edu>, 1735 E. S. Campus Dr., Salt Lake City, UT 84112. If you do not feel comfortable reporting to authorities, the U's Victim-Survivor Advocates provide free, confidential, and trauma-informed support services to students, faculty, and staff who have experienced interpersonal violence. To privately explore options and resources available to you with an advocate, contact: Center for Student Wellness (801-581-7776, <https://wellness.utah.edu>), 328 Student Services Building, 201 S. 1460 E., Salt Lake City, UT 84112.

## Privacy Policy

FERPA, the federal law that guards student privacy, prohibits me from discussing your performance in this class with anyone except you without your permission, which must be on file with the university, not simply told to me. In particular, I will not return your homework or exams to anyone except you without an email from your university email address. To ensure compliance with this law, send email with a university email address or via Canvas mail. Out of respect for the privacy of your classmates, do not record or screenshot any part of this class for use outside of this class, even if you omit identifying information about the speaker or poster. You may not circulate or share images, clips, or other course materials with individuals who are not enrolled in this class. Doing so is a serious violation of our class ethical code and will result in a charge of academic misconduct.

## Student Mental Health Resources

Rates of burnout, anxiety, depression, isolation, and loneliness are high among undergraduate students at all U.S. universities, and have noticeably increased during the pandemic. If you need help, campus mental health resources are available: <https://studentaffairs.utah.edu/mental-health-resources/index.php>. This includes counseling, trainings, and other support. If you feel like you need extra support in academics, overcoming personal difficulties, or finding community, then more information about campus resources can be found here: <https://www.utah.edu/students/services.php>.

## 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. More information about the counseling center, including ways to contact them, can be found here: <https://counselingcenter.utah.edu/>.

## Syllabus Subject to Change

This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the course schedule to accommodate the needs of our class.