

Foundations of Analysis I

Math 3210-001, Fall 2021

University of Utah

Instructor: Dr. Gil Moss

(The most recent version of the syllabus will always be the one posted on Canvas.)

Time Mon, Wed, Fri, 8:05 – 9:25AM Mountain Time

Location LCB 225

Email moss@math.utah.edu

Office hours Will take place over Zoom, at least for the time being. Time is to be determined in the first week of class

Text *Foundations of Analysis* by Joseph L. Taylor, American Mathematical Society, Providence 2012. ISBN: 978-0-8218-8984-8.

A free electronic version of the book is on reserve through Marriott library. Students can access it for free by selecting the course reserves tab in the Marriott Library catalog, <http://search.library.utah.edu>.

Webpage The course webpage is hosted on Canvas. Official announcements, this syllabus, homework assignments, and any other information regarding the course can be found on the Canvas page: <https://utah.instructure.com/courses/724198>.

Course description This course focuses on the theory behind single-variable calculus. It takes a proof-based approach to the real numbers, sequences, infinite series, continuity, differentiation, and integration. The emphasis is on improving the student's ability to understand and explain concepts precisely, logically, and completely, especially their ability to understand and write mathematical proofs. Math 3210 is the first course in the 3210–3220 Foundations of Analysis sequence.

We will cover chapters 1-6 of the textbook, which are,

Chapter 1: Real numbers

Chapter 2: Sequences

Chapter 3: Continuous functions

Chapter 4: The derivative

Chapter 5: The integral

Chapter 6: Infinite series.

Prerequisites C or better in (Math 2210 or 1260 or 1280 or 1321 or 3140) AND (Math 2200 or 2270 or 2250).

Overview This is an in-person course, which will meet in LCB 225 at the scheduled class times. There are only four days on which you are *required* to attend class, which are the days of the four exams (Sep 17, Oct 22, Nov 19, Dec 16). However, attendance is *strongly encouraged*, and there is a course participation component of the grade that can be fulfilled with regular attendance (see section on Grading below).

The four exams will be administered in class. Each exam is 15% of the total grade. There will be no *comprehensive* final exam, but the material builds on itself throughout the course, and the fourth exam will be administered during the U's scheduled final exam slot: Thur, Dec 16, 8 - 9:30am.

Homework will be assigned roughly every week that there is not an exam, and turned in electronically.

An important objective of the course is to train students to communicate mathematics effectively. Articulating one's own confusion, clearly sharing one's understanding with classmates, and effectively operating within a group are especially important for mastering the proof-based course material (and are good life skills!). Students are expected to participate in class activities and discussions, form study groups, ask/answer questions of their peers, ask/answer Piazza discussion posts, and contribute to a respectful and productive learning environment.

Even though communication and group learning are expected, the work a student *turns in* must be their own, reflecting their own understanding. Copying someone else's homework solutions constitutes plagiarism, and communicating or using outside resources on an exam constitutes cheating. Both are violations of the U's honor code and will be reported to the College of Science.

Tech requirements

- Students are expected to have Canvas navigation skills. Familiarity with Canvas will be critical to access many features of this course.
- Students **MUST** use their U-mail email account ([uNID]@utah.edu) for all student-instructor email correspondence, and must send email to the instructor via the address `moss@math.utah.edu`. Messaging through Canvas is also acceptable. If I don't reply it might mean I'm not getting your emails, so if you are in doubt, try sending it from a different email address or approaching me in person.
- Students **MUST** check their U-mail regularly because official class announcements will be sent through this email.
- It is expected that students will receive Canvas messages and notifications to their email. In Canvas, go to Account → Notifications to make sure you receive Canvas messages and notifications in your email.
- Assignments will be submitted and graded through Gradescope. You can access Gradescope through the Canvas page by clicking the "Gradescope" link in the left-hand navigation pane, or by going to `gradescope.com` (scroll to the bottom of this syllabus to find information on scanning and submitting your assignments).
- There will be a course discussion forum hosted through a platform called Piazza. This will be integrated into the Canvas page, and can be accessed by clicking the "Piazza" link in the left-hand navigation pane.
- The U suggests Firefox, Chrome, or Safari for logging in to Canvas, but not Internet Explorer. For technical problems with Canvas, contact the UOnline Helpdesk at (801) 581-6112.
- For information on borrowing a laptop from the U, free wifi access off-campus, or about portable wifi hotspots, see `lib.utah.edu/coronavirus/checkout-equipment.php`

Homework Homework will be assigned roughly weekly, except on exam weeks. Homework assignments will be submitted, graded, and returned via Gradescope.com. Each student will be able to access Gradescope through Canvas by clicking the "Gradescope" link in the navigation pane of the Canvas page.

Each student will be responsible for creating a readable PDF scan of their written work and submitting it electronically through Gradescope.com before the deadline. To create a high-quality PDF scan of an assignment, one option is to use a scanner app on a phone or tablet (see the Gradescope guide below). Consult the Gradescope guide at the bottom of this document for more details on how to scan and submit an assignment.

The lowest homework score will be dropped. Late homework will not be accepted.

You are encouraged to discuss the homework problems with others, but you must write your own solutions, in your own words, based on your own understanding.

Exams There will be four exams throughout the semester, each worth 15% of the total course grade. The idea is to have fewer exams, each worth fewer points, to reduce the levels of stress and anxiety associated with any single exam. These exams will be administered during class in the usual classroom.

Exam dates are:

Exam 1: Friday, Sep 17th,

Exam 2: Friday, Oct 22nd,

Exam 3: Friday, Nov 19th,

Exam 4: Thursday, Dec 16, 8:00 - 9:30am.

Exams will be closed book and closed notes, with no calculators. Online resources and communication with others is not allowed during the exams, and all work must be the student's own. Violation of these rules will be considered academic misconduct and will result in a zero on the exam and will be reported to the Dean of Science.

Participation Students will be graded on weekly course participation. There are three ways to earn the week's participation credit:

- Attend all three lectures in a given week,
- – Attend two out of three lectures in a given week and,
 - before next week's Monday lecture, post a question, comment, or response on the Piazza discussion board (click the "Piazza" link in the left-hand navigation pane of the Canvas page to access Piazza).
- – Attend one or zero lectures in a given week and,
 - before next week's Monday lecture, post a question/comment/response on the Piazza discussion board (click the "Piazza" link in the left-hand navigation pane of the Canvas page to access Piazza)., and
 - before next week's Monday lecture, submit a reflection journal entry in Canvas of at least 200 words on a mathematical topic. You can write about topics covered in class or any other mathematical topic that interests you at the moment. You can find more guidance on this through Canvas.

For participation credit, Piazza discussion posts need to be substantial, mathematical in nature, and demonstrate that you have reflected on the topic before-hand (make sure you've spent at least five minutes reflecting on what you are asking/saying/answering before you post).

Outside of the participation requirement, students are strongly encouraged to make use of the Piazza discussion board for any reason related to the course, mathematical or not.

Grading	Homework (with lowest score dropped)	25%	(assigned roughly weekly)
	Participation	15%	noted weekly, roughly 1% per week
	Exam 1	15%	Friday, Sep 17
	Exam 2	15%	Friday, Oct 15
	Exam 3	15%	Friday, Nov 12
	Exam 4	15%	Wednesday, Dec 8, 8:00 - 9:30am

I anticipate assigning letter grades as follows:

A: 93–100%, A-: 86–92, B+: 83–85, B: 78–82, B-: 75–77, C+:71–74, C:65–70, C-:55–64, D: 50–54, E:0–50

Flexibility This semester we will observe the following principles in our class:

- Amid the COVID pandemic and other turmoil, the humane option is the best option. We will prioritize supporting each other as people and learners. We will prioritize simple solutions that make sense for the most people.
- We will foster intellectual conversation, social connection, and accommodating the needs of everyone. This includes incentives to learn together, stay engaged and motivated, and combat isolation.
- We will remain flexible. We may need to adapt throughout the semester. Everybody needs support and understanding.
- Do not hesitate to reach out to the instructor for any reason: moss@math.utah.edu

Important Dates Last day to elect CR/NC:

Last day to reverse CR/NC:

Last day to withdraw from classes:

Last day of class:

Reading day:

Last exam:

COVID Info 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/>.

Miscellaneous If you have a preferred first name, nick-name, pronoun, or form of address, please let me know.

The University of Utah seeks to provide equal access for people with disabilities. If you will need accommodations in this class, you need to give prior notice to the Center for Disability Services, 162 Olpin Union Building, 801-581-5020. CDS will work with you and the instructor to arrange accommodations. All written information in this course can be made available in an alternative format with prior notification to the CDS.

Wellness Personal concerns such as stress, anxiety, relationship troubles, depression, cross-cultural differences, etc., will interfere with one's studies. For helpful resources contact the Center for Student Wellness at www.wellness.utah.edu or 801-581-7776.

Student success advocates The role of Student Success Advocates is to support students in making the most of their experience at the U (ssa.utah.edu). They can help students with mentoring, finding resources, etc. Any student facing challenges securing food or housing is urged to contact a student success advocate for support.

University Counseling Center The University Counseling Center (UCC) provides developmental, preventive, and therapeutic services that promote intellectual, emotional, cultural, and social well-being of U students. They advocate a philosophy of acceptance, compassion, and support for their clients and each other. They aspire to respect cultural, individual, and role differences as they create a safe and affirming climate for all individuals.

Non-discrimination Violence and harassment based on sex and gender is a civil rights offense, subject to the same kinds of accountability as offenses based on race, nationality, color, religion, age, disability status, or veteran status. If you or someone you know has been harassed or assaulted, report it to the police, or to the Dean of Students, or to the Office of Equal Opportunity and Affirmative Action, 801-581-8365.

Student accountability Honesty and integrity are especially important in times like these. All students are expected to maintain professional behavior in the classroom, according to the Student Code, as spelled out in the Student Handbook. Students have rights in the classroom, detailed in Article III of the Code. The Code also specifies prohibited conduct (Article XI), including cheating on exams, plagiarism, collusion, fraud, theft, etc. Students should know they are responsible for knowing what is in the Student Code. The instructor is responsible for enforcing responsible classroom behaviors, and I will do so. Students have the right to appeal such action to the Student Behavior Committee.

Addressing sexual misconduct Title IX makes it clear that harassment and violence based on gender (including sexual orientation and gender expression/identity) is a civil rights offense subject to the same laws applied to offenses on the basis of race, national origin, color, religion, age, disability status, veterans status, or genetic information. Report harassment or assault to the police (801-585-2677) or to the Title IX coordinator in the office of Equal Opportunity and Affirmative Action (801-581-8365), or the office of the Dean of Students (801-581-7066). For support and confidential consultation, contact the Center for Student Wellness (801-581-7776).

HOMEWORK SUBMISSION GUIDELINES BELOW:



submitting homework on Gradescope

To turn in your homework on Gradescope, you will need to create a PDF of your work and save it to your computer before submitting.

This is a guide for scanning on iOS phones (pg. 1), scanning on Android phones (pg. 2), and submitting via the web app (pg.3). If you're scanning via a scanner or another method, you can skip to the submission part of the guide.

Scanning on iOS Devices



1. DOWNLOAD: Go to the App Store, search **Scannable** by Evernote (our recommended app).

You can also follow a similar process for *Genius Scan* or a different scanning app. Just make sure the app you choose will let you make high quality PDFs.

2. SCAN: Once on the main page, Scannable will start looking for a document and automatically start scanning.

3. SELECT + SEND SCAN: When you're done, select the **check mark**. You can now review your scans for legibility, hit **Send scan**, select the correct pages, and **Mail** your scans to yourself.

From here, save your file onto your computer in a memorable place, and you're ready to submit!

TIPS FOR SCANNING:

When setting up Scannable, it's a good idea to click the "...">
> Settings > File Type > PDF. This way, your single page assignments save as PDFs.

Taking your photos: Place your work on a flat surface. (A darker table, with high contrast to your paper, is best).

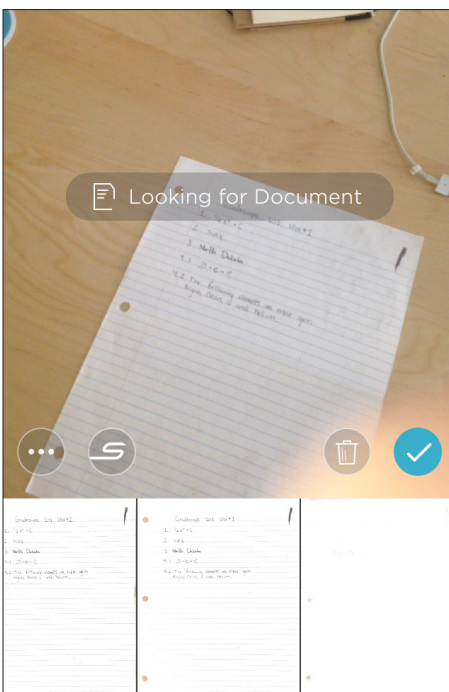
Hold your camera at a bird's eye angle, with a steady hand.

Always check that your photo is legible - if you try to speed through you will get blurry photos!

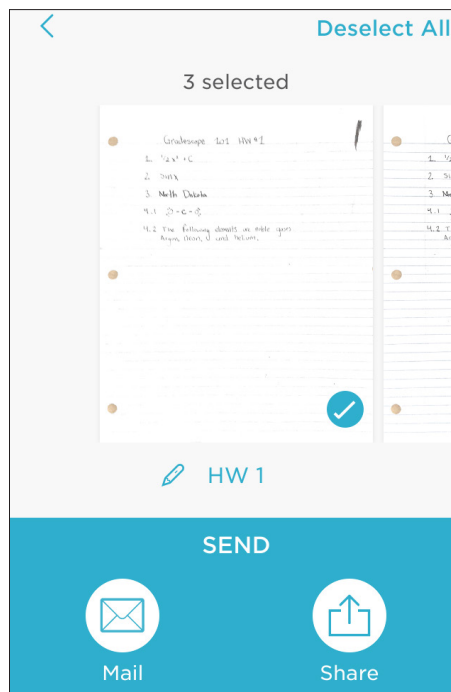
If your scan is blurry or illegible: First try retaking. Then try restoring the photo. **Select thumbnail > Slider icon > Restore).**

If your scan is still illegible: You might have written your assignment too lightly or unclearly. Make sure you use a dark pencil or pen for best results!

To get your scans on your computer, you can also save to *Evernote*, *iCloud*, or other cloud service.



Camera view



Document view

Scanning on Android Devices



1. **DOWNLOAD:** Go to the Play Store, search for the **Genius Scan** app (this is our recommended app) and download.

If you're familiar with a different scanning app, make sure it will let you make high quality PDFs.

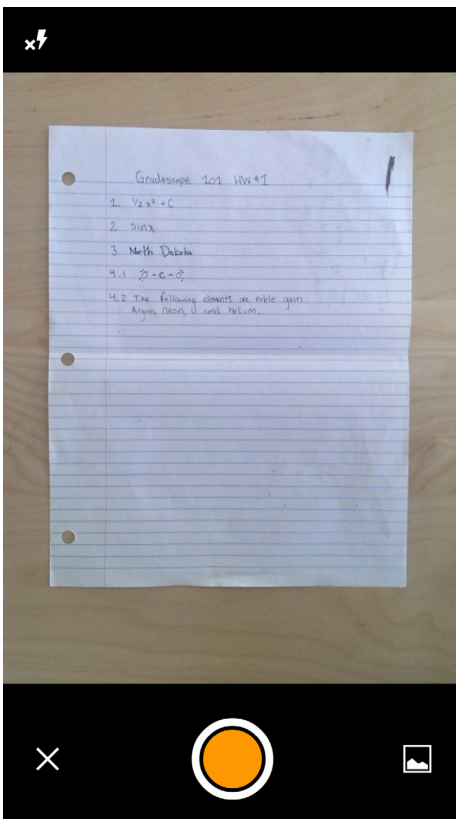
2. **SCAN:** Once you open the app and get to the main page, select the camera and **take** and **crop** your photo. Continue for all your pages.

3. **CHECK/FINISH SCAN:** When you're done, **select Move To > Create / Add to a new doc.**

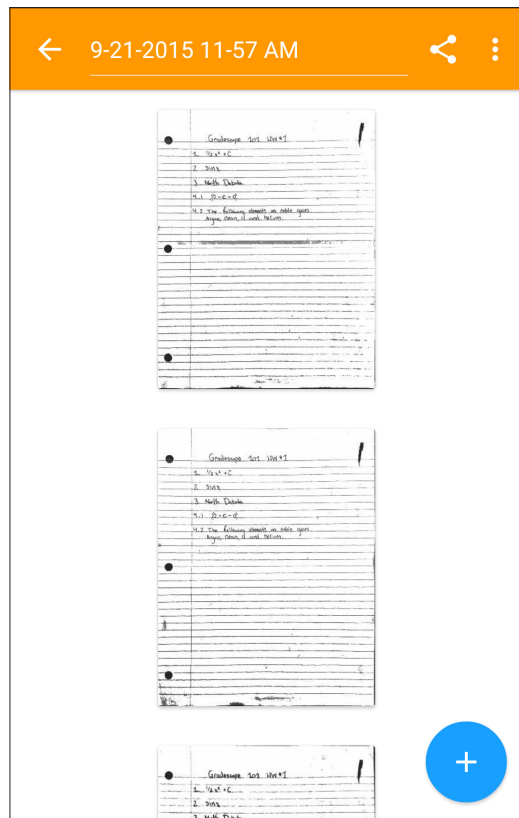
Make sure all your pages are in one document, and review your scans for legibility.

4. **SHARE SCAN:** The last step is to get your scan onto your computer, so you can submit via web. Select your document, click the **Share** icon and send the PDF to your email.

From here, save your file onto your computer in a memorable place, and you're ready to submit!



Camera view



Document view

TIPS FOR SCANNING:

As you take your photos, you can save your scans to a document by selecting "Move To"

Whether you do it before or after scanning, make sure multi-page homeworks are all in **one document** and not **individual scans**.

Taking your photos: Place your work on a flat surface. (A darker table, with high contrast to your paper, is best).

Hold your camera at a bird's eye angle, with a steady hand.

Always check that your photo is legible - if you try to speed through you will get blurry photos!

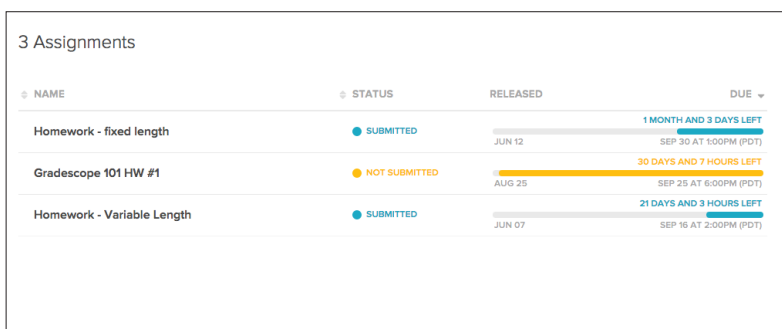
If your scan is blurry or illegible: Try retaking. Then try changing the enhancement of the photo - right after you cropped your photo, select the **Enhancement** icon on the top right.

If your scan is still illegible: You might have written your assignment too lightly or unclearly. Make sure you use a dark pencil or pen for best results!

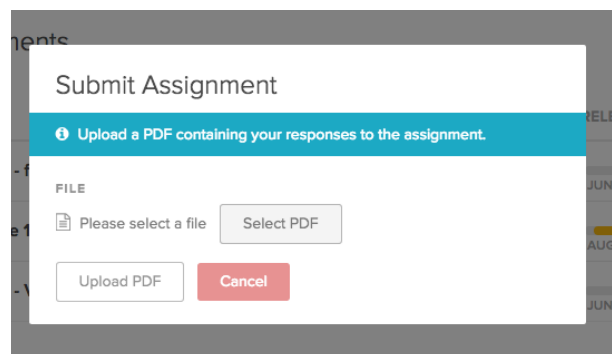
Submitting your PDF on Gradescope

1. Go to gradescope.com and log in with the email address your instructor used to add you to the course. If you don't think you have an account, **ask your instructor** to add you to the course, or email help@gradescope.com
2. On Your Courses page, select the course for which you're submitting work.
3. On your Courses page, you will see all of your current assignments. Click on the assignment you are turning in.

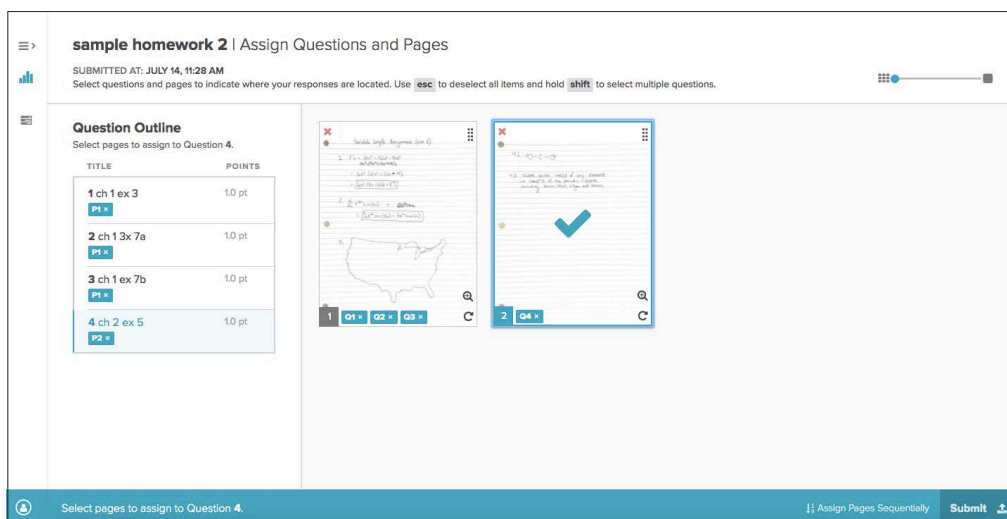
Click **Submit PDF** > Click **Select PDF** > locate the correct file on your computer > Click **Upload PDF**.



NAME	STATUS	RELEASED	DUE
Homework - fixed length	SUBMITTED	JUN 12	1 MONTH AND 3 DAYS LEFT SEP 30 AT 1:00PM (PDT)
Gradescope 101 HW #1	NOT SUBMITTED	AUG 25	30 DAYS AND 7 HOURS LEFT SEP 25 AT 6:00PM (PDT)
Homework - Variable Length	SUBMITTED	JUN 07	21 DAYS AND 3 HOURS LEFT SEP 16 AT 2:00PM (PDT)



4. Your last step is to tell your instructor which page corresponds to each question on the assignment. You will see a list of all the assigned problems, and images of all your scans. **For each question** click the page(s) that contains your answer. You can use the SHIFT key to select multiple questions at a time and assign them to pages.



5. Now click **Save**. You will be sent to a new page to view your submission. Once you see this page and your scan looks good, you're done!

Questions or feedback? Email us at help@gradescope.com.