

TRANSITION TO ADVANCED MATHEMATICS

ASSESSMENT

Fall 2021

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Math 215

§A. Components of the Course

This is not a lecture-oriented class or one in which mimicking prefabricated examples will lead you to success. You will be expected to work actively to construct your own understanding of the topics at hand with the readily available help of me and your classmates. Many of the concepts you learn and problems you work on will be new to you and ask you to stretch your thinking. You will experience frustration and failure before you experience understanding. This is part of the normal learning process. **If you are doing things well, you should be confused at different points in the semester. The material is too rich for a human being to completely understand it immediately.** Your viability as a professional in the modern workforce depends on your ability to embrace this learning process and make it work for you.

WEEKLY EXERCISES

The exercise problems available at the end of the lecture note are designed for you to practice applying the concepts that we have learned in class and to help you develop the ability to read and write clear mathematical proofs. A certain number of these problems will be assigned at the beginning of the week (usually over the previous weekend), and students are expected to complete (or try their best to complete) them by the end of the week (or the due date). All assignments should be *carefully, clearly, and cleanly* written. Among other things, this means your work should include *proper grammar, punctuation, and spelling*. You should write a draft of a given solution before you write down the final argument, so do yourself a favor and get in the habit of differentiating your scratch work from your submitted assignment.

- Homework will usually be due at 5pm on the due date and should be uploaded to Moodle.
- In general, late homework will not be accepted without prior permission. *If you anticipate being late, let me know early, not on the deadline, and I will try to accommodate you.*
- **Working together on homework is encouraged!** However, you must still complete and turn in an assignment representing your own work.
- If you do work together in a group on a weekly exercise, please write down the names of other students in your group at the top of your submission.
- You are encouraged to check in with me or the TA regarding the accuracy of your homework **before** you submit them.

PRACTICALLY PERFECT PROOFS

Over the course of the semester, each student will receive about twelve problems whose solutions involve crafting coherent, convincing, and mathematically correct arguments, also known as *proofs*. These problems are sometimes difficult and always require careful thought, lots of attention, and lots of time to think and make mistakes.

You will need to **independently** submit a formal, correct, professionally-typeset solution (a P³ or Practically Perfect Proof) for these and each will go through a revision process. The first time you submit

your P^3 , you will receive a provisional grade and feedback on your work, and may choose to resubmit the assignment. An honest attempt at each P^3 assignment must be submitted on the initial due date in order to be eligible for revision. All P^3 assignments must be typeset in \LaTeX , which will provide you several opportunities to learn this skill.

Note: Senior majors in the MCS department must write their IS thesis using \LaTeX . See the next section for info about \LaTeX and guidance on typesetting your solutions.

See the pdf file titled **Practically Perfect Proofs** in Moodle for further rules and explanations.

\LaTeX

\LaTeX (pronounced “lay-tek”) is a free typesetting system for preparing technical documents and is widely used in mathematics. You will learn the basics of \LaTeX in this course and use it to typeset your P^3 assignments and your final expository paper. During weekly homeworks, you will be given instructions on how to typeset your work in \LaTeX . **No previous knowledge of \LaTeX is assumed.**

I highly recommend using the cloud-based TeX editor Overleaf (<https://www.overleaf.com>) if you are new to \LaTeX . They have a comprehensive tutorial/help page: <https://www.overleaf.com/learn>. However, you can also install a local installation of \LaTeX on your personal computer (e.g., TeXShop for Mac: <http://pages.uoregon.edu/koch/texshop/> or MiKTeX for Windows: <https://miktex.org>). Please note that I am **not** the right person to ask if you have *technical* issues with your local installation. If you need help with a particular technical issue, you can always ask try an internet search that is verbatim your issue. It is very likely that someone else in the world has had the same issue before, so the solution may be out there!

MODULE QUIZZES

There will be three quizzes during the semester including a final cumulative quiz at the end of the semester. The quizzes will be designed to check your understanding of fundamental concepts and principles; you will be expected to apply the material learned to solve a wide variety of new and potentially unfamiliar problems and proofs.

See the ‘Lecture Note’ for tentative schedule. I will post more details about the format of each quiz as the date approaches.

EXPOSITORY PAPER

You will be writing and presenting an expository mathematical paper - a presentation of a mathematical topic, complete with an annotated bibliography. See the pdf file titled **Expository Paper** in Moodle for further details. Although topic selection will begin after fall break, I am providing you the document ahead of time so that you can do a little research before deciding on a project.

PARTICIPATION CREDITS

The best way to maximize your experience in this course is to fully engage with the material and your classmates. Your active participation not only helps you, but it also creates a better learning environment for everyone in the course. This semester, there will be many different ways for you to demonstrate your engagement and professionalism remotely and in-person. For example,

- Completing the guided lecture notes and assignments on time.

- Completing the occasional checkpoint* quizzes posted on Moodle on time,
- Asking relevant questions in class, office hours, or through email.
- Volunteering to present solutions in class.
- Giving constructive feedback to your classmates.
- Completing (to a satisfactory level decided by me) the reflection tasks.

If I decide that not enough good faith effort was given to complete a reflection task, I may mark it as incomplete, and ask you to resubmit it.

§B. How different types of assignments are scored

The weekly homework and module quizzes will be scored numerically for accuracy. The participation credits (reflection tasks, class engagement etc.) will be given for completion. See the pdf files on **Practically Perfect Proofs** and on **Expository Paper** for their grading scheme.

§C. Collaboration and Academic Integrity

The goals of academic integrity are (i) to give credit where credit is due, and (ii) to create a record that enables other learners and scholars to trace the development of ideas. A good rule of thumb is: always cite your sources, resources, or people that you received assistance from, with as much specificity as possible. Please ask me if you have any questions about balancing academic integrity and assignments. I encourage you to collaborate in solving questions in the lecture note, and we will be specifically working on many of the problems in class - the exercises at the end of the notes are for you to practice and learn! However, jot a note in the margins of your written solutions for any steps that you received assistance with to also practice academic integrity. Note that in the P^3 assignments, and in the Module quizzes, your work must represent *your own understanding in your own words*; you may not use solutions, directly or indirectly, from any sources - including other students, past students, online sources, or other textbooks.

For more details on college policies regarding Academic Honesty, check the **Academic Policies, Procedures & Support Services** document in Moodle.

§D. How Semester Grade is Determined

Your grade for the semester is not based on percentages because a lot of items in the course don't carry point values. Instead, your grade will be based on the quantity and quality of evidence you can provide of across-the-board mastery of Math 215.

DETERMINE YOUR BASE GRADE

To determine your course **base grade** (the letter A/B/C/D/F without plus/minus modifications), use the following table. To earn a grade, you must complete **all** the requirements in the column for that grade; your base grade is the **highest grade level for which all the requirements have been met or exceeded**.

*Used to be called pre-class quizzes

Category	A	B	C	D
Weekly Homework	80%	70%	60%	50%
Module Quizzes	70%	60%	50%	40%
Checkpoint Quizzes	90%	75%	60%	45%
Reflection Tasks (4)	4	4	3	2
Participation and Engagement	Frequent	Regular	Occasional	Minimal
Practically Perfect Proofs (12)	9E, 3M	6E, 5M	3E, 7M	9M
Expository Paper				
Summary and Discussion	Required	Required	Required	
Outline and Annotated Bibliography	Required	Required		
Full First Draft	Required	Required		
Presentation (14)	11	8	5	
Peer Review	2 peers	1 peer	1 peer	
Final Submission (56)	50	44	38	32

Note: Again, **all of the requirements in a grade column must be met or exceeded in order to earn that grade.** Otherwise your grade is the highest grade for which all the requirements are met or are exceeded. For example, if you only earn 60% in weekly homeworks during the semester, you are not eligible for a grade of B or A in the course, regardless of your other performances. A grade of F is given if not all the requirements for a D are met.

DETERMINING PLUS/MINUS MODIFIERS

‘**Plus**’ or ‘**Minus**’ letter grades will be assigned based on the proximity to the nearest full letter grade and will be according to the instructor’s discretion. Note that you can only get the following letter grades: A, A–, B+, B, B–, C+, C, C–, D, or F.