Transition to Proofs (MTH 299) Summer 2025 Syllabus

Communication with your instructor

Get to know me:
Instructor: Shashini Marasinghe (she/her/hers)
Office Location: Wells Hall, D513
Email: marasin1@msu.edu

Link for all virtual meetings:
Join Zoom Meeting: https://msu.zoom.us/j/95298993741
Meeting ID: 952 9899 3741
No passcode

Office Hours:
T , TH 11am-12pm in the same Zoom as class.
Or by appointment, email me: marasin1@msu.edu

Course structure

Modality: Online synchronous
Class hours: Three times per week (MWF) from 9:10am-11:30 am
Zoom link:https://msu.zoom.us/j/95298993741 (Meeting ID:952 9899 3741, No passcode)
Course page: D2L - https://d2l.msu.edu/d2l/home/2129549
Course communication: Through D2L (and occasional emails)
Total credits: 4 credits
Start-End date: May 12 - June 27 (accelerated summer class - Summer session 1)

This accelerated **Transition to Proofs** course is designed to help you develop strong proof-writing skills through a combination of **preparation**, **hands-on practice**, and **reflection**. We will focus on building your ability to write rigorous proofs and think critically about mathematical reasoning.

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Each week you will be expected to engage with the course in three ways:

- **Before each class**:
  - Watch **Pre-recorded video lectures (asynchronous)** on D2L introducing the material for the day.
  - Complete a required **Understanding Check** D2L assessment before class to confirm your understanding
- **In class (synchronous)**:
  - We'll begin with a **quick review** of the video lecture.
  - We will spend most of the time working through problems together on a shared Notebook MTH299 summer 25, where I will guide you and provide assistance. You'll have the opportunity to work on problems **individually**, in **small groups**, and as a **full class**, ensuring that I can support you at every step of the way.
  - During online sessions, we will use a **shared Jamboard** (collaborative Google Slides board) where you can post any questions, comments, or thoughts in real time throughout the class.
  - At the end of each session, you'll submit a **worksheet**, graded for completion.
  - There will also be a brief feedback reflection at the end of each class structured as a **minute paper** which will count towards attendance credits.
- **Attendance** is mandatory, and **cameras must be on** throughout each session to support full engagement. If you have concerns or are uncomfortable about this requirement, please contact me, so that we can find an appropriate alternative arrangement.
- If you are unable to attend class due to **unavoidable circumstances**, you may still submit your worksheet for **half credit**, up to a maximum of **3 worksheets**.
- **Outside of class**:
  - Complete **homework** (due Fridays). If you decide to work with a friend or group, be sure to **clearly note their names** on your worksheet.
  - Complete a **short proof quiz** (due Mondays).
  - Submit a **weekly portfolio** (due Wednesdays).

Because this is a **fast-paced course**, it's essential to stay prepared and keep up with all deadlines. Full details about assignments and expectations are provided in the next pages.

Expectations

This class may feel quite different from other math courses you've taken, especially if you're coming from the calculus sequence. Our goal this semester is to help you deepen and extend your mathematical understanding through the study of proof-based mathematics. Because this material

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may be new territory, it's essential to ask questions, both of me and your classmates. Active engagement is key to your success, and I'm here to support you. There are many resources available, and I encourage you to make use of them: form study groups, come to office hours, and work collaboratively.

For group work: Our small-group sessions are one of the most valuable aspects of this course. They provide a space to practice communicating mathematical ideas clearly both out loud and in writing. Everyone brings something meaningful to the group, and your contributions, whatever form they take, will help your peers and deepen your own understanding.

Since this is an **online class**, we'll often use **Zoom breakout rooms** for small-group work. I won't always be able to join every group in real time, so if any questions come up during these sessions, please post them on the **Jamboard** before you forget. We'll revisit these questions at the end of class when we're all back together.

I expect you to respect the range of perspectives your classmates offer. Productive discussions rely on mutual respect and active participation.

Course Objectives

This course is intended to serve as a bridge from your training in calculus– which typically focuses on formulas and calculations– to that of ***higher mathematics–*** which focuses on abstraction, problem solving, and proof. You will be taught to think independently, to digest abstract concepts and tools from higher mathematics, and to express yourself clearly in a ***mathematical proof***. You will be expected to become proficient with the structure of mathematical logic, including truth tables, and you will be expected to become proficient in some basic styles of proof, such as: direct proof, proof by contradiction, proof by induction, proof by contrapositive, equivalences, and more.

Supplies

OneNote: This is the shared worksheet that you will be working on MTH299 summer 25.

Textbook: There is no required textbook needed for the course.

Computer: A laptop / desktop / tablet computer is required so that you can access all materials posted on D2L, attend class through Zoom, check your email, etc.

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WebCam: A webcam on your laptop/desktop is necessary for the synchronous class time. No particular type of webcam is required.

Internet: With this class being fully online, a decent internet connection is crucial.

Access to a Scanner / Scanning App: For some of the assignments, you are required to scan your work and submit it as a PDF. There are many scanning apps that you can get for your smart phone / tablet that will work well for this such as Adobe Scan, Dropbox Scan, or the CamScanner. We recommend you practice scanning some papers and getting it to your computer as a single PDF so you know if there are any issues/hiccups before taking the quizzes / exams.

Access to a Printer or Tablet (Personal preference): PDFs will be provided as class notes. Many students find it very useful to print these out prior to watching the videos/attending class. Online assignments will be submitted electronically through D2L. You can write your solutions by hand on paper, scan them and upload them as PDFs, you can use a tablet to write your solutions, or you can type your solutions on Latex. Please check that your homework submission files are readable, especially if you're taking pictures of handwritten work.

Grading distribution

Grade distribution for the course is shown in the following table. After the table, we will go through each of these components in detail.

Understanding Checks (UCs)		15%	• Total of 16 videos • 3 drops • Submissions are expected by 11.59 pm the day before we work on the material in class (MWF)
Class Engagement	**Worksheets (Review, problem solving, Journal entries)**	20%	• Total of 17 worksheets • 3 drops • Submissions are expected by 1 pm after each class (MWF)
Practice Assignments (Homeworks)	**HWs**	20%	• Total of 6 HWs • 1 drop • Submissions are expected on Fridays by 11.59 pm

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	HWs revision assignments		• Submissions are allowed at any point of the semester Earn back 100% of the points you missed
Mastery Quizzes	**Quizzes**	15%	• Total of 6 quizzes • 1 drop • Submissions are expected on Mondays by 11.59 pm
	Quizzes revision assignments		• Submissions are allowed one week after receiving the grade for the Quiz • Earn back 50% of the points you missed
Portfolio 30%	**Weekly portfolio submission**	10%	• Total of 6 weekly submissions • No drops but extensions would be provided if needed • Submissions are expected on Wednesdays by 11.59 pm
	Final portfolio submission	10%	• 1 submission due June 25
	Portfolio Showcase (defense)	10%	• Each person is expected to do a 15 min presentation in front of the class + 5 min Q&A (one-on-one with me in breakout rooms) • June 23 - June 25

Understanding Checks (UCs)

Before the beginning of each class, you should watch pre-recording videos designated to introduce concepts that we will work on during class that day. Each video will come with a presentation slide (Blank and Marked) that you can fill out while watching the video. The videos are available on D2L, and they will have a corresponding Understanding Check D2L quiz that you are required to complete after watching the video. UCs may include multiple choice, fill in the blank, matching, or multi-select questions. Please note that D2L is set up so that you cannot access Understanding Check without viewing the content video first. These Understanding Checks are **short**, **2-4 question** assessments that are meant to help you gauge your comfort level with the material from

the videos. You should watch the video and submit your Understanding Check **by 11.59 pm the day before we work** on that material in class.

Your three (3) lowest Understanding Checks scores will automatically be **dropped.**

Class Engagement

Group worksheets for each day of class will be posted to D2L and uploaded to class OneNote MTH299 summer 25. These worksheets will be graded based on your participation and engagement during class time and group work time, not based on correctness or on the number of problems you finish. To earn full points, you must attend class **and** turn in a worksheet on D2L and journal entry/minute paper preferably on the same worksheet **by 1 pm on the same day we work on the worksheet in class.**
Your three (3) lowest worksheet grades will be **dropped**.

Practice Assignments (HWs)

There will be 6 homework assignments this semester, one each week. Homework will be **due on Fridays at 11:59 PM to D2L.** You can handwrite your work, write on a digital tablet or type your solutions in Latex but you should submit your homework as **a single pdf file to the D2L dropbox**. If you wish to write on paper, the app CamScanner is a free tool that will allow you to convert your work into a pdf. If you take pictures or scans of handwritten work, please preview your file to make sure your submission file is not too small or blurry to read.

Your lowest (1) HW grade will be dropped.

Mastery Quizzes

Every Monday, there will be a Mastery Quiz on D2L that **opens after class (at 11.30 am) and is due by 11:59 pm on the same day.** This would be a timed D2L assessment (about 30 minutes) that covers content from the previous week. The quizzes might contain "written solution/standard response" problems (where you will be expected to upload a picture/pdf of your written work on D2L) and some multiple choice, fill in the blank, matching, or multi-select questions. Details about the format of each question will be given as instructions during the quiz.

Your lowest (1) Quiz grade will be dropped.

Portfolio

The portfolio is meant to help you create a big picture view of learning mathematics by:

- Summarizing the main proof techniques and tools you have acquired in the class
- Highlighting the main concepts and ideas you have learned in the class

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- Reflecting on your mathematical journey
- **Developing mathematical curiosity and enjoyment**

I hope that this portfolio will be a mini-textbook written by you for you to use and add to in many of your future classes.

The use of artificial intelligence (AI) tools (for example, ChatGPT, Bard, etc.) is not permitted to generate portfolio content.

The portfolio will have three main components:

- Weekly submission (10%): you will be asked to explore mathematics in an unique way each week (through arts, famous mathematician, application to real life or to your field, etc), along with summarizing some of the key concepts we have learned that week. More details about the portfolio will be provided on D2L. **This will be due every Wednesday by 11.59 pm.**
- Final submission (10%): this will include all the individual weekly submissions along with a complete summary of the main concepts and proof techniques presented in the course. More details about the portfolio will be provided on D2L. The portfolio should be professional and needs to be typed in LaTeX or Word or google doc. **This will be due June 25, by 11.59 pm.**
- Defense during a portfolio Showcase (10%): on the last two days of class **(June 23 and June 25)**, we will have a showcase of all the portfolios you have been working on during the semester. You will be asked to present a 15 min slideshow presentation of your portfolio. After that, you will be put in a breakout room alone with me where I may ask you some clarifying questions about your proofs and related summaries in your portfolio.

Policies

Absence and Late/missing Assignment policies

Please refer to the "Student Success Support" section if you are going through personal problems or unforeseen situations. I will work with you individually on your success in the course.

Every component of your grade (except for the portfolio) has built in drops and/or re-attempts that are meant to serve as a buffer for your grade if you're unable to complete an assignment for whatever reason. Please refer to the corresponding grade component for more information.

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RCPD/VISAs

If you have an RCPD-issued VISA for accommodations, please send an email to me and let me know, so we can discuss all your accommodation needs. You can find more information about the MSU Resource Center for Persons with Disabilities at 517-884-RCPD or on the web at www.rcpd.msu.edu.

Administrative Drop for Non-Attendance

Students will be dropped from this course for non-attendance by a departmental administrative drop after the second synchronous class period, or the fifth class-day of the term of instruction, whichever occurs first.

Other university policies

There are many other important policies that deserve to be in here but the syllabus is already quite long. Check out these policies which we abide by via https://math.msu.edu/Classes/other_policies.aspx

Schedule and Dates

Important dates

Date	Event
Monday, 5/12	Classes begin for Summer Session 1
Wednesday, 5/14	Open adds end
Thursday, 5/22	Last day to drop with refund
Monday, 5/26	Holiday - University Closed
Wednesday, 6/4	Middle of the semester (Last day to drop with no grade reported)
Wednesday, 6/27	Last day of class for MTH 299

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Thursday, 6/27	Classes end for Summer Session 1

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