MA111 – Calculus I — Fall 2025

Syllabus

1. General Information

Instructor: Dr. Rachel Petrik
Email: petrik@rose–hulman.edu
Office Location: FL102 (Moench)

Course Website: I will use the course page in Moodle as our primary course web page.

Textbook: Thomas' Calculus Early Transcendentals, 15th edition, by Hass, Heil, and Weir. Pearson Publishing 2018, ISBN-13: 9780134439020

An e-book of this textbook is available on the course Moodle page through MyLab Calculus as part of the Inclusive Access eTextbook fee for incoming Y1/FR students.

Communicating with Dr. Petrik:

- ◇ The best way to contact Dr. Petrik is via email. You can expect a reply within 24 hours during the week (Monday 8:00AM – Friday 4:00PM). I generally do not check my email on weekends (Friday 4:00PM – Monday 8:00AM) and thus emails received over the weekend will likely not be responded to until the following Monday.
- ◇ Any important comments/questions made in class that you want Dr. Petrik to follow up on, will also need to be sent as an email.
- ◇ When asking for help with HW or class material via email or the discussion board, you will get the quickest response when you send a message that includes (1) a screenshot of the problem and (2) the work you have for the problem (or where in the textbook or notes that you think could help with the problem).

Student Drop-In Hours: This course will go by fast. You need to get your questions answered *as soon as possible*. We may not have time for everyone's questions in class, but this is precisely what drop-in hours are for! If you are not able to make the regularly scheduled times, please email me to set up an appointment. It is *highly unlikely* that I will be able to accommodate same day meeting requests.

- ◇ Monday, 9:00 – 9:50AM (FL102)
- ◇ Tuesday, 2:00 – 2:50PM (FL102)
- ◇ Thursday, 2:00 – 2:50PM (FL102)
- ◇ Friday, 9:00 – 9:50AM (FL102)

2. Course Description

Course Objectives:

1. *Analytic Geometry:* Understand and apply the principles of analytic geometry in the plane, including the analysis of curves and geometric figures.
2. *Algebraic and Transcendental Functions:* Analyze and work with both algebraic and transcendental functions, including their properties and behaviors.
3. *Limits and Continuity:* Evaluate limits and understand the concept of continuity for functions, applying these concepts to solve mathematical problems.
4. *Differentiation:* Differentiate various types of functions using appropriate techniques, and interpret the derivative both geometrically and physically.
5. *Applications of the Derivative:* Apply derivatives to real-world problems, including using Newton's method for finding roots and analyzing rates of change.
6. *Introduction to Integration:* Understand the basics of integration, including finding antiderivatives, and explore the Fundamental Theorem of Calculus and its applications.

A detailed list of learning objectives is posted in a separate document on Moodle.

Course Structure: Since MA111 is a 5 credit hour course, we will meet every weekday and you should plan to devote an additional 10 hours outside of class working on coursework. Subsequently, class will be structured as follows:

- ◇ Monday, Tuesday, Thursday, and Friday will be lecture days. These days will be devoted to material delivery and shorter in–class activities.
- ◇ Wednesday will be our "lab" day. These days will be devoted to more in–depth activities involving learning and developing skills in Maple, a computer algebra system.
- ◇ You are expected to treat me and your classmates with respect, kindness, and grace. Microaggressions are not tolerated. If you notice one, whether from me or another student, speak up. These actions are generally inadvertent but hurtful, and we can all learn to do better.
- ◇ You are expected to attend face–to–face class sessions assuming you are well. That being said, **if you feel ill, then please stay home**. You are expected to be an engaged citizen of this course – this means but isn't limited to: attending office hours when needed, participating in class discussion, etc. While there is no formal attendance policy for this course, students who do not regularly attend and are not engaged generally do not succeed in the course.

3. Grading System

Your learning will be assessed through Homework (WebWork & Written), Quizzes, Exams, and Activities (involving Maple). Grades will be posted to Moodle. You can expect grades to specific assignments to be posted no later than one week after the due date. Your course score will be based on the following percentages:

10% Written Homework
7% WebWork
7% In-Class Activities
10% Quizzes
48% Exams 1, 2, 3, & 4 (not evenly weighted)
  Highest Exam: 15%
  Middle Two Exams: 12% Each
  Lowest Exam: 9%
18% Final Exam
  Part I: 70% of Final Exam Score
  Part II: 30% of Final Exam Score

If you score below a 50% on the Final Exam, I reserve the right to give you an F in the course. Your letter grade will be determined according to the following scale, *rounded to the nearest percent*:

A: $\geq 90.0\%$	C: $\geq 70.0\%$
B+: $\geq 87.0\%$	D+: $\geq 67.0\%$
B: $\geq 80.0\%$	D: $\geq 60.0\%$
C+: $\geq 77.0\%$	F: $< 60.0\%$

I reserve the right to make adjustments to this grading system if needed. Such adjustments, if made, will always be to the benefit of students.

3.1. **Homework.**

- ◇ Online homework will be given via the WebWork platform each week. Most weeks there will be two assignments due at 11:59PM Eastern on the due dates, which usually will be Tuesday and Friday. These assignments are accessible via the course Moodle page.
- ◇ Traditional written homework will also be given weekly, usually due on Mondays at 11:59PM Eastern. These will consist of textbook problems and other supplemental problems. These will be turned in electronically via Gradescope. You are encouraged to form study groups and discuss homework and the course material with each other. However, the homework you submit to be graded should be your own work. *If you work with someone on a particular problem(s), clearly indicate this in your write–up.*

3.2. **In-Class Activities.** Each Wednesday without an exam will have an in–class activity using Maple to be worked on in groups. Each student will submit their own Maple file (which must be executable) to Moodle the following day at 11:59PM Eastern.

3.3. **Late Assignment & Extension Policy.** As a general rule, you should plan to complete assignments several hours before the deadline in case any technological issue arises (temporary loss of internet connection, etc.). Regarding late work and extensions, I have adopted the following formal policies:

- **Assignments turned in within 24 hours following the due date will be graded for 70% credit** (i.e. raw score * 0.7 = effective score). Assignments not turned in within 24 hours of the due date will received a zero. *Due to technical considerations WebWork assignments are not eligible for the late policy.*
- **All students are granted three (3) 24–hour "no–questions–asked" extensions** subject to the following conditions.
  - Extensions are for a period of 24 hours from when the assignment is initially due. *This includes weekend days if relevant.*
  - Extensions can be used on Written Homework assignments, WebWork assignments, and In-Class Activities only. *In particular, these cannot be used to delay a quiz or exam.*
  - To use an extension, simply email Dr. Petrik before the assignment deadline. You do not need to wait for a confirmation email; your request is sufficient if you have an extension available. I will notify you once the extension has been recorded in Moodle.
  - You can only use one extension on any given assignment.
  - Any unused extensions at the end of the quarter will not hold any value or be converted into bonus points.

These extensions can be used for whatever reason you would like as long as it meets the conditions above. That being said, baring *extreme circumstances*, I do not intend to provide additional extensions beyond these initial ones. *So, use them wisely!*

3.4. **Exams.** There will be four midterm exams throughout the quarter. These are tentatively scheduled as follows:

- Exam 1: Wednesday, September 24 (Week 3)
- Exam 2: Wednesday, October 8 (Week 5)
- Exam 3: Wednesday, October 29 (Week 8)
- Exam 4: Wednesday, November 12 (Week 10)

3.4.1. *Make–Up Exam Policy.* Barring *extreme circumstances*, I do not give makeup exams. In the event of a rare scenario which warrants a makeup exam, you should expect (1) to provide documentation verifying the scenario and (2) to contact me as soon as possible and stay in reasonable contact.

3.5. **Final Exam.** A comprehensive final exam will be given during finals week. The final will consist of two parts: Part I, a paper-and-pencil only exam, and Part II, which will allow the use of a calculator and/or a blank Maple worksheet. Part I will count for 70% of the final exam grade, and Part II will count for the remaining 30%. The final will be scheduled by the registrar later this quarter. Do not make travel plans prior to finding out the date and time of the final – the final can not be taken at a time other than that scheduled by the registrar.

4. Academic Integrity

The policy on academic misconduct (Section III on page 14 at the link below):
https://www.rose-hulman.edu/campus-life/student-life/assets/Student-Handbook.pdf
The Mathematics Department's Academic Integrity Policy:
https://rosehulman.sharepoint.com/sites/Math/SitePages/AcademicIntegrityPolicy.aspx

You are expected to do your own work for this class. You may consult with classmates and other sources when studying or doing homework, but the work you turn in must be your own. You must acknowledge any sources you use on the homework outside of the textbook and class notes. This includes discussing problems with your classmates, information found in other books or on the internet. Failure to acknowledge your sources constitutes academic misconduct. The *default minimum*

penalty for academic misconduct in this course will be a 0% on the assignment in question. If you are ever in doubt about whether some specific situation violates the policy, the best approach is to discuss it with your instructor beforehand. This is a very serious matter that we do not take lightly. Nor should you.

Each case of academic misconduct will be documented with a letter to the Dean of Student Affairs (and potentially referral to the Rules and Discipline Committee as outlined by the link above). *I reserve the right to impose harsher penalties than those listed above, especially for repeated instances of academic misconduct or for particularly egregious instances of academic misconduct.*

4.1. **Use of AI.** In this course, the policy on use of large language models (like ChatGPT, Gemini, Co-pilot plugin) is as follows:

- **Timed Assessment:** Exams and quizzes course will be paper only assessments. While the final exam has a portion which allows Maple and/or a calculator, these are the only resources allowed. As such, these tools are by default irrelevant and not permitted. Use in this setting constitutes academic misconduct.
- **Homework & Study:** The policy, particularly for written homework, is the same as the policy for consulting the internet, other textbooks, and classmates: it is not forbidden, *however the solutions you submit are expected to be your own not verbatim copies AND you must cite how and where you have used the tool.* A suggested strategy to do so responsibly can be found in the paragraph to follow.

AI/LLM tools can have value to search out ideas and to strengthen your understanding, but one should recognize that they aren't always 100% correct. If you choose to use these tools in part of your workflow for the course, you should be using them as you would consult me, an assistant, or StackOverflow: to learn from ideas on concepts. I **strongly** suggest taking paper notes on its reply, closing the tab, then generating your solution only from those notes. This will help you to internalize the ideas. You must also add a statement documenting use of the tool at the top of the submission, just like you would document help received from a person.

Bottom line – Use it responsibly to increase your understanding, and not as a crutch.

5. Institute Policies

This course adheres to all Institute policies described in the Student Handbook. A few to play close attention to are noted below.

5.1. **Dropping the Course.** You are responsible for understanding the university's policies and procedures regarding withdrawing from courses found in the current catalog. You should be aware of the current deadlines according to the Academic Calendar.

5.2. **Student Accessibility Services.** If you have a documented disability that requires academic accommodations, please notify your instructor as soon as possible. Rose-Hulman is committed to working with students who have special needs or disabilities. Visit the Accessibility Services website for more information. Requests for academic accommodations must be documented with and approved by the Accessibility Services office before they can be implemented in this course.

5.3. **Diversity Statement.** Rose-Hulman Institute of Technology is committed to being an inclusive community in which the multiplicity of values, beliefs, intellectual viewpoints, and cultural perspectives enrich learning and inform scholarship.

5.4. **Emergency Information:** To receive email or text messages regarding emergency situations that may impact campus and, possibly, the delivery of classes, register for RAVE alerts and/or follow @Rose-HulmanAlert on Twitter. Any announcements about the Institute's ability to offer classes will be shared on Rose-Hulman's website.

I reserve the right to alter this syllabus as necessary with proper notification.