

**MATH 1271**  
Calculus I  
Spring 2023

**Lecture 050:** MWF 3:35pm – 4:25pm, Tate Hall 101

**Lecturer:** Jiaping Wang

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**Office hours:** MWF 2:30pm – 3:20pm

**Discussion TAs and TA offices:**

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**Email Policy:** Please add **MATH 1271** to the subject line of all your emails. It will help me filter emails from my inbox. Also make sure you carbon copy your discussion TA on all emails, as this will help us coordinate a response.

**Class Format:** Lectures are held in person. There will be **No** zoom lectures nor recorded lectures. However, in the continued wake of the COVID-19 pandemic asynchronous material will be updated on the course canvas page.

**Required text:** Stewart, *Calculus: Early Transcendentals*, volume 1, custom 8<sup>th</sup> edition. The core material of the course is contained in sections 2.1 – 2.8; 3.1 – 3.6, 3.9, 3.10; 4.1 – 4.5, 4.7 – 4.9; 5.1 – 5.5; 6.1 – 6.3, 6.5. It is important to read the textbook sections in advance in order to make the most of lecture and discussion time, but it is even more important to work as many exercises as possible. Calculus is not a spectator sport! Suggested exercises are listed at the end of this document.

**Exams and Grading:**

**15%** Ten weekly quizzes, in discussion on Thursdays that are not exam days. **No** make-ups. The two lowest scores will be dropped.

**45%** Three 50-minute exams, in discussion:

Thursday February 16, Thursday March 30, Thursday April 27.

**40%** Final exam: **Thursday May 4th, noon – 3 p.m.**, location TBA.

**Final Course Grade:** The final grade distribution for each discussion in all lectures of MATH 1271 will be determined by its students' performance on the common final exam. An individual student's final grade within that distribution is then assigned based on the overall course score from the quizzes and exams. Earning 90%, 80%, and 70% of the total points will be sufficient for the final grade to be in the A, B, and C ranges, respectively, though the actual cut-off lines may be relaxed.

By University policy, a grade of A represents achievement that is outstanding relative to the level necessary to meet course requirements. A grade of B represents achievement that is

significantly above that level, a grade of C represents achievement that meets that level, and a grade of D represents achievement that is worthy of credit even though it fails to meet fully the course requirements. A grade of S requires a grade of C- or better. An incomplete grade of "I" may be given if, due to *extraordinary circumstances* (as determined by the instructor), the student was prevented from completing the work of the course on time. The *minimum* requirement for an incomplete grade is a vast majority of the course work completed at the level of C- or better. An "I" grade requires a written agreement between the student and the instructor and is up to the discretion of the instructor. It also requires the completion of a form, which can be obtained in Vincent Hall 115. All work must be completed by the end of the subsequent regular term (spring or fall). Otherwise an "I" will be automatically changed to an F or N, consistent with the student's grading scale for the course. Any arrangement for an incomplete grade **MUST** be made before the final exam.

**Make Up Policy:**

There are **No** Make-up quizzes.

Make-up midterm exams are only available for the following reasons: illness requiring hospitalization, participation in intercollegiate athletic events, military service, bereavement, and religious observances. Written documentation **Is Required** and arrangements **Must** be made in advance.

However, if you have a legitimate excuse such as being too ill (covid or otherwise), subpoenas, jury duty, or an emergency (family-related, natural disaster, etc), then the missing exam will receive the weighted average of your other two midterm scores. This will only be granted for students who get approval directly from the lecturer and arrangements **Must** be made in advance. If you miss more than one exam, any additional one will be given a score of **0**.

**Calculator policy:** Only scientific calculators are allowed on quizzes, exams, and the final exam. Scientific calculators are inexpensive, have one-line displays and cannot display graphs of functions, perform symbolic manipulations, or store text in memory. If you are unsure whether your calculator is allowed, check with the lecturer or with your TA before the day of the quiz or exam. Cell phones and internet-connected devices are not allowed on quizzes, exams, and the final exam.

**Student Learning Outcomes:** A student in MATH 1271, as in any mathematics course, will develop the following skills, identified in the University's Student Learning Outcomes:

- identify, define, and solve problems
- locate and critically evaluate information
- master a body of knowledge and mode of inquiry
- communicate effectively

And calculus specific skills including, but not limited to

- Basic skills, such as using differentiation rules and the fundamental theorem of calculus
- Interpretation and application of derivative and definite integral

- Definitions of derivative and definite integral
- Rigorous definition of limit
- Application and meaning of mean value theorem, intermediate value theorem, and extreme value theorem

**Goals for the course:** Specifically, students will develop these skills in the context of differential and integral calculus, applying the techniques of calculus to investigate **how quantities change**. These quantities are modeled by functions, including polynomial, rational, exponential, logarithmic, and trigonometric functions. Calculus is a towering achievement of human thought, worthy of study in its own right, but it is also the essential language of technical applications, including economics, physics, biology, psychology... any pursuit in which changing quantities are analyzed.

**Liberal education:** This course fulfills the Mathematical Thinking component of the Liberal Education requirements at the University of Minnesota. An important part of any liberal education is learning to use abstract thinking and symbolic language to solve practical problems. Calculus is one of the pillars of modern mathematical thought, and has diverse applications essential to our complex world. In this course, students will be exposed to theoretical concepts at the heart of calculus and to numerous examples of real-world applications.

**Prerequisites:** Mastery of pre-calculus topics, such as trigonometry, algebra, analytic geometry, and functions, is essential preparation for this course. One can demonstrate this mastery via (i) four years of high school mathematics, including trigonometry, (ii) a grade of C- or better in MATH 1151 or 1155 or their equivalent, or (iii) sufficient score on the calculus readiness placement test. Especially important is comfort with trigonometry in the language of the unit circle; check this in the first week of the course!

**Additional resources:** Often the best resource to get extra help in this course will be to attend office hours. However, should you want additional help here are some tutoring resources.

The following centers on the university offer **Free** peer tutoring, either by appointment or drop in times.

[SMART Learning Commons](#)

[Multicultural Center for Academic Excellence](#)

The Undergraduate Office in the School of Mathematics maintains a list of private tutors available for hire. They are located in **Vincent Hall 115**.

**Academic dishonesty:** See the [Student Conduct Code](#), for general information. Academic dishonesty, including use of an unapproved electronic device, will result in a report to the Office for Community Standards, and penalties can include a grade of zero on the task in question and/or a failing grade in the course.

**Other policies:** Links to other general policy statements can be found at the following hyperlinks– including statements about [equal opportunity](#), [disability accommodations](#), and [mental health resources](#). They can also be found on the course Canvas page.

If you have a letter detailing accommodations, notify the lecturer and your TA as soon as possible.

### Tentative Lecture Schedule

Monday	Wednesday	Friday
	1/18 2.1	1/20 2.2
1/23 2.3	1/25 2.4	1/27 2.5
1/30 2.6	2/1 2.7	2/3 2.8
2/6 3.1	2/8 3.2	2/10 3.3
2/13 3.4	2/15 Review exam 1	2/17 3.5
2/20 3.6	2/22 3.9	2/24 3.10
2/27 4.1	3/1 4.2	3/3 4.3
3/6 NO CLASS	3/8 NO CLASS	3/10 NO CLASS
3/13 4.3	3/15 4.4	3/17 4.5
3/20 4.7	3/22 4.8	3/24 4.9
3/27 5.1	3/29 Review exam 2	3/31 5.2
4/3 5.3	4/5 5.3	4/7 5.4
4/10 5.5	4/12 6.1	4/14 6.2
4/17 6.2	4/19 6.3	4/21 6.3
4/24 6.5	4/26 Review exam 3	4/28 Review Final
5/1 Review Final		(5/4 FINAL EXAM)

### Suggested exercises

Homework will not be collected and will not be graded, but quiz and exam problems will be similar to the following suggested **odd-numbered exercises**. Working many exercises is essential for success in the course.

2.1	1-9
2.2	5-9, 15, 17, 31-43
2.3	11-31, 37-45
2.4	1-5
2.5	5, 7, 41-57
2.6	5-9, 13-41, 47-51
2.7	5-57
2.8	3, 13, 15, 21-31, 35, 43-47
3.1	3-37, 49-81
3.2	3-33, 41-53
3.3	1-23, 29-33, 39-55
3.4	7-53, 59-81

3.5 5-31, 35-39, 43-59

3.6 3-33, 39-51

3.9 3-49

3.10 11-31

4.1 29-43, 47-61, 69-73

4.2 5-13, 17-21, 25-29

4.3 9-21, 37-55

4.4 9-67

4.5 1-53

4.7 3-37, 61, 63

4.8 7, 11-21

4.9 1-21, 25-47, 59-63, 69-77

5.1 1-7, 13-23

5.2 5-11, 17-25, 33-39

5.3 7-43, 53, 59-63

5.4 5-17, 21-45, 51-63, 67, 71

5.5 1-47, 53-73, 81

6.1 5-27, 33

6.2 1-17, 31, 33, 47-53

6.3 3-19, 37-43

6.5 1-7, 13-21