

CALCULUS I

MATH 1850:0432

The University of Iowa
The College of Liberal Arts and Sciences
Spring 2026

Course meeting time and place: *MTWF 8:30-9:20 am 218 MLH (MacLean Hall)*

This course is offered by the Department of [Mathematics](#).

Instructor:

Abdul Shabeer Abdul Sattar

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Office: B1L MLH

Student drop-in hours: (Tentative) *Mon 10:30-11:30am, Thurs 9:30-10:30am. Other times by appointment.*

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Description of Course

This is a standard first semester course in Calculus. The sequence MATH:1850 - MATH:1860 is one of the basic entry-level mathematics courses for students in the mathematical and physical sciences. Topics include fundamental concepts, limits, methods and techniques of differential calculus of a single variable (including power, product, quotient and chain rules; extreme values, graphing, optimization, implicit differentiation, related rates); definite and indefinite integrals, substitution rule, Fundamental Theorem of Calculus; applications including areas, and volumes. The students should expect the material to be covered at two to three times the pace in high schools. Students are expected to attend class and read the textbook for comprehension. Usually, for every hour of lecture the students are expected to spend three hours studying outside the class. The Examinations will cover the material discussed in class as well as assigned material from the text that is not discussed in class.

Learning Objectives

The main goal of this class is to provide the mathematical background needed to familiarize students with several fundamental concepts in calculus such as limits, derivatives, and integrals. The course emphasizes both the theoretical aspects of these notions as well as a wide range of applications to other sciences including engineering and economics. The students completing this course will be able to apply these concepts to real life problems that often arise in the natural sciences (e.g., optimization problems, modeling of various phenomena in physics, biology, astronomy etc). The students will be prepared for the second semester of calculus. The course is designed to be a half-year course; it is not, in general, recommended that student plan to take MATH:1850 and not MATH:1860. This course is also the building block for several subsequent classes.

Outline of Course Topics

We will cover Chapters 1-6 of the textbook. Some sections will be omitted.

Chapter 1. (Sec 1- 5) Review pre-calc: Basic properties of a list of functions that will be studied in this course including exponential, logarithmic and inverse functions. Review of increasing/decreasing functions; odd/even functions; domain of a function; equation of a line and equation of a circle; laws of exponents; laws of logarithms.

Chapter 2. (Sec 1-3, 5-8) Limits, one-side limits, infinite limits and limits to infinity. Vertical and horizontal asymptotes and notion of continuous functions. Using Intermediate Value Theorem to approximate roots. Tangent lines and definition of derivatives.

Chapter 3. (Sec 1-7,9-11) Differentiation. Product, quotient and chain rules. Implicit differentiation. Linear approximation. Related rates and exponential growth. Hyperbolic functions.

Chapter 4. (Sec 1-5, 7,9) Extreme values. Monotonicity, concavity and graphing of functions. Mean Value Theorem and L'Hospital's Rule. Optimization. Antiderivatives.

Chapter 5. (Sec 1-5) Riemann integrals and approximations of integrals by Riemann sums. Fundamental Theorem of Calculus and substitution rule. Indefinite integrals.

Chapter 6. (Sec 1-5) Areas and volumes of revolution. Work and average value of function, if time allows.

Required Textbooks

The required textbook(s) for this course are:

- *Title: Single Variable Calculus, Early Transcendentals*
- *ISBN: 9780357128916*
- *Author: James Stewart, Daniel Clegg & Saleem Watson*
- *Publisher: Cengage Learning*
- *Copyright Year: 2020 (edition 9)*

The ICON Direct program will be used to provide required course materials via your ICON course site. Your U-Bill will be charged automatically after your course has started, unless you opt out prior to the last day for tuition and fee reduction [course deadline](#).

Course ICON site

To access the course site, log into [Iowa Courses Online \(ICON\)](#) using your Hawk ID and password.

Types of Assessments

- Weekly Homework
- Weekly Quizzes
- Two Collaborative Activities
- Two Midterm Exams
- One Final Exam

Grading System

This course uses criterion-reference grading. This means that your grade is determined by how well you demonstrate that you have mastered the learning objectives of the course – not on how well you do in relation to your peers. With criterion-reference grading, it is possible for everyone to get an A in the course!

Final grades will be awarded based on the following ranges:

Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
Minimum Percentage	98	93	90	87	83	80	77	73	70	67	63	60	0

Course Grades

5% Activity	:	Two fun collaborative activities on Tuesdays following midterms.
5% Attendance	:	Attendance and Participation.
10% Homework	:	Total of 12 HW assignments due Sundays 11:59pm.
15% Weekly Quiz	:	Total of 11 Quizzes and two lowest scores will be dropped.
20% Mid-Term 1	:	In-class on Monday, 2 nd March (Week 7).
20% Mid-Term 2	:	In-class on Monday, 13 th April (Week 13).
25% Final Exam	:	120 min long cumulative exam during the final week.

Exams(65%)

There will be a total of three exams for this course: two midterms and one final exam. The sections for the midterm will be announced later but sufficiently in advance. The final exam will be cumulative and will cover all the material presented in the course. All exams are **closed-book**. Mathematics is as much about getting the right answers as it is about explaining (or proving) why your answer is correct. For that reason, you will be expected to demonstrate written communication skills, in addition to mastery of the material.

Make-up exams will be considered only in compelling medical situations with supporting documentation from a medical professional, in family or other emergency situations, or as required by the University. If you absolutely cannot make the scheduled time work, you must contact the instructor at least a week in advance to request accommodation. Missing an exam without a valid reason will result in a score of zero for that exam.

The [final examination date and time](#) will be announced by the Registrar generally by the fifth week of classes, and it will be announced on the course ICON site once it is known. **Do not plan your end of the semester travel plans until the final exam schedule is made public. It is your responsibility to know the date, time, and place of the final exam.** The [Registrar's Office website](#) details which types of schedule conflicts qualify for make-up exams and the processes students should follow to request make-up exams. Not all conflicts qualify for make-up exam times, and requests must be made by the deadlines listed.

Homework (10%)

Weekly assignments will be posted every Monday on the ICON page and can be accessed through WebAssign. They will be based on the sections being covered that particular week. It is recommended that you start working on these problems right after the appropriate lecture and not wait until the end of the week to start. They are **due** the following **Sunday at 11:59 p.m.**

Quiz (15%)

There will be weekly quizzes every **Monday** in class that account for 15% of your final grade. It will be based on the content from the week before. There will not be any quiz during the exam week. These quizzes are designed to reinforce important concepts from recent lectures and homework. It is expected of you to show your work and write legible solutions. The final quiz of the semester will be a **bonus quiz**, which may be used to replace a missed quiz or a quiz with a lower score. At the end of the semester, **two lowest scores** will be **dropped**.

Activity (5%)

There will be two in-class activities worth 5% of your final grade. These activities will take place during the class on **Tuesdays following the midterm exams: Activity 1** will be on 3rd March, and **Activity 2** will be on 14th April.

Attendance (5%)

Attendance is mandatory in this course and is worth 5% of your final grade. Attendance will be taken at the beginning of each class. If you miss the attendance then make sure to check with me at the end of the class to get yourself marked present. **Every student gets three unexcused absences. Post that, for every missed class you lose 0.5% from your total of 5%.** If you miss a class, then you are responsible for any announcements made or materials covered.

Classroom Expectation

I strongly encourage you to actively participate in class by asking questions or requesting further explanations whenever the material is unclear. Remember, **all questions are great questions!** Participation also includes actively taking notes, paying attention during class, and engaging with the material. **All electronic devices must be put away** unless otherwise stated so.

Collaboration

You are encouraged to work with others on homework and all in-class activities unless you are specifically instructed not to do so. You may also visit the Math Tutorial Lab or consult online resources. Please be aware that to master the skills needed for this class, a lot of practice is required. To do well on assignments and exams you will need to work on many of these problems multiple times without help. Be sure to test your knowledge by doing much of the homework on your own.

(Tentative) Calendar of Course Assignments and Exams

Weeks	Sections Covered	Activities and Assessments
Week 1 (01/20-01/23)	Sec 1.1, 1.2	HW1
Week 2 (01/26-01/30)	Sec 1.3, 1.4, 1.5, 2.1	HW2
Week 3 (02/02-02/06)	Sec 2.2, 2.3, 2.5	Quiz 1, HW 3
Week 4 (02/09-02/13)	Sec 2.6, 2.7	Quiz 2, HW 4
Week 5 (02/16-02/20)	Sec 2.8, 3.1, 3.2	Quiz 3, HW 5
Week 6 (02/23-02/27)	Sec 3.3, 3.4	Quiz 4, MT 1 Review, HW 6
Week 7 (03/02-03/06)	Sec 3.5, 3.6	MT 1, Activity 1
Week 8 (03/09-03/13)	Sec 3.8, 3.9, 3.10	Quiz 5, HW 7
Week 9 (03/16-03/20)	SPRING BREAK	SPRING BREAK
Week 10 (03/23-03/27)	Sec 3.11, 4.1, 4.2	Quiz 6, HW 8
Week 11 (03/30-04/03)	Sec 4.3, 4.4, 4.5	Quiz 7, HW 9
Week 12 (04/06-04/10)	Sec 4.7, 4.9	Quiz 8, MT 2 Review, HW 10
Week 13 (04/13-04/17)	Sec 5.1, 5.2	MT 2, Activity 2
Week 14 (04/20-04/24)	Sec 5.3, 5.4, 5.5	Quiz 9, HW 11
Week 15 (04/27-05/01)	Sec 6.1, 6.2, 6.3	Quiz 10, HW 12
Week 16 (05/04-05/08)	Sec 6.4, 6.5	Bonus Quiz, Final Review

Academic Honesty and Misconduct

We trust you to do your own work, and cheating on exams and quizzes will not be tolerated. Your grade should reflect your level of understanding of the material in this class. By asking others to do work for you, you are only cheating yourself of an opportunity to learn and receive feedback.

All students in CLAS courses are expected to abide by the [college's standards of academic honesty](#). Undergraduate academic misconduct must be reported by instructors to CLAS according to [these procedures](#).

Artificial Intelligence (AI) Policy

AI systems like ChatGPT, Copilot, Gemini are useful technologies but should not be abused. They are also in primitive stages where they might hallucinate or give incorrect answers. As you are in an early stage of mathematics it might hence be hard to distinguish the right responses from the wrong. Hence, while you may use these AI tools to study, I advise extreme caution. Always consult with trusted sources. All your submitted work, including homework, should be your own and in your own words. You may not use AI for your homework assignments. Any results obtained from other sources should be cited as such. Failure to cite your sources (including “AI” systems) is academic dishonesty and may be punished as such. You must make every effort to read through the materials and attempt to solve the problems on your own. Collaborations and discussions with your peers are always encouraged for homework.

Student Support Resources and Related Policies

The Math Tutorial Lab in 125 MacLean Hall offers free, drop-in tutoring for students enrolled in this class. Schedule and information about the Math Tutorial Lab is available [here](#).

● There are a variety of other places on campus where you can go for help with this course. Visit <http://tutor.uiowa.edu> for more information.

Please go through these university policies:

[Absences from Class](#)

[Absences for Religious Holy Days](#)

[Absences for Military Service Obligations](#)

[Accommodations for Students with Disabilities](#)

The University is committed to providing an educational experience that is accessible to all students. If a student has a diagnosed disability or other disabling condition that may impact the student’s ability to complete the course requirements as stated in the syllabus, the student may seek accommodations through Student Disability Services (SDS). SDS is responsible for making Letters of Accommodation (LOA) available to the student. The student must provide an LOA to the instructor as early in the semester as possible, but requests not made at least two weeks prior to the scheduled activity for which an accommodation is sought may not be accommodated. The LOA will specify what reasonable course accommodations the student is eligible for and those the instructor should provide.

Students are always welcome to discuss any accommodation or issues they encounter during the course.

Mental Health

Students are encouraged to be mindful of their mental health and seek help as a preventive measure or if feeling overwhelmed and/or struggling to meet course expectations. Students are encouraged to talk to their instructor for assistance with specific class-related concerns. For additional support and counseling, students are encouraged to contact University Counseling Service (UCS). Information about UCS, including resources and how to schedule an appointment, can be found [here](#). Find out more about UI mental health services [here](#).

Other useful links and policies:

[Mental Health](#)

[Basic Needs and Student Support](#)

[Sexual Harassment/Sexual Misconduct and Supportive Measures](#)

[Conflict Resolution](#)

Student Complaints

Students with a complaint about a grade or a related matter should first discuss the situation with the instructor and/or the course supervisor (if applicable), and finally with the DEO (Chair) of the department, school or program offering the course. Sometimes students will be referred to the department or program's Director of Undergraduate Studies (DUS) or Director of Graduate Studies (DGS).

Undergraduate students should contact [CLAS Undergraduate Programs](#) for support when the matter is not resolved at the previous level. Graduate students should contact the [CLAS Graduate Affairs Manager](#) when additional support is needed.

Course's College (Administrative Home)

The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the add and drop deadlines, academic misconduct policies, and other undergraduate policies and procedures. Other UI colleges may have different policies.

Drop Deadline for this Course

You may drop an individual course before the drop deadline; after this deadline you will need collegiate approval. You can look up the drop deadline for this course [here](#). When you drop a course, a "W" will appear on your transcript. The mark of "W" is a neutral mark that does not affect your GPA. To discuss how dropping (or staying in) a course might affect your academic goals, please contact your Academic Advisor. Directions for adding or dropping a course and other registration changes can be found on the [Registrar's website](#). Undergraduate students can find policies on dropping CLAS courses [here](#).

UI Email

Students are responsible for all official correspondence sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community. For the privacy and the protection of student records, UI faculty and staff can only correspond with UI email addresses.

Please refer to the following links for some of the university policies:

[Free Speech and Expression](#)

[Non-discrimination Statement](#)

[Classroom Expectations](#)

[Class Recordings](#)

Disclaimer:

The instructor reserves the right to modify the course syllabus, schedule, or policies as necessary. Any changes will be communicated to students in a timely manner.