

The University of Iowa
The College of Liberal Arts and Sciences
Spring 2024

Title of Course: MATH 1850:0BBB, Calculus I

Course meeting time and place:

Lecture:	MWF 1:30pm-2:20pm in 118 MLH (MacLean Hall)
Discussion 1850:0B11:	TTh 8:30am-9:20am in 113 MLH with Marc Moore
Discussion 1850:0B12:	TTh 11:00am-11:50am in 113 MLH with Marc Moore

Department of Mathematics: <https://math.uiowa.edu/>

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

Course Home: The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the add and drop deadlines, the “second-grade only” option (SGO), academic misconduct policies, and other undergraduate policies and procedures. Other UI colleges may have different policies.

DEO: Ryan Kinser (he/him/his), 14A MacLean Hall, ryan-kinser@uiowa.edu

Instructor: Lizzie Buchanan (she/her)

Contact: elizabeth-buchanan@uiowa.edu

Office location: 1L MLH (MacLean Hall)

Student drop-in office hours: TBD

Students are invited to drop by during these hours to discuss questions about the course material or concerns, chat about homework help, studying strategies, etc. I am also available by appointment if you are unable to attend my scheduled hours.

TA: Marc Moore

Contact: marc-moore@uiowa.edu

TA student drop-in hour: TBD

Description of Course:

This is a standard first semester course in Calculus. The sequence MATH:1850 (Calc I) - MATH:1860 (Calculus II) 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 read the assigned textbook sections before class, attend every lecture, and attend all discussion section meetings. attend class and read the textbook for comprehension. **Usually, for every hour of lecture and discussion time, the students are expected to spend one to 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, as occasion arises.

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 the theoretical aspects of these notions, and touches on wide range of applications to other sciences including engineering and economics. The students completing this course will be able to go on 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 students plan to take MATH:1850 and not MATH:1860. This course is also the building block for several subsequent classes.

Textbook/Materials

Required text: <https://math.uiowa.edu/undergraduate-program/course-information/book-list>

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. Specific opt out information will be provided in the course syllabus and in the opt out tool. You are then responsible for obtaining an alternative copy of the text.

- Single Variable Calculus: Early Transcendentals Required
ISBN: 9780357022269
Author: Stewart James; Clegg Daniel K.; Watson Saleem
Publisher: Cengage ©2020

Approximately \$35.43 will be billed to your U-Bill

The ICON Direct textbook is available through the Unizin Engage link on the ICON page.

Material to be covered: We will cover Chapters 1-6 of the textbook. Some sections will be omitted. The following list gives a breakdown of the content covered and the expected time spent on each topic. A PRECISE CLASS CALANDAR, WITH HOMEWORK PROBLEMS FOR EACH CLASS PERIOD, APPEARS ON COURSE ICON PAGE.

- Chapter 1. (1- 5) Basic properties of a list of functions studied in the course including exponential, logarithmic and inverse functions. (3 class periods)
- Chapter 2. (1-8) Limits, one-side limits, infinite limits and limits to infinity. Vertical and horizontal asymptotes. Discussion of precise definition of limits and continuous functions. Using Intermediated Value Theorem to approximate roots. Tangent lines and derivatives. (8 class periods)
- Chapter 3. (1-11) Differentiation. Product, quotient and chain rules. Implicit differentiation. Linear approximation. Related rates and exponential growth. Hyperbolic functions. (12 class periods)

- Chapter 4. (1-5, 7-9) Extreme values. Graphing of functions. Mean Value Theorem and L'Hospital's Rule. Optimization. Antiderivatives (8 class periods)
- Chapter 5. (1-5) Riemann integrals and approximations of integrals by right endpoint rule etc. Fundamental Theorem of Calculus and substitution rule. Indefinite integrals. (5 class periods)
- Chapter 6. (1-5) Areas and volumes of revolution. Work and average value of function if time allows. (3-5 class periods)

Academic Honesty and Misconduct

All students in CLAS courses are expected to abide by the [CLAS Code of Academic Honesty](#). Undergraduate academic misconduct must be reported by instructors to CLAS according to [these procedures](#). Graduate academic misconduct must be reported to the Graduate College according to Section F of the [Graduate College Manual](#).

Student Complaints: Students with a complaint about a grade or a related matter should first discuss the situation with the instructor (Lizzie Buchanan), and finally with the Director or Chair of the school, department, or program offering the course.

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 Associate Dean for Graduate Education](#) and Outreach and Engagement when additional support is needed.

Drop Deadline for this Course: You may drop an individual course before the 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. 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](#).

Grading System and the Use of +/- : Plus/minus grading WILL be used. Throughout the term, students can monitor their course grades on ICON. The course may be curved at the end of the term, but a curve will only be applied to benefit students and boost grades, if needed. The following lays out guaranteed minimum letter grade minimums for the course:

- If a student ends the term with grade 90%, they will receive a letter grade of A- or higher
- If a student ends the term with grade 80%, they will receive a letter grade of B- or higher
- If a student ends the term with grade 70%, they will receive a letter grade of C- or higher
- If a student ends the term with grade 60%, they will receive a letter grade of D- or higher
- This means that everyone with an end-of-term grade 60% or higher is guaranteed to pass the course. And it is possible to have an end-of-term grade below 60% and still pass the course, but it is not guaranteed. If at any point in the term you think you are on track to have an end-of-term grade below 60%, please contact me so we can discuss what to do to help you get your grades up.
- Final grade of A+ is only given in exceptional circumstances, for students who earn a grade of approximately 98% or above.

Course Grades

Final course grades will be assessed based on your performance in the following activities:

- **Homework Quizzes (30% of grade)**

- Each class period, I will assign written homework problems. These will not be collected, so it is up to each student to make sure they are keeping up with homework. You can use calculators, computers, talk to tutors and other students, whatever you want as you go through the homework problems. But keep in mind that all graded assessments have a no-calculator policy.
- On Thursdays in Discussion section meeting, students will have a 3(ish)-question written Homework Quiz. The questions will be related to the content from the previous Wednesday, Friday, Monday classes. The questions will be heavily based on the assigned homework for those days.
- There are twelve Homework Quizzes plus one Pre-Course Check-In, leading to a total of 13 assignments in the Homework Quiz category.
- When calculating a student's Homework Quiz grade, the lowest two scores will be dropped. This means that a student who scored a 50% and a 40% during a rough couple of weeks but got 90% on all other Homework Quizzes, will end the term with a 90% Homework Quiz grade. And a student who oversleeps and misses the Homework Quiz one time but otherwise gets 80% on all quizzes, will get a 80% for their Homework Quiz grade.
- Students who are absent from discussion the day of a Thursday Homework Quiz and therefore miss the quiz altogether, should email as soon as possible, and **BEFORE** the start of the quiz. If you email Marc BEFORE the quiz starts, you may be able to schedule to take the quiz in the next couple of days. Otherwise, these absences are addressed by the policy of dropping the two lowest HQ grades. If more than two HQ absences occur, a student must email the instructor (Lizzie Buchanan, elizabeth-buchanan@uiowa.edu) to discuss options. Anyone who knows they will be absent for a HQ must email the instructor (Lizzie Buchanan, elizabeth-buchanan@uiowa.edu) and TA (Marc Moore marc-moore@uiowa.edu) as soon as possible to discuss options.
- **Quiz Notecard:** Every student is allowed to bring a HANDWRITTEN NOTECARD to use during the quiz. Your notecard must be 1/3 the size of a standard piece of 8/5x11 printer paper (I recommend simply folding a piece of paper in thirds, then write on one of the thirds.) You can write as small as you want, and write anything you want on it, but it must be handwritten. You can only write on ONE side.

- **Participation (10% of grade)**

- Everyone who REGULARLY comes to lectures, discussion section, arrives on time, emails instructor well in advance if there are conflicts with homework quizzes or exams, participates in class at least occasionally throughout the term, will get full credit for participation.

- **Midterm Exams (two exams, together are worth 40% of grade)**

- Midterm exams will be given in class
- Midterm 1: **Wednesday, February 21**
- Midterm 2: **Wednesday, April 3**

- **Midterm Notecard:** Every student is allowed to bring a **HANDWRITTEN NOTECARD** to use during the midterm exams. Your notecard must be 1/2 the size of a standard piece of 8/5x11 printer paper (I recommend simply folding a piece of paper in half, then write on one of the halves.) You can write as small as you want, and write anything you want on it, but it must be handwritten. You can only write on **ONE** side.
- **No other notes or calculators are allowed.**
- **Final Exam (20% of grade)**
 - **The final is a cumulative exam, covering content from the entire semester. However, the emphasis is on the final third of the course.**
 - **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.** According to Registrar's final exam policy, students **have a maximum of two weeks after the announced final exam schedule** to request a change if an exam conflict exists or if a student has more than two exams in one day (see the [policy here](#)).
 - **Final Exam Notecard:** Every student is allowed to bring a **HANDWRITTEN NOTECARD** to use during the final exam. Size **TBD**.
 - **No other notes or calculators are allowed.**

Attendance and Absences [University regulations require that students be allowed to make up examinations](#) that have been missed due to illness, religious holy days, military service obligations (including service-related medical appointments), or other unavoidable circumstances or University-sponsored activities. Students with UI-authorized activities must discuss their absences with the instructor as soon as possible. Religious obligations must be communicated within the first three weeks of classes.

Communication: 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.

Where to Get Academic Support for This Course:

Math Tutor Room in MLH 1st Floor. <https://math.uiowa.edu/math-tutorial-lab>

Mental Health Resources and Student Support

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 at counseling.uiowa.edu. Find out more about UI mental health services at mentalhealth.uiowa.edu.

Student Care and Assistance provides assistance to University of Iowa students who are experiencing a variety of crisis and emergency situations, including but not limited to medical issues, family emergencies, unexpected challenges, and sourcing basic needs such as food and shelter. More information on the resources related to basic needs can be found at basicneeds.uiowa.edu/resources/. Students are encouraged to contact Student Care & Assistance in the Office of the Dean of Students (Room 135 IMU, dos-assistance@uiowa.edu, or 319-335-1162) for support and assistance with resources.

University Policies

Accommodations for Students with Disabilities

The University is committed to providing an educational experience that is accessible to all. 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. 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. Additional information can be found on the [SDS website](#).

Classroom Expectations

Free Speech and Expression

Non-discrimination

Absences for Religious Holy Days

Sexual Harassment/Misconduct and Supportive Measures

Calendar of Course Assignments and Exams (all during class or during discussion section):

Date	Assessment	Class Days Covered
Th, Jan 18	Pre-Course Check-in	n/a, Diagnostic pre-course check-in. Topics should be familiar from previous math classes. Completion of the check-in counts towards Homework Quiz grade
Th, Jan 25	Homework Quiz 1	Days 1, 2, 3
Th, Feb 1	Homework Quiz 2	Days 4, 5, 6
Th, Feb 8	Homework Quiz 3	Days 7, 8, 9
Th, Feb 15	Homework Quiz 4	Days 10, 11, 12
Wednesday, Feb 21 (Day 16)	Midterm 1	Days 1-15
Th, Feb 29	Homework Quiz 5	Days 17, 18
Th, March 7	Homework Quiz 6	Days 19, 20, 21
<i>Th, March 14 is during Spring Break</i>	---	---
Th, March 21	Homework Quiz 7	Days 22, 23, 24
Th, March 28	Homework Quiz 8	Days 25, 26, 27
Wednesday, April 3 (Day 31)	Midterm 2	Days 17-30
Th, April 11	Homework Quiz 9	Days 32, 33
Th, April 18	Homework Quiz 10	Days 34, 35, 36
Th, April 25	Homework Quiz 11	Days 37, 38, 39
Th, May 2	Homework Quiz 12	Days 40, 41, 42
TBD	Final Exam	Days 1-44 (emphasis on Days 32-44)