*MATH 1850 - students*

**This is a template syllabus. This file contains course specific information, such as catalog description, goals and objectives, which does not change. <span style="color:red">The parts highlighted in red are to be determined by the individual instructors.</span> The official syllabus for each section will be provided by the instructor in the beginning of the semester.**

<div align="center">

<span style="color:red">**SYLLABUS Fall/Spring 20\*\***</span>
**MATH 1850**
**The University of Iowa**
**The College of Liberal Arts and Sciences**
**Department of Mathematics**
**Calculus I (MATH:1850-<span style="color:red">xxxx</span>)**
**Time and location: <span style="color:red">xxxx</span>**

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Some of the policies relating to this course (such as the drop deadline) are governed by its administrative home, the College of Liberal Arts and Sciences, 120 Schaeffer Hall.

**Prerequisites:** (MATH:1010 with a minimum grade of C- and MATH:1380 with a minimum grade of C-) or MATH:1460 with a minimum grade of C- or ALEKS score of 75 or higher or MPT Level 3 score of 9 or higher or (ALEKS score of 55 or higher and MATH:1010 with a minimum grade of C-) or MATH:1020 with a minimum grade of C- or (MATH:1340 with a minimum grade of C- and MATH:1010 with a minimum grade of C-) or (MATH:1005 with a minimum grade of C- and MATH:1010 with a minimum grade of C-)

**Approved GE:** Quantitative or Formal Reasoning.

<span style="color:red">**Instructor:**</span>
<span style="color:red">Office location and hours:</span>
<span style="color:red">Phone:</span>
<span style="color:red">E-mail:</span>
<span style="color:red">Website address:</span>
<span style="color:red">**TA:**</span>
**Supervisor**: For this course, see the DEO.
**DEO Contact Information:** <span style="color:red">Professor …, 14 MLH, 319-335-0714, …@uiowa.edu</span>

**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 and discussion time, 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.

**Objectives and Goals of the Course**:

The main goal of this class is 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.

**Required text**: (Check the current textbook from Department Webpage)

https://math.uiowa.edu/undergraduate-program/course-information/book-list

The textbook used in 2018:  (available at Iowa Bookstore): Single Variable Calculus, Early Transcendentals by J Stewart, 8$^{th}$ edition, ISBN-13: 978-1-305-27242-2 for Chapters 1-6.

**Material to be covered: The Chapters are from the text above. The topics will be essentially same if the textbook changes.**

We will cover Chapters 1-6 of the textbook, some sections will be omitted.
Chapter 1. (1- 5)  Basic properties of a list of functions studied in the course including exponential, logarithmic and inverse functions.
Chapter 2. (1-8) Limits, one-side limits, infinite limits and limits to infinity. Vertical and horizontal asymptotes. Precise definition of limits and continuous functions. Using Intermediated Value Theorem to approximate roots. Tangent lines and derivatives.
Chapter 3. (1-11) Differentiation. Product, quotient and chain rules. Implicit differentiation. Linear approximation. Related rates and exponential growth. Hyperbolic functions.
Chapter 4. (1-5, 7-9) Extreme values. Monotonicity, concavity and graphing of functions. Mean Value Theorem and L'Hospital's Rule. Optimization and Newton's method. Antiderivatives
Chapter 5. (1-5) Riemann integrals and approximations of integrals by midpoint rule etc. Fundamental Theorem of Calculus and substitution rule. Indefinite integrals.
Chapter 6. (1-5) Areas and volumes of revolution. Work and average value of function if time allows.

**Grading:** For each course, the instructor chooses a grading strategy appropriate to departmental and college guidelines, and the related discipline. Some of the recommended options include (but not limited to) the following:

With **criterion-reference grading**, students receive grades based on the quality of their work in relation to the criteria defined by the instructor and by the rubrics or models specifying the qualities of each grade. Some instructors may choose to adjust the scale (criteria) if a need arises.

**Norm-based grading** is used in the course which is based on how others in the class perform. This method is generally used in large lecture courses or coordinated multi-section courses. The distribution of grades may be based on CLAS recommendations.

**Grading System: Plus/minus** grading will be used.
- XX%    X midterms (dates)
- XX%    Final exam (date, time and place to be announced)
- XX%    X Quizzes, about every other week (dates)
- XX%    Homework, assigned weekly, and usually due the following week
- XX%    Attendance and class participation (optional)

**All exams are comprehensive**, unless specified otherwise.

**A Word about the Date and Time of the Final Exam:** The date and time of every final examination is announced by the Registrar generally by the fifth week of the classes. **No exams of any kind are allowed during the last week of classes.** All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar's web site and will be shared with instructors and students. It is the student's responsibility to know the date, time, and place of the final exam.

**Make-up policy:** As stated in CLAS webpage: https://clas.uiowa.edu/faculty/student-attendance-and-absences: "University policy requires that students be permitted to make up examinations missed because of illness, mandatory religious obligations, authorized UI activities, or unavoidable circumstances. An unavoidable circumstance is defined as an event beyond the student's control and often involves a serious and unexpected hospitalization, a family tragedy, or a related incident. Such circumstances **do not include** attendance at a wedding, a family vacation, obligations related to work or other such matters. The instructor of a student participating in an authorized UI activity is sent a statement generally by email from the UI official in charge of the event before the absence occurs; this statement will include the specific date and time that the student will miss class. Activities related to employment, fraternities or sororities, or volunteer activities are not UI authorized activities."

**Student Collaboration:** Student collaboration is NOT permitted on exams. Any attempt to collaborate during exams will result in a 0 score on that test. The instructors will specify if collaboration is allowed on assignments and, if so, the expectations for a student's individual performance.

The homework for this course is designed to help you master your knowledge related to the topics covered during lecture. As such, you may work on the homework problems with others or use online resources. However, please be aware that to master the skills needed for this class, practice is required and that to do well on the final exam you will need to work many of these problems multiple times without help. Be sure to test your knowledge by doing much of the homework on your own. All other graded work for this class (quizzes and tests) must be completed individually and any form of cheating will be reported. Please read the student collaboration rules above

**Other Course Policies: The parts in red are to be determined by the individual instructors.**
*Homework***:** For almost all students, doing problems is the best way to learn the material. Homework will be assigned every class period and should be completed before the next class meeting. The assignments may be collected on Thursdays in the beginning of discussion unless otherwise announced in class. No late homework is accepted without a university approved, documented reason**.** Your lowest homework score may be dropped. Your homework must be legible, answers should be boxed and the assignment should be stapled.

*Exams:* There will be two-three midterm exams and a final exam. Books, notes and calculators are not allowed during exams. Tentative dates for the exams can be found in the schedule. See above for the Make-up Policy.

*Quizzes:* The main purpose of quizzes is to help you evaluate your knowledge on a regular basis – identifying problem areas before the exams will allow you to get help before your grade suffers. Quizzes are generally given in discussion on Thursdays and will consist of problems from the homework due that day. Quiz make-ups are only allowed with a university approved, documented reason. Your lowest quiz score may be dropped.

*Course attendance:* Attendance is expected for each class meeting, as it will help you better understand the concepts covered in lectures. If you miss a class, you are responsible for any assignments/announcements made/material covered.

*Participation in class discussions and preparations:* We strongly encourage you to actively participate in class discussions; ask questions or ask for more explanations whenever you feel confused; in this class there is NO stupid question!

*Help:* You are always welcome to come to our office hours or stop by outside of office hours if we *are* around. You may also make an appointment. Your TA also has office hours. Another excellent resource is the Math Lab is located in 125 MLH. It is staffed by very knowledgeable

math graduate students. Math Lab services are FREE. For more information and hours, please go to http://www.math.uiowa.edu/math-tutorial-lab

Also, as a general rule, for each lecture you should spend at least two-three hours on reading/homework/repeating the material, etc. You should start working over the homework problems right after the relevant sections are covered. If you encounter difficulties, we strongly recommend you seek help immediately! Don't postpone it until one day before the exam! Also remember this: small deficiencies at the beginning tend to rapidly grow into big ones.

*Changing grade policy:* If we change your grade on a homework, quiz, or exam it is your responsibility to remind us in the same day by e-mail that we have changed your grade.
*Cell phones policy:* We are expecting you to NOT use your cell phones, i-pads, or computers during the lecture time for other purposes than class related.

*Complaint procedure:* Any student having a problem with the course should contact the instructor; sooner is better. Most issues can be resolved with a straightforward discussion. Please read the notes to the student below.

*Calculators:* You may not use a calculator during tests and quizzes and we encourage you not to use one while doing homework.

**Resources for Students:**
Students will find the Writing Center and the Speaking Center very useful for this course:
Writing Center: http://www.uiowa.edu/~writingc/
Speaking Center: http://clas.uiowa.edu/rhetoric/for-students/speaking-center
Math Tutorial Lab: 125 MLH  http://www.math.uiowa.edu/math-tutorial-lab

**<u>Notes to the Students:</u>**

1. All students in the College have specific rights and responsibilities. You have the right to adjudication of any complaints you have about classroom activities or instructor actions. Information on these procedures and your responsibilities is available in the Schedule of Courses and on-line in the College's Student Academic Handbook,

(https://clas.uiowa.edu/students/handbook ) In summary, first see the person you wish to complain about, and then see his/her immediate supervisor. The chain is: graduate or undergraduate assistants, then Prof. XX, then the Chairman of the Department of Mathematics Prof. YY, and then an appropriate Dean. The Department of Mathematics has offices in 14 MLH (MacLean Hall). To make an appointment to talk to the chairman of the department call 335-0714 or contact the departmental secretary in 14 MLH.

2. We would like to hear from anyone who has a disability which may require some modification of seating, testing, or other class requirements so that appropriate arrangements may be made. Please contact your lecturer during his office hours, in the beginning of the semester and far in advance of the exams. You should notify the Office of Student Disability Services, SDS and obtain the form(s) needed. The necessary modifications will be made available to you after the SDS processes and approves your request.

3. We are planning to use ICON for posting grades and other course material. Also, some announcements may be e-mailed through ICON to your UI e-mail. Check ICON and your UI e-mail regularly, and make sure that UI has your correct e-mail address.

4. *This course plan may be modified during the semester. All changes will be announced in class in advance. It is solely the student's responsibility to be informed of such announced changes.*

**CLAS Teaching Policies & Resources — Syllabus Insert**
*https://clas.uiowa.edu/faculty/teaching-policies-resources-syllabus-insert*

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