

COURSE POLICIES – MATH 101: CALCULUS 1

INSTRUCTOR: Janice Sklensky

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CLASS MEETINGS: MWF 10:30-11:20, R 1:00-1:50, in Science Center B234

OFFICE HOURS: M 2:30-3:20, T 1:30-2:20, W 12:00-12:50, R 10:30-11:20

and by appointment, when necessary.

COURSE WEBSITE – PUBLIC:

<http://jsklensky.webspace.wheatoncollege.edu/home.html> – Math101: Calculus 1

Links to course policies, syllabus, problem sets, WeBWork, OnCourse, etc

COURSE WEBSITE – PRIVATE: the OnCourse page for this course

Consists of links to in-class problems, supplemental material, study guides, and questionnaire

COURSE MATERIALS:

- *APEXCalculus*, by Hartman, Siemers, Heinold, and Chalisejar — an open-source Calculus book, available through OnCourse or at <http://www.apexcalculus.com/>
- Excerpts from *Calculus from Graphical, Numerical, and Symbolic Points of View*, Second Edition, by Ostebee and Zorn — available through OnCourse

OVERVIEW:

Most everything in the world changes: climate, DNA, the orbits of the planets, shopping patterns, and your annual income, to name a few. Understanding, predicting, and being able to affect how these quantities change is critical – and for that, we need Calculus! Calculus allows us to describe and predict the behavior of changing quantities. Of course, we usually can not predict the behavior exactly, but even a good approximation can be extremely helpful. Calculus is all about using approximations. Often, by taking better and better approximations we can deduce what would happen if we continued this process ad infinitum, and thus find an exact solution.

This semester, you will begin to study this language of change. By the end of the course, you will have the tools necessary to solve many fascinating problems including some that do not seem, at first glance, to be mathematical at all. For a list of topics covered, see the course learning outcomes and the day-by-day syllabus.

IS THIS THE RIGHT MATH COURSE FOR YOU?

- **Comfort with functions and some study of trigonometry and exponential functions are prerequisites for this course.** If you do not have these prerequisites, please meet with me immediately.
- Calculus is intended for people who either are interested in math or whose major requires it. If this doesn't describe you, we probably offer better options for you.
- Our Calculus I course is designed to be a first exposure to Calculus. If you've had Calculus before (whether or not you received credit for Calculus 1), we encourage you to try Calculus II. If you are not sure whether you would be ready for Calculus II or not, take a look at the course learning outcomes listed on the following page. If you stay in this course despite having had some Calculus before, please be considerate of those who have *not*, by saving comments or questions on material we haven't yet gotten to for after class or during my office hours – it makes people nervous!

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COURSE LEARNING OUTCOMES

Successful completion of Calculus 1 hones the following skills:

- Reading technical material
- Learning and using technical vocabulary and notation
- Identifying a variety of equations and their related graphs
- Relating Calculus concepts to their graphical, numerical, and symbolic representations
- Mathematically modeling situations described in words
- Applying definitions and theorems from Calculus to solve symbolic and graphical problems
- Judging the reasonableness of a solution to a problem
- Justifying the process used to obtain a solution in a clear and organized manner
- Working in small groups, communicating mathematically to others verbally

More specifically, upon successful completion of Calculus I, students will be able to:

- Find limits of functions (including infinite limits, limits at infinity), graphically & analytically
- Evaluate limits in indeterminate form
- Determine continuity of a function at a point graphically and analytically
- Sketch a graphically-defined function's derivative or antiderivative
- Understand the connection between derivatives, slopes, and rates of change
- Find the derivative of elementary algebraic functions using the definition of a derivative
- Apply differentiation rules to elementary algebraic, trig, exponential, and log functions
- Use the basic rules of differentiation to find derivatives of products, quotients, and composites
- Use the graph of a function to estimate its derivative
- Find the equations of lines tangent to functions
- Find the velocity and acceleration of an object at any time, given its position function
- Find the position of an object at any time, given its velocity and initial position
- Determine intervals where a function increases and decreases, analytically and graphically
- Determine a function's concavity and points of inflection, analytically and graphically
- Classify local extreme values using the first and second derivatives
- Find absolute maxima and minima of functions using the Extreme Value Theorem
- Solve optimization problems
- Apply the Mean Value Theorem
- Approximate or evaluate a definite integral using Riemann sums
- Understand the connection between definite integrals and area
- Understand and apply the Fundamental Theorem of Calculus
- Compute some definite and indefinite integrals using substitution

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GOALS AND EXPECTATIONS:

Naturally, the primary goal for this class is that you master the topics developed in this course, listed on the previous page.

Other goals: that you improve at reading technical text and improve at clearly communicating complicated material. These are lifetime skills that are necessary in nearly every career.

Math is a subject you can only learn by doing—observing others is not enough. The course is structured to give you repeated opportunities to work with the material, at increasing levels of depth and complexity.

Because more and more studies indicate that students benefit immensely from an opportunity to both practice what they've learned and to discuss the concepts with fellow students, our class time will often combine some lecture with opportunities for in-class work in small groups on introductory problems so that you may *do and discuss*. Your initial exposure to the material should come through your reading of the text before each class. I will often discuss the material you've read, but only enough to clarify it to someone who's already read it. Most of class time will be devoted not to my presenting the information to you for the first time, but to me helping you to work your way to a deeper understanding of the material. These efforts should help crystallize your understanding of the material, *or* to help you identify where some confusion is arising.

This initial exposure is followed by more drill problems from each section to be completed daily on-line; you will get immediate feedback on these, so you will know right away whether you are understanding the basics.

To deepen your grasp of the material, you will also have weekly problem sets consisting of a combination of more online problems and conceptual questions.

And to encourage mastery of the material, there will be three midterm exams and a final exam, each of which encourages you to look at the big picture and fit the material into its place within the course.

This structure not only aims to maximize your mastery of Calculus, but also to help accomplish the secondary goals as well – improving reading of technical material through requiring you to have read the text each day and learning to more clearly communicate complicated ideas—verbally, through working with partners on in-class work, and in writing, through problem sets.

The expectation for all classes taught at Wheaton is that you spend 2 to 3 hours of work outside of class for every hour in class. No matter what your experience has been in other classes, **plan to spend at least 8 - 12 hours per week working on Calculus outside of class!** Of course, some weeks you may spend more than 12 hours on this class, while others you may spend fewer than 8 hours.

On the following page is list summarizing both the broad expected outcomes for this course and the specific outcomes. These are for you to use when applying for jobs, or to see whether this course is right for you

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INTELLECTUAL INTEGRITY AND THE HONOR CODE

Wheaton's Honor Code is designed to encourage students to act as true scholars and to create a strong bond and morale among the student body, by giving students more freedom and opportunities to learn. With that freedom comes greater responsibility. As you know, all students at Wheaton are expected to conduct themselves with the highest level of academic integrity.

You are each ultimately responsible for your own learning. In this class, this means that while you are encouraged to work with other students, all submitted work must reflect your own understanding, and you must document any help received, whether from a friend, a tutor, a relative, another professor, or an online source or the equivalent.

It is much better for you (intellectually, morally, and for your grade) to turn in an incomplete or not- thoroughly-thought-through assignment than it is to present work that is not your own. Completely aside from it being an Honor Code issue, it also helps me have a realistic view of how the class as a whole is doing and to make any necessary adjustments. (The penalty for violating the Honor Code in this class is a 0.)

As part of the Honor Code, you are required to write

I have abided by the Wheaton College Honor Code in this work

followed by your signature, on all written assignments. If at any time you do not feel you can truthfully submit the pledge, please speak to me (or the Chair of the Math Program, or your advisor - whoever you feel most comfortable with) immediately.

For a discussion of how the Honor Code specifically applies to the various assignments and exams in this class, please see the last several pages of these policies.

CLASSROOM ETIQUETTE:

I would like to provide a classroom atmosphere with minimal distractions for both you and me, in which all students feel comfortable asking a question or contributing to a discussion.

This not only means that I ask that you not talk or whisper while someone else is speaking, but that you refrain from:

- texting
- using a computer. If you need a computer to for notes, please bring the accommodations letter to me as quickly as possible.

Ask questions when you do not understand something. I can guarantee that 95% of the time, if you have a question, so do at least three other people in the classroom.

When we are covering material that you've seen before or which comes easily to you, please be considerate of those for whom it is new or difficult.

DAILY ASSIGNMENTS:

In order to understand the nuances of the material, you need to practice the basic ideas from one day's class at least a bit before we move on to the next day. To this end, you will have daily on-line assignments consisting of a small number of problems, due at 8:30am every Monday, Wednesday,

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and Friday. These assignments will remind you of recent vocabulary and basic ideas; doing them online allows you to receive instant feedback.

These assignments are done through a system called *WeBWorK*. You will find links to WeBWorK on my public webpage, OnCourse, and the syllabus.

Late daily assignments will not be accepted
(except in extreme circumstances).
I will drop the lowest two daily scores at the end of the term*.

* Students who do every daily assignment will receive a few bonus points.

WEEKLY PROBLEM SETS:

In addition to the short daily assignments, you will have more extensive and more conceptual weekly homework assignments. These problem sets will consist of both online problems through WeBWorK and more traditional handwritten problems.

Problem sets will generally be due every Thursday at the beginning of class. While they are only due once a week, they represent a week's worth of learning, and you should therefore work on them throughout the week.

In case you are wondering: the combination of daily WeBWorK assignments and weekly problem sets done both through WeBWorK and in the traditional handwritten way do **not** combine to be more homework than I have assigned in the past, before WeBWorK. I have split my usual homework assignments between them. WebWork is helpful for giving you instant feedback; written problems are helpful both for giving you partial credit and also for giving you weekly practice at organizing your thoughts in a forum where the presentation of your work counts as much as the final result does (which is more reflective of the real world). Dividing the weekly homework between WeBWorK and handwritten work should have the additional benefit of allowing the grader to grade a larger proportion of your handwritten problems than has been possible in the past.

For more details on the homework assignments, see the links *A Description of Calculus 1 Homework Assignments* and *General Guidelines for Problem Set Presentation* on the public course web page.

The assignments will be posted online; you will find them through links on the day-to-day syllabus or toward the bottom of the public course web page.

Late weekly problem sets will have points deducted!

If turned in on Thursday after class but before 3:30pm, then I will deduct 0-10%. I will deduct 10%-15% for problem sets turned in after 3:30pm Thursday and before 10:30am Friday. Problem sets turned in between 10:30am and 4:00pm Friday will lose between 15% and 25%. I will not accept any problem sets after that, except in extreme circumstances.

(If you *do* find yourself in unusual circumstances, please do let me know. I can often be flexible, particularly if I have advance warning, but in those situations where I can not, I can make a note of your situation on my grade sheet, to remind me of your situation at the end of the semester.)

DIFFERENTIATION EXAM:

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Differentiation is a fundamental tool for understanding the later concepts of the semester. The Differentiation Exam will consist of four problems, and is graded with no partial credit. You must get every problem completely correct to get credit on the exam, but you may retake (different versions of) this exam as many times as necessary until you pass.

(Because the differentiation exam deals with skills learned in this class, unlike the preliminary assessment, it will not be online, as students often learn by discussing each exam with me as they finish it.)

If you pass it before the first deadline, you get 100% on the exam. (There are three later deadlines, for 90%, 75% and for 50%. All of the important dates are on the syllabus.)

EXAMS:

During the semester, I will give three midterm exams to determine how well you are putting together the concepts and skills we have covered. The primary emphasis of the exams will be for you to show me to what extent you've mastered the underlying mathematical ideas. The dates of these exams are fairly firmly scheduled, and are listed on the course syllabus. The final will be cumulative, will continue to emphasize concepts, and will be 3 hours long. The date and time are on the syllabus; make your travel plans accordingly.

For each of these exams (other than the Differentiation Exam), you may bring one 8.5 x 11 page of notes, **handwritten (by you) on one side**, which you will turn in with the exam. The midterm exams will be given Thursdays from 12:30-2.

Notify me in advance if you will be missing a midterm exam. If your reason for missing is acceptable, we will arrange that you take the exam **early**. If you miss an exam without notifying me in advance, I reserve the right not to give you a make-up exam. I will not give any student more than one make-up exam during the semester, without extensive documentation of a significant reason backed up by the advising office.

ATTENDANCE: Clearly, missing class is not a wise idea, particularly in a subject like Calculus. I therefore don't make attendance explicitly part of your grade. However, I do keep track of attendance to some extent, and may use it when assigning final grades at the end of the term, for students who are at the borderline between two grades.

As soon as you know that you will be missing class, please let me know (e-mail is best)– if you will be missing class for a mandatory field trip or similar activity, I can make a note of it in my file.

Your attendance or lack thereof is your choice and your responsibility. If you **do** miss class, you are responsible for the material that was covered; it is not my responsibility to teach it to you.

ACCOMMODATIONS: Wheaton is committed to ensuring equitable access to programs and services. Students interested in acquiring information on accessibility, or with disabilities requiring accommodations, should contact Abigail Cohen, Assistant Dean for Accessibility and Assistive Technology. Please register with her at the Filene Center for Academic Advising and Career Services, or call x8215 to schedule an appointment. Requests for accommodations should be made during the first two weeks of the semester so that timely and appropriate arrangements can be made.

EVALUATION I expect to use the weights below, although I reserve the right to change them if it seems indicated.

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Daily Assignments	15%	Differentiation Exam	6%
Weekly Assignments	15%	Three In-Class Exams	42%
Final Exam*	22%		

* **Note on Final Exam:** If you earn over 95% on the final, you will not receive below a B in the class, no matter what your overall total would otherwise indicate (except in extreme circumstances). Conversely, if you earn below 60% on the final you will not receive above a C, no matter what your overall total would otherwise indicate, except in extreme circumstances. Similarly, if you earn below 40% on the final, you will not receive above a D.

Discussing Grades with me: If you question the accuracy of any score or believe I did not see or understand something that you wrote, *of course* I would be happy to look at it again – **bring it to me within a week** of receiving it. I also welcome discussing the scoring of work with me within a week of receiving it back, if your questions are about the nature and nuance of the material and why I considered an explanation to be incomplete or unconvincing.

However, if it seems to me that your aim is merely more points, rather than pointing out a mistake I made or wanting to understand the material better, I reserve the right to lower your score on that assignment, test, or overall total.

IF NEEDED: The Counseling Center is a confidential resource on campus for all students, providing short-term solution-focused therapy, case management, emergency services and support. This year the Counseling Center is open Monday - Fridays from 8:30 am - 4:30 pm and students can call (508-286-3905) or stop by 42 Howard Street (the white building between Beard and Art Haus) to make an appointment or seek emergency services during office hours. Counseling Center staff is available to support students with a wide range of challenges including, but not limited to, anxiety, depression, sleeping and eating concerns, identity exploration, substance use and concentration challenges. We welcome any student to come and have a discussion with us regarding what their needs are and we will help with next steps of care, whether here on campus, or locally off campus. Outside of office hours, mental health concerns and emergencies should be directed to the Area Coordinator On Call via calling Public Safety at x3333 or 508-286-3333.

HONOR CODE

You are expected to abide by the Honor Code in all your work at Wheaton. Below, I detail how the Honor Code relates to the various assignments and exams in this course.

- **If you see a violation of the Honor Code occurring that relates to this course, you are bound by the Honor Code to report it.** If you do not feel comfortable reporting it to me, report it to the chair of the Math program.
- **For all assignments:** To help you figure out the concepts of a problem, you may discuss the work and use references, *but* you may not use anybody or anything which either gives you the answer or leads you directly to the solution.
- **When you do use references** (friend, classmate, tutor, online resource, book), you *must* cite them. For instance, if you work with friends on a problem set, or if you get help from a tutor, write something like *I worked with Joe Friend on this assignment*, or *I received help from Jane Tutor on Problems 3, 4, and 7*.

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- **Daily WeBWorK:** You may discuss the underlying ideas with your classmates, but you must not only enter the responses yourself but understand the results. Do not simply try every possibility until you reach the correct one.
- **Weekly Problem Sets:** You may discuss the underlying ideas, but you must do the problems on your own. You must understand every problem that is submitted under your name.
- **Differentiation Exam:** The different versions of the Differentiation Exam are numbered. If you and a classmate have both finished a certain version of the exam, you may look at it together and discuss it, but otherwise no sharing of the exams is to take place, either while taking it or after the fact.
- **Midterm and Final Exams:** You may not use any notes, books, or colleagues as reference during the exams, except for your “cheat sheet”, which must conform to my stated rules. You may not look at anybody’s exam or ”cheat sheet” until after all exams have been returned. You may not use a calculator unless I specify that you may, and you may not use the graphing aspect of a calculator and you may not use the graphing aspect of a calculator or any device with access to the internet or phone lines. You may not text anybody during the exam, or receive a text message from anybody during an exam.