Course Policies – Math 104: Calculus 2

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Public Course Web Page (links to publicly available course information, such as these course policies and the syllabus, reading assignments, homework, in-class problems, and classroom etiquette): Go to my public home page at

`http://acunix.wheatonma.edu/jsklensk/home.html`

and click on the link for this course.
Private Course Web Page (where I post activities and less public course information, such as responding to reading assignments, a background questionnaire for you to fill out, any supplementary materials or additional course reading, study guides): the OnCourse page for this course

Meeting Times: MWF 10:30-11:20, in SC 1349; Th 1:00-1:50 in Mars SC 1141

Office Hours: Tentatively M 2:00-2:50, T 2:30-3:20, W 11:30-12:20, Th 10:30-11:20, F 12:00-12:50. For the most recent version of my office hours, go to my public home page (see above) and click on"when am I here?" for my usual weekly schedule.

If you can't make any of my office hours, please contact me about arranging an appointment.

Course Materials:

Required: *Calculus: Early Transcendental Functions, 3rd edition*, by Smith and Minton.

Optional: The associated student solutions manual. The mathematical program *Maple* is also available for you to use on your own computer if it's connected to the campus network and is running a sufficiently recent operating system. See my public web page for the course, which you can get to through the above web page, for a link on instructions on how to upload this. It's also available in the Kollett Center, the CS lab, or the GIS lab.

Overview:

This course is of course a continuation of the topics covered in Calculus 1. Two intertwined and recurring themes of Calculus 2 are the connections between the approximate and the exact, and the finite and the infinite. We will repeatedly see that if we are willing to explore infinity, we can often find exact solutions where approximations at first seem to be our only option. Because finding exact solutions is still not always possible, we will also develop various methods both to find approximate solutions to these same problems, and to find how good those approximations are.

We will continue to develop the concept of the integral begun in Calculus I, and to investigate the connection between area under a curve and the slope of the tangent line. We will also see how the 2-dimensional notion of the integral can be used to find arclength (a 1-dimensional concept) and volume (a 3-dimensional concept). We will see how polynomials can be used to approximate functions, how one integral can be used to approximate another, and how a sum of terms can be used to approximate an integral.

We will also explore the concept of area under a curve over an infinite interval, and spend a considerable amount of time developing the notion of adding an infinite number of terms, and exploring the connection between these infinite sums and integrals. We will wrap it all up by seeing how some "infinite polynomials" can be used to represent functions.

Some examples of types of questions we will (hopefully) cover:

1. How can you figure out how much foam goes into a Nerf football?
2. How does your calculator, or Maple, figure out that π is approximately 3.141592654?
3. How can you *know* that the volume of a sphere is $\frac{4}{3}\pi r^2$?
4. How can you use functions to design a vase, or a wine glass – and find out how much material you'd need to buy to actually make it?
5. Is there (theoretically) a shape that can be filled with paint, but which could never be painted, no matter how long you tried?

Course Structure, Goals and Expectations:

Calculus is recognized as being one of humanity's outstanding accomplishments. Furthermore, the more math you learn, the more you hone your logical abilities. For both these reasons, one main goal for this class–the obvious one–is that you master the topics developed in this course. The others are that you improve at reading technical text and at communicating complicated material clearly. These are lifetime skills: if you can read technical material, think logically, and communicate then you can learn just about anything you want to, and share what you have figured out with others.

In this class, as with all others, how much you actually learn is entirely up to you. Math is a subject you can only learn by doing–observing me (and others) may give you a start, but it is certainly not enough. The course is structured to give you repeated opportunities to work with the material, at increasing levels of depth and complexity.

The lecture format for classes was developed at a time when books were scarce – lecture consisted of the teacher dictating the textbook and students copying it down. That is certainly not necessary in this day and age – what *is* increasingly needed is an ability to process technical writing. Your initial exposure to the material will therefore come through your reading of the text before each class. Classtime 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. More and more studies of how students best learn indicate that watching a professor lecture for 50 minutes at a time 3 or 4 times a day is in fact not a very good way for students to learn: students benefit immensely from an opportunity to both practice what they've learned and to discuss the concepts with fellow students. Class itself will therefore often combine lecture with opportunities for in-class work in small groups on introductory problems so that you may *do and discuss* what we've just discussed. 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 for 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 handwritten problem sets consisting of more conceptual questions. For a greater variety of opportunities to deepen your mastery of the material, there will be two projects which present questions in a more realistic manner, and of course exams, which encourage 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 guided reading, learning to more clearly communicate complicated ideas–verbally, through working with partners on in-class work, some problem sets, and projects; and in writing, through weekly problem sets and projects.

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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. Since this class meets for 4 hours a week, no matter what your experience has been in other classes,

Plan to spend *at least* 8 hours a week on Calculus outside of class!

Of course, some weeks you may spend more than 8 hours on this class, especially when studying for exams or finishing up projects, while others you may spend less.

Is this the right math course for you?

Calculus II is aimed at students who have had a solid grounding in Differential Calculus, with an introduction to Integral Calculus. For instance, if you've taken Calculus AB in high school, then Calc II is probably a good choice for you – whether or not you passed the AP test. If you've taken Calculus BC in high school – that is, if you've had both Differential and Integral Calculus, as well as some sequences and series – then you should consider taking Multivariable Calculus instead. If you have any questions as to whether this is the course for you, please do stop by and talk to me.

Calculus II is intended for students who want to take it, or whose majors require them to take it. Calculus is not required for graduation, and may not be the best way to fulfill your math requirement if you have no especial interest in math.

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. I therefore ask that you show both me and fellow classmates respect when it is their turn to speak.

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 except during designated times. If you have accommodations that encourage taking notes using a computer please do let me know, and get the accommodations letter to me as quickly as possible.

Please ask me questions when you do not understand something. I know it can be uncomfortable, but I can guarantee you that 95% of the time, if you have a question, so does at least one other person in the class!

When we are reviewing material you've seen before, please be considerate of those who have *not* previously seen it, by saving comments or questions on material we haven't yet gotten to for after class or during my office hours – doing otherwise makes other students nervous!

Unfortunately, there is no eating or drinking in the main classroom (SC 1349) because of the presence of the computers.

Reading Assignments:

I will put a copy of each reading assignment on the web – follow links from the course website. Each assignment will indicate what you are to be reading that day, which parts are especially important

and whether any can be skipped. Each assignment will also have questions that you are to answer through OnCourse. The purpose of the assigned reading itself is so that you have seen the material and begun to think about it before class – class time will not be for the introduction of ideas but for enhancing your understanding of those concepts. The purpose of these daily responses is two-fold: the questions should help you continue to develop your technical reading skills, and I use your responses to give you credit for your efforts. These responses are required.

OnCourse does not accept late assignments

For more details, see the course webpage itself and the link *Suggestions for Reading a Math Book* on the course web page.

Homework:

Your weekly homework assignments are divided into two portions: online problems, which I will refer to by the system we use, *WeBWorK*; and (usually) more conceptual problems, which will be handwritten which I will refer to as *Problem Sets*.

This is not twice as much homework as I would assign without WebWork – I have split my usual homework assignments between them. WebWork is helpful for giving you instant feedback; the Problem Sets 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.

For more details on the homework assignments, see the links *A Description of Calculus 2 Homework Assignments* and *General Guidelines for Problem Set Presentation* on my public course web page.

The assignments will be posted online; you will find them through links toward the bottom of the public course web page.

Late WeBWorK will not be accepted. Late handwritten problem sets will have points deducted!

I will drop your lowest WeBWorK score at the end of the term.

If a problem set is turned in on Thursday after lab but before 2:45 (and if everybody involved was working appropriately in lab), I will deduct 0-20% depending on the situation. I will deduct 25%-50% for problem sets turned in after 2:45 pm Thursday and before 2:00pm Friday. I can not accept any problem sets after 2:00pm Friday of the week the problem set is due.

Projects:

You will have one or two days of class time to work on these projects; the rest of the work you will do with your 2-3 person group outside of class. The project consists not only of the mathematical solution to the situation, but (equally important) your description of the solution and why it is true – in the form of a letter.

Late projects will have points deducted each day!

Projects turned in within 24 hours of the time they are due will be graded out of 90 points rather than 100; projects turned in between 24 and 48 hours late will be graded out of 80 points; projects

turned in between 48 and 72 hours late will be graded out of 70 points. I will not accept projects more than 72 hours late.

Antidifferentiation Exam:

Antidifferention is a fundamental tool for understanding the deeper concepts of the semester. The Antidifferentiation 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.

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 make sure that you are putting together the concepts and skills we have covered. The primary emphasis of the exams will be for you to show me how well 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. Remember that finals can not be rescheduled, and make your travel plans accordingly.

For each exam (other than the antidifferentiation 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. These midterm exams will be given during the lab period; while they will end no later than 1:55, you may begin them as early as 12:30.

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.

Illness aside, I view your attendance or lack thereof as your choice and your responsibility. If you **do** miss class, your are responsible for the material that was covered.

I should probably warn you: – I can only keep one day's worth of events in my head and may not remember something important, so ask your friends as well as me when checking what you missed.

Accommodations:

In compliance with the Wheaton College policy and equal access laws, Dean Wilhelm is available to discuss appropriate accommodations that may be recommended for students with disabilities. Requests for accommodations are to be made during the first two weeks of the semester so that

timely and appropriate arrangements can be made. Students are required to register with Denyse Wilhelm, Assistant Dean of Academic Resources and Disability Services, ADA/504 Coordinator, whose office is located in Kollett Hall, first floor at the Filene Center for Academic Advising and Career Services. Contact extension 8215 to schedule an appointment, or email Dean Wilhelm at `wilhelm_denyse@wheatoncollege.edu`.

Evaluation

I expect to use the weights below, although I reserve the right to change my mind if the semester does not go as expected.

Reading Assignments	4%	Antidifferentiation Exam	4%
WeBWorK	6%	Three In-Class Exams	48%
Problem Sets	6%	Final Exam	21%
Two Group Projects	11%		

If you question the fairness or accuracy of any grade, bring it to me **within a week** of receiving it.

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 to me.** If you do not feel comfortable reporting it to me, the chair of the department or Dean Kuszaj are other resources.
- **For all assignments:** You may discuss the work with classmates, and you may use references that help you figure out how to do a problem on your own, but you may not use any references (people, other people's projects or assignments, books, the web) which either give you the answer or lead you directly to the solution.
- **When you use references** (as described above), you *must* cite them. For instance, if you work with friends on an individual problem set, or if you get help from a tutor, write something like *I worked with Jane Friend on this assignment*, or *I received help from Joe Tutor on Problems 3, 4 and 7.*
- **For all group work:** You must make every effort to meet with your group at all meetings. You may not purposely exclude any member from a meeting.

  You may not divide the work!

  You must make every effort to participate and aid in finding the solutions. If you don't understand what someone else is saying, you must ask them to explain it. If someone asks you to explain your ideas, you must take the time to explain it. In the end, you must understand all the work that is being submitted under your name.

  Do not put your name, or allow your name to be put, on any assignment to which you did not substantially contribute mathematically. (If you felt lost at the

beginning of the assignment, you should have made every effort to learn the material, and should understand it by the time the assignment is turned in.)

Similarly, do not allow anyone else's name to be put on an assignment unless they worked hard to understand the material involved. Do not allow an understanding of how difficult that person's week was to overcome this rule – a student who has had a difficult week should come speak to me and I will make a note of it in my gradesheet.

- **Reading assignments:** You may discuss the questions with your classmates, but you must enter the responses yourself, in your own words.

- **Homework:** For WeBWork and for individual problem sets, you may discuss the underlying ideas, but you must do the problems on your own.

  For the group problem sets, **you may not divide the work!** You must make every effort to find a time when every member of the group can make it to your meetings (groups should consist of two or three people). If you don't understand what someone else is saying, you must ask them to explain it. If someone asks you to explain your ideas, you must take the time to explain them. In the end, you must understand every problem that is submitted under your name. After your group has jointly figured out every problem, one person will be responsible for recopying your work. This primary author must change from week to week.

- **Projects:** While you may not break the project up into different tasks that you divide up among you, if a repetitive process is called for, you may spread the task among you. Each person should understand all of the work that is done.

  You *may* divide the writing of the paper in whatever way is agreeable to the group. You each must proofread the entire paper for consistency and typos.

  You absolutely positively may not divide the project work by saying one person will figure out the math and another will write it up!

- **Dividing Up Group Points:** Do not give, or take, credit that is not due. If you did not work on a problem set or project at all, you should not receive any points for that problem set. If your contribution was minimal, you should receive minimal credit.

  Antidifferentiation Exam: The different versions of the Antidifferentiation 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 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.