

Syllabus for MATH 130-02: Calculus I Fall Semester 2011

Professor: Erika L.C. King

Office: Lansing 304

Office Hours: M 2:30-3:30pm, W 3:00-5:00pm, Th 12:30-2:00pm, F 1:30-2:30pm, and
by appointment

Phone: (315) 781-3355

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Class: held MWF 10:10am-11:05am in Eaton 110

Lab: held Tu 10:20am-11:45am in Gulick 206A

Textbook: *Calculus: Early Transcendentals, Single Variable*, by Briggs and Cochran

Website: <http://math.hws.edu/eking/math130.html>

Math Intern, David Brown, Office Hours in Lansing 310: Sunday: 4:00-10:00pm,

M and W: 6:00-11:00pm, T and Th: 3:00-6:00pm and 7:00-11:00pm

Course Content

An oil tanker explodes and begins leaking oil into the surrounding sea. In an effort to contain the spill, the company that owns the tanker wants to figure out how fast the area of the spill is increasing. Another company that sells canned fruit wants to minimize the cost of packaging. How do they determine the dimensions of the container that will use the least material for a given volume of fruit? In MATH 130 we will learn the differential calculus the companies' researchers use to solve these problems.

This semester we will be covering most of chapters 1, 2, 3, and 4 of the text. We will begin with a brief review of some key mathematical concepts you will need during the course. Then we will study the fundamental concept of a limit, and how we can use limits to define derivatives. We will explore applications of differentiation including answering questions like the ones above, finding slopes of tangent lines and calculating other rates of change.

Prerequisites and Goals

In order to enroll for this class, you must have earned a score of 20 or above on the computerized mathematics placement test (see <http://math.hws.edu/placement/info.html> for more information) or a C or better in MATH 100. No prior calculus experience is needed (indeed it is expected that you have had **none**), but you **must** have a firm understanding of basic algebra and trigonometry in order to succeed in this course. Appendix A of the text (pages 1061-1068) and chapter 1 of the text contain material with which you should feel very comfortable. If you have **any** questions about whether or not this is the right place for you, please speak with me immediately.

This course has three main goals: firstly for you to gain an understanding of the notion of a limit, the foundation of **all** calculus concepts, secondly to develop a proficiency in differentiating functions, and thirdly to learn how to apply these differentiation skills to solve real world problems. In addition, we will begin to explore antidifferentiation, which will be studied in depth in the second semester of calculus.

Assessment

Homework: You will need a composition book (spiral notebooks and three-ring binders will not be accepted) in which to complete homework problems. I will refer to this as your journal. Reading and journal problems will be assigned daily in addition to optional practice problems. Check the course website or the posting outside my office after each class for the assignment. Though you should work part of each assignment on your own, you are encouraged to find a partner or two with whom you can discuss some of these problems. Your journal should **not** contain class notes or lab work, but feel free to include any additional thoughts or observations you have about the class. Follow these guidelines for your journal work:

- Complete the problems in the order in which they are assigned.
- Label each problem by section and problem number.
- Use a highlighter to mark each label, so they are easily identifiable.
- Briefly describe the problem and/or draw a diagram if helpful/required.
- If unable to fully complete the problem, show attempts and why they did not work.
- Note with whom you worked (if anyone).

At the beginning of each lab there will be a five-minute, open-journal homework quiz on a problem taken directly from your journal problem set. Thus it is imperative that you keep up with assignments. No calculators or textbooks will be allowed for quizzes. Extra time will not be allowed for those arriving late to class. Under **no** circumstances may a quiz be made up. These quizzes will receive a score between zero and four, and be given the same weight as other quizzes. I will drop your lowest homework quiz score when calculating your final grade.

I will collect the journals at each exam. Daily work on journal exercises should help you understand what is being covered in class and prepare you to do well on the labs, quizzes and exams. Each journal check will be worth 60 points. Completing optional journal problems will earn you bonus points towards this score.

Labs: The Tuesday labs will be problem-solving sessions. You will work in groups of three on sets of exercises. I will be available to answer any questions you might have, but you should find most of the resources you need within your group. Each student must write up his/her own solutions, but in class the next day (Wednesday) I will collect (at random) only one write-up from each group. I will grade this write-up out of 30 points and each member of the group will receive the same number of points. Thus, it will be important that the group members work together to ensure that everyone understands the material. You cannot expect to complete lab during class if you have not kept up with the daily reading and exercises. I will drop your lowest lab grade when calculating your final grade. More details about the lab set-up will be discussed in the first lab session, this Tuesday, August 30th.

Quizzes: There will be an announced, ten to fifteen minute quiz roughly once a week, usually on Fridays at the beginning of class. These quizzes will cover material from that week's lab. No calculators will be allowed for quizzes. Extra time will not be allowed for those arriving late to class. Under **no** circumstances may a quiz be made up. In **extreme** cases and if you inform me at least two class days **in advance**, I will allow you to take a quiz **before** the scheduled time. Each quiz will be worth fifteen points. I will drop your lowest quiz score when calculating your final grade.

Presentations/Talks: At the beginning of most classes and labs we will have a short amount of time to discuss questions about the most recent homework or the previous lecture. In addition to my responses to questions, students will present homework problems at the board and explain solutions to their classmates. If there are no student questions, I may choose a homework problem to be presented. It is becoming increasingly important for students to become adept at giving concise, engaging presentations. Class presentations provide an opportunity for students to practice, as well as for the audience to see a different approach to certain problems. There will also be several mathematics and computer science departmental talks, providing a great opportunity for you to have exposure to mathematical topics outside of calculus. During the semester you will be responsible for presenting two homework problems, attending two talks or doing one of each. Each presentation or talk attendance is worth 15 points. Full credit is not automatic.

Exams: Exams are meant to test your ability to perform techniques quickly and efficiently and your ability to illustrate a deeper understanding of the material by combining different concepts from within the material. Non-graphing calculators will be provided for you at each exam; you may **not** use your own calculator. There will be three 60-minute exams and a final exam. The exams are scheduled for the following dates:

- Exam 1: Tuesday, September 27th
- Exam 2: Tuesday, October 25th
- Exam 3: Tuesday, November 22nd
- Final Exam: Wednesday, December 14th 8:30-11:30am

It is impossible to construct fair makeup exams in mathematics. Thus my policy is that there are **no** makeup exams. Write the above dates in your calendar. **You must be present for all exams.** Make your travel plans accordingly. The final exam will be weighted as two exams. I will drop your lowest exam grade when calculating your course grade. (If the final is your lowest grade, it is dropped just once.) Thus you will have four exam grades that will contribute to your exam average.

Bonus: You may earn five bonus points for each mathematics/computer science seminar talk you attend or presentation you make beyond the required number mentioned above, up to fifteen points. These points contribute to the non-exam portion of your grade.

Course Grade: Your combined journal, quiz, lab and presentation/talk scores will be worth 32% of your grade and each (non-dropped) exam will be worth 17% of your grade (note that there are four such exams, “two” of which may be your final exam). Your grade will also be influenced by your attendance and class participation. If you are absent for any portion of class, check the website and contact a classmate as soon as possible to get a copy of notes, handouts and assignments, as well as to find out about any announcements you may have missed. You are allowed four absences (note that this includes labs). **More than four unexcused absences will lower your grade by at least one letter.** The greater the number of absences, the greater the reduction. Excused absences require documentation such as a letter from a dean. It is impolite to arrive late to class or leave the classroom while class is in session unless it is an emergency. **Habitual tardiness will lower your grade.** On the other hand, if you have perfect attendance in the course and no latenesses, I will add three points to your lowest (non-dropped) exam.

Disclaimer

The above exam dates, quantity of graded work, policies, and course layout are subject to change in the event of extenuating circumstances.

The Center for Teaching and Learning (CTL)

At Hobart and William Smith Colleges, we encourage students to seek the academic collaboration and resources that will enable them to do their best work. The CTL offers a variety of resources that can help students achieve academic success, including Teaching Fellows (for course content help in some departments), Writing Colleagues (for help on papers), Study Mentors (for help with study skills and time management), Group Study Tables (for content help in specific courses), and more. For more information on these resources, visit the CTL webpage at <http://www.hws.edu/academics/ctl/index.aspx>, or visit the CTL Blackboard site.

If you are a student with a disability for which you may need accommodations, you should self-identify and register for services with the Coordinator of Disability Services at the Center for Teaching and Learning (CTL), and provide documentation of your disability. Disability related accommodations and services will not be provided until the registration and documentation process is complete. The guidelines for documenting disabilities can be found at the following website: <http://www.hws.edu/disabilities>. Please direct questions about this process or Disability Services at HWS to David Silver, Coordinator of Disability Services, at silver@hws.edu or x3351.

Academic Integrity

I highly encourage you to discuss the reading and journal problems with each other in addition to attending office hours. Verbalizing your questions, explaining your mathematical ideas and listening to others will increase your understanding. However, you should **not** feel free to copy someone else's work or make your work available to someone else. **Copying constitutes plagiarism, a violation of academic integrity which could result in failure in the course. There is, of course, no collaboration or use of outside resources allowed on quizzes or exams.** Violation of the Colleges' Principle of Academic Integrity may result in a report sent to your file in the dean's office and/or appearance before the Committee on Standards.

How to Succeed

- Attend all classes and labs on time.
- Remain seated and attentive during all lectures, presentations and whole class discussions.
- Ask questions and participate in class.
- Review class notes and read the text before and after each class.
- Begin working on homework problems as soon as they are assigned.
- Discuss questions and problems with your classmates.
- Come to office hours, make an appointment, or email me whenever you have questions.
- Visit the math intern for extra help when I am not available.
- Practice problems **without** notes, textbook, peers, the intern or other mentors.
- Have fun!

Essay Assignment

This assignment will contribute to the non-exam portion of your grade. Write a full one-page typed (usual font size and margin widths) autobiography. Discuss your major and minor (or what you think they will be), what you hope to do with your college degree, the reason you chose to take this course, your favorite and least favorite memories of mathematics, your favorite hobbies, and anything else interesting (for example, what you did over the summer). When explaining why you chose to take this course, mention whether or not you had calculus in high school. If you did, explain why you think it is a good idea to repeat this material. The paper is due at the beginning of lab tomorrow (Tuesday, August 30th), when you will sign up for a short one-on-one meeting with me in my office. Please bring a photo of yourself, with which you are willing to part, to the meeting. This meeting and the photo help me get to know each of you better and more quickly. Your grade on this assignment will be based on whether you address all the topics requested, as well as the quality of your writing (including good grammar and typography) and your prompt attendance of our meeting, photo in hand. This assignment is worth fifteen points.