Syllabus for MATH 131: Calculus II

Spring Semester 2010

Professor: Erika L.C. King
Office: Lansing 304
Office Hours: M 10:30am-Noon, W 3-5pm, Th 3-4pm, F 1:30-2:30pm, and by appointment
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Class: held MWF 9:05am-10:00am in Napier 201
Lab: Tu 1:30pm-2:55pm in Gulick 206A
Textbook: *Calculus of a Single Variable: Early Transcendental Functions, 4th edition*, by Larson, Hostetler and Edwards
Website: http://math.hws.edu/eking/math131.html
Math TA Office Hours in Lansing 310: Su-Th 7:00pm-11:00pm

Course Content

When lawmakers work to pass energy conservation bills they need to be able to prove that their new restrictions will, for example, significantly reduce the use of oil. How can they defend their predictions? In Math 130 we focused on differentiation, and in Math 131 we will focus on integration. One of the key applications of integration, finding the area between two curves, can help the lawmakers build their case.

This semester we will be covering most of chapters 5, 7, 8 and 9. We will begin by studying the definition and basics of integration, and then explore applications of integration such as the one mentioned above and finding volumes of objects created by rotating a curve around a line. Later we will delve into the puzzles of integrating more complicated functions by learning additional techniques and tricks. The last part of the semester, we will begin exploring infinite sequences and series, which give us the ability to integrate functions we cannot integrate with our initial techniques and which form the foundation of important results in analytical mathematics.

Prerequisites and Goals

This course has three main goals: firstly for you to develop a proficiency in many techniques of integration, secondly for you to gain an understanding of the important link between differentiation and integration illuminated in the Fundamental Theorem of Calculus, and thirdly to introduce you to sequences, series and the power they give us to solve problems.

In order to enroll for this class, you must have earned a grade of C- or above in Math 130 or earned credit for the AB track of AP Calculus (or the equivalent). If you have not fulfilled this requirement then you must have permission from me to remain in this class. Throughout this semester, I will assume that you are fluent with the material from Math 130. If you have any questions about whether or not this is the right place for you, please speak with me immediately.

Assessment

Homework: You will need a spiral notebook or composition book (no three-ring binders!) 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. You are encouraged to find

a partner or two with whom you can work on 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.
- 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 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.

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, Tuesday, January 26th.

Quizzes: There will be an announced, ten to fifteen minute quiz roughly once a week, usually on Fridays at the beginning of class. 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 work 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 more important for students to become adept at giving concise, engaging presentations. These 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/computer science 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, February 16th
- Exam 2: Tuesday, March 9th
- Exam 3: Tuesday, April 13th
- Final Exam: Saturday, May 8th, 7:00-10:00pm

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 additional mathematics/computer science seminar talk you attend or presentation you make, 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; **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)

Hobart and William Smith Colleges encourage you to seek the academic collaboration and resources that will enable you to demonstrate your best work. Students who would like to enhance their study skills, writing skills, or other academic skills may visit the CTL website at http://www.hws.edu/academics/ctl/index.aspx or contact the CTL at 781-3351. If you are a student with a disability for which you may need accommodations, you should self-identify, register with the Coordinator of Disability Services at the CTL, and provide me with the necessary documentation from the CTL, so that I can best accommodate your needs. I am not allowed to give accommodations unless I receive the documentation in advance. Please direct questions about this process or Disability Services at HWS to David Silver, Coordinator of Disability Services, at silver@hws.edu or 781-3351.

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 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 TAs for extra help when I am not available.
- Practice problems with**out** notes, textbook, peers, the TAs 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, what you expect to learn in this course, your favorite and least favorite memories of mathematics, your favorite hobbies, and anything else interesting (for example, what you did over winter break). The paper is due at the beginning of class on Friday (January 22), 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 (a good photocopy of your student ID is acceptable) 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. Note that if you had me for Calculus I last semester you do not need to bring a photo, but you should make sure this essay is different from the essay you gave me in September. How has your view of calculus or mathematics in general changed since you entered college? What did you like best about Calculus I? Etc.