MATH 111.01 — CALCULUS A

Syllabus and Course Procedures Fall 2009

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Text Materials Arnold Ostebee and Paul Zorn, Calculus from Graphical, Numerical, and Symbolic Points of View, Volume 1, 2nd Ed., Harcourt College Publishing (2002).

Course Grade Your course grade will be determined using a weighted average* as follows:

Homework Assignments	13 %	
Quizzes**	12 %	
In-Class Participation/Activities	5 %	
Mathematical Paper 1	8 %	
Mathematical Paper 2	8 %	
Midterm Exam 1	13 %	Wednesday, October 7 (2 hours)
Midterm Exam 2	13 %	Wednesday, November 18 (2 hours)
Gateway Exam	10 %	To Be Announced
Final Exam	18 %	Sunday, December 20, 8:30 - 11:30 am

* Grading scale is *nominally*: A (90-100), B (80-90), C (70-80), D (60-70), F (below 60)
** I will delete your lowest quiz score before calculating your final course average

Course Material The following is a *rough* course outline. Some sections may be omitted, delayed, or added to respond to calendar pressures, and not all sections will require written homework.

Ch 1: Sections 1-3 (review), 4,5,6,7
Ch 2: Sections 1,2,3,4,5,6,7
Ch 3: Sections 1,2,4,5
Ch 4: Sections 1,2,3,5,6,8,9
Ch 5: Sections 1,2,3,4

Written Homework Assignments Homework exercises will be assigned and collected frequently (typically at least one assignment per week.) The homework may involve computer exercises. You are encouraged to discuss problem concepts and solution techniques with your fellow students, but your final homework reports must be your own work. Homework solutions should be legible and presented in a logical fashion, with problem number clearly indicated. Messy work that is difficult to follow may receive no credit. Although

this is a mathematics course, you should often accompany your mathematical work with explanations and ideas written in complete sentences. Your homework will be graded by a senior math major. I can't stress enough how important homework is to success in this course. Homework problems in our textbook range from simple to very difficult. Particularly, many text problems will seem harder than the problems you are used to from your high school courses, requiring more thought and less routine symbolic manipulation. The payback from hours of hard work on home assignments will be a deeper understanding of calculus and, ultimately, the likelihood of a high grade in the course.

Quizzes (Exam Rehearsals) Students benefit from extra practice on solving problems in an exam setting. In-class quizzes are intended to provide such practice and give students feedback on how well they know the most important core topics of this course. If a student has a weakness in a particular area, better to find out on a quiz rather than an exam. There will be four to six in-class quizzes this semester. The in-class quizzes will usually be about 10 to 15 minutes long and will consist of one or two exam-like problems on core course topics.

In-Class Participation/Activities It is important that all students be engaged in class discussions, group work, and activities. This component of your grade reflects your efforts and progress in these areas. To assess this course grade component, I intend to use attendance, group contributions, in-class presentations, and scores on in-class problems which I may occasionally collect.

Mathematical Software and Technology There will be a considerable amount of work done with the aid of the computer program Maple. Do not worry at all if you have never used Maple, as I assume no familiarity with Maple whatsoever; all that you need to know about the program will be covered in class. The Maple program is available for your use in Hayes 311, Hayes 203, and most other public network sites. Proper maintenance of your files is your responsibility. You should also have a pocket calculator capable of handling computations with transcendental functions (the trigonometric functions, ln, $\log_{10}$, exponential, square root, etc.).

Mathematical Papers You will write two mathematical papers in this course. Did he say mathematical papers? Yes — expressing your ideas in writing is important in any discipline, including mathematics. A mathematical paper usually entails a detailed exposition of some mathematical concept, problem, or in-class activity. More details will be provided per each individual assignment.

Midterm Exams There will be two midterm examinations. Each exam will consist of two parts — a *no technology part* and a *technology permitted part*. On the no technology portion of the exam, you may use only pencil and paper. For the technology permitted portion, you may use a calculator, Maple, and derivative tables.

Final Exam The final exam will be a three-hour exam covering the material for the entire course, however the focus of the final will be weighted more heavily on material from the second half of the semester. The format of the final exam will be very similar to that of the midterm exams, consisting of a *no technology part* and a *technology permitted part*.

The Differentiation Gateway Exam Calculus is a coherent set of ideas that describe change using mathematics. Although symbolic manipulation is not the central idea of the course, it is the language in which we describe mathematical ideas and a powerful set of tools that we use to answer questions that interest us. Essentially, symbolic representation and manipulations are the grammar rules that allow us to speak the language of calculus. It is imperative that you obtain sufficient facility with symbolic manipulation so that the manipulations themselves do not form a barrier between you and the ideas they represent.

The differentiation gateway exam is a purely computational exam, designed to make sure that you are obtaining the analytical (grammatical) skills that are required to do calculus. The gateway exam will be given after we have covered the essential rules of differentiation (approximately the 10th week of the semester), and will consist of seven problems that test your ability to apply these rules correctly. To pass the gateway exam, you must present flawless solutions to six of the seven problems on the exam. The gateway exam is worth 10% of your final course grade. Since perfect solutions are required, a reasonable number of retakes of the gateway exam are permitted according to the following guidelines.

a. Retakes will be of similar format to the first gateway exam, but will consist of different problems.

b. A student may take no more than 2 retakes per week, and may take at most 1 retake in any given day. No student may retake the gateway exam after 4 pm on the last day of classes.

c. A student who passes the gateway exam on their first attempt will receive 120% on the exam (i.e. 1.2 times full credit).

d. A student who passes a retake within two weeks after the gateway exam is first given will receive 100% on the exam (i.e. full credit).

e. A student who passes a retake after more than two weeks have passed since the first gateway exam was given will receive 50% on the exam (i.e. half credit).

f. A student who fails to pass the gateway exam on all attempts will receive 0% on the exam.

Late Policy All assignments must be turned in at the beginning of the class period on the assigned due date, unless specified otherwise by the instructor. No credit will be given to unexcused late papers. If you have a conflict due to illness or sports, e-mail me right away.

Academic Honesty Any work you submit for credit in this course must result directly from your own understanding, thoughts, and ideas. Presenting the work of others as your own in strictly prohibited.

Disabilities If you have any disability and therefore may have need for some type of accommodation in order to participate fully in this class, please feel free to discuss your concerns in private with Erin Salva, Coordinator of Disability Services (phone 5145).