MA 2550: Calculus I (Spring 2009)

MWF 9:05–9:55am, Hyde 327
R 12:30–1:45pm, Hyde 327

Instructor Information

Instructor: Dr. Dana Ernst
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Course Information and Policies

Prerequisites: A satisfactory grade in MA 2140 or Level 3 placement on the PSU Placement Test with high school precalculus mathematics. Note: if credit has been granted for either MA 2490 or MA 2500 (Applied Calculus I or Applied Calculus II, respectively), consent of the Mathematics Chair is required in order to receive credit for this class.

Course Description: A first calculus course concentrating on limits, continuity, the derivative and integration. Applications are made to classical problems in physics and other sciences. We may use a software package call `Lurch`, which is capable of doing symbolic mathematics.

Text: *Calculus*, by James Stewart, 6th edition, (Thomson/Brooks Cole).

Purpose: The primary objective of this course is to aid students in becoming confident and competent in solving problems that require techniques developed in calculus. Successful completion of MA 2550 provides students with skills necessary for upper division mathematics courses, such as MA 2560: Calculus II. In general, calculus is a study of functions. The main tools are differentiation, which measures instantaneous change in a function, and integration, which gauges the cumulative effect of that change. The crowning achievement of first semester calculus is the Fundamental Theorem of Calculus, which explains how differentiation and integration are related. Students will have a working understanding of limits and continuity. Students will also be able to utilize various techniques to differentiate and integrate numerous functions including trigonometric functions. In addition, students will understand and be able to apply the Mean Value Theorem, the First and Second Derivative Tests, and the Fundamental Theorem of Calculus in both theoretical problems and applications. Also, the purpose of any mathematics class is to challenge and train the mind. Learning mathematics enhances critical thinking and problem solving skills.

Quantitative Reasoning Connection (QRCO): MA 2550 satisfies the Quantitative Reasoning Connection (QRCO) requirement of the PSU General Education Program. Students will enhance their ability to analyze quantitative material, and use quantitative techniques to solve problems.

Homework: Homework will be assigned *every* lecture day, which will typically be Monday, Wednesday, and Friday. Thursdays will be used for going over homework problems, as a catch-up day, and/or for working on labs (see below). The homework assignments will usually be due on Monday, Thursday, and Friday. I will always tell you when a given homework assignment is due; so, there should never be any confusion. Your homework will *always* be graded for completion and *usually* some (2–3) of the problems will be graded for correctness. You are allowed and encouraged to work together on homework. However, each student is expected to turn in his or her own work. Every

homework assignment is worth 5 points. There will be roughly 32–35 homework assignments. Five (possibly more) of your lowest homework scores will be dropped. Your overall homework score will be worth approximately 22% of your final grade. Late homework will *not* be accepted unless you have notified me by phone or email that your homework will be late. Email is the preferable method of notification and the deadline for notification of late homework is 5:00AM the day the assignment is due. When notifying me that you will be turning in your homework late, you should tell me: (1) the assignment number and the corresponding section, and (2) when you plan on turning the homework in. This generous policy should not be abused.

Labs: A few times during the semester I will assign small group projects, which we will call labs. The labs will be a mixture of work done in and out of class. If all goes according to plan, we will use a new computer program called `Lurch` for some or all of the labs. There will be approximately 5 labs, each worth 10 points (your total score on the lab assignments will be worth approximately 8% of your final grade).

Exams: There will be 3 exams, which are *tentatively* scheduled for the following **Thursdays**: **Feb 19**, **Mar 26**, and **Apr 23**. Each exam will be worth 100 points (approximately 15% of your final grade). There will also be a *cumulative* final exam, which will be on **Wednesday, May 13** at **8:00–10:30am**. The final exam is worth 150 points (approximately 23% of your final grade). Make-up exams will only be given under extreme circumstances, as judged by me. In general, it will be best to communicate conflicts ahead of time.

About Calculators: A graphing calculator will be useful for this course, but is not required (isn't the book expensive enough?). Calculators will be allowed on the exams, but will not be necessary. If you decide to purchase a graphing calculator, I recommend the `TI-83` or `TI-83 Plus`. I will *not* spend class time discussing how to use a graphing calculator.

Course Evaluation

Grading: You will be graded on your written work, which will be judged on the basis of *correctness*, *completeness*, and *legibility*.

Basis for Evaluation: Your final grade will be determined by the scores of your homework, labs, exams, and final exam.

Homework:	5 points each	(total is approximately 22% of final grade)
Labs:	10 points each	(total is approximately 8% of final grade)
3 Exams:	100 points each	(total is approximately 45% of final grade)
Final exam:	150 points	(approximately 23% of final grade)

Grade Determination: Your grade will be calculated using the following formula:

$$\frac{\text{your total points}}{\text{total possible points}} \times 100 = \text{your percent score}$$

At any moment during the semester, you can calculate your current grade by dividing the total number of points you have received up until that point by the total number of possible points available up until that point. Grades may be "massaged" at the end of the semester, but in general this is what you should expect:

93–100%	A	73–76%	C
90–92%	A-	70–72%	C-
87–89%	B+	67–69%	D+
83–86%	B	63–66%	D
80–82%	B-	60–62%	D-
77–79%	C+	0–59%	F

Additional Information

Math Center: This student-run organization provides peer tutoring services for most 1000 and 2000 level math courses and some 3000 level courses. Tutors are typically math majors interested in teaching math and practicing their instructional skills. The Math Center is located in Hyde Hall room 351. You can drop in anytime during open hours. More information can be found at:

http://www.plymouth.edu/math/resources/center.html

Student Handbook: The PSU Student Handbook addresses policies pertaining to students with disabilities, religious observation, honor code, general conduct, etc. The Handbook can be found at:

http://www.plymouth.edu/stulife/handbook/handbook.html

ACT for Growth: All teacher education majors are subject to the Areas of Concern/Targets for Growth policy, which is located at:

http://www.plymouth.edu/education/act.html

Closing Remarks

When does the learning happen? It might happen in class, but most likely it happens when you sit down to do your homework. Most of you can follow what I do on the board, but the question is, can you do it on your own? To learn best, you must struggle with mathematics on your own. It is supposed to be difficult. However, if you are struggling too much, then there are resources available for you. I am always happy to help you. If my office hours don't work for you, then we can probably find another time to meet. You can also get help from each other. Get a study buddy! Help each other learn. Go to the Math Center (see above). It is your responsibility to be aware of how well you understand the material. Don't wait until it is too late if you need help. *Ask questions!*