

## MA 2560: Calculus II (Spring 2009)

MWF 10:10–11:00AM, Hyde 327

R 11:00–12:15PM, Hyde 313

### Instructor Information

**Instructor:** Dr. Dana Ernst

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**Office hours:** MWF 11AM–12PM and Th 10AM–11AM (or by appointment)

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### Course Information and Policies

**Prerequisites:** A satisfactory grade in MA 2550: Calculus I (or equivalent). Note: Students may not receive credit for both MA 2520 and MA 2560; and students may not receive credit for both MA 3500 and MA 2560.

**Course Description:** A continuation of first semester calculus, including further study of integration techniques, improper integrals, infinite series, polar coordinates and conic sections. 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 2560 provides students with skills necessary for upper division mathematics courses, such as MA 3540: Multivariable Calculus. In this second semester course, we focus on the important problem of how one actually integrates functions. Among the techniques of integration we will learn are the methods of partial fractions and integration by parts. We will also generalize the notion of changing variables (substitution) to study parameterization and new coordinate systems, like polar coordinates. Along the way we will study logarithm, exponential, and hyperbolic trigonometric functions, which are useful in their own right and for integration. Another topic of the semester will be a study of infinite series, which will let us consider “nice” functions as “infinite polynomials,” called Taylor Series, which makes them much easier to do calculus with. Taylor Series will also allow us to integrate functions when our previous techniques do not suffice, and provide useful approximations of functions for numerical techniques. Lastly, 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 2560 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 **Friday, May 15 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.

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

**General Education:** According to the PSU General Education Curriculum, MA 2560: Calculus II is listed as a Quantitative Reasoning Course: the ability to analyze quantitative material, and use quantitative techniques to solve problems.

**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!*