MATH 192: Calculus & Analytic Geometry II (Spring 2008) MWF: 1:00 – 1:50 in Ambrose ___

Instructor: Brad Thiessen
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Office Hours: MWF 12–1, 3:30-4:30; R 3:30-4:30

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Overview:

This course will build upon the concepts you learned in MATH 191 (limits, differentiation, and integration) to introduce more advanced topics in Calculus. This course will focus on techniques of integration, polar coordinates, sequences, and series. Partial differentiation and multiple integration will also be introduced. The software package *Mathematica* may be used to assist in routine computations.

Required Materials:

Calculus of a Single Variable (8th ed.) by Anton (ISBN: 0-471-48274-9)
Binder for course notes and assignments
Graphing calculator (TI-82 or higher recommended)

Prerequisites:

Students enrolled in this course have successfully completed Calculus I (MATH 191) or earned an appropriate math placement score. I will assume you understand basic calculus concepts (limits, differentiation, integration) along with facility with algebraic manipulations and graphing calculators.

Note: We will begin the semester with a brief review of the concepts you need to know for this course

Outline of Major Topics:

1) Review of limits, indeterminate forms, and L'Hopital's Rule
2) Review of differentiation (concept, methods, chain rule)
3) Review of integration (concept, methods, u-substitution, area between curves, volume of solids of revolution)
4) Integration techniques (tables, by parts, trig substitution, partial fractions) & improper integrals
5) Sequences & Series (convergence, integral test, alternating series, ratio/root tests, special sequences and series)
6) Conics, Parametric Equations, and Polar Coordinates
7) Partial derivatives and multiple integration

Course Procedures:

Each topic will be introduced through a mix of lecture and guided problem solving. Working together, we will learn important Calculus concepts and apply those concepts to solve semi-real problems. I may ask small groups of students to solve problems in front of the class (perhaps from the previous homework assignment). The purpose of this is not to embarrass you – I want you to gain experience solving problems and explaining your solutions. I encourage you to take (and even share) notes each class period, as you will be allowed to use your notes on the exams.

Before each class period, I recommend you read the corresponding section from your textbook. That way, you'll get more out of each class period. After class, you should solve all the assigned homework problems. The vast majority of the assigned problems are odds, so you can check your answers in the back of the textbook. We will devote many Thursday class periods to homework labs (class periods in which we work through the homework problems and answer all homework questions). The content in this course will be extremely difficult to learn if you do not complete the homework.

You will be allowed to use your notes during the exams (and any quizzes). The exams will allow you to demonstrate your knowledge, understanding, and ability to apply calculus concepts. The test questions will sample content we cover in class – if we spend a good deal of class time on a topic, you can expect lots of test questions on that topic.

Right after each exam, I will collect student portfolios. Students who complete all the assigned homework problems will receive credit. Students who do not complete the homework will not be penalized.

Don't feel overwhelmed by this – the procedures will become routine over the next few weeks. Just come prepared to class everyday by reading the textbook and completing the assigned homework. If you actively participate in class discussions and review your notes periodically, you should have success in this class.

Student Expectations:

1) Attend class. While I will not specifically lower your grade due to poor attendance, your test performance will suffer if you are absent from class. If you must miss class, I'd appreciate it if you let me know in advance.

2) Actively participate in class discussions and complete the homework problems. If you actively participate in class (asking and answering questions), you will learn the material. Make sure you show all your work on the homework problems. This will help you during the exams.

3) Successfully complete all quizzes, tests, and assignments. All exams will be open-note. Students absent on the day of an exam must notify me prior to the scheduled date in order to avoid penalty.

4) Take responsibility for their learning. Students are encouraged to work collaboratively on assigned problems, participate in class discussions (ask questions!), and seek assistance if needed. Take advantage of the Thursday homework labs! The best way to contact me outside of my posted office hours is via e-mail. Feel free to stop by my office for assistance.

Student Evaluation:

Each unit will have the following grading components:

	Traditional	No Homework
Unit Exam	70%	85%
Class Participation & Quizzes	15%	15%
Homework Portfolios (solutions and work shown)	15%	--

* Quizzes will be announced at least one week in advance

** I will give you all multiple opportunities to solve problems in class. You won't have to compete for these points.

The grading scale will not be higher than: A (90%+), B(80%+), C(70%+), D(60%+)

Plagiarism:

Don't cheat. You can work with other students on the homework, but the exams should only represent your level of understanding. Review the Policy on Academic Dishonesty in the University Catalog.

Accommodations:

Students with disabilities who believe they may need accommodations in this class are encouraged to contact the Office of Services for Students with Disabilities at 333-6275 as soon as possible to better ensure that such accommodations are implemented in a timely fashion.

Monday		Wednesday		Friday	
		1/16	Syllabus review Course overview	1/18	Limits: Concept and methods Derivatives: Definition/Chain Rule Sections 2.1 - 2.6, 3.1-3.9 • p 143: 1, 5, 7, 9, 11, 19 • p 221: 3, 7, 11, 29, 31, 41 • p 297: 3, 25, 33 • p 511: 21, 23, 29, 31, 69, 71
1/21	**MLK Jr. Day – No class**	1/23	Indeterminate Forms & L'Hopitals Rule • 7.5: 5-25 odd, 47	1/25	Integration: concept; u-substitution area; volume • p 375: 3, 5, 9, 11, 39, 83, 85 • p 511: 69, 71 • p 433: 1, 7, 9, 13
1/28	Homework Lab Complete all review homework Integration	1/30	Trigonometry review Periodic functions; unit circle; radians Trig functions and identities • Read Appendix A	2/1	Inverse trig functions Solving trig applications • p.A11 7, 9, 11, 15, 21, 29, 39, 60
2/4	Homework Lab Complete all review homework Trigonometry	2/6	Derivatives & Integrals of Inverse Trig • 7.7: 17, 19, 27, 43, 45, 49	2/8	Review for exam #1
2/11	**Unit #1 Exam** **Homework Portfolios Due**	2/13	Review exam results	2/15	Integration Techniques Integrating rational functions • 8.1: Select problems 1-29 odd
2/18	Integration by parts • 8.2: 1, 3, 5, 9, 11, 19, 23, 29, 43, 45	2/20	Partial Fractions • 8.5: 9, 13, 15, 19, 27	2/22	Homework Lab Int. by Parts & Partial Fractions
2/25	Trig Integrals & Substitution • 8.3: 1, 3, 29 • 8.4: 3, 7, 11, 15, 19, 21, 23	2/27	Integration by tables Numerical Integration • 8.6: 1-11 odd (computer lab?) • 8.7: 1, 23	2/29	Homework Lab Integrations (all techniques)
3/3	**Spring Break**	3/5	**Spring Break**	3/7	**Spring Break**
3/10	Improper integrals • 8.8: 3-15 odd	3/12	Review for exam	3/14	**Unit #2 Exam** **Homework Portfolios Due**
3/17	Review exam results	3/19	Sequences • 10.1: 1, 3, 5, 7, 9, 13, 23, 27	3/21	**Good Friday – No Class**
3/24	**Easter Monday – No Class**	3/26	Series & Convergence • 10.3: 1, 3, 7, 9, 11	3/28	Integral Test & p-series • 10.4: 3, 5, 7, 9, 11, 13, 21
3/31	Homework Lab Series convergence tests Review for quiz	4/2	**Quiz: Sequences & Series**	4/4	Comparison of series Ratio & Root tests • 10.5: 1, 3, 5, 7, 9, 11, 15, 17
4/7	Homework Lab 10.5: 21-44 all	4/9	Alternating series • 10.6: 3, 5, 7, 13, 19	4/11	Taylor Polynomials • 10.7: 9, 11, 21
4/14	**Quiz: Series Convergence**	4/16	Exam Re-take day (if needed) Review exam results	4/18	First-order differential equations • 9.1: 3, 7, 9, 15, 17
4/21	Slope fields; Euler's Method • 9.2: 1, 3, 9, 11	4/23	Modeling with 1st-order DiffEq • 9.3: 1, 3, 5, 7	4/25	Partial derivatives • In-class exercises
4/28	Vectors • In-class exercises	4/30	Vectors in space • In-class exercises	5/2	Review for Unit #4 Exam

Final Exam: _____

4/10/2007