

## COURSE SYLLABUS

### MATH 2212 CALCULUS II

SPRING 2007

**Days & Time:** MWF 12:00 pm - 01:10 pm

**Room:** General Classroom Building # 431

**CRN:** 11250

**Instructor:** Dr. Andrey Shilnikov

**Office:** # 724 of College of Education Building

**Office Hours:** MWF 11:00-11:45 am, other times by appointment

**Office phone:** (404) 651-0655

**Departmental phone:** (404) 651-2245

**E-mail:** ashilnikov [at] gsu.edu

**Web:** <http://www.mathstat.gsu.edu/~matals>

**Text:** *Calculus: One and Several Variables, 9<sup>th</sup> Edition* by Salas, Hille & Etgen, Wiley, 2003, ISBN 0-471-23120-7

**Optional:** Student Solution Manual

**Calculator:** Students *will NOT* be allowed to use any type of calculator on any graded assignments in this class.

**Prerequisites:** Grade of C or higher in MATH 2211 or a suitable score on the math placement test.

**Grading:** There will be a total of 600 points possible for this course. The points are distributed as follows

Three exams	300 = 100 * 3
Final exam	200
Three quizzes	60=20*3
Extra credit	40

Your total accumulated points will determine your grade

A	504-600
B+	487-503
B	448-486
C+	431-447
C	392-446
D	336-391
F	0-335

**Note:** During the first two weeks of the semester the Department of Mathematics and Statistics checks the computer records to determine whether or not each student has met the prerequisites for this course. If you do not have the prerequisites, please inform me and change to another course right away. If our computer search finds that you do not have the prerequisite, you must drop this course or you will be dropped automatically.

If you do not attend class during the first two weeks you will be administratively dropped.

**Withdrawal Policy:** If you withdraw from this class on or before W-Day (**March 1, 2007**) you will receive a W regardless of your performance. If you hardship withdraw after this date (a regular withdrawal at this point gives you an automatic WF) you will receive a **W ONLY** if you are passing (70 average or better); otherwise you will receive a WF (which averages into your GPA just like an F).

**Description:** Limits and continuity, differentiation, Mean Value Theorem for derivative, applications of differentiation, definition of the integral, Fundamental Theorem of Calculus, applications of integration to area.

**Procedures:** Class meets twice a week. Taking good notes during the class is of significant importance. Homework will be assigned in each class. After the class, read the book, read your notes and do as many of the homework problems as you can prior to the next class. Try to get the remaining problems explained in the next class. You are responsible for all material covered in class, whether or not you attended this class.

**Examinations:** There will be 3 hourly exams and the final exam (two hours). All hourly exams will be taken during the regular class time and in the regular classroom. Books and notes will not be allowed on all tests. *There will be no make-up exams except in an extreme verifiable emergency.* Absence from the final exam will result in a grade of F for the course unless arrangements are made *prior* to its administration.

**Tentative Course Outline:**

This day by day outline provides a general plan for the course; deviations may be necessary. We will be covering Sections: 7.1 - 7.4, 7.6 - 7.7, 8.1 - 8.5, 9.3 - 9.8, 10.1 - 10.7, 11.1-11.8

CLASS DATE	CHAPTER/SECTION	HOMEWORK PROBLEMS
01/08	7.1	1-9 (odd), 21,22,23,30,37
01/10	7.2	3,7,9,17,19,21,23
01/12	7.3	5,9,11,13,15,17,19,23,25,29,31,37-43,49-52, 69
01/15	7.4	11,17,23,31,39,41,45,48, 66-68
01/17	7.6	1-3, 5,6,7, 10, 17, 18, 21, 22
01/19	7.7	7,9,15,17,21,23,39,41,43,45, 49,51, 53-61
01/22	8.1	1-37 (odd)
01/24	8.2	1-21 (odd), 30, 31, 33
01/26	8.3	1- 43 (odd)
01/29	8.4	5-11(odd), 21-25 (odd)
01/31		Review
02/02	<b>Exam I</b>	<b>(7.1-7.7,8.1-8.4)</b>
02/05	8.5	1-19, 21, 27, 31-37 (odd)
02/07	9.3	3,5,9,11,19,23,27
02/09	9.3	31,41,49,51,53,55
02/12	9.4	1-5, 8, 11, 14, 16,19
02/14	9.4	21, 22, 23, 25, 28
02/16	9.5	1-9 (odd)
02/19	9.6	3,9,11,13,15,17,27,29,43
02/21	9.7	5,7,11,13,15,19,21,27,28
02/23	9.8	3,4,6,7,8
02/26	10.2	1-7(odd), 9-17
02/28	10.3	1-21, 29-31
03/02		Review
03/04	<b>Exam II</b>	<b>(8.5, 9.3-9.8,10.2-10.3)</b>
		<b>03/05-03/11 Spring Break</b>
03/12	10.4	5,13,15,21,23,25,29,31,35
03/14	10.5	1-27 (odd)
03/16	10.6	1-27 (odd), 28, 30-33

03/19	10.7	7,11,15,21, odd 25-31
03/21	11.1	3,5,9,13,15,17
03/23	11.1	19,21,23, 49-52
03/26	11.2	5,7,9,19,21,29,31,33
03/28	11.3	5,15,19,21,23
03/30	11.3	27,29,35
04/02		Review
04/04	<b>Exam III</b>	<b>(10.4-10.7,11.1-11.3)</b>
04/06	11.4	3,9,13,21,27,31,33,39
04/09	11.5	1,3,5,13
04/11	11.5	27,29,31
04/13	11.6	odd 1-11
04/16	11.6	odd 13-21
04/18	11.7	1,2,17-25
04/20	11.7	26-34
04/23	11.8	1, 2, 4- 6, 9, 10, 11-21 (odd)
04/25	11.8	31-39, 53-54
04/27		Review
04/30		Review
05/07		<b>Final Exam, 12:30 p.m. – 02:30 p.m.</b>

**Academic Dishonesty:** Plagiarism and cheating are serious offenses and may be punished by failure on the exam. Repeated cheating will result in a grade F for the course.

**Studying:** You *must* work on this course every week. The pace is hectic and allowing yourself to fall behind will end in disaster.

**Homework:** Working on the homework assignments is an essential part of the course. It is critical for your success on the exams.

**Inclement Weather Policy:** If the University is closed due to inclement weather, any exam that may have been scheduled for that date will be administered on the next available class date. If an assignment is due that day (or if you are scheduled for an exam) it will be due the next class.

**Attendance and Conduct Policy:**

Turn off all pagers and cell phones before entering the classroom – having these items “go off” in class is considered disruptive behavior and can result in your being administratively dropped from the course. In fact, any type of inappropriate conduct may result in your being administratively dropped from the course. See the University’s Policy on Disruptive Behavior in the *General Catalog*, p. 19 ([www.gsu.edu/images/Downloadables/UG\\_05\\_06.pdf](http://www.gsu.edu/images/Downloadables/UG_05_06.pdf)) or *On Campus*, the official student handbook ([www2.gsu.edu/~wwwdos/codeofconduct\\_adminpol\\_a.html](http://www2.gsu.edu/~wwwdos/codeofconduct_adminpol_a.html)).

**Academic assistance at GSU:**

1. Form study groups with classmates
2. See instructor during office hours
3. Visit the Math Assistance Complex, 122 Kell Hall (404-651-3365)
4. Attend Supplemental Instructions, MW 2:45-4:25, r. 427 (GCB)
5. Visit the Counseling Center: Learning assistance, Test anxiety classes, Student support services (404-651-2211)

6. African American Student Services (404-463-9000)
7. Private tutor list is available at Math Assistance Complex and Math Department

**Course Content Standards.** The following content standards are offered as guidelines for assessing student progress, judging the effectiveness of instructional programs, and developing curricular units. These standards describe what a student should be able to demonstrate at the completion of the course.

The content standards are labeled CSI through CSIO and any further designation such as CSIA, CS4B, or both. The "A" designation indicates topics that are used explicitly in the course, but introduced in earlier courses. Although these topics are reinforced in Math 2212, they may be considered prerequisite material. The "B" designation indicates that topics are introduced in Math 2212.

### **CS 1 A. Quantitative Reasoning**

Students will use quantitative reasoning in problem solving situations including:  
Geometric, symbolic, algebraic, and analytic representation and manipulation of quantitative information;  
Pattern recognition.

### **CS 2A.The Real Number System**

Students will use algebraic and order properties of the real number system and subsystems of the set of real numbers.

### **CS 3A.Functions.**

Students will use and investigate functions and related concepts including:  
Representations of functions using formulas, graphs, and parameters;  
Operations on functions defined by arithmetic operations, composition, and inversion;  
Types of elementary functions such as polynomial, rational, radical, absolute value, trigonometric, and piecewise-defined functions.  
Properties of functions and their graphs involving monotonicity, extrema, concavity, and other salient features.

### **CS 4A.Limits and Continuity.**

Students will demonstrate knowledge of and be able to use concepts and techniques related to limits and continuity including:  
Performing analytic and graphical interpretations of concepts;  
Evaluating limits;  
Determining points of continuity/discontinuity of functions;  
Applying properties of limits and continuity related to operations on functions.

### **CS 4B.Limits and Continuity.**

Students will evaluate limits of indeterminate form.

### **CS 5A.Analytic Geometry.**

Students will demonstrate knowledge of and be able to use analytic geometry concepts and related techniques including conic sections.

### **CS SB. Analytic Geometry.**

Students will demonstrate knowledge of and be able to use analytic geometry concepts and related techniques including conic sections.

Students will demonstrate knowledge of and be able to use representations and transformations involving rectangular and polar coordinate systems.

### **CS 6A.Differentiation.**

Students will demonstrate an understanding of the derivative at a point, derivative functions, and related concepts including:

Interpretation of the derivative at a point in terms of difference quotients, slopes of tangent lines and (instantaneous and average) rates of change;

The Mean Value Theorem for derivatives and related results;

Applying properties of differentiation related to elementary functions and operations on functions;

Application of the derivative to investigating properties of functions;

Implicit differentiation and differentials.

### **CS 6B. Differentiation.**

Students will use the derivatives of exponential/logarithmic functions, and apply the technique of logarithmic differentiation.

### **CS 7A. Integration.**

Students will demonstrate an understanding of integration and related concepts including:

The definite integral as an accumulation of small quantities;

The Fundamental Theorem of Calculus and antiderivatives;

The Mean Value Theorem for integrals;

Applying properties of integration related to elementary functions, operations on functions, and elementary substitutions;

Applications of integration in a variety of contexts.

### **CS 7B. Integration.**

Students will demonstrate an understanding of integration and related concepts including:

Integrals involving exponential and logarithmic functions;

Integration by parts and other techniques of integration;

Evaluation of improper integrals. 1

### **CS 8B. Sequences and Series.**

Students will demonstrate an understanding of sequences, series, and related concepts including:

Limits of sequences, sums of series, and radii of convergence;

Geometric series, alternating series, power series, and Taylor polynomials;

Tests of convergence and absolute convergence.

### **CS 9A. Applications.**

While applying analytic, algebraic, geometric, and algorithmic techniques to solving applied problems students with: Use appropriate technology; Communicate how the problem is modeled by a mathematical formulation, and how to interpret the result of the mathematical analysis.

### **CS 10A. Mathematical Proof.**

Students will demonstrate an understanding of mathematical proof and related concepts including:

Analysis of the logical structure of mathematical proofs and derivations;

Use contradictions and counter examples appropriately;

Use mathematical induction. The rudiments of  $\epsilon, \delta$  - proofs.