

**Fayetteville State University**  
**COLLEGE OF ARTS AND SCIENCES**  
**Department of Mathematics and Computer Science**  
**MATH 142- Calculus with Analytic Geometry I**  
**Spring 2012**

**“In case FSU must close for an emergency during the semester, instruction will continue using Blackboard.”**

**I. Locator Information:**

Instructor: **Dr. Deepthika Senaratne**  
Webassign Course ID: **uncfsu 9938 4434**  
Day and Time Class Meets: **MWF 12.30-1.45 pm**  
Where class meets: **SBE 140**  
Semester Credit Hours: **4**  
Office Location: **SBE 344**  
Office Hours: **MWF 11 am-12pm, 2.00-3.00pm, R 10am-12pm**  
Office Phone: 672-1668  
Email Address: **dsenaratne@uncfsu.edu**

Homework is assigned through Webassign. Please visit [www.webassign.com](http://www.webassign.com) to enroll in the course.

**FSU Policy on Electronic Mail:** Fayetteville State University provides to each student, free of charge, an electronic mail account ([studentid@broncos.uncfsu.edu](mailto:studentid@broncos.uncfsu.edu)) that is easily accessible via the Internet. The university has established FSU email as the primary mode of correspondence between university officials and enrolled students. Inquiries and requests from students pertaining to academic records, grades, bills, financial aid, and other matters of a confidential nature must be submitted via FSU email. Inquiries or requests from personal email accounts are not assured a response. The university maintains open-use computer laboratories throughout the campus that can be used to access electronic mail. Rules and regulations governing the use of FSU email may be found at <http://www.uncfsu.edu/policy/general/FSUE-mailFINAL>

**II. Course Description:** The first course of a three-semester sequence in calculus with analytical geometry, including studies of graphs, functions, limits, differentiation, application of differentiation, integration, and application of the definite integral. *Prerequisites: MATH 129 and MATH 130 or MATH 131.* A graphing calculator is required.

**III. Disabled Student Services:** In accordance with Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ACA) of 1990, if you have a disability or think you have a disability, please contact the Center for Personal Development in the Spaulding Building, Room 155 (1<sup>st</sup> Floor); 910-672-1203.

**IV. Textbook:** *CALCULUS Concepts & Contexts* 4E by James Stewart – THOMPSON BROOKS/COLE Publication. ISBN-13: 978-0-495-55742-5

**V. Student Learning Outcomes** –Upon completion of this course, students will be able to:

- Demonstrate the ability to solve limit and derivative problems in connection with the tangent line to a curve and the velocity of an object.
- Demonstrate the knowledge of differentiation rules with related concepts and the ability to apply L'Hospital's Rules to find a limit.
- Demonstrate the ability to apply the concepts of derivative and rate of change to various practical problems such as Newton's Method in numerical analysis and optimization in applied sciences.
- Demonstrate the knowledge of integration theory and the Fundamental Theorem of Calculus.
- Demonstrate the ability to apply the integration technique and use mathematical software such as Maple to solve practical problems.

**VI. Course Requirements and Evaluation Criteria:**

#### **Evaluation Criteria**

Evaluation in the course shall be by continuous assessment. Mode of assessment would include homework assignments, chapter exams, class attendance and participation, and final examination. The grading scale for determining the course grade and weights given to various activities are given below.

**a. A = 90-100%    B = 80-89%    C=70-79%    D=60-69%    F=Below 60%**

**b. Homework: 25 %;  
Tests (the lowest grade will be dropped): 45%;  
Final Exam: 20%;  
Quizzes: 10 %**

**Extra Credit:  
05 points: for proper attendance, good behavior and class participation. (Each Test)**

**c. No make-up exams or late assignments will be accepted without a legitimate reason. Should you expect to miss an exam, you need to get instructor's approval for a possible makeup in advance.**

## **General Requirements:**

1. It is the responsibility of the students to avail themselves of all class meetings and individual help from their instructors. Students are only allowed to miss less than 4 classes for acceptable reasons provided documentation.
2. Students are expected to enter the classroom on time and remain until the class ends. Three late arrivals and early departures will constitute an absence from the class. An interim grade of "EA," Excessive Absences, will be assigned for students whose unexcused class absences exceed 4 hours. See "Class Attendance" of the 2011-2012 FSU Catalog for details.
3. Students must refrain from smoking, eating and drinking in the classroom. The rights of others must be respected at all times.
4. Students are encouraged to ask questions of the instructor in class and to respond to those posed by the instructor. They should not discourage others from raising or answering questions.
5. Students are expected to complete all class assignments and to spend adequate time on their class work to insure that the course outcomes are met. At least two hours of home study is expected for each class hour.
6. Talking in class between students is strictly unacceptable. Discussions should be directed to the instructor.
7. Dishonesty on graded assignments will not be tolerated! Students must neither give nor receive any assistance on any work to be graded. The University's cheating policy will be applied for any violations. The minimum penalty will be a grade of zero (0) on the assignment.

**Consequences for Failing to Meet Behavioral Expectations:** The first time a student violates one of these rules, the instructor will warn him or her privately, either after class or before the next class. (Faculty members reserve the right to warn students publicly if needed.) The second time a student violates the guidelines; the instructor may deduct as many as twenty points from the student's next exam grade. If a student violates the guidelines three times, the instructor will report the student to the Dean of Students for disciplinary action according to the FSU Code of Student Conduct.

## **VII. Academic Support Resources:**

1. The Mathematics Laboratory (located at H.T. Chick 216 C) provides computer-assisted instruction and peer tutoring for students who wish to strengthen their mathematics skills. Please visit <http://www.uncfsu.edu/learningcenter/math/> for lab schedules. Information on how to access and use Smarthinking and Criterion can be obtained through University College Learning Center (H. T. Chick 216 C).
2. Tutoring is also available through the Department of Mathematics, and other programs at FSU. Information regarding these programs will be posted on the blackboard.

## VIII. Course Outline and Assignment

**\*The following Course Outline and Assignments are subject to change if appropriate.\***

<b>Class</b>	<b>Topic Covered</b>	<b>Assignment</b>
1	Review of Algebra- Chapter 1	For all assignments, please use web assign: www.webassign.com
2	Review of Algebra- Chapter 1	
3	2.1 The Tangent and Velocity Problems	
4	2.2 The Limit of a Function	
5	2.3 Calculating Limits Using the Limit Laws	
6	2.4 Continuity	
7	2.5 Limits Involving Infinity	
8	2.5 Limits Involving Infinity	
9	2.6 Derivatives and Rates of Change	
10	2.7 The Derivative as a Function 2.8 What does $f'$ say about $f$ ?	
11	Review for Exam 1	
12	Exam 1	
13	3.1 Derivatives of Polynomials and Exponential Functions	
14	3.2 The Product and Quotient Rules	
15	3.3 Derivatives of Trigonometric Functions	
16	3.4 The Chain Rule	
17	3.4 The Chain Rule	
18	3.5 Implicit Differentiation	
19	3.6 Inverse Trigonometric Functions and Their Derivatives	
20	3.7 Derivatives of Logarithmic Functions	
21	3.8 Rate of Changes in Natural and Social Sciences	
22	3.9 Linear Approximations and Differentials	
23	Review for Exam 2	
24	Exam 2	
25	4.1 Related Rates	
26	4.2 Maximum and Minimum Values	
27	4.2 Maximum and Minimum Values	
28	4.3 Derivatives and the Shape of Curves	
29	4.4 Graphing with Calculus and Calculators	
30	4.5 Indeterminate Forms and L'Hospital's Rule	
31	4.6 Optimization Problems	
32	4.7 Newton's Method 4.8 Anti-derivatives	
33	Review for Exam 3	
34	Exam 3	
35	5.1 Areas and Distances	
36	5.2 The Definite Integral	
37	5.3 Evaluating Definite Integrals	
38	5.4 The Fundamental Theorem of Calculus	
39	Review for Exam 4	
40	Exam 4	
41	Final Exam Review	
42	Review for Final Exam	
	Final Exam	

**IX. Teaching Strategies:** The majority of the material of the course will be given in lecture format. There is a short review before and after each lecture. Graphing calculators will be used in the class to help students develop a firm grasp of the underlying mathematical concepts. Student discussions, cooperative learning groups will be strongly encouraged.

**X. Bibliography:**

- Howard Anton, Calculus: A New Horizon, John Wiley & Sons, 1998.
- Richard Courant and John Fritz, Introduction to Calculus and Analysis, Springer-Verlag, 1999.
- Earl W. Swokowski, Calculus with Analytic Geometry, PWS-Kent Publishing Company, 1994.
- C. H. Edwards and David E. Penny, Calculus with Analytic Geometry, Prentice-Hall, 1997.
- S. I. Grossman and Richard B. Lane, Calculus, Saunders College Pub. 1997
- G. B. Thomas and R. L. Folley, Calculus with Analytic Geometry, Addison-Wesley Publishing Company, 1996.
- James Stewart, Calculus, Brooks/Cole Pub. Co., 2001.
- James Stewart, CALCULUS Concepts & Contexts 3E, THOMPSON BROOKS/COLE Publication, 2005.

**EX Grade \*\***

An Extension Grade may be assigned in lieu of a final grade of D or F for undergraduate students taking any course in which the university provides a structured program of academic support. The Extension Grade may only be used the first time a student takes the course at Fayetteville State University.

The Extension Grade will be designated as "EX D" or as "EX F" and is not calculated into the student's Grade Point Average but will remain on the student's transcript. Any student requesting an Extension Grade must sign an Extension Grade Contract not later than the end of the fifth week of the semester, or not later than the end of the first week of each summer term. The Extension Grade Contract will specify the course and section, the nature and duration of the academic support, and the individual or office that will verify completion of the academic support. An Extension Grade Contract must require at least 10 hours of academic support.

To be eligible for the Extension Grade, a student must complete all requirements for the course and all requirements of academic support services. The instructor will certify completion of the course requirements, and a representative of the appropriate academic support unit will verify completion of academic support requirements. When a student receives an Extension Grade, the student must re-enroll for the course in the next semester that the student matriculates at the university. If the student does not re-enroll in the course, the Extension Grade will revert to the original grade of D or F, and will be calculated into the student's Grade Point Average.

