

Fayetteville State University
College of Arts and Sciences
Department of Mathematics and Computer Science
MATH 241-01 Calculus with Analytic Geometry II
Fall 2011

I. Locator Information:

Instructor: Dr. Wu Jing

Course # and Name: MATH 140 Calculus with Analytic Geometry II

Semester Credit Hours: 4

Day and Time Class Meets: MWF 9:00am-10:15am

Office Hours: MW 10:30am-2:00pm R 11:00am-12:00pm or by appointment

Office Location: Lyons Science 128

Office Phone: 910-672-2205

Email Address: wjing@uncfsu.edu

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

FSU Policy on Electronic Mail: Fayetteville State University provides to each student, free of charge, an electronic mail account (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.pdf>

II. Course Description:

The second course of a three-semester sequence in calculus with analytic geometry, including studies of differentiation and integration; techniques of integration, improper integrals, applications of integrals, differential equations, infinite series, and analytic geometry. Prerequisites: MATH 142.

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 (1st Floor); 910-672-1203.

IV. Textbook:

James Stewart, **Calculus, 4th Edition**, BROOKS/COLE, 2010. ISBN 0-495-55742-0.

V. Student Learning Outcomes:

This course provides necessary background in calculus for students in sciences. Upon completion of this course, students will be able to:

- Demonstrate the knowledge of differentiation and integration theory and the ability to apply the

- Fundamental Theorem of Calculus to evaluate integrals including improper integrals using various techniques.
- Demonstrate the ability to use integration techniques to find areas, volumes, arc lengths, and other related problems in applied sciences.
- Demonstrate the knowledge of modeling techniques with differential equations and the ability to solve basic linear and nonlinear differential equations using various analytical and numerical techniques including Euler's method.
- Demonstrate the knowledge of infinite series and the ability to apply various tests for convergence, perform standard operations with power series, and find Taylor and Maclaurin series representations of functions.
- Demonstrate the ability to apply numerical integration techniques and use mathematical software such as Maple to solve practical problems.

VI. Course Requirements and Evaluation Criteria:

1. Attendance is MANDATORY. Any student that misses no more than 3 lectures throughout the entire course will be awarded 3 bonus points towards their final grade. Attendance will be taken daily.
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. Each student is permitted four (4) hours of absences from the class. An interim grade of "EA," Excessive Absences, will be assigned for students whose class absences exceed 4 hours.
3. There will be weekly homework. Homework will be collected and graded. Students who do not turn in homework may expect to receive a grade of 0 for these assignments. The lowest two homework grades will be dropped. No late homework will be accepted.
4. There are four chapter tests. The lowest chapter test grade will be dropped. All tests will be announced well in advance of their administration. A make-up test will be given only if the student has a documented and valid written justification for unavoidable absence from the test. There is no more than one make-up exam for each student during the semester. The final examination is cumulative, i.e., it covers the contents of all chapters.
5. There will be pop-up quizzes. NO make-up quizzes will be given.
6. It is the responsibility of the students to avail themselves of all class meetings, tutorial sessions, and individual help from their instructors.
7. Students are responsible for maintaining a notebook of problems selected by the instructor. Students are encouraged to include as many additional problems as possible.
8. Students must refrain from smoking, eating and drinking in the classroom. The rights of others must be respected at all times.
9. 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. Often, other students have the same questions which they wish to ask, but are hesitant to do so.
10. 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.
11. Talking in class between students is strictly unacceptable. Discussions should be directed to the instructor.
12. 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.

The grading scale and weights given to various activities for evaluation are given below.

Tests-50%

Homework/Quizzes-25%

Final Exam-25%

A 90-100%

B 80-89%

C 70-79%

D 60-69%

F Below 60%

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.unctsu.edu/learningcenter/math/> for lab schedules.
1. Extra help or tutoring (provided by a graduate assistant) might also be available through the Department of Mathematics and Computer Science, please see Mr. Black at SBE 339 (Tel: 910-672-2265) for detailed information.
- 2.

VIII. Course Outline and Assignment Schedule

* Subject to change for the optimum benefit of the class

**All assignments will be announced in class.

SECTION	TOPIC
[5.1]	Areas and distances
[5.2]	The definite integral
[5.3]	Evaluating definite integrals
[5.4]	The Fundamental Theorem of Calculus
[5.5]	The Substitution Rule
[5.6]	Integration by parts
[5.7]	Additional techniques of integration
[5.8]	Integration using tables and computer algebraic system
[5.9]	Approximate integration
[5.10]	Improper integrals
	Exam #1
[6.1]	More about areas
[6.2]	Volumes
[6.3]	Volumes by cylindrical shells
[6.4]	Arc length
[6.5]	Average value of a function
[6.6]	Applications to physics and engineering
[6.7]	Applications to economics and biology
	Exam #2
[7.1]	Modeling with differential equations
[7.2]	Direction fields and Euler's Method
[7.3]	Separable equations
[7.4]	Exponential growth and decay
[7.5]	The logistic equation
[7.6]	Predator-Prey system

Exam #3

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- [8.1] Sequence
 - [8.2] Series
 - [8.3] The integral and comparison tests; Estimating sums
 - [8.4] Other convergence tests
 - [8.5] Power series
 - [8.6] Representations of functions as power series
 - [8.7] Taylor and Maclaurin Series
 - [8.8] Application of Taylor Polynomials

Exam #4

Final Exam (8:00am---9:50am, Wednesday, December 7th)

IX. Teaching Strategies:

The majority of the material of the course will be given in lecture format. There will be a comprehensive review after the completion of each chapter. Graphing calculators will be used in the class to help students develop a firm grasp of the underlying mathematical concepts.

X. Bibliography:

- M. L. Lial, J. Hornsby, & D. I. Schneider, *College Algebra*, Addison Wesley, New York, 2001
R. A. Barnett, M. R. Ziegler, & K. E. Byleen, *College Algebra*, McGraw-Hill, Boston, 2001
Michael Sullivan, *College Algebra*, Prentice Hall, Upper Saddle River, New Jersey, 2005
Mark Dugopolski, *College Algebra*, Addison Wesley, Boston, MA, 2007
J. E. Kaufman, *Precalculus*, PWS Publishing Company, Boston, 1995