NORTHERN ARIZONA UNIVERSITY
College of Engineering, Forestry & Natural Sciences

Department of Mathematics & Statistics   AMB 123   928-523-3481
Prof William Schulz   http://www.cefns.nau.edu/~schulz   william.schulz@nau.edu

Syllabus for Math 136 Section 2
Spring 09   9:10-10:00   MWTHF AMB 221

PREREQUISITE: A grade of C or better in Math 125

COURSE DESCRIPTION AND OBJECTIVES: MAT 136 is a four credit hour course that meets 200 minutes each week. The course initiates the study of calculus with emphasis on limits, differentiation, the beginnings of integration and the applications of the ideas to geometry and the natural sciences.

STUDENT LEARNING OUTCOMES: Upon completion of the course, students should be able to calculate limits by a variety of methods, apply these methods to the calculation of derivatives from the definition of derivative, be able to take derivatives of the basic algebraic and transcendental functions and to use the chain rule to take derivatives of more complex functions. She will be able to correctly interpret the meaning of the derivative in terms of rates and tangent lines and do numerical approximations. She will be able to apply her knowledge of the derivatives of functions to find tangent lines and rates of change in a variety of circumstances and to find maximums and minimums of functions and be able to use this knowledge to analyze graphs. He will be able to find higher derivatives and use them to investigate concavity and the application of concavity to maximum and minimum problems and to acceleration. She will be able to take derivatives in complicated situations by use of logarithmic differentiation and implicit differentiation. In addition, he will be able to find easy antiderivitives and apply this knowledge to the calculation of areas using the fundamental theorem of Calculus and to do some more complex integrals by the use of tables and substitution.

APPROACH: The class will use a lecture-discussion format; students will apply what they have learned to solve homework problems. Problems will come from WebWorks and other sources.

TEXT AND COVERAGE: A Web based Calculus text at http://tutorial.math.lamar.edu/

ASSESSMENT AND GRADES:

1. **Homework** will be due 1-3 times each week. Most assignments will be computer based using the WeBWorK system (http://webwork2.math.nau.edu/webwork2/WSchulz_135 or follow links from the site above).   Problems chosen from other sources may be assigned as well, but often these will not be collected or graded. The problems from other sources have been chosen to provide practice on concepts and methods not completely covered in the WeBWorK sets, so they should not be considered to be optional. Occasionally, problems constructed by the instructor may be assigned for submission.
2. About 3 **technology projects** will be assigned during the semester.   These will require use of a graphing calculator although you can use heavier tools if you like.
3. Three in-class, closed-book, closed-notes **examinations** and a **comprehensive final exam** will be administered during the semester.   Some exams may include a take-home portion.
4. The above requirements will be distributed as follows:
      Homework   9%

Tech projects	9%
Three exams	55%
Final exam (Wed 10 Dec, 7:30 – 9:30 am):	27%

Grades will be based on percentage of points earned according to the scale below:

A: 90-100%   B: 80-89%   C: 70-76%   D: 60-69%   F: 0 – 59%

The instructor reserves the right to lower grade cutoffs.

COURSE OUTLINE: We will cover the following topics (in order)
    Review of functions
    Limits
    Derivatives
    Applications of derivatives
    Integrals, methods of integration

OTHER:

1. You will find it essential to have a graphing calculator. .
2. Regular attendance is expected. Normally no provisions will be made to accommodate students who miss class.
3. The WeBWorK system will not give credit for answers entered after the deadline, although it will indicate whether late answers are correct.
4. Missed exams and quizzes may not normally be made up without an institutional excuse or an absence authorized by University Policy. Any predictable absence must be discussed with the instructor in advance.
        .
5. Late project reports are subject to reduction in points.