Mathematics 121- Elements of Calculus

Course Justification:
Approximately twenty years ago, the Department of Mathematics at North Carolina State University recognized the need for a course which would introduce students in certain curricula to the basic concepts and applications of calculus in one semester, not with the goal of preparing students to take additional courses in calculus nor with a goal of preparing students to be proficient users of calculus, but rather with a goal of providing students with a certain degree of literacy in this remarkable field of intellectual endeavor and an awareness of how this field of mathematics has found application in areas of biology, economics, business, and the social sciences. This goal is not accomplished by having a student take the first semester of a multi-semester sequence in calculus, for much more time must be devoted to skill development. Thus, this course has a unique role to play on our campus.

Proposed Revision:
The proposed revision is the creation of new learning outcomes and means of assessing those outcomes to meet the new GER objectives as set forth by the CUE.

Enrollment In The Past Five Years:

Spring 1999	508
Summer 1 1999	89
Summer 2 1999	63
Fall 1999	629
Spring 2000	522
Summer 1 2000	93
Summer 2 2000	62
Fall 2000	646
Spring 2001	495
Summer 1 2001	84
Summer 2 2001	52
Fall 2001	661
Spring 2002	555
Summer 1 2002	84
Summer 2 2002	36
Fall 2002	624
Spring 2003	505
Summer 1 2003	92
Summer 2 2003	57
Fall 2003	730

Resources Statement: N/A

Consultation With Other Departments: N/A

GER Objectives:
Mathematics Objectives: Each course in the mathematical sciences category of the General Education Requirements will provide instruction and guidance that help students to:

1) improve and refine the mathematical problem-solving abilities of students; and
2) develop the logical reasoning skills of students.

MA 121 Learning Outcome:
Upon completion of this one-semester, terminal calculus course, students will be able to define, find, and apply the derivative and the integral as well relate these new concepts to previously learned mathematics.

Means of Evaluating the Outcome: The final examination will contain questions such as

1) find the derivative using the following: definition of derivative, power rule, product rule, quotient rule, and chain rule.
2) Apply the derivative graphically and by solving optimization problems
3) Find the integral using the following: general antiderivative techniques and substitution methods.
4) Apply the integral by finding areas and volumes and by using them as accumulation models.

Syllabus:
See attached.

MA 121 - 003 FALL 2003 11:20 – 12:35 T Th HA 201

Instructor: John Griggs **TA's**: Chris Wiest, Crystal Conway **SI Leader**: Abby Knotts
Office: HA 255 **Phone**: 513-2288 **E-mail**: jrgriggs@pams.ncsu.edu
Office hours: 1:30 – 2:30 pm T Th, and by appointment
Textbook: Calculus and its Applications (8th ed.) by Bittinger , 2004, ($98 new, $72 used)

Goals and Objectives: Since MA121 is a course in the mathematical sciences category of the General Education Requirements, it will provide instruction and guidance that help students to: (1) improve and refine the mathematical problem-solving abilities of students; and (2) develop the logical reasoning skills of students. Upon completion of this one-semester, terminal calculus course, students will be able to define, find, and apply the derivative and the integral as well as relate these new concepts to previously learned mathematics.

Grading: 60% Tests; 15% Homework/Quiz; 25% Final exam; the +/- system will be used: 98 - 100 A+; 92-97 A; 90-91 A-; 89-89 B+; 82-87 B; 80-81 B-; 78-79 C+; 72-77 C; 70-71 C-; 68-69 D+; 62-67 D; 60-61 D-; 0-59 F

Absences: No penalty for excessive absences; the reward for good attendance (3 absences or fewer) is dropping the worst test score. (sleeping = absent) Tardies and early departures will accrue into absences. Students who are tardy should sit in the back row of the classroom so as not to distract the class that has already begun. It is then your responsibility to see the TA's at the front of the classroom after class to have your absence changed to a tardy.

Homework/Quiz: 11 Webassign homeworks; 4 quizzes (one of which is a one page type-written report of an interview with a person currently working in your chosen career/field. You may ask as many questions as you choose, but you must ask how mathematics is used in that career). No late homeworks will be accepted and no make-up quizzes will be given. Because of this, the 3 worst grades from this group of 15 grades will be dropped. No extensions of Webassign will be given when the request is made after the deadline.

Students with **documented disabilities** (through NCSU's DSS) will be given all necessary accommodations. Instructor must have paperwork well before testing begins.

Academic Integrity Statement: Academic dishonesty includes the giving; taking, or presenting of information or material by a student with the intent of unethically or fraudulently aiding oneself or another person on any work which is to be considered in the determination of a grade or the completion of academic requirements. More specific definitions are set in the NCSU Code of Student

Conduct. The honor pledge: “I have neither given nor received unauthorized aid of this test or assignment

Final Exam: Thursday, Dec 11 8:00 – 11:00 am HA 201
J. Griggs’ homepage (link to test solutions): **http://www4.ncsu.edu/~jrgriggs/**
Webassign homepage: https://www.webassign.net/ncsu/student.html