NEW COURSE PROPOSAL

MATH 140. CALCULUS FOR BUSINESS APPLICATIONS (3)
Three hours of lecture per week.
Prerequisite: A passing score on the Calculus Placement Examination or MATH 101 or MATH 105.

An integrated course in analytic geometry and calculus in the context of business and economics applications. Functions, limits, derivatives, integrals and mathematical modeling are used in problem solving in decision making context.
GenEd: B3

1. Catalog Description of the Course. [Include the course prefix, number, full title, and units. Provide a course narrative including prerequisites and corequisites. If any of the following apply, include in the description: Repeatability (May be repeated to a maximum of ___ units); time distribution (Lecture ___ hours, laboratory ___ hours); non-traditional grading system (Graded CR/NC, ABC/NC). Follow accepted catalog format.]

MATH 140. CALCULUS FOR BUSINESS APPLICATIONS (3)
Three hours of lecture per week.
Prerequisite: A passing score on the Calculus Placement Examination or MATH 101 or MATH 105.

An integrated course in analytic geometry and calculus in the context of business and economics applications. Functions, limits, derivatives, integrals and mathematical modeling are used in problem solving in decision making context.
GenEd: B3

2. Mode of Instruction.

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Units</th>
<th>Hours per Unit</th>
<th>Benchmark</th>
<th>Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

3. Justification and Learning Objectives for the Course. (Indicate whether required or elective, and whether it meets University Writing, and/or Language requirements) [Use as much space as necessary]

The course is a required course for Business majors. Open to Liberal studies students and other majors.

Through this course, students will be able to

- Apply differential methods to solve business related problems.
- Apply derivatives and integrals in various contexts.
- Use computers and other graphical methods for mathematical modeling
- Compute maxima and minima, and use other optimization methods
- Apply mathematical arguments to decision making
- Express ideas of Calculus in oral and written form.

This course is not designed to satisfy the University Writing or Language requirements.

4. Is this a General Education Course YES

If Yes, indicate GE category:

<table>
<thead>
<tr>
<th>A (English Language, Communication, Critical Thinking)</th>
<th>B (Mathematics &amp; Sciences)</th>
<th>C (Fine Arts, Literature, Languages &amp; Cultures)</th>
<th>D (Social Perspectives)</th>
<th>E (Human Psychological and Physiological Perspectives)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Course Content in Outline Form. [Be as brief as possible, but use as much space as necessary]

NEWCRSFR 9/30/02
Limits; Derivatives
Basic rules of Differentiation: the Product and Quotient Rules; The Chain rule;
Marginal Functions in Economies
Higher-Order Derivatives
Applications of the First and Second Derivatives to Business and Economics
Curve Sketching
Optimization methods
Compound Interest;
Differentiation of Exponential Functions
Differentiation of Logarithmic Functions;
Exponential Functions as Mathematical Models
Antiderivatives and the Rules of Integration;
Integration by Substitution;
Area and the Definite Integral
The Fundamental Theorem of Calculus
Area Between Two Curves
Applications of the Definite Integral to Business and Economics

6. References. [Provide 3 - 5 references on which this course is based and/or support it.]

* Calculus: For Business, Economics, the Social and Life Sciences by Laurence D. Hoffmann, Gerald Bradley
ISBN 0-534-95568-1

7. List Faculty Qualified to Teach This Course.

All Mathematics Faculty

8. Frequency.
a. Projected semesters to be offered: Fall ___X__ Spring _X____ Summer ___X__

9. New Resources Required.
a. Computer (data processing), audio visual, broadcasting needs, other equipment
   Existing PC labs
b. Library needs
   Existing resources
c. Facility/space needs
   None

10. Consultation.
   Attach consultation sheet from all program areas, Library, and others (if necessary)

11. If this new course will alter any degree, credential, certificate, or minor in your program, attach a program modification.

Ivona Grzegorczyk 1/8/03

Proposer of Course Date

NEWCRSFR 9/30/02