

CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS

**NEW COURSE PROPOSAL**

PROGRAM AREAS \_\_\_\_\_ MATH \_\_\_\_\_

**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.**

	Units	Hours per Unit	Benchmark Enrollment
Lecture	___3___	___1___	___24___
Seminar	_____	_____	_____
Laboratory	_____	_____	_____
Activity	_____	_____	_____

**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:**

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

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

Limits;  
Derivatives  
Basic rules of Differentiation: the Product and Quotient Rules; The Chain rule;  
Marginal Functions in Economics  
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  
McGraw-Hill Science/Engineering/Math; ISBN: 0072437650; 7th Rev edition (2000)  
\* S. T. Tan. *Calculus for the Managerial, Life, and Social Sciences*. 4th edition. Brooks/Cole Publishing Company (1997).  
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 Grzegorzcyk \_\_\_\_\_ 1/8/03 \_\_\_\_\_  
Proposer of Course Date