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 150 CALCULUS I (4)
Four hours of lecture per week.

Prerequisite: Passing scores on the Calculus Placement Examination or MATH 105
A course in analytic geometry and calculus. Topics include: elementary and transcendental functions,their properties, limits, derivatives, integrals and mathematical modeling.
GenEd : B3

2. **Mode of Instruction.**

	Units	Hours per Unit	Benchmark Enrollment
Lecture	___4_____	___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 Mathematics majors.

Through this course, students will be able to

- Design mathematical models and work with functions
- Compute limits, derivatives and antiderivatives and apply them in context
- Analyze graphs of functions and use them to solve problems
- Use modern software to solve problems
- Compute maxima and minima, and apply other optimization techniques
- Explain, using proper terminology, ideas of calculus and solve computational problems.
- 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:

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

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

The Tangent and Velocity Problems
The Limit of a Function
Continuity
Limits at Infinity; Horizontal Asymtotes
The Derivative as a Function
Derivatives of Polynomials
The Product and Quotient Rules
Derivatives of Trigonometric Functions
The Chain Rule
Implicit Differentiation
Higher Derivatives
Derivatives of Logarithmic Functions
Hyperbolic Functions
Linear Approximations
Maximum and Minimum Values
The Mean Value Theorem
l'Hospital's Rule
Curve Sketching
Optimization Problems
Antiderivatives
Areas and Distances
The Definite Integral
Fundamental Theorem of Calculus

6. References. *[Provide 3 - 5 references on which this course is based and/or support it.]*
James Stewart, *Calculus: Early Transcendentals*, fourth edition, Brooks/Cole Publishing Co., 1999.

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 computer labs

b. Library needs
Existing library resources.

c. Facility/space needs
Classrooms.

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