

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 351 REAL ANALYSIS (3)

Three hours of lecture per week.

Prerequisite: MATH 250.

Topics include: real number system, metric spaces, norms, function spaces, continuity, differentiability, integrability of functions, sequences and series.

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 Mathematics majors.

Through this course, students will be able to

- Discuss the theoretical basis of the system of real numbers
- Work in general metric and function spaces
- Analyze functions in terms of continuity, differentiability and integrability.
- Demonstrate application of sequences and series on an advanced level.
- Express concepts and techniques of Real Analysis 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** **NO**
If Yes, indicate GE category:

A (English Language, Communication, Critical Thinking)	
B (Mathematics & Sciences)	
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]*

Real number system: Dedekind cuts, supremum/infimum

Metric spaces: Norms, convergence, function spaces.

Continuity: Introduction to general topological spaces, basic theorems on Continuity.

Differentiability: Abstract definition of differentiability, basic properties,

Integrability of functions: Riemann Integrals, Lebesgues Integrals, Criteria of integrability

Sequences and series: Advanced theorems from the theory of sequences and series of numbers, Sequences and series of functions, uniform convergence.

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

W. Rudin, *Real and complex analysis*, New York : McGraw-Hill, current addition.

7. List Faculty Qualified to Teach This Course.

All Mathematics faculty

8. Frequency.

a. Projected semesters to be offered: Fall X Spring X Summer

9. New Resources Required.

a. Computer (data processing), audio visual, broadcasting needs, other equipment

none

b. Library needs

none

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.

Proposer of Course

Date