

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 480 DIFFERENTIAL AND RIEMANNIAN GEOMETRY (3)

Three hours of lecture per week.

Prerequisite: MATH 351

Topics include: Implicit Function theorem. Differentials, Riemannian manifolds, curvature, local isometries.

Gauss-Bonnet Theorem.

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 an elective for Mathematics majors.

Through this course, students will be able to

- Discuss and use the Implicit Function Theorems in a variety of contexts.
- Apply the basic features of Riemannian manifolds
- Use differentials in a theoretically sound manner/
- Analyze general curves with respect to their curvature
- Use the Gauss-Bonnet Theorem
- Present concepts and techniques of Differential and Riemannian Geometry 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]*

Implicit Function theorem
Differentials
Riemannian manifolds
Curvature
Local isometries
Gauss-Bonnet Theorem.

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

Warner, Frank *Foundations of differentiable manifolds and Lie groups*, New York : Springer, current edition.

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