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 DIFERENTIAL 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.

<table>
<thead>
<tr>
<th>Units</th>
<th>Hours per Unit</th>
<th>Benchmark Enrollment</th>
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</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>3</td>
<td>1</td>
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<tr>
<td>Seminar</td>
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<td>Laboratory</td>
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<tr>
<td>Activity</td>
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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

If Yes, indicate GE category:

YES NO
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.]


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

NEWCRSFR 9/30/02