1. **Catalog Description of the Course.**

**Math 510 PROBABILITY METHODS AND MEASURE THEORY. (3)**

Three hours lecture per week
Prerequisite: Admission to the Computer Science or Mathematics Graduate Program

Introduction to probabilistic methods. Topic include: sigma algebras, measures, integrals, Lebesgue measure, main convergence results and the change of variable results for integrals. Probabilistic methods in computational sciences are studied.

2. **Mode of Instruction.**

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<th>Units</th>
<th>Hours per Unit</th>
<th>Benchmark Enrollment</th>
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<td>Seminar</td>
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3. **Justification and Learning Objectives.**

Justification: This class is a core class for students in Computational Sciences program. This is a prerequisite for Stochastic Analysis and Markov Processes.

Learning Objectives:

Through this course, students will be able to

- Understand the essential concepts of probability and measure theory.
- Apply probability theory and mathematical statistics in various situations
- Demonstrate the knowledge of measure theory
- Construct appropriate mathematical models
- Formulate statistics and probability problems in the language of math.

4. **Is this a General Education Course?**

No.

5. **Course Content in Outline Form.**

   Topics:

   a) sigma algebras,
   b) measures, integrals,
   c) Lebesgue measure,
   d) convergence results for integrals,
   e) change of variable results for integrals,
f) probabilistic methods in computational sciences.

6. References.


7. Faculty Qualified to Teach This Course.
   Qualified Faculty: Mathematics faculty

8. Frequency.
   Projected semesters to be offered: Fall X

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.

Jorge Garcia       10/31/03

Proposer of Course       Date
Approvals

Program Coordinator ___________________________ Date

GE Committee Chair ___________________________ Date
(If applicable)

Curriculum Committee Chair ___________________ Date

Dean ___________________________ Date

Effective Semester: ________________________________
1. Course prefix, number, title, and units: ___________ Math 510

2. Program Area: ________MATH________________________________

**Recommend Approval**

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<thead>
<tr>
<th>Program Area/Unit</th>
<th>Program/Unit Coordinator</th>
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<th>NO (attach objections)</th>
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