

COURSE MODIFICATION PROPOSAL

Courses must be submitted by October 15, 2010, and finalized by the end of the fall semester to make the next catalog (2011-12) production

DATE (CHANGE DATE EACH TIME REVISED): APRIL 26, 2011; REV 9.8.11

PROGRAM AREA(S): MATHEMATICS

Directions: All of sections of this form must be completed for course modifications. Use **YELLOWED** areas to enter data. All documents are stand alone sources of course information.

1. Indicate Changes and Rationale for the Change. [Mark all change areas that apply and follow with justification. Be as brief as possible but, use as much space as necessary.]

- | | |
|---|--|
| ☐ Course title | ☒ Course Content |
| ☐ Prefix/suffix | ☒ Course Learning Outcomes |
| ☒ Course number | ☒ References |
| ☐ Units | ☐ GE |
| ☐ Staffing formula and enrollment limits | ☐ Other ☐ |
| ☒ Prerequisites/Corequisites | ☐ Reactivate Course |
| ☐ Catalog description | |
| ☐ Mode of Instruction | |

Rationale: We wish to renumber this course so as to cross-list a course in another discipline that currently has the same number. (I.e., We will cross-list the existing PHYS 510 as COMP/MATH/PHYS 510; to do so we need to renumber the existing MATH 510.) All other changes consist of wording/ grammar corrections and one additional topic listed under each of outcomes and course content.

2. Course Information.

[Follow accepted catalog format.] (Add additional prefixes i f cross-listed)

OLD

Prefix MATH Course# 510
Title Probabilistic Methods and Measure Theory; Units (3)
3 hours lecture per week
☐ hours blank per week

Prerequisites: Admission to the Computer Science or Mathematics Graduate Program

☐ Consent of Instructor Required for Enrollment
Corequisites: ☐

Catalog Description (Do not use any symbols):

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

General Education Categories: ☐

Grading Scheme (Select one below):

☒ A – F

☐ Credit/No Credit

☐ Optional (Student's Choice)

Repeatable for up to ☐ units

Total Completions 1

Multiple Enrollment in Same Semester Y/N N

Course Level:

NEW

Prefix MATH Course# 512
Title Probabilistic Methods and Measure Theory; Units (3)
3 hours lecture per week
☐ hours blank per week

Prerequisites: Admission to the MS Mathematics Program or MS Computer Science Program

☐ Consent of Instructor Required for Enrollment
Corequisites: ☐

Catalog Description (Do not use any symbols):

Introduction to probabilistic methods. Topics 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.

General Education Categories: ☐

Grading Scheme (Select one below):

☒ A – F

☐ Credit/No Credit

☐ Optional (Student's Choice)

Repeatable for up to ☐ units

Total Completions 1

Multiple Enrollment in Same Semester Y/N N

Course Level:

☐ Undergraduate
☐ Post-Baccalaureate
☒ Graduate

☐ Undergraduate
☐ Post-Baccalaureate
☒ Graduate

3. Mode of Instruction (Hours per Unit are defaulted)

Hegis Code(s) _____
(Provided by the Dean)

Existing

Proposed

	Units	Hours Per Unit	Benchmark Enrollment	Graded		Units	Hours Per Unit	Benchmark Enrollment	Graded	CS No. (filled out by Dean)
Lecture	<u>3</u>	<u>1</u>		x	Lecture	<u>3</u>	<u>1</u>	<u>10</u>	x	
Seminar		<u>1</u>			Seminar		<u>1</u>			
Lab		<u>3</u>			Lab		<u>3</u>			
Activity		<u>2</u>			Activity		<u>2</u>			
Field Studies					Field Studies					
Indep Study					Indep Study					
Other blank					Other blank					

4. Course Attributes:

☐ **General Education Categories:** All courses with GE category notations (including deletions) must be submitted to the GE website: <http://summit.csuci.edu/geapproval>. Upon completion, the GE Committee will forward your documents to the Curriculum Committee for further processing.

A (English Language, Communication, Critical Thinking)

- ☐ A-1 Oral Communication
- ☐ A-2 English Writing
- ☐ A-3 Critical Thinking

B (Mathematics, Sciences & Technology)

- ☐ B-1 Physical Sciences
- ☐ B-2 Life Sciences – Biology
- ☐ B-3 Mathematics – Mathematics and Applications
- ☐ B-4 Computers and Information Technology

C (Fine Arts, Literature, Languages & Cultures)

- ☐ C-1 Art
- ☐ C-2 Literature Courses
- ☐ C-3a Language
- ☐ C-3b Multicultural

D (Social Perspectives)

E (Human Psychological and Physiological Perspectives)

UDIGE/INTD Interdisciplinary

Meets University Writing Requirement

Meets University Language Requirement

☐ **American Institutions, Title V Section 40404:** ☐ Government ☐ US Constitution ☐ US History

Refer to website, Exec Order 405, for more information: <http://senate.csuci.edu/comm/curriculum/resources.htm>

☐ **Service Learning Course** (Approval from the Center for Community Engagement must be received before you can request this course attribute).

5. Justification and Requirements for the Course. [Make a brief statement to justify the need for the course]

OLD

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

NEW

Justification: This class is a core class for students in the MS Mathematics and the MS Computer Science programs. This is a prerequisite for Stochastic

Processes.

- ☐ Requirement for the Major/Minor
☒ Elective for the Major/Minor
☐ Free Elective

Analysis and Markov Processes.

- ☐ Requirement for the Major/Minor
☒ Elective for the Major/Minor
☐ Free Elective

Submit Program Modification if this course changes your program.
The number changes; the course remains a core course.

6. Student Learning Outcomes. (List in numerical order. You may wish to visit resource information at the following website: <http://senate.csuci.edu/comm/curriculum/resources.htm>)

Upon completion of the course, the student will be able to:

OLD

- 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.

Upon completion of the course, the student will be able to:

NEW

- Make connections between the essential concepts of probability and measure theory.
- Apply measure theory, integration and mathematical statistics in various situations
- Construct appropriate mathematical models
- Formulate statistics and probability problems in the language of mathematics.
- Analyze the parallelism between Probability and Measure Theory

7. Course Content in Outline Form. (Be as brief as possible, but use as much space as necessary)

OLD

- 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.

NEW

- a) sigma algebras
- b) measures, integrals
- c) Lebesgue measure
- d) Lebesgue Spaces, Radon Nikodym theory
- e) convergence results for integrals
- f) change of variable results for integrals
- g) probabilistic methods in computational sciences

Does this course content overlap with a course offered in your academic program? Yes ☐ No ☐

If YES, what course(s) and provide a justification of the overlap. ☐

Does this course content overlap a course offered in another academic area? Yes ☐ No ☐

If YES, what course(s) and provide a justification of the overlap. ☐

Overlapping courses require Chairs' signatures.

8. Cross-listed Courses (Please note each prefix in item No. 1)

- A. List cross-listed courses (Signature of Academic Chair(s) of the other academic area(s) is required).
- B. List each cross-listed prefix for the course: ☐
- C. Program responsible for staffing: ☐

9. References. [Provide 3-5 references]

OLD *Probability Theory and Examples* R. Durrett, Duxbury (1996) 0534243185

NEW *Probability Theory and Examples* R. Durrett, Duxbury (1996) 0534243185

Elements of Integration and Lebesgue Measure, R. G. Bartle 1995, 0471042226

10. Tenure Track Faculty qualified to teach this course.

Mathematics faculty (priority to Dr. Jorge Garcia)

11. Requested Effective Date or First Semester offered: first academic-year possible

12. New Resource Requested: Yes ☐ No ☒
If YES, list the resources needed.

A. Computer Needs (data processing, audio visual, broadcasting, other equipment, etc.)
☐

B. Library Needs (streaming media, video hosting, databases, exhibit space, etc.)
☐

C. Facility/Space/Transportation Needs:
☐

D. Lab Fee Requested: Yes ☐ No ☐ (Refer to the Dean's Office for additional processing)

E. Other. ☐

13. Will this course modification alter any degree, credential, certificate, or minor in your program? Yes ☐ No ☒

If, YES attach a program update or program modification form for all programs affected.

Priority deadline for New Minors and Programs: **October 4, 2010** of preceding year.

Priority deadline for Course Proposals and Modifications: **October 15, 2010**.

Last day to submit forms to be considered during the current academic year: **April 15th**.

Cindy Wyels (Director, MS in Mathematics)

4/21/11

Jorge Garcia (Associate Professor, Mathematics)

Proposer(s) of Course Modification

Date

Type in name. Signatures will be collected after Curriculum approval.

Approval Sheet

Course: MATH 510 (change to MATH 512)

If your course has a General Education Component or involves Center affiliation, the Center will also sign off during the approval process.

Multiple Chair fields are available for cross-listed courses.

Program Chair		
	Signature	Date
Program Chair		
	Signature	Date
Program Chair		
	Signature	Date
General Education Chair		
	Signature	Date
Center for Intl Affairs Director		
	Signature	Date
Center for Integrative Studies Director		
	Signature	Date
Center for Multicultural Engagement Director		
	Signature	Date
Center for Civic Engagement and Service Learning Director		
	Signature	Date
Curriculum Chair		
	Signature	Date
Dean of Faculty		
	Signature	Date