

NEW COURSE PROPOSAL

PROGRAM AREA _____

- 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 588 STOCHASTIC ANALYSIS (3)

Three hours lecture per week

Prerequisite: Admission to the Computer Science or Mathematics Graduate Program

Topics include: Brownian motion, stochastic integrals, conditional expectation, Kolmogorov's Theorem, applications of Lebesgue Dominated Convergence Theorem. Introduction to Stochastic Differential Equations will be given.

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]*

This course is an elective for MS in Applied Mathematics.

Through this course, students will be able to

- Discuss Brownian motions and stochastic integrals and applications.
- Apply Kolmogorov's theorem
- Perform stochastic analysis of problems from various fields (bioinformatics, finance, computer science)
- Demonstrate solution to stochastic differential equations

4. Is this a General Education Course **NO**

5. Course Content in Outline Form. *[Be as brief as possible, but use as much space as necessary]*

- Brownian motion,
- stochastic integrals,
- conditional expectation and applications
- Kolmogorov's Theorem,
- applications of Lebesgue Dominated Convergence Theorem.
- Introduction to Stochastic Differential Equations.
- Further applications in finance, bioinformatics and computer science

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

1. Introduction to Stochastic Processes Thomas G. Kurtz 2001
2. Stochastic Differential Equations Bernt Ksandal, Springer Verlag; 6th edition (December 2003) 3540047581

3). Bioinformatics: The Machine Learning Approach, by Pierre Baldi, Sren Brunak, MIT Press; ISBN: 026202506X ; 2nd edition (2001)

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.

Jorge Garcia
Proposer of Course

10/31/03
Date

Approvals

Program Coordinator	Date
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GE Committee Chair (If applicable)	Date
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Curriculum Committee Chair	Date
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Dean	Date
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Effective Semester: _____

California State University Channel Islands
New Course Proposal Consultation Sheet

1. Course prefix, number, title, and units: _____ **Math 588**
2. Program Area: _____ MATH _____

Recommend Approval

Program Area/Unit	Program/Unit Coordinator	YES	NO (attach objections)	Date
Art				
Business & Economics				
Education				
ESRM				
Humanities				
Liberal Studies				
Mathematics & CS				
Sciences				
Library*				
Information Technology*				

* If needed