

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 513. ADVANCED ALGEBRA (3)

Three hours of lecture per week

Prerequisite: Admission to the Computer Science or Mathematics Graduate Program

Topics include: Techniques of Group Theory, Rings Fields, Modules, Galois Theory, Algebraic Number Theory, Algebraic Geometry, Techniques of Linear Algebra, Noncommutative Algebra, and Homological Algebra.

2. Mode of Instruction.

	Units	Hours per Unit	Benchmark Enrollment
Lecture	<u>3</u>	<u>1</u>	<u>24</u>
Seminar	<u> </u>	<u> </u>	<u> </u>
Laboratory	<u> </u>	<u> </u>	<u> </u>
Activity	<u> </u>	<u> </u>	<u> </u>

- 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 the proposed MS in mathematics. Students in the course will learn recent advances and applications of algebra in various contexts.

Through this course, students will be able to

- Describe and classify algebraic structure
- Apply algebraic methods in various problems
- Discuss and use linear algebra methods
- Use Noncommutative Algebra
- Apply Galois Theory
- Express algebraic ideas and its application 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**

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

Groups and applications,
Rings, Fields and applications
Modules
Techniques of Group Theory,
Galois Theory

Algebraic Number Theory
Algebraic Geometry and applications
Techniques of Linear Algebra,
Methods of noncommutative Algebra
Homological Algebra and applications.

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

A First Graduate Course in Abstract Algebra, W. J. Wickless, Published By: Marcel Dekker, Inc., 2004
Algebra (Graduate Texts in Mathematics) by Thomas W. Hungerford, Springer Verlag, 2004

7. List Faculty Qualified to Teach This Course.

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.

Jesse Elliott 10/31/03

Proposer of Course

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 482 NUMBER THEORY AND CRYPTOGRAPHY (3)

2. Program Areas: _____ 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