

Faculty Senate Curriculum Committee

Approval Form

Proposal Title: Mathematics Seminar

Sponsor(s): Fran Masal Dept.: Mathematics & Computer Science

Check one: Course Specialization Concentration Achievement Certificate
 Certification Program Major Program Minor Change
(please name: deletion or credit/title/catalog change)

Undergraduate Graduate 3 Credit Hours

<p>Step 1 (Department)</p> <p><input checked="" type="checkbox"/> Approved <u>4/16/85</u> <small>Date</small></p> <p><input type="checkbox"/> Not Approved</p> <p><u>[Signature]</u> <small>Dept. CC Chairperson</small></p> <p><input checked="" type="checkbox"/> Reviewed <u>4/16/85</u> <small>Date</small></p> <p><u>[Signature]</u> <small>Chairperson, Dept.</small></p>	<p>Step 2 (Receipt)</p> <p>SCC# _____</p> <p>Proposal Received _____ <small>Date</small></p> <p>_____ <small>Chairperson, SCC</small></p>	<p>Step 3 (School CC)</p> <p>Reviewed <u>11/17/84</u> <small>Date</small></p> <p><input checked="" type="checkbox"/> Approved <input type="checkbox"/> Not Approved</p> <p>Comments: <i> wording change on objectives</i></p> <p><u>[Signature]</u> <small>Chairperson, School Curr. Comm.</small></p>
--	--	--

Step 4 (Academic Dean) Comments:

Reviewed 3/10/86
Date

[Signature]
Signature, Dean of School

Step 5 (SCC)

Open Hearing 4/10/86
Date Approved by Senate Curriculum Committee _____
Date

Returned to sponsor(s) for the following reasons:
Statement of inclusion in suggested changes for Math Dept. 1985

Step 6 (Faculty Senate)

Presented to Faculty Senate : _____
Date Approved Not Approved

Notification to Vice-President Academic Affairs _____
Date _____
Signature, SCC Chairperson

Step 7 (Vice-President for Academic Affairs)

Received 5/15/86
Date

Approved Yes No

If no, reasons are as follows:


Student credit hours 3

Faculty load hours 3

Equalized credit hours 3

Official copy and approval sheet filed 9/16/86
Date

Signature



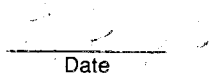
Vice-President for Academic Affairs

Registrar

Approved course description received _____
Date

Hegis Taxonomy and Course Number assigned _____

Signature _____
Registrar



Date

Notification forwarded: Senate Curriculum Committee Chairperson, Department Chairperson(s), Academic Dean(s), Registrar, Sponsor(s).

Proposed New Course

Course Profile

I. Objectives

A. Title: Mathematics Seminar

B. Department: Mathematics and Computer Science

C. Sponsors: Fran Nasat et al

D. Level: Undergraduate - senior level; 3.0 s.t. credit

E. Effect- or curricular pattern: The course is one of a core of required courses in the B. S. in Mathematics degree model, in accordance with proposed changes to the Mathematics major. It will also be available to other majors and to students in master's programs.

F. Prerequisites: Senior standing and the permission of the instructor, or the department chairman, if the seminar is unstated at the time of enrollment. Usually, such permission will be based on the successful completion of two of the following: Geometry I, Abstract Algebra, Differential Equations, Real Variables (Intermediate Analysis), Numerical Analysis, or Applied Mathematics.

G. Time frame: Implemented in the spring of 1988, but not required for all Mathematics majors until spring of 1997.

H. Resources: Sufficient staff, facilities, and library holdings exist.

II. Rationale

This course is unique at the College and is a response to the growing demand for more comprehensively trained mathematicians. The course meets this need by providing each student with the opportunity to do independent work in mathematics and to make an oral presentation of the results. As such, the course also provides each student with a capstone experience that is analogous to that provided for computer science students in the course Advanced Programming.

A course of this nature has also been recommended by the department's self study consultant, Dr. Nathaniel Knox of Jordan State University. In particular, the course will provide the Department with an additional means of evaluating the strengths and weaknesses of its senior majors and the effectiveness and currency of its program in mathematics.

The general characteristics of the course reflect the problem solving background needed for situations that are likely to be found in industry and graduate schools today, as well as providing for changes that are likely to occur over a 5 to 10 year period. In these areas, the seminar allows for extensive problem solving sessions, and the oral presentation of a short (15-20) written report on a mathematical topic by each student.

III. ESSENCE

A. Objectives of the seminar:

At the end of the seminar, students will be able to:

1. Demonstrate various problem solving techniques as applied to advanced mathematical problems.
2. Demonstrate various methods of proof.
3. Cite the literature, implications, and applications of a topic from mathematics.
4. Cite or demonstrate the developing relationship between computers and problem solving in mathematics.
5. Write mathematical prose.

B. Topical outline of the seminar:

1. Introduction to Problem Solving
 - Patterns and algorithms.
 - Discovery, invention, and generalization.
 - Heuristic strategies.
 - Logic and proof.
 - Types of problems.
 - Historic and current unsolved problems.
 - Recently solved problems.
2. Solving Problems from Various Areas
 - Algebra
 - Analysis
 - Foundations
 - Geometry
 - Emerging areas
3. The Literature of Mathematics
 - Journals, reviews, and abstracts.
 - Developing a mathematical report.
 - writing mathematical prose.

C. Grading procedures:

A set of problems will be selected from advanced texts, from the problem solving sections of mathematics journals, and from those suggested by Department faculty. Each student will be graded on the number and type of problems solved (25%) and on the originality and presentation of the solutions (25%).

Additionally, each student will be graded on their oral presentation of their written report: 25% for the presentation and 25% for the report.

IV. CONSULTATIONS

Consultations were solicited from:

The Department, Admin. Studies, Sec. Ed., and Physics.

V. ADDITIONAL INFORMATION

A. Prior curricula:

Many versions of this seminar exist at other colleges. This fact, coupled with needs and desires formulated during the Department's recent self study of its mathematics program, led the Department to investigate such courses and to realize that such a course would be of great benefit to its mathematics majors.

B. Resource materials:

Journal for Recreational Mathematics
Journal of the Mathematics Association of America
The Mathematics Magazine
The College Mathematics Journal
The Mathematics Teacher
The Arithmetic Teacher
School Science and Mathematics
Scientific American

VI. CATALOG DESCRIPTION:

1701.499 Mathematics Seminar (3 S.H.)

Prerequisites: Senior standing and the permission of the instructor.

This course is designed to aid students in integrating their knowledge of mathematics and in further developing their problem solving abilities. The course content includes problem solving techniques, a review of the literature of mathematics, and solving problems drawn from a variety of current resources. Additionally, each student is required to write and to present a short report on a mathematical topic.