

Faculty Senate Curriculum Committee

Approval Form

Proposal Title: Changes For Math Degree Model

Sponsor(s): Ronald Czochar Dept.: Math / CS

Check one: Course Specialization Concentration Achievement Certificate

Certification Program Major Program Minor Change change in requirements for major
(please name: deletion of credit/title/catalog change)

Undergraduate Graduate _____ Credit Hours

Step 1 (Department)

Approved 2/6/86
Date

Not Approved

[Signature]
Dept. CC Chairperson

Reviewed _____
Date

Chairperson, Dept.

Step 2 (Receipt)

SCC# 85-86-88

Proposal Received 04/07/86
Date

Brenda A. Bolay
Chairperson, SCC

Step 3 (School CC)

Reviewed 4/21/86
Date

Approved
 Not Approved

Comments:

[Signature]
Chairperson, School Curr. Comm.

Step 4 (Academic Dean) Comments:

Reviewed 4/24/86
Date

[Signature]
Signature, Dean of School

Step 5 (SCC)

Open Hearing 5/14/86 Approved by Senate Curriculum Committee 5/14/86
Date Date

Returned to sponsor(s) for the following reasons:

Step 6 (Faculty Senate)

Presented to Faculty Senate : 5/21/86 Approved Not Approved
Date

Notification to Vice-President Academic Affairs 5/21/86 Brenda A. Bolay
Date Signature, SCC Chairperson

Step 7 (Vice-President for Academic Affairs)

Received 5/22/86
Date

Approved Yes No

If no, reasons are as follows:

*MATH DEGREE
PROGRAM REQUIREMENT
CHANGES*

Student credit hours NA

Faculty load hours NA

Equalized credit hours NA

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

Signature *Adrian Tadey*
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).

PROPOSAL FOR CHANGE IN DEGREE REQUIREMENTS IN MATHEMATICS

I. DETAILS

A. Change Requested

- From:
1. General Education - 60 S.H.
 2. Health and Physical Education - 3 S.H.
 3. Free Electives - 21 S.H.
 4. Major Courses - 36 S.H.
 - a. Required Courses - 27 S.H. [Prerequisites]
~~DELETE~~ - 0701.102 Intro. to Computer Science [1701.121]
1701.130 Calculus I [1701.122]
1701.131 Calculus II [1701.130]
1701.230 Calculus III [1701.131]
1701.210 Linear Algebra [1701.131]
1701.340 Modern Algebra I [1701.210]
1701.330 Intro. to Real Analysis I [1701.230]
1702.360 Intro. to Prob. and Stat. I [1701.131]

- To:
1. General Education - 60 S.H.
 2. Health and Physical Education - 3 S.H.
 3. Free Electives - 18 S.H.
 4. Major Courses - 39 S.H.
 - a. Required Courses - 30 S.H.
~~ADD~~ - 0704.150 Discrete Math [0701.102]
1701.130 Calculus I [1701.122]
1701.131 Calculus II [1701.130]
1701.230 Calculus III [1701.131]
1701.210 Linear Algebra [1701.131]
1701.340 Modern Algebra I [1701.210]
1701.330 Intro. to Real Analysis I [1701.230]
1702.360 Intro. to Prob. and Stat. I [1701.131]
~~ADD~~ - 1701.499 Math Seminar [Senior standing.]

B. Sponsor: Ronald Czochoz
Department of Mathematics and Computer Science

II. RATIONALE

A. Introduction to Computer Science is a course that is being taught in the high schools and, as with Precalculus, should be expected of any well prepared student entering the major. As a prerequisite for Discrete Math it remains an implied requirement for those who have not taken it or its equivalent.

B. The rapid development of computer science as a discipline and the computer as a tool has produced a need for a more balanced presentation of both continuous and discrete mathematics early in the curriculum. A required course in discrete mathematics taken concurrently with the calculus will provide just such a balanced presentation. The requirement will also serve as an appropriate foundation for more advanced courses that assume a knowledge in elementary set theory, logic, and methods of proof.

C. A need for a senior level seminar, as well as a foundation course such as the proposed Discrete Math course, was discussed in a recent department evaluation. The Math Seminar would provide students with the opportunity to do independent research in mathematics and enable them to present their results orally. This course would serve as a capstone experience to their mathematics major as well as a stepping stone to situations found in industry and graduate schools today.

D. The inclusion of required courses both at the beginning and the end of the student's major signifies an attempt by the department to present mathematics as more than just a series of courses. The combination of the courses in continuous and discrete math at the beginning of the major will present a fairly comprehensive view of what modern mathematics is all about and why the student would want to study mathematics. The mathematics seminar at the end of the major will look back to see how far the student has come and look forward at some of the possible new directions that he might want to explore.

III. ESSENCE

This change will require students majoring in Mathematics to complete 3 more credit hours than is currently needed. A recent survey of Math Majors at nine other colleges showed that the 39 credit hours would not be any more than is currently required at Stockton, Ramapo, Montclair, Trenton, Drexel, or Temple. The effect this change would have on the dual major in Mathematics and Computer Science would again be just an increase of 3 credit hours. The total requirement for the dual major would then be 60 S.H. which is still less than is required for majors in Chemistry or Biology.

IV. CONSULTATIONS

Consultations were solicited from the Department of Mathematics and Computer Science. Also the outside consultant in the Departmental Review, Dr. Nathaniel Knox, specifically endorsed this type of degree model.

CATALOG DESCRIPTION:

1703.150

Discrete Mathematics for Computer Scientists

(Prerequisites: 0701.101 and 1701.121)

This course covers topics in discrete mathematics essential for work in computer science beyond elementary programming. Included are: enumeration systems and computer codes, logic, software structures, algebra, combinatorics, graphs, and automata theory. Emphasis will be placed on the solution of problems in these areas, and, at the instructor's discretion, computer programs which are relevant to these areas.

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.