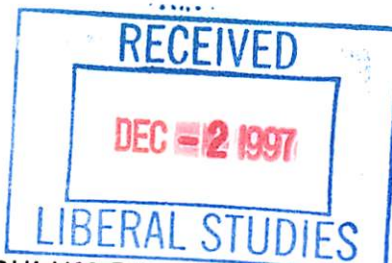


LSC Use Only
Number: _____
Submission Date: _____
Action Date: _____



UWUCC USE Only
Number: 97-356
Submission Date: _____
Action Date: App. 12/16/97
Senate app. 2/3/98

CURRICULUM PROPOSAL COVER SHEET
University-Wide Undergraduate Curriculum Committee

I. CONTACT

Contact Person Gerald Buriok Phone 2608
Department Mathematics

II. PROPOSAL TYPE (Check All Appropriate Lines)

____ COURSE _____
Suggested 20 character title

____ New Course* _____
Course Number and Full Title

____ Course Revision _____
Course Number and Full Title

____ Liberal Studies Approval + _____
for new or existing course Course Number and Full Title

____ Course Deletion _____
Course Number and Full Title

____ Number and/or Title Change _____
Old Number and/or Full Old Title

____ _____
New Number and/or Full New Title

____ Course or Catalog Description Change _____
Course Number and Full Title

☒ PROGRAM: _____ Major _____ Minor _____ Track

____ New Program* _____
Program Name

☒ Program Revision* Mathematics _____
Program Name

____ Program Deletion* _____
Program Name

____ Title Change _____
Old Program Name

____ _____
New Program Name

III. Approvals (signatures and date)

Gerald Buriok 9/14/97
Department Curriculum Committee

[Signature] 10/15/97
College Curriculum Committee

Gerald Buriok 9/14/97
Department Chair

John D. Ed 10/15/97
College Dean

[Signature] 10/14/97
Provost (where applicable)

+ Director of Liberal Studies (where applicable)

Part II. Description of Curriculum Change

1. Catalog description for the revised program in the appropriate form.

Bachelor of Science - Mathematics

Liberal Studies: As outlined in Liberal Studies section **50-52**
with the following specifications:
Mathematics: (included in major)
Liberal Studies electives: no courses with MA prefix

Major: **40-41**

Required courses:

MA 123	Calculus I for Physics, Chemistry, and Mathematics	4sh
MA 124	Calculus II for Physics, Chemistry, and Mathematics	4sh
MA 171	Introduction to Linear Algebra	3sh
MA 216	Probability and Statistics for Natural Science	4sh
MA 241	Differential Equations	3sh
MA 271	Introduction to Mathematical Proofs I	3sh
MA 272	Introduction to Mathematical Proofs II	3sh
MA 480	Senior Seminar	1sh

Controlled electives:

Four courses from the list: **12sh**

MA 371, 421, 422, 423, 424, 427, 476, 477

A minimum of three additional semester hours from
the list of controlled electives above or the following: **3-4sh**

MA 342, 350, 353, 355, 363, 364, 425, 445, 446,
447, 465, 481

Other requirements:

3-9

Computer Science:

CO 110 Problem Solving and Structured Programming 3sh

Foreign Language Intermediate level (1) 0-6sh

Free Electives:

22-31

Total Degree Requirements

124

(1) Intermediate-level Foreign Language may be included
in Liberal Studies electives.

2. Summary of changes:

a. Table comparing old and new programs

Required courses:

<u>Old Program</u>	<u>New program</u>
MA 127 Calculus I (4sh)	MA 123 Calculus I for Physics, Chemistry, and Mathematics (4sh)
MA 128 Calculus II (4sh)	MA 124 Calculus II for Physics, Chemistry, and Mathematics (4sh)
MA 227 Calculus III (4sh)	
MA 171 Intro to Linear Algebra (3sh)	MA 171 Intro to Linear Algebra (3sh)
MA 216 Prob & Stats Nat. Sci. (4sh)	MA 216 Prob & Stats Nat. Sci. (4sh)
MA 241 Differential Equations (3sh)	MA 241 Differential Equations (3sh)
MA 271 Algebraic Structures (3sh)	MA 271 Introduction to Mathematical Proofs I (3sh)
	MA 272 Introduction to Mathematical Proofs II (3sh)
	MA 480 Senior Seminar (1sh)
[25 sh required]	[25 sh required]
Controlled electives:	Controlled electives:
Four courses from the list:	Four courses from the list:
MA371.421.422.423.424.427.476.477	MA371.421.422.423.424.427.476.477
A minimum of three additional semester hours from the list of controlled electives above or the following: MA342.350.353.355.363.364.425.445.446.447.465.481.	A minimum of three additional semester hours from the list of controlled electives above or the following: MA342.350.353.355.363.364.425.445.446.447.465.481.
Other requirements: CO110. foreign language.	Other requirements: CO110. foreign language.

b. List of all associated course changes:

These courses will be deleted from the list of required courses:

MA 127 Calculus I (4sh)
MA 128 Calculus II (4sh)
MA 227 Calculus III (4sh)

These courses will be added to the list of required courses:

MA 123 Calculus I for Physics, Chemistry, and Mathematics (4sh)
MA 124 Calculus II for Physics, Chemistry, and Mathematics (4sh)
MA 272 Introduction to Mathematical Proofs II (3sh)
MA 480 Senior Seminar (1sh)

3. Rationale for Change

One of the objectives of the various mathematics programs is to give students a rigorous understanding of the nature of mathematic and mathematical proofs. As part of this objective, the Mathematics Department has traditionally offered a separate three semester calculus sequence specifically for its majors, including a more rigorous, proof oriented presentation, while offering a "leaner", more applications oriented two semester sequence for the rest of the sciences. In recent years, the Mathematics Department has found this dual approach to be a stumbling block in handling students wishing to transfer or change majors into mathematics. On a number of occasions, students entering or leaving our major midway through one of the calculus sequences has had to start a second sequence from scratch because of differences in pace or rigor. To address this problem, the Mathematics Department has decided to place all of its majors in the two semester calculus sequence for the sciences. To make up for the reduced exposure to mathematical proofs, the faculty has proposed expanding its one semester introduction to proofs course (the former MA 271 Algebraic Structures) into a two semester sequence (proposed as MA 271-272) and add a one credit senior seminar "capstone" course. The expanded proof sequence will contain the more theoretical material from the three semester calculus sequence. Moving this material into the "proof" courses will further benefit the students in that they will have had more time to mature mathematically before grappling with abstractions. Also, having mathematics majors and science majors in the same calculus sequence is more in line with mathematics curricula elsewhere in the nation.

The senior seminar is meant to broaden students' views of mathematics by analyzing problem solving skills and considering the general nature of mathematics. It will focus on extending their understanding of these topics. The senior seminar will also be used by the faculty of the Mathematics Department as an outcomes assessment tool for the Mathematics and Applied Mathematics programs.

Part III. Implementation.

1. How will the proposed revision affect students already in the existing program?

The program revision will become effective with students entering the University in the fall of 1998. The Mathematics Department will offer MA 127, 128, and 227 during the 1998-99 academic year to allow students who are already part way through the sequence, or who need to repeat one of the classes, an opportunity to take the classes. After that, MA 127, 128, and 227 will become inactive and will eventually be deleted from the master list of course. Students already in the program will be permitted to take MA 272 as an elective if they completed the old

MA 271. They will be encouraged to take MA 480 Senior Seminar as an elective.

2. How will the proposed revision affect faculty teaching loads? Have additional faculty been authorized? If you are adding requirements, how will adequate seats be provided.

The affect on faculty teaching loads will be almost negligible. Here is a listing of current offerings and proposed offerings under the revised program.

	<u>Current Course Offerings</u>	<u>Revised Course Offerings</u>
Fall:	MA 123 (2-3 sections) MA 124 (1-2 sections) MA 127 (1 section) MA 128 (1-2 sections) MA 227 (1 section) MA 271 (1 section) Total: (7 - 10 sections)	MA 123 (3-4 sections) MA 124 (2-4 sections) MA 271 (1 section) MA 272 (1 section) Total: (7-10 sections)
Spring:	MA 123 (2 sections) MA 124 (2 sections) MA 127 (2 sections) MA 128 (1 section) MA 227 (1 section) MA 271 (1 section) Total: (9 sections)	MA 123 (4 sections) MA 124 (3 sections) MA 271 (1 section) MA 272 (1 section) MA 480 Senior Seminar (1 section) Total: (10 sections)

Note: Since MA 227 is four credits and MA 272 is three credits, there will be a savings of one credit in faculty workload each semester. MA 480 Senior Seminar will be offered spring semesters only, and will be covered by one of the credits saved. (The courses MA 123, 124, 127, 128, 227 are all four credit courses, while MA 271 and 272 are three credits.) No additional faculty are necessary. Adequate seats will be provided by offering sections of MA 123 and 124 in place of current offerings of MA 127 and 128 respectively.

3. Are other resources adequate?

Yes. No other resources are needed.

4. Do you expect an increase of decrease in the number of students as a result of these revisions? If so, how will the department adjust?

We do not believe the revisions will have any impact on the number of students taking these courses.

Part IV. Course Proposals

Attached.