SIMON FRASER UNIVERSITY

MEMORANDUM

S.76-165

To...... SENATE

From SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Subject...... Changes in Faculties of Arts and Science: Mathematics Entry

Date...... 18th November, 1976

Action taken by the Senate Committee on Undergraduate Studies at its meeting of November 9, 1976 gives rise to the following motion:

MOTION

That Senate approve, and recommend approval by the Board of Governors, the changes as set forth in S.76-165 pertaining to Mathematics in the B.A. program in the Faculty of Arts.

Note – It was noted the changes reflected those being made in Mathematics in the Faculty of Science.

Daniel R. Birch

: ams

SIMON FRASER UNIVERSITY
MEMORANDUM

SCUS 76-42 G

Mr. H. Evans, Secretary, SCUS

From Sheila Roberts, Secretary,

Faculty of Arts Curriculum Committee

Subject Calendar Entry--Mathematics
Faculty of Arts -+ of Science

Date October 22, 1976.

The Faculty of Arts Curriculum Committee has passed the changes in the Mathematics Programme as outlined on the attached calendar sheets. I expect that they will forward the required documentation to you for Senate and SCUS consideration. The committee has also approved the changes in Mathematics 142, Mathematics 242, and Mathematics 320.

Sheila Roberts.

cc. C. Y. Shen. Mathematics.

COURSE DESCRIP-
TION ONLY:
INDICATE WHETHER
LEC/LAB/TUT.

CHANGES REQUESTED FOR 1977/1978 CALENDAR

CHANGES APPROVED BY:

132

Mathematics Program

Location: Room 5119 - Academic Quadrangle
Telephone: 291-3331

The Department of Mathematics offers a program of study within the Faculty of Arts leading to the degree of Bachelor of Arts with a major or honors in Mathematics. Students interested in a Bachelor of Science degree in Mathematics should refer to the Faculty of Science entry.

Requirements for the Bachelor of Arts in Mathematics are set out below. Information on advisers, faculty members, and course descriptions and prerequisites is given within the Faculty of Science section of the Calendar.

General Requirements — Majors and Honors

A B.A. with a major in Mathematics requires completion of 120 semester hours of credit, of which at least 70 hours must be taken within the Faculty of Arts or within the Mathematics Department.

A B.A. with honors in Mathematics requires completion of 132 semester hours of credit, of which at least 82 hours must be taken within the Faculty of Arts or within the Mathematics Department.

Students planning to complete a B.A. with a major or honors in Mathematics must satisfy the Faculty of Arts requirements which appear in this Calendar beginning on page _____.

Lower Division Requirements — Majors and Honors

~~(1) MATH 151-3, 152-3, 232-3 and 253-1 and at least three of MATH 141-2,~~
~~142-3, 161-3, 180-3, 104-3, 195-3), 106-3, 341-3, CMPT-103-3 (or 102-3)~~
~~and CMPT-105-3 (or 100-3). Of these three courses, at most one may be a~~
~~geometry course (MATH 104-3, 105-3, 106-3) and at most one may be a~~
~~Computing Science course (CMPT 100-3, 102-3, 103-3, 105-3).~~
~~NOTE: Students who have been, or who have intended to be, majors or~~
~~honors students in Biological Sciences and who have completed MATH~~
~~154-3 or MATH 155-3 need not take MATH 151-3 or MATH 152-3 respec-~~
~~tively. Students who have been, or who have intended to be, majors or~~
~~honors students in the social sciences and who have completed MATH 150-3~~
~~with a grade of A or B need not take MATH 151-3.~~

> DELETE AND REPLACE BY THE FOLLOWING:
>
> (1) MATH 151-3, 152-3, 232-3, 253-4 and at least 6 additional hours in Mathematics (MATH 100-3 and MATH 190-3 may not be included) or Computing Science 103-3, 105-3. This requirement would normally be met by the end of the fourth level.
>
> NOTE: Students who have been, or who have intended to be, major or honors students in Biological Sciences and who have satisfactorily completed MATH 154-3 or 155-3 need not take MATH 151-3 or 152-3 respectively. Students who have been, or who have intended to be, major or honors students in the social sciences and who have completed MATH 150-3 with a grade of A or B need not take MATH 151-3.

(2) At least 12 semester hours in Group A courses (English, History, Modern Languages, Philosophy). Courses must be taken from at least two of these departments.

PENDING APPROVAL BY FACULTY OF SCIENCE, SGUS and SENATE

COURSE DESCRIPTION ONLY:
INDICATE WHETHER
LEC/LAB/TUT.

DELETE AND REPLACE BY THE FOLLOWING:

(1) At least 45 credit hours in upper division courses, of which at least 30 must be in upper division Mathematics courses. Mathematics majors will be required to take at least three 400 division Mathematics courses. Any upper division courses used to satisfy lower division requirement (1) above may not be counted as part of the 30 hours, and MATH 302-3 and 450-8 also may not be counted as part of the 30 hours. NOTE: PHYS 411-4 may be considered to be a Mathematics course in this case.

DELETE AND REPLACE BY THE FOLLOWING:

(1) At least 60 credit hours in upper division courses, of which at least 50 must be in upper division Mathematics courses. Mathematics honors students will be required to take at least five 400 division Mathematics courses. Any upper division courses used to satisfy lower division requirement (1) above may not be counted as part of the 50 hours. NOTE: PHYS 411-4 may be considered to be a Mathematics course in this case.

MATHEMATICS 153

(3) At least 12 semester hours in Group B courses (Archaeology, Economics and Commerce, Geography, Political Science, Psychology, Sociology and Anthropology). Courses must be taken from at least two of these departments.

(4) At least two courses totalling at least 6 semester hours in Group C courses (Biological Sciences, Biochemistry, Chemistry, Physics). In this case, Mathematics courses are excluded.

(5) A minimum of 30 semester hours must be completed in courses outside the major or honors program.

Upper Division Requirements — Major

(1) At least 45 credit hours in upper division courses, of which at least 30 must be in upper division Mathematics courses. NOTE: PHYS 411-4 may be considered to be a Mathematics course in this case.

Upper Division Requirements — Honors

(1) At least 60 credit hours in upper division courses, of which at least 50 must be in upper division Mathematics courses. NOTE: PHYS 411-4 may be considered to be a Mathematics course in this case.

(2) MATH 310-3, 312-3, 421-4, 422-4 and at least one of 411-4 or 412-4. These courses are counted as part of the 50 hours of Mathematics credit referred to above.

Prerequisite Grade Requirement

Students are expected to obtain a grade of C– or better in Mathematics courses. They will not normally be permitted to enrol in any Mathematics course for which a D grade or lower was obtained in any prerequisite.
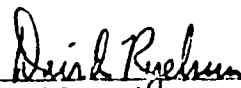
SIMON FRASER UNIVERSITY

MEMORANDUM

To Undergraduate Curriculum Committee Faculty of Science	From David Ryeburn, Chairman Undergraduate Studies Committee Mathematics Department
Subject NEW COURSE PROPOSAL - MATH 242-3 and related calendar changes.	Date September 22, 1976

For some time the Mathematics Department has considered the possibility of fusing together two existing courses, MATH 142-2 (Pure Mathematics II) and MATH 241-2 (Pure Mathematics III). We are now ready to do so and propose a new course, MATH 242-3 (Introduction to Analysis). MATH 242-3 covers the important theoretical material which is at best mentioned in passing while teaching calculus courses, and which is important for anyone desiring to continue his study of Analysis in mathematics. Students will find it easier to fit one 3 hour course into their schedules than two 2 hour courses. We think that it will be more efficient to cover the material this way since material will not have to be reviewed after the semester break and thus very little if any of the material now covered in MATH 142-2 and 241-2 will need to be omitted.

The prerequisite for MATH 242-3 is to be MATH 152-3 (Calculus II) or MATH 155-3 (Calculus II for the Biological Sciences); as an alternative students may take the calculus course concurrently. MATH 242-3 is to be a prerequisite for every course now having MATH 241-2 as a prerequisite. Moreover , we wish to include MATH 242-3 as an additional prerequisite for MATH 320-3 (Theory of Convergence) which currently has MATH 253-4 as its only prerequisite. Our experience in offering that course for the past year shows that most of those students who have not taken MATH 241-2 have much more difficulty with MATH 320-3 than those who have already taken MATH 241-2. The final calendar change necessitated by the introduction of MATH 242-3 is the change in title for MATH 141-2 (now called Pure Mathematics I). This course was considered to be part of the 141-2, 142-2, 241-2 sequence. We would like to request, as a result of the replacement of 142-2 and 241-2 by 242-3, that the title for 141-2 now be "Introduction to Pure Mathematics".

David Ryeburn

cc.   Undergraduate Curriculum Committees,
      Faculty of Arts
      Faculty of Education
      Faculty of Interdisciplinary Studies

COURSE PROPOSAL FORM

1. Calendar Information   Department: __Mathematics__

   Abbreviation Code: __MATH__ Course Number: __141-2__ Credit Hours: __2__ Vector: __2-1-0__

   Title of Course: __Introduction to Pure Mathematics_____(formerly Pure Mathematics I)
   Calendar Description of Course:

   An introduction to some of the fundamental concepts of mathematics.

   Nature of Course   Lecture/tutorial

   Prerequisites (or special instructions):   B.C. High School Math 12, or MATH 100-3,
           or permission of the Department.

   What course (courses), if any, is being dropped from the calendar if this course is
   approved: None

2. Scheduling

   How frequently will the course be offered?

   Semester in which the course will first be offered?

   Which of your present faculty would be available to make the proposed offering
   possible:

3. Objectives of the Course

        NOTE: Rationale for change in course title can be found in the covering memo.

4. Budgetary and Space Requirements (for information only)   .

   What additional resources will be required in the following areas:

   Faculty

   Staff

   Library

   Audio Visual

   Space

   Equipment

5. Approval

   Date: __September 22, 1976__ _____   _____

   _____   _____   _____
   Department Chairman   Dean   Chairman, SCUS

1. Calendar Information   Department: Mathematics

   Abbreviation Code: MATH   Course Number: 242   Credit Hours: 3   Vector: 3-1-0

   Title of Course: INTRODUCTION TO ANALYSIS

   Calendar Description of Course:

   Mathematical induction. Limits of real sequences and real functions. Continuity and its consequences. The Mean Value Theorem. The Fundamental Theorem of Calculus. Series

   Nature of Course   Lecture/tutorial

   Prerequisites (or special instructions): MATH 152-3 or 155-3 must precede or be taken concurrently.

   What course (courses), if any, is being dropped from the calendar if this course is approved: MATH 142-2 and 241-2.

2. Scheduling

   How frequently will the course be offered?   Twice yearly

   Semester in which the course will first be offered? Fall 1977

   Which of your present faculty would be available to make the proposed offering possible: All faculty

   Objectives of the Course

   To cover the important theoretical material which is at best mentioned in passing while teaching calculus courses, and which is important for anyone desiring to continue his study of analysis in mathematics.

4. Budgetary and Space Requirements (for information only)

   What additional resources will be required in the following areas:

   Faculty   None
   Staff   None
   Library   None
   Audio Visual   None
   Space   None
   Equipment
               None

5. Approval

   Date: September 22, 1976

   _____   _____   _____
   Department Chairman   Dean   Chairman, SCUS

SCUS 73-34b:- (When completing this form, for instructions see Memorandum SCUS 73-34a. Attach course outline).

MATH 242-3

Introduction to Analysis

1. Brief survey of some ideas from Logic - connectives, quantifiers, proofs, sets and functions.

2. Mathematical induction.

3. Sequences and series of real numbers.

4. Limits, continuity, and differentiability for real functions.

5. Continuous functions and their properties - the Intermediate Value Theorem, Maximum-Minimum properties, uniform continuity.

6. Theorems of Calculus - Mean Value Theorems, Fundamental Theorem of Calculus, Introduction to the idea of uniform convergence.

TEXT: The Theoretical Side of Calculus, by Colin Clark.

COURSE PROPOSAL FORM

1. Calendar Information　　　　　　　　　　Department: Mathematics

   Abbreviation Code: MATH　Course Number: 320-3　Credit Hours: 3　Vector: 3-1-0

   Title of Course: ___Theory of Convergence___

   Calendar Description of Course:

   > Sequences and series of functions; uniform convergence; consequences of uniform convergence; improper integrals; additional applications of convergence.

   Nature of Course　　Lecture/tutorial

   Prerequisites (or special instructions): Math 242-3 (or 241-2) and MATH 253-4.

   　　(former prerequisite:　MATH 253-4)

   What course (courses), if any, is being dropped from the calendar if this course is approved:
   　　　　　None

2. Scheduling

   How frequently will the course be offered?

   Semester in which the course will first be offered?

   Which of your present faculty would be available to make the proposed offering possible:

3. Objectives of the Course

   　　Rationale for change in prerequisite can be found in covering memo.

4. Budgetary and Space Requirements (for information only)

   What additional resources will be required in the following areas:

   Faculty

   Staff

   Library

   Audio Visual

   Space

   Equipment

5. Approval

   Date:　　September 22, 1976

   _____　　_____　　_____
   Department Chairman　　　　　　　　　　Dean　　　　　　Chairman, SCUS

SCUS 73-34b:- (When completing this form, for instructions see Memorandum SCUS 73-34a. Attach course outline).