

# SIMON FRASER UNIVERSITY

## MEMORANDUM

S. 76-163

To SENATE

From SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Subject New Course Proposal - Math.242-3,  
Introduction to Analysis, and  
Related Calendar Changes

Date 18th November, 1976

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

### MOTION 1

That Senate approve, and recommend approval by the Board of Governors, Math.242-3, Introduction to Analysis.

Note The Mathematics Department in one three-semester hour course proposes to deal in an integrated way with the material previously handled in two two-semester hour courses.

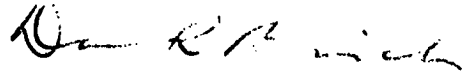
### MOTION 2

That Senate approve, and recommend approval by the Board of Governors, a change in prerequisite such that Math.242-3 is made prerequisite for a course which now has Math.241-2 as a prerequisite and that Math.242-3 is added as a prerequisite for Math.320-3, Theory of Convergence.

### MOTION 3

That Senate approve, and recommend approval by the Board of Governors, a change in title for Math.141-2 from "Pure Mathematics I" to "Introduction to Pure Mathematics".

Note Math 141-2 was previously entitled "Pure Mathematics I" as part of a sequence which also included "Pure Mathematics II and III". Now that the latter two courses have been fused and retitled, it is appropriate to retitle the former.

  
Daniel R. Birch

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SENATE COMMITTEE ON UNDERGRADUATE STUDIESCOURSE PROPOSAL FORMCalendar InformationDepartment: MathematicsAbbreviation Code: MATH Course Number: 242 Credit Hours: 3 Vector: 3-1-0Title 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. Students who have obtained credit for MATH 241-2 cannot subsequently *take* MATH 242-3 *for further credit.*

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?      Summer 1977

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

All faculty

3. 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. ApprovalDate: September 22, 1976

*Thomas R. Beilly*  
Department Chairman

*John DeLobis*  
Dean

Chairman, SCUS

# SIMON FRASER UNIVERSITY


F-76-12

## MEMORANDUM

Undergraduate Curriculum Committee	From	David Ryeburn, Chairman
Faculty of Science		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

Syllabus

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.