

SIMON FRASER UNIVERSITY

S.73-13

MEMORANDUM

To SENATE

From SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Subject FACULTY OF SCIENCE - CHANGES IN
DEPARTMENT OF MATHEMATICS
REQUIREMENTS AND COURSES

Date DECEMBER 13, 1972

MOTION:

"That Senate approve, as set forth in S.73-13, changes in the Department of Mathematics requirements and courses, including the following:

1. Mathematics 106-3 - change in course description.
2. Inclusion in the Mathematics Department's list of courses the new Computing Science courses 102-2 and 100-3, with CMPT 102-2 acceptable in lieu of Math 106-3.
3. Changes in prerequisites for Mathematics 142-2, 241-2, 291-2, 292-3, 406-3, 412-4, 413-4.
4. Changes in course descriptions for Mathematics 101-3, 142-2, 413-4.
5. Discontinuation of Mathematics 205-3."

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Subject FACULTY OF SCIENCE - CHANGES IN
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Date DECEMBER 13, 1972

On recommendation of the Faculty of Science, the Senate Committee on Undergraduate Studies has approved, as set forth in SCUS 72-38, changes in the Department of Mathematics requirements and courses, and recommends approval to Senate.

SIMON FRASER UNIVERSITY

5'0 615 72-38'

MEMORANDUM

To..... Mr. H. Evans, Registrar and Secretary
to the Senate Committee on Undergra-
duate Studies

From..... J. S. Barlow, Chairman
Faculty of Science Undergraduate
Curriculum Committee

Subject..... Mathematics Undergraduate Calendar
Revisions

Date..... November 28, 1972

The Faculty of Science Undergraduate Curriculum Committee met on Friday, November 24, 1972, to consider the revisions to the Mathematics section of the Undergraduate Calendar.

The Committee specifically discussed the following recommendations and all were recommended for approval by the Committee:

1. That Math still offer Math 106-3 (with revised description).
2. That Math be allowed to include Computing Science courses in their list of courses.
3. That the following changes in prerequisites be approved as a good many of these changes are based on implied changes in the content of the courses:
 - a. #9, re Math 142-2: See attached copy.
 - b. #11, re Math 241-2 "
 - c. #13, re Math 406-3 "
 - d. #14, re Math 412-4 "
 - e. #15, re Math 413-4 "

May I also point out that the addition of Math 291-2 and 292-3 have been approved by our Faculty and were previously submitted to Senate for approval.

A copy of the proposed changes has been revised (by hand) according to the above recommendations and is attached for your information.


J. S. Barlow

JSB:la..

cc: Department of Mathematics

C.C. Meyers
Boyer

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1. P. 245 - 246

Faculty List

Revised Faculty List (copy attached)

Editorial Revision

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2. P. 247

REQUIREMENTS FOR STUDENTS MAJORING OR TAKING HONORS IN MATHEMATICS

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(i) to obtain credit by the end of the fourth level for the following lower level Mathematics courses: 151-3, 152-3, 232-3, 253-4 (formerly 251-3), and at least three of the following courses: 106-3, 141-2, 142-2, 161-3, 180-3, 195-3.

(i) to obtain credit by the end of the fourth level for the following lower level Mathematics courses: 151-3, 152-3, 232-3, 253-4 (formerly 251-3) and at least three of the following courses: 106-3 (or CMPT 102-2), 141-2, 142-2, 161-3, 180-3, 195-3, 241-3.

(In choosing courses from this list students should note that 106-3 and 241-2 ...)

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3. P. 248

REQUIREMENTS FOR STUDENTS COMPLETING A MINOR PROGRAM IN MATHEMATICS

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(i) to obtain credit for 11 semester hours of Mathematics courses numbered 101 through 299 inclusive. These would normally consist of the following courses: 151-3 and 152-3 and 232-3, and either 106-3 or 161-3 or 241-2 or 253-4 (formerly 251-3).

(i) to obtain credit for 11 semester hours of mathematics courses numbered 101 through 299 inclusive. These would normally consist of the following courses: 151-3 and 152-3 and 232-3, and either 106-3 (or CMPT 102-2) or 161-3 or 241-2 or 253-4 (formerly 251-3).

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4. P. 248

PROGRAMS OF STUDY

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The Department offers courses in four areas of the Mathematical Sciences - Pure Mathematics, Applied Mathematics, Statistics, and Computing Science

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Editorial Revision

This adjustment is to make allowance for the introduction of the new Computer Science courses, and for the fact that Math 106-3 will cease to be offered (at least temporarily). Not be offered in 1973-74.

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<p>PROGRAMS OF STUDY</p> <p>The lower division Mathematics courses (100 and 200 levels) allow the student to obtain a broad mathematical background. In addition to the required Calculus and Linear Algebra courses, there are courses in Statistics, Geometry, the History of Mathematics, and Applied Mathematics. Courses in Computer Science and related topics are offered by both the Computer Science and Mathematics Departments.</p>	<p>5. P. 249</p> <p>PROGRAMS OF STUDY</p> <p>The lower division Mathematics courses (100 and 200 levels) allow the student to obtain a broad mathematical background. In addition to the required Calculus and Linear Algebra courses, there are courses in Statistics, Geometry, the History of Mathematics, and Applied Mathematics. Courses in Computer Science and related topics are offered by both the Computer Science and Mathematics Departments.</p>	<p>Editorial Revision</p>
<p>DESCRIPTION OF COURSES</p> <p>Students enrolled in the calculus sequence ... member of the Mathematics Department.</p> <p>This list also includes courses offered by the Computer Science Department.</p> <p>CAPT 100-3 Introduction to Concepts and Procedures</p> <p>An introduction to the syntax, vocabulary and semantics of language structures through which computers may be made to implement procedures and solve problems. (2-1-1)</p> <p>CAPT 102-2 Introduction to PL/I Programming</p> <p>Introduction to the PL/I programming language. (1-0-1)</p>	<p>6. P. 250</p> <p>DESCRIPTION OF COURSES</p> <p>Students enrolled in the calculus sequence ... member of the Mathematics Department.</p> <p>This list also includes courses offered by the Computer Science Department.</p> <p>CAPT 100-3 Introduction to Concepts and Procedures</p> <p>An introduction to the syntax, vocabulary and semantics of language structures through which computers may be made to implement procedures and solve problems. (2-1-1)</p> <p>CAPT 102-2 Introduction to PL/I Programming</p> <p>Introduction to the PL/I programming language. (1-0-1)</p>	<p>The Department wishes to include the Computer Science courses in its listing since neither Math 106-3 nor 205-3 will be offered during the 73-74 academic year. These courses should also be listed in view of the fact that students may take CAPT 102-2 to partially satisfy lower level degree requirements in Mathematics.</p>
<p>101-3 Introduction to Statistics</p> <p>A pre-calculus course in random variables and their distributions, estimating and hypothesis testing. (3-0-1)</p>	<p>7. P. 250</p> <p>101-3 Introduction to Statistics</p> <p>An introductory course in random variables and their distributions, estimating and hypothesis testing. (3-0-1)</p>	<p>This course description was altered to prevent the misconception that this course was a prerequisite to the calculus courses.</p>

<p>8. <u>P. 250</u> 106-3 Introduction to Computing Introduction to the concepts of algorithm and flowchart. Their relation to the structure of a computer. Use of a high level programming language for elementary problem solving. (3-1-0)</p>	<p>8. <u>P. 250</u> 106-3 Introduction to Computing Introduction to the concepts of algorithm and flowchart. The use of Fortran for problem solving including the use of available subroutine packages. (3-1-0)</p>	<p>As a result of the introduction of the new Computer Science courses, the syllabus for Math 106-3 had to be altered to avoid duplication. This change in description is to reflect the change in syllabus.</p>
<p>9. <u>P. 250</u> 142-2 Pure Mathematics II An elementary axiomatic development of the number systems: Natural numbers, integers, rational numbers, real numbers and complex numbers. (2-1-0) Prerequisite: Mathematics 141-2 or permission of the instructor.</p>	<p>9. <u>P. 250</u> 142-2 Pure Mathematics II An elementary axiomatic treatment of the real number system as a complete ordered field. Limits of real sequences and real functions. (2-1-0) Prerequisite: Mathematics 141-2 or 151-3.</p>	<p>It is not necessary for a student to have worked in elementary logic and set theory in order to take Math 142-2. However, if he has not done Math 141-2, then he should at least have some elementary knowledge of the use of functions in the calculus. It is for this reason that the prerequisite change has been made. The change in description is to more accurately reflect the course content.</p>
<p>10. <u>P. 251</u> 205-3 Computers and Programming</p>	<p>10. <u>P. 251</u> 205-3 delete</p>	<p>This course is being deleted as a result of the introduction of new courses in Computer Science. It will eventually be replaced by a lower level Numerical Analysis course.</p>
<p>11. <u>P. 252</u> 241-2 Pure Mathematics III A rigorous treatment of some of the important concepts and theorems of calculus. (2-1-0) Prerequisite: Mathematics 152-3.</p>	<p>11. <u>P. 252</u> 241-2 Pure Mathematics III A rigorous treatment of some of the important concepts and theorems of calculus. (2-1-0) Prerequisite: Mathematics 142-2 and 152-3, or For permission of the Department. Physics students, Math 252-4 may be substituted.</p>	<p>The reason for the addition of Math 142-2 to the prerequisite list for this course is that a student needs to know material on limits of sequences and of real functions which is covered in Math 142-2, in order to begin work in Math 241-2.</p>

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ADD, after the 253-4 listing, and before the 302-3 listing the following:

NOTE: The prerequisites for the selected topics courses listed below (291-2 and 292-3) will be specified according to the particular topic or topics offered under these course numbers.

291-2 Selected Topics in Mathematics

The topics included in this course will vary from semester to semester depending on faculty availability and student interest. (2-1-0)

292-3 Selected Topics in Mathematics

The topics included in this course will vary from semester to semester depending on faculty availability and student interest. (2-1-0)

New Listings.

13. P. 253

406-3 Numerical Analysis I

Theoretical and practical study of
ordinary differential equations. (3-1-0)

Prerequisites: Mathematics 106-3 and 232-3
and 352-2.

13. P. 253

406-3 Numerical Analysis I

Theoretical and practical study of
differential equations. (3-1-0)

Prerequisites: Mathematics 106-3 (or CMPT 102-2) and
232-3 and preferably 352-2.

The adjustment made in the prerequisite is to acknowledge the introduction of the new Computer Science courses. Over the last three weeks of Math 412-3 I have given a brief introduction to the elementary solution of differential equations. Math 352-2 is desirable but not necessary as a prerequisite. By having that course as a strict prerequisite, Math 406 will be more accessible to students in Computer Science.

14. P. 253

412-4 Methods II

Series, harmonic analysis, matrices
special functions. (4-1-0)

Prerequisites: Mathematics 253-4 (formerly 251-3)
and 352-2.

14. P. 253

412-4 Methods II

Series, harmonic analysis, matrices
special functions. (4-1-0)

Prerequisites: Mathematics 232-3 and 253-4 (formerly
251-3) and 352-2.

The omission of Math 232-3 as a prerequisite for this course was an oversight. It always should have been a prerequisite. Linear spaces are dealt with in an elementary fashion in Math 232-3, and linear spaces permeate the mathematics in Math 412-4.

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413-4 Ordinary Differential Equations

A study of ordinary differential equations in the real and complex domain. (4-1-0)

Prerequisites: Mathematics 352-2 and 422-4.

15. P. 254

413-4 Ordinary Differential Equations

A study of ordinary differential equations in the real domain. (4-1-0)

Prerequisite: Mathematics 352-2.

The syllabus for this course was found to be too heavy with the inclusion of solutions of differential equations in the complex domain. The syllabus is demanding enough without this material. Since this material is to be removed from the course, it is no longer necessary to have Math 422-4 (Complex Variable I) as a prerequisite