

SIMON FRASER UNIVERSITY

MEMORANDUM

S.79-144

To Senate

From Senate Committee on Undergraduate
Studies

Subject Proposed Option in the B.Sc.
Honors Program in Mathematics

Date 1979-11-15

Action taken by the Senate Committee on Undergraduate Studies at its meeting of November 6, 1979 gives rise to the following motion:

MOTION

That Senate approve and recommend approval to the Board, as set forth in S.79-144, the proposed option in the B.Sc. Honors program in Mathematics.

Note - The proposal does not involve any new courses but identifies a group of courses as a suitable option for physics-oriented mathematicians. According to the Chairman of the Departmental Undergraduate Studies Committee, it is designed "to fill a gap between our present Honors Mathematics program and the Honors Mathematical Physics program."


Daniel R. Birch
Chairman

/csg

SIMON FRASER UNIVERSITY

MEMORANDUM

SCUS 79-40

H. M. Evans

SCUS

Subject Proposed option in Honors Mathematics
B.Sc. Programme

From N. Heath

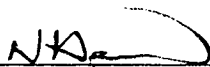
Assistant to the Dean of Science

Date 1979 10 29

The Faculty of Science approved the following motion at its meeting of 1979 10 24.

"That the proposed option in the B.Sc. Honors programme in Mathematics be approved and forwarded to SCUS and Senate for consideration and approval."

The option is described in the attached document. A rationale prepared by Dr. C. Graham is also attached.


N. Heath

NH/rcw

SIMON FRASER UNIVERSITY

MEMORANDUM

Dr. C.L. Kemp, Chairman
Faculty of Science Undergraduate
Curriculum Committee

From G.A.C. Graham, Chairman
Undergraduate Studies Committee
Mathematics Department

Subject RATIONAL FOR MATHEMATICS B.SC. (HONORS) OPTION Date September 24, 1979

This option is composed of cognate courses in Mathematics, Physics, and Computing and successful completion will earn a B.Sc. (Honors) degree in Mathematics. It is designed to optimize the training of physics-oriented mathematicians at SFU and to fill a gap between our present Honors Mathematics program and the Honors Mathematical Physics program.

The option requires as few as 37 hours of upper division Mathematics courses which compares with the 50 such hours currently required for Honors in Mathematics. It requires 15-18 hours of suitable upper division Physics courses. The possibility of including Math 262, 263, Engineering Mechanics I, II together with courses like Math 361, 467, 468, 469 and Physics 325, 344, 345, 385, 413, 425 provide the opportunity of developing individual programs that are well suited for students interested in engineering type problems. No laboratory courses are required but students have the opportunity to take them as electives.

By contrast, the Mathematical Physics program has been primarily directed to the training of a certain type of theoretical physicist and had its role in this direction further enhanced after the revisions of Fall 1978. These revisions made that program even less attractive than before for physics-oriented mathematicians and it was agreed then that the currently proposed option for Honors in Mathematics should be brought forward (e.g. see Minutes of Faculty of Science of November 27, 1978).

Since the option may be viewed as doing nothing more than introducing a desirable element of flexibility into our current requirements for Honors in Mathematics and involves no extra expenditure of resources whatsoever, it is not necessary to address the question of marketability. Nevertheless, it is apparent that there is a demand for the type of training provided by the option, that is spurred by the availability of company and government jobs in such areas as Earth Sciences (e.g. tectonophysics, oceanography and glaciology), magnetohydrodynamics and the continuum mechanics of materials (the example of stress cracks in structures is topical) among others.

G.A.C. Graham

G.A.C. Graham

GACG/dr

cc: Dr. J.M. Webster, Dean of Science
Dr. M. Singh, Chairman, Mathematics

For insertion immediately before the three-line paragraph that precedes the section headed "Advisory Service" on page 414 of the 1979-80 SFU Calendar.

The Mathematics Department also offers a further option (which, if exercised, supersedes requirements (i), (ii), (iii), (iv) above) for a B.Sc. (Honors) degree in Mathematics. The required courses are as follows:

MATH 151-3, 152-3, 232-3, 242-3, 251-3, 252-3, 272-3

PHYS 120-3, 121-3, 211-3, 221-3

CMPT 103-3

MATH 310-3, 313-3, 314-3, 316-3, 320-3, 322-3, 361-3[§], 418-3

PHYS 344-3, 345-3, 385-3

At least 2 of the following courses (*indicates choices which are particularly recommended): MATH 387-3, 415-3*, 416-3*, 419-3*, 424-3*, 425-3, 426-3, 438-3*, 439-3

At least 5 of the following courses:

(A) MATH 466-4, 467-3, 468-4, 469-4, 470-4, 471-4

(B) PHYS 325-3, 355-3, 384-3, 413-3, 415-3, 425-3, 484-3

with at least 2 courses from each of group A and B.

The choice of courses must be made in such a way that at least five of the above courses at the 400-level are completed. In addition the total number of credit hours must be at least 132 of which at least six must be in a Faculty other than the Faculty of Science and at least 60 must be at the upper division.

[§]indicates that MATH 262-4 (or MATH 161-3) is a prerequisite for MATH 361-3. The package MATH 262-4, 263-4 is well suited for students interested in engineering type problems.

Co-operative System

Co-operative Education is a system which combines work experiences with academic studies. The student spends alternate semesters on campus and in paid, study-related jobs.

Arrangements for the work experiences are made through the Department's Co-op Co-ordinator and the University's Office of Co-op Education. For further details on the co-op system students should refer to that section of the Calendar.

Requirements for Students Majoring or Taking Honors in Mathematics

Students majoring or taking honors in Mathematics for a B.A. degree are subject to the general regulations of the Faculty of Arts; in observing these regulations, Mathematics courses are counted as Faculty of Arts courses. Students majoring or taking honors in Mathematics for a B.Sc. degree are subject to the general regulations of the Faculty of Science; in observing these regulations, Mathematics courses are counted as Faculty of Science courses. In either case, students majoring or taking honors in Mathematics will be required by the Mathematics Department:

- (i) To obtain credit for Mathematics 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 programs and who have satisfactorily completed MATH 154-3 or 155-3 will 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 satisfactorily completed MATH 157-3 or 158-3 will not take MATH 151-3 or 152-3 respectively.

- (ii) To obtain at least six semester hours of credit in courses other than Mathematics offered by the Faculty of Science. (Physics courses which are recommended for the Applied Mathematics option, as described in the Student Guide issued by the Mathematics Department, can be used for the satisfaction of this requirement.)

- (iii) In the case of major students — to obtain a total of at least 44 (B.Sc.) or 45 (B.A.) semester hours of credit in upper division courses, of which at least 30 hours must be in upper division Mathematics courses; Mathematics majors will be required to take at least three 400 division courses, none of which may be

a Directed Studies or Honors Essay course. Any upper division courses used to satisfy condition (i) 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.

- (iv) In the case of honors students — to obtain a total of at least 60 semester hours of credit in upper division courses, of which at least 50 hours must be in upper division Mathematics courses; Mathematics honors students will be required to take at least five 400 division Mathematics courses, none of which may be a Directed Studies or Honors Essay course. Any upper division courses used to satisfy condition (i) above may not be counted as part of the 50 hours, and MATH 302-3 and 450-8 also may not be counted as part of the 50 hours.

For the purpose of satisfaction of conditions (i), (iii) and (iv) above, PHYS 411-4 may be counted as a Mathematics course.

Mathematics students are expected to obtain a grade of C- or better in their courses, as they will normally not be permitted to enrol in any Mathematics course for which a D grade or lower was obtained in any prerequisite.

Advisory Service

Mathematics Major and Honors students should consult an adviser in the Mathematics Department for further information before planning their programs in detail. Although no specified upper division courses are required in order to satisfy conditions (iii) or (iv) above, students will find that certain combinations of courses will form more cohesive programs than others. Reading the Student Guide issued by the Mathematics Department and discussing these topics with an adviser is highly recommended.

Requirements for Students Completing a Minor Program in Mathematics

Students completing a minor program in Mathematics are subject to the general regulations of the Faculty in which they are registered. They normally will be required by the Mathematics Department—

- (i) To obtain at least 11 semester hours credit for Mathematics courses numbered 101 through 299 inclusive. These courses normally will include MATH 151-3 (or 150-3 or 154-3 or 157-3), 152-3 (or 155-3 or 158-3), and 232-3.
- (ii) To obtain credit in at least 15 semester hours of upper division Mathematics courses. These courses may not include MATH 450-8 or PHYS 411-4.

The Mathematics Department plans to offer a sufficient number of courses over a two year period to enable students to complete a minor in Mathematics through evening study.