

S.74 756

SIMON FRASER UNIVERSITY

MEMORANDUM

To SENATE

From SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Subject FACULTY OF SCIENCE -
MATHEMATICAL PHYSICS HONORS PROGRAM

Date NOVEMBER 14, 1974

MOTION 6: "That Senate approve - and recommend approval to the Board - the proposed program, as set forth in S.74-156, for a Mathematical Physics Honors Program."

REGISTRAR'S NOTE:

As the proposal represents no new courses or requirements but merely a combination of courses it is intended that, if approved, it become effective immediately.

S.74-156

SIMON FRASER UNIVERSITY

MEMORANDUM

To.....SENATE.....

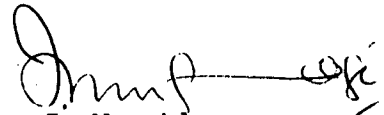
From.....SENATE COMMITTEE ON UNDERGRADUATE STUDIES.....

Subject.....Faculty of Science: Mathematical
Physics Honors Program.....

Date.....November 14, 1974.....

At its meeting of 12th November, the Senate Committee on Undergraduate Studies discussed the attached proposal for the establishment of an honors program in Mathematical Physics. It should be noted that this proposal includes no new courses or requirements but is merely a combination of courses to allow those students who wish to do so, approximately ten to fifteen a year, to achieve recognition for work in Mathematical Physics. It is thus intended that, if the proposal is approved, it become effective immediately.

This proposal is now forwarded to Senate, with the Committee's recommendation that it be approved.


I. Mugridge

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att.

SCUS 74-55

SIMON FRASER UNIVERSITY

MEMORANDUM

To: Senate Committee on

From: A.E. Curzon

Undergraduate Studies

Acting Dean of Science

Subject: MATHEMATICAL PHYSICS
(HONORS) PROGRAM

Date: November 7, 1974

The attached Mathematical Physics (Honors) Program proposal was approved by the Faculty of Science at its meeting of October 31, 1974 and is now forwarded to the Senate Committee on Undergraduate Studies for consideration.

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A. E. Curzon

MATHEMATICAL PHYSICS (HONORS) PROGRAM

Proposed Calendar Entry

An Honors program in Mathematical Physics is offered jointly by the Departments of Mathematics and Physics. Entry into this program requires the permission of both Departments. It is possible for graduates from this program to do graduate work in either Physics or Mathematics; depending upon the particular interest of the student, a small amount of additional work in either Physics or Mathematics may be required.

Levels 1,2,3, and 4

PHYS 201-2, 202-2, 203-2, 204-2, 205-2, 206-2, 233-2,
234-2, and 235-2

MATH 151-3, 152-3, 232-3, 253-4, 310-3, 312-4

CMPT 103-3

19 semester hours of electives.

TOTAL: 60 semester hours.

Levels 5,6,7, and 8

PHYS 331-3 (or 332-3), 341-4, 351-4, 381-4, 382-4, 411-4,
412-4, 421-4

MATH 320-3, 361-3, 371-3, 422-4

Any two of the following 5 courses: MATH 413-4, 414-4,
420-4, 431-4, 432-4

And three of the following 8; at least one of which
must be either MATH 468-4 or 469-4:

MATH 466-4, 467-4, 468-4, 469-4, 470-4, 471-4,

PHYS 461-4, 471-4

Plus 8 hours of electives.

TOTAL: 72 semester hours.

It is recommended that CHEM 104-3 and 105-3 be taken in the electives. Students interested in numerical methods are reminded of the availability of MATH 316-3 and 416-4.

Rationale:

Theoretical physicists have played an important role in the development of modern physics. People like Maxwell, Boltzmann, Gibbs, Einstein and Feynman, to mention only a few, have revolutionized physics. More important to note is the fact that there has been a strong revival of mathematical physics in the past decade or so. It has brought mathematicians and physicists together in a fruitful coalition in such areas as Quantum field theory and Statistical Mechanics. It is expected that this flurry of activity in mathematical physics will continue for quite some years to come.

Graduate programs in mathematical physics are now being instituted in various universities (e.g. University of Indiana); requiring students to have a strong background in physics and in mathematics. The program we have designed enables students to take more mathematics courses than regular Physics Honors students, in lieu of the advanced laboratory courses in physics, as it is felt that the advanced fourth year labs are not essential for students who wish to do theoretical physics.

It is felt that there is both a demand and a need for the institution of a program in Mathematical Physics at Simon Fraser University. Already we have received requests from students for such a program. Some students have, in fact, switched their majors from physics to mathematics because they are more theoretically inclined, but would have preferred to obtain a degree in mathematical physics.

It is further felt that the establishment of a program in Mathematical Physics would bring about a closer interaction between the Departments of Mathematics and Physics.

Research in mathematical physics is highly exacting and usually draws students who are at the top of their class. For this reason, it is felt that the institution of an Honors program only in mathematical physics is highly desirable. Students who are initially enrolled in the Honors program, but who fail to obtain Honors standing would have the following recourse: 1) the inclusion in his program or the addition of either PHYS 331 or 332 would permit the student to obtain a Physics Major degree, or 2) the inclusion or addition of two

of MATH 141, 142, 161, 180, 194, 196 or 241 would permit the student to obtain a Mathematics Major degree.

Graduates of the Mathematical Physics program would be acceptable to do advanced study in either Mathematics or Physics, subject to the following restrictions at Simon Fraser University: 1) graduates would be acceptable in Theoretical Physics but could need an upper level Physics laboratory course to qualify for admission to an experimental research program, 2) students may be required to take a few undergraduate courses in Mathematics, the nature and number of which would be determined by the particular area of Mathematics in which the student plans to do graduate work.

To summarize, it is recommended that the Honors program in Mathematical Physics be instituted. Since this program requires students to take a particular selection of existing courses from the Departments of Mathematics and Physics, it would not require either additional staff or funds. It is felt that the program is both viable and justifiable from the point of view of the importance of this subject in future research, and because there is a demand from students for this type of program.