

SIMON FRASER UNIVERSITY

MEMORANDUM

S.79-7

To..... Senate  
.....  
..... Revisions to the Mathematical  
Subject..... Physics Honours Program.....

From..... N.R. Reilly, Chairman  
..... Senate Committee on  
..... Undergraduate Studies.....  
Date..... 8 December 1978.....

Action taken by the Senate Committee on Undergraduate Studies at its meeting on December 5 gives rise to the following motion:

MOTION:

That Senate approve and recommend approval to the Board of Governors the changes proposed in the requirements for the Mathematical Physics Honours Program as detailed in S79-7 .

The revision of the Mathematical Physics Honours Program was precipitated by the recent revisions in the Physics program which were approved at the meeting of Senate on December 4, 1978. The current proposal results from lengthy discussions between the two departments of Mathematics and Physics and has the support of both departments.

*Norman R. Reilly*

N.R. Reilly

/kb

## MEMORANDUM

To..... H.M. Evans, Registrar  
..... and Secretary to S.C.U.S.

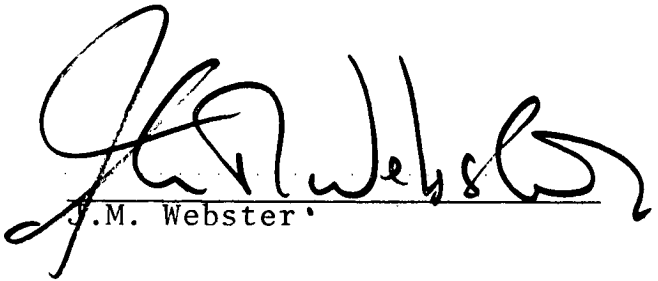
From J.M. Webster,  
..... Dean of Science

Subject... Proposed Revision to the  
..... Mathematical Physics Honors BSc

Date. 1978 11 27

The Faculty of Science today approved a proposal to revise the Mathematical Physics Honors B.Sc. programme. The revision is necessary because of the extensive revisions to the Physics curriculum, recently approved by S.C.U.S.

The proposal is submitted herewith to S.C.U.S. for consideration and approval.

  
J.M. Webster

JMW:km

PROPOSED REVISION OF MATHEMATICAL PHYSICS HONORS PROGRAMME

(For current requirements, see p. 420 in the 1978-79 calendar)

Lower Division Required Courses (37 semester hours)

<u>CMPT</u>	103-3	Introduction to a High Level Programming Language I
<u>MATH</u>	151-3	Calculus I
	152-3	Calculus II
	232-3	Elementary Linear Algebra
	242-3	Introduction to Analysis
	253-4	Calculus III
<u>PHYS</u>	120-3	Physics I
	121-3	Physics II
	131-2	General Physics Laboratory
	211-3	Intermediate Mechanics
	221-3	Intermediate Electricity and Magnetism
	233-2	Introductory Physics Laboratory A
	234-2	Introductory Physics Laboratory B

Upper Division Required Courses (66 - 70 semester hours)

<u>MATH</u>	310-3	Introduction to Ordinary Differential Equations
	312-4	Multidimensional Calculus
	320-3	Theory of Convergence
	361-3	Mechanics of Deformable Media
	422-4	Complex Variable I

Two of:

	316-3	Numerical Analysis I
	371-3	Introduction to Probability and Statistics
	413-4	Ordinary Differential Equations
	414-4	Partial Differential Equations
	420-4	Linear Analysis
	486-4	Probability

Two of:

	416-3	Numerical Analysis II
	466-4	Tensor Calculus
	467-3	Vibrations
	468-4	Continuum Mechanics
	469-4	Fluid Dynamics
	470-4	Variational Calculus
	471-4	Special Relativity

One of:

421-4 Real Variable I  
423-4 Real Variable II  
431-4 Algebra I  
432-4 Algebra II  
441-4 Topology

PHYS

325-3 Relativity and Electromagnetism  
344-3 Thermal Physics  
345-3 Statistical Physics  
355-3 Optics  
384-3 Methods of Theoretical Physics I  
385-3 Quantum Physics  
413-3 Advanced Mechanics  
415-3 Quantum Mechanics  
425-3 Electromagnetic Theory

One of:

331-3<sup>(a)</sup> Electronics Laboratory  
332-3 Intermediate Laboratory

One of:

465-3 Solid State Physics  
484-3 Methods of Theoretical Physics II  
NUSC 485-3 Particle Physics

Note a) The requirement that PHYS 326-3 Electronics and Instrumentation must precede or be taken concurrently with PHYS 331-3 can be waived with the permission of the Physics Department.

Other requirements:

6 semester hours of non-Science electives.  
Further elective credit \* at any division to bring the total credit for the degree to 132 semester hours.

\* excluding EDUC 401, 402, 405

It is recommended that CHEM 104-3 and 105-3, General Chemistry I and II, be taken in the electives.

## Mathematical Physics (Honors) Program

### Advisers:

*G. A. C. Graham* - Associate Professor of Mathematics  
*M. Plischke* Assistant Professor of Physics  
*C. Y. Shen* Assistant Professor of Mathematics  
*K. S. Viswanathan* Associate Professor of Physics

Mrs. J. H. Easton

Location: Room AQ5121 - Math Dept.

Telephone: 291-4849

Mr. R. L. Kerr, Program Co-ordination

Location: Room P8435 - Science Complex

Telephone: 291-3152

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. Students interested in this program are strongly advised to contact Mr. R. L. Kerr as soon as possible in order to schedule their programs.

### Levels 1, 2, 3, and 4

PHYS 120-3, 121-3, 211-3, 221-3, 6 hours of 200-division Physics laboratory courses.

MATH 151-3, 152-3, 232-3, 242-3, 253-4, 310-3, 312-4

CMPT 103-3

16 semester hours of electives

TOTAL: 60 semester hours

### Levels 5, 6, 7, and 8

PHYS 334-4 (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 five courses: MATH 413-4, 414-4, 420-4, 431-4, 432-4

And three of the following eight courses, at least one of which must be either MATH 468-4 or 469-4:

MATH 466-4, 467-3, 470-4, 471-4,

PHYS 461-4, 471-4

Plus 7 to 9 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.

# SIMON FRASER UNIVERSITY

## MEMORANDUM

SCUS 78-78A

*Distributed at Meeting*

..... H.M. Evans, Registrar.....	From... Dr.. R.. Frindt, Physics.....
..... Registrar's Office.....	..... Dr.. C.. Graham, Mathematics.....
Subject... Revisions to the MATHEMATICAL PHYSICS HONORS PROGRAMME	Date... 1978.12.01.....

In addition to the changes brought about by revisions in the Physics curriculum, the Mathematics and Physics departments have reconsidered the Mathematics course requirements for the Mathematical Physics Degree and have agreed to the following revisions:

(Note - courses are all MATH unless designated P = PHYS)

- 1) Change 371 from a required course to a choice within the option group: 2 of (371, 413, 414, 420, 486)
- 2) Remove 431 and 432 from the same option list (see 6 below)
- 3) Remove the requirement that one of 468 and 469 must be taken - see 5)
- 4) Remove the Physics courses PHYS 461 and PHYS 471 from the list which used to read: 3 of (468, 469, 466, 467, 470, 471, P461, P471)
- 5) Add 416, 468 and 469 to option list: Two of (416, 466, 467, 468, 469, 470, 471)
- 6) Add 316 as an option in the list given in 1)
- 7) Create a new option list: One of (421, 423, 431, 432, 441)

The new programme should allow the student more flexibility in choosing upper division Mathematics courses.

The revised Mathematics requirements are more consistent with the objectives of the Programme as viewed by the Department of Physics. Further curriculum development is under way in the Department of Mathematics to create an option within the Mathematics Honors Programme which will include courses in both Mathematics and Physics. This is expected to complement the Mathematical Physics Programme.

*R. Frindt*  
\_\_\_\_\_  
R. Frindt

*C. Graham*  
\_\_\_\_\_  
C. Graham

RF:CG/km