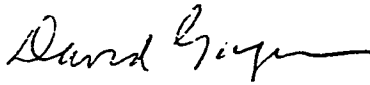


**SIMON FRASER UNIVERSITY  
OFFICE OF THE VICE-PRESIDENT, ACADEMIC**

**MEMORANDUM**

**To:** Senate

**From:** D. Gagan, Chair   
Senate Committee on Academic Planning

**Subject:** Faculty of Education -  
Curriculum revisions

**Date:** November 12, 1996

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SCUS Reference: SCUS 96-36  
SCAP Reference: SCAP 96-53

Action undertaken by the Senate Committee on Undergraduate Studies and the Senate Committee on Academic Planning gives rise to the following motion:

**Motion:**

“that Senate approve and recommend approval to the Board of Governors the curriculum revisions for the Faculty of Education as set forth in S.96-76 as follows:

- i) Addition of B.Ed. Specialization in Mathematical Sciences

**For Information:**

Acting under delegated authority of Senate, SCUS approved revisions of a minor nature as follows:

- ii) Change of credit hours:  
EDUC 406 - 5 (for HEART students) to 406 - 12
- iii) Change of requirements for Bachelor of Education:  
a Major or two Minors, completed from the  
Faculties of Applied Sciences, Arts or Science,  
or a B.Ed. Specialization from the Faculty of  
Education
- iv) New Special Topics courses EDUC 298 and 299
- v) 2 credit option to be added to all EDUC 300 level  
Special Topics
- vi) Change of prerequisite and title: EDUC 428
- vii) Clarification in calendar wording regarding Secondary  
Applications

In all cases agreement has been reached between the Faculty and the Library in the assessment of library costs associated with new courses.

Any Senator wishing to consult the full report of curriculum revisions within the Faculty of Education should contact Bobbie Grant, Senate Assistant at 291-3168 or e-mail [bgrant@sfu.ca](mailto:bgrant@sfu.ca)

Courses for the B. Ed. Specialization

in Mathematical Sciences

(Sept. 27/96)

<u>Course</u>	<u>Name</u>	<u>Prerequisite</u>
<b>Lower Division (select at least 20 semester hours)</b>		
MATH 113-3	Geometry	
MATH 144-3	Introduction to Pure Math.	
MATH 151-3	Calculus I	
MATH 171-1	Computer Explorations in Calculus I	MATH 151 (co-requisite)
MATH 190-3	Principles of Mathematics for Teachers	
MACM 101-3	Discrete Mathematics I	
CMPT 103-3	Introduction to PASCAL	
MATH 152-3	Calculus II	MATH 151
MATH 172-1	Computer Explorations in Calculus II	MATH 152 (co-requisite)
MATH 232-3	Elementary Linear Algebra	MATH 151
MATH 242-3	Introduction to Analysis	MATH 152
MACM 201-3	Discrete Mathematics II	MACM 101
STAT 270-3	Intro. to Prob. and Stats.	MATH 152
<b>Upper Division (select at least 30 semester hours)</b>		
MATH 308-3	Linear Programming	MATH 232 (+ MATH 243)
MATH 310-3	Ordinary Diff. Equations	MATH 152 + MATH 232
MATH 332-3	Intro. to Applied Algebraic Systems	MATH 232
MATH 339-3	Groups and Symmetry	MATH 232
MATH 342-3	Elementary Number Theory	a 200 MATH or MACM course
MATH 343-3	Applied Discrete Mathematics	MACM 201 + a computing language
MATH 380-3	History of Mathematics	MATH 151 & 232 + 152 or 113
MATH 398-3	Selected Topics in Mathematics	depending on topic
MATH 439-3	Algebraic Systems	MATH 332
STAT 330-3	Linear Models in Applied Stats. I	MATH 232 + STAT 270
MACM 316-3	Numerical Analysis I	MATH 152, MATH 232 + a comp lang
CMPT 320-3	Social Impl. of a Computerized Society	45 sem. hr. + a computing science course
CNS 491-3	Technology & Canadian Society	60 sem. hr.
HIST 360-3	History of Science: 1100- 1725	9 sem. hr. of History or Science

## Rationale

At the present time, the Bachelor of Education degree requires candidates to complete a major or two minors outside the Faculty of Education. It also requires them to complete a Liberal Arts Certificate (30 credits). Students who wish to specialize in mathematics teaching at present would be required to complete a major in mathematics. This component requires a minimum of 27 credits of lower division mathematics (primarily calculus), 30 credits of upper division mathematics (including at least 3 courses at the 400 level), and 15 credits in allied upper division courses--a total of 72 credits.

To obtain a B. Ed. degree under the current regulations, a student specializing in mathematics education would be required to complete a minimum of 162 credits, while the minimum stated general requirement for the B. Ed. is 150 credits. At the same time, such a student may not obtain a broad exposure to different branches of mathematics commonly taught in schools (e.g., arithmetic, algebra, geometry, statistics, probability, matrices, vectors, calculus, computing, problem solving). Under the proposal for the mathematical sciences specialization, the student would require 140 hours to meet the requirements for subject matter knowledge, the Liberal Arts Certificate, and courses required in Education for the B. Ed., leaving at least 10 credits for electives to meet the 150-credit B. Ed. minimum requirement.

The purpose of introducing a specialization in the mathematical sciences for the B. Ed. thus is two-fold:

- 1) to allow students to specialize in the subject area while at the same time providing an opportunity to choose electives at any level, and
- 2) to provide a program more closely aligned to the requirements of the public school system.

SIMON FRASER UNIVERSITY

FACULTY OF EDUCATION

MEMORANDUM

To: Leone Prock, Director  
Undergraduate Programs

From: Tom O'Shea

Date: 1996-10-25

Re: Mathematics specialization for B. Ed Degree

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This memo is in response to the request from for more information on the proposed mathematics specialization within our B. Ed. program. I have listed the questions submitted to me through our representative on SCUS and responded to each in turn.

1. Was Math consulted?

Yes, we have discussed this proposal many times over a number of years. Specific members of the math dept. included Harvey Gerber (at one time chair of their Undergraduate Programs committee) and Kathy Heinrich (former chair of the department). The proposal viewed by SCUS included suggestions from the current math dept. chair of Undergraduate Programs regarding recent changes in their course offerings and prerequisites.

2. Is this going to be the only specialization? Or will these specializations proliferate?

I can speak only for the math specialization. It was designed to meet the specific needs of mathematics teachers in the public schools, and is consistent with recent recommendations of the National Council of Teachers of Mathematics and the American Mathematical Association. It should be noted that the specialization we have proposed is one in "mathematical sciences," rather than more narrowly in mathematics. Other subject areas may also wish to amend traditional course configurations to better reflect their needs.

3. What are the resource implications?

None. Students would enrol in courses currently listed in the SFU calendar. Only the combination of courses would be affected.

Does this mean the Education students won't take Math courses?

No. There is no change in the requirements for teacher certification.

Will it pull students away from other math courses?

Yes. Students will enrol in math courses deemed most useful and appropriate for their future role as mathematics teachers.

4. Will the students be affected by this specialization?

It's very difficult to interpret what is being asked.

5. How many students will take this specialization?

Numbers are not known. At the present time, most people with an interest in mathematics and teaching complete a first degree from Arts or Science, with a major in mathematics. Then they complete our one-year PDP which entitles them to a teaching certificate. The problem with this model is that it maximizes subject content and minimizes pedagogical and pedagogical-content knowledge. This may be all right for students completing a major in mathematics who want to prepare themselves for any contingency...future

graduate work, employment in industry, and so on... and later find themselves in a position, perhaps due to lack of job opportunities, where they decide to become teachers. On the other hand, some students know from the beginning that they want to become mathematics teachers. It is this group that we wish to tap and provide the best preparation. As explained in the rationale that accompanied the proposal, at the present time such students would need to complete a minimum of 162 credits, with little room for academic electives. The proposed specialization would require students to acquire a minimum of 50 credits in the mathematical sciences, that is, one-third of the 150 credits required for the B. Ed. degree. At the same time, for the B. Ed. they are required to obtain a broader education through the Liberal Arts certificate (30 credits), and to develop an understanding of education and teaching through the Faculty of Education (60 credits). This leaves 10 credits of "electives" through which they may wish to extend their knowledge in line with their personal interests.

We would hope that students who intend, from the beginning, to become mathematics teachers would find this route attractive.

6. There was concern about the current problem of poor teaching of math in public schools. Is this program going to water down the quality even more?

Emphatically not. It will improve the quality.

7. Will this lead to fewer Math majors?

This is possible, for the reasons outlined in #5 above.

I hope these comment help to clarify our proposal. I would be pleased to appear before SCUS if they which to have more detailed information.

A handwritten signature in black ink, appearing to read "J. J. Shea", written in a cursive style.