

SIMON FRASER UNIVERSITY
Senate Committee on University Priorities
Memorandum

S.05-106

TO: Senate

FROM: John Waterhouse
Chair, SCUP
Vice President, Academic

RE: Proposal for a PhD in Education,
Mathematics Education Stream (SCUP 05-054)

DATE: September 15, 2005

At its September 14, 2005 meeting SCUP reviewed and approved the proposal from the Senate Graduate Studies Committee for the establishment of a PhD in Education, Mathematics Education Stream, which is now forwarded to Senate for approval.

Motion

That Senate approve and recommend to the Board of Governors the proposal for a PhD in Education, Mathematics Education stream, including the following new courses:

EDUC 941-5 Mathematical Learning and Thinking: Historical, Philosophical
and Psychological Dimensions
EDUC 942-5 Contemporary Theories and Methodologies in Mathematics Education
encl.

c: J. Driver
P. Shaker
T. O'Shea
S. Dench

**SIMON FRASER UNIVERSITY
DEAN OF GRADUATE STUDIES
MEMORANDUM**

TO: SCUP
FROM: Jonathan Driver, Dean of Graduate Studies
SUBJECT: Revision: Faculty of Education: PhD in Mathematics Education
(GS2005.30)
DATE: 20th September 2005
cc: Tom O'Shea, Education

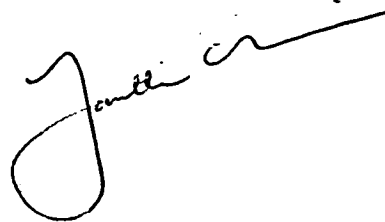
At its meeting of July 11th, Senate Graduate Studies Committee approved a new stream in the PhD program in Education: PhD in Mathematics Education. This was also approved at the SCUP meeting of September 14th.

In my original covering memo to SCUP I reported that the new program would be housed within the Curriculum Theory and Implementation stream, and that it would be implemented in Fall 2005. This is incorrect. The new program is a separate stream and its implementation is planned for Fall 2006. These issues were fully understood at the SGSC meeting, but I reported them incorrectly in my original covering memo to SCUP.

As noted in my original memo, the new stream includes two new courses:

Education 941-5
Mathematical Learning and Thinking: Historical, Philosophical and Psychological Dimensions

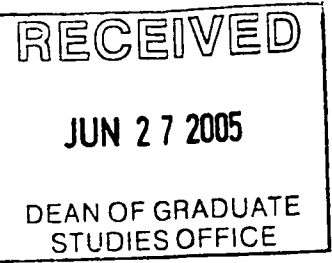
Education 942-5
Contemporary Theories and Methodologies in Mathematics Education



SIMON FRASER UNIVERSITY

Faculty of Education

MEMORANDUM



GS2005.30

TO: Vivian Blaker

FROM: Tom O'Shea

**RE: MATERIAL FOR SENATE
GRADUATE STUDIES COMMITTEE**

DATE: June 27, 2005

The proposal for a Ph.D. in Mathematics Education (attached) was approved by the Faculty of Education at a meeting held on June 20, 2005. Please add this document to the agenda for the next Senate Graduate Studies Committee meeting. Copies of the new course proposals have been forwarded to the Faculty of Arts and Social Sciences and the Faculty of Science for possible course overlap. In addition, a copy has been forwarded to the Library for their assessment.

Many thanks!

A handwritten signature in black ink, appearing to read "Tom O'Shea". The signature is written in a cursive style with a large, looping initial "T".

Tom O'Shea
Director of Graduate Programs

:smh

Attachment

**Simon Fraser University
Faculty of Education**

**A PhD in Education,
MATHEMATICS EDUCATION STREAM**

In 1998 our Faculty approved a proposal for Mathematics Education emphasis within the existing Ph.D in Curriculum Theory and Implementation. The current proposal is for a Ph.D. in Mathematics Education as a separate stream within the Ph.D program in Education.

Description

The Ph.D in Mathematics Education is designed to attract educators preparing for a career as researchers in an academic setting or leaders in a professional setting. The program will provide students with advanced knowledge of historical developments in mathematical thinking and learning and of current theories and methodologies. It will provide a venue for developing and carrying out an independent research study. Through the program the students will become acquainted with current trends in the field and with the national and international research community.

Rationale

Mathematics education as a field of study has developed rapidly in the last 30 years. There is a demand for qualified Canadian mathematics educators at the University level. This demand will intensify with the development of University Colleges and other degree-granting institutions. Across the continent there is a severe shortage of qualified candidates to fill Faculty positions in mathematics education. This shortage is the result of two trends: retirement of faculty identified as "mathematics educators" (the specialization was conceptualized only about 30 years ago) and acknowledgement of the need for "specialists" in this area, especially within departments of Mathematics. Furthermore, specialists in mathematics education are now sought by school districts, community colleges and other non-university institutions.

SFU has a growing reputation for innovation and integrity in mathematics education, both nationally and internationally. SFU has benefited from successful collaboration among the Faculty members from the Faculty of Education and the Department of Mathematics. We have had successful experiences with students at the doctoral level and our reputation is growing. We have already attracted both local and international students and we expect that a more focused doctoral program will attract more candidates. We anticipate an enrollment of 4-5 students a year. We currently have 9 students in the existing Curriculum Theory and Implementation (Mathematics Education) program, one of whom will graduate in June. We have offered admission to 4 candidates to the existing stream for September 2005.

Our experience with students specializing in mathematics education under the CT&I umbrella shows that the currently required coursework does not provide sufficient exposure to mathematics Education as a field of study. We have faced major dilemmas in teaching EDUC 946 – Doctoral seminar in Mathematics Education, attempting to pack into one course everything that we consider essential for a doctoral level mathematics educator and have been forced to make difficult choices. Another indication of the deficiency of the current "emphasis" program is our Reading Club. This endeavor, that includes reading and monthly discussion around issues in mathematics education, was initiated by the doctoral students and is administered by Peter Liljedahl. We consider this to be only a partial compensation for what cannot be accomplished in the coursework in the current version of the program. The new variant of the Doctoral program aims at providing a broad exposure to mathematics education while at the same time maintaining a focus on education in general.

Key faculty members who will be teaching and supervising

Dr. Stephen Campbell
Dr. Peter Liljedahl
Dr. Rina Zazkis

Admission Requirements

General requirements for admission, residence, comprehensive examination and thesis will apply. An additional admission requirement will be a Master's Degree in Mathematics, Mathematics Education, or demonstration of prior knowledge of Mathematics and issues related to teaching and learning Mathematics.

Curriculum

The required coursework will consist of 25 credits as follows:

- EDUC 941-5 Historical Overview of Mathematical Thinking and Learning
(proposal attached)
- EDUC 942-5 Contemporary Theories and Methodologies in Mathematics Education
(proposal attached)
- EDUC 946-5 Doctoral Seminar in Mathematics Education
(see description below)
- EDUC 910-5 Directed Readings

Electives

One additional graduate course as approved by the students' supervisor/pro-tem and the coordinator of the program.

Additional courses may be required based on the applicants' background and research interests.

A note on course offerings

Initially, the courses will be offered on biennial basis.

EDUC 941 will be taught by Campbell (and may accommodate students in lieu of EDUC 901).

EDUC 942 will be taught by Liljedahl and Zazkis on rotation or in collaboration.

EDUC 946 will be taught by Campbell, Liljedahl and Zazkis on rotation or in collaboration.

Intended Start Date

Fall 2006

EDUC 946-5 Doctoral Seminar in Mathematics Education

This seminar is designed to extend and deepen students' understanding of the discipline of mathematics education. It examines international developments, research programs, special interest groups and issues in mathematics teacher education. It builds on and supports participating students' interests in their academic endeavors.

REQUIRED CALENDAR CHANGE

CURRENT (p.291, as a sub-entry under Curriculum Theory and Implementation)

Curriculum theory and Implementation PhD program candidates who wish to specialize in mathematics education must have prior knowledge of issues related to mathematics teaching and learning.

Students are required to complete the following

EDUC 901-5 Seminar in the History of Educational Theory
EDUC 902-5 Interdisciplinary Seminar in Contemporary Educational Theory
EDUC 910-5 Directed Readings
EDUC 946-5 Doctoral Seminar in Mathematics Education

EDUC 899-10 Doctoral Thesis
EDUC 983-5 Doctoral comprehensive Examination

and one of

EDUC 911-5 Colloquium in Curriculum Theory (1)
EDUC 912-5 Colloquium in Curriculum Theory (2)

PROPOSED CALENDAR ENTRY (separate entry under Programs of Study)

Mathematics Education

This program, leading to a Ph.D. degree, is for those interested in becoming scholars and leaders in Mathematics Education. Prior knowledge of Mathematics and issues related to teaching and learning Mathematics is required.

Students are required to complete the following:

EDUC 941-5 Historical Overview of Mathematical Thinking and Learning
EDUC 942-5 Contemporary Theories and Methodologies in Mathematics Education
EDUC 946-5 Doctoral Seminar in Mathematics Education
EDUC 910-5 Directed Readings
One elective graduate course as approved by the supervisor and coordinator of the program.
EDUC 983-5 Doctoral Comprehensive exam
EDUC 899-10 Doctoral Thesis

Tentative Scheduling of Courses

	Year 1 intake	Year 2 intake	
Fall	EDUC 941		Campbell
Spring	EDUC 910 or EDUC 9xx		
Summer	EDUC 9xx or EDUC 910		
Fall	EDUC 942	EDUC 942	Liljedahl OR Zazkis
Spring	EDUC 946	EDUC 946	Liljedahl OR Zazkis
Summer		EDUC 9xx or EDUC 910	
Fall	EDUC 941	EDUC 941	Campbell
Spring	EDUC 910 or EDUC 9xx	EDUC 9xx or EDUC 910	
Summer	EDUC 9xx or EDUC 910		

Detailed information on the new courses is available upon request by calling
Bobbie Grant, Senate Assistant, at 604 291-3168 or email bgrant@sfu.ca