

## MEMORANDUM

SENATE

From..... J. M. WEBSTER,

DEAN OF GRADUATE STUDIES

Date..... NOVEMBER 17, 1983

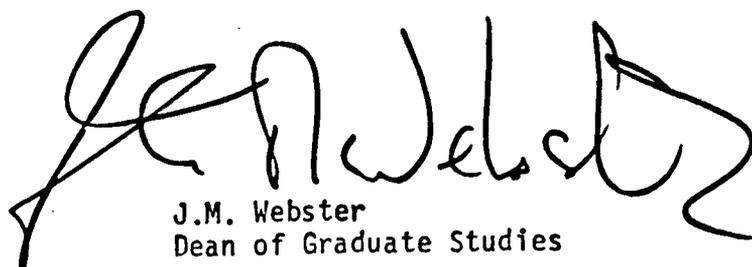
Subject..... PROPOSED GRADUATE CURRICULUM  
CHANGES - MATHEMATICS

Action undertaken by the Senate Committee on Graduate Studies at its meeting of November 14, 1983, gives rise to the following motion:-

MOTION:

"That Senate approve and recommend approval to the Board of Governors, as set forth in S.83-111, the proposed changes in Mathematics including the following:-

- i) New course proposals -
- |            |                       |                 |
|------------|-----------------------|-----------------|
| MATH 825-4 | Enumeration           |                 |
| MATH 826-4 | Posets and Matroids   |                 |
| MATH 827-4 | Discrete Mathematics: | Selected Topics |
- ii) Change of numbers -
- |            |                           |                |
|------------|---------------------------|----------------|
| MATH 822-4 | Topology I                | to MATH 839-4  |
| MATH 823-4 | Topology II               | to MATH 840-4  |
| MATH 824-4 | Topology: Selected Topics | to MATH 841-4" |



J.M. Webster  
Dean of Graduate Studies

# SIMON FRASER UNIVERSITY

## MEMORANDUM

H. Evans  
Secretary to Senate  
Subject: RECOMMENDATIONS TO SCGS

From: P. Dobud  
Administrative Assistant  
to the Dean of Science  
Date: October 25, 1983

The following items, described in the enclosed documentation, have been approved by the Faculty of Science. Could you please arrange to have them placed on the Agenda of the next Senate Committee on Graduate Studies Committee meeting?

### NEW MATHEMATICS COURSES

"That the proposal for the following new Mathematics graduate courses be approved (paper F-83-9)."

MATH 825-4 Enumeration  
MATH 826-4 Posets and Matroids  
MATH 827-4 Discrete Mathematics: Selected Topics

### CHANGE OF NUMBER OF GRADUATE COURSES IN MATHEMATICS

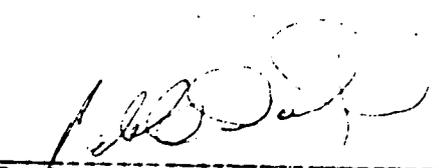
"That the proposal to change the number of the following graduate courses in the Mathematics Program be approved (paper F-83-9)."

FROM MATH 822-4 Topology I  
TO MATH 839-4 Topology I

FROM MATH 823-4 Topology II  
TO MATH 840-4 Topology II

FROM MATH 824-4 Topology: Selected Topics  
TO MATH 841-4 Topology: Selected Topics

/mgj  
Encls./

  
P. Dobud

cc: D. Sutton, Chairman  
Faculty of Science  
Graduate Studies Committee

# SIMON FRASER UNIVERSITY

F-83-9

## MEMORANDUM

To.....Dr. J. Cochran.....  
.....Dean of Science.....  
Subject.....NEW COURSE PROPOSALS.....  
.....Math 825, 826 & 827.....

From.....Dr. B.S. Thomson, Chairman.....  
.....Graduate Program Committee.....  
.....Mathematics Department.....  
Date.....August 12, 1983.....

The Mathematics Department wishes to add to the graduate calendar three new courses in the area of Discrete Mathematics. We currently list only two courses in this area (Math 820-4, Graph Theory, Math 821-4, Combinatorics) although we have responded to the students additional needs with reading courses and selected topics courses.

The Discrete Mathematics group (Alspach/Brown/Godsil/Hell/Heinrich) that is operating in our department has a reputation in this field in North America second only to the Group at the University of Waterloo. They have hosted numerous special meetings, they invite many distinguished visiting faculty, and they are beginning to attract quality graduate students. To support their growth and to maintain their reputation we need to formalize our offerings and make the graduate calendar better reflect the true extent of activity in the Discrete Mathematics area.

For these reasons we propose three new courses (Math 825, 826, 827 described in the attached material). The first two of these represent important areas of mathematics that can not be touched upon in any of our current listings, and the third course is a selected topics course which is merely a notational change from the usual "Pure Mathematics" Selected Topics course (Math 800-4).

Our intention is to offer these courses on a two year cycle. The effect will be to increase the variety of courses for students who are specializing in this area, but with no increase in the total number of courses mounted. There are no budgetary implications that arise as the research group here together with the visitors that it now regularly attracts are more than adequate for our teaching needs.

To ensure a pleasing presentation in the calendar we have decided to re-number our 3 graduate Topology courses. The details are indicated on the course proposal forms attached.

BST/sh  
Encl.

*Brian Thomson*

AUG 16 1983

SINON FRASER UNIVERSITY

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: MATHEMATICS Course Number: 825-4

Title: ENUMERATION

Description: Enumeration problems concerned with permutations, sequences, partitions lattice walks and graphs, algebraic and analytic properties of generating functions, asymptotic analysis.

Credit Hours: 4 Vector: \_\_\_\_\_ Prerequisite(s) if any: \_\_\_\_\_

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: 5 When will the course first be offered: FALL 84

How often will the course be offered: Once per two years.

JUSTIFICATION:

Enumeration problems are important in both pure and applied mathematics.

Presently these can only be superficially studied in Math 821.

RESOURCES:

Which Faculty member will normally teach the course: Alsapach/Brown/Godsil/Hell

What are the budgetary implications of mounting the course: None

Are there sufficient Library resources (append details): Yes

- Appended: a) Outline of the Course
- b) An indication of the competence of the Faculty member to give the course.
- c) Library resources

Approved: Departmental Graduate Studies Committee: [Signature] Date: 15.08.83

Faculty Graduate Studies Committee: [Signature] Date: 15 Sept.

Faculty: [Signature] Date: OCT 24 1983

Senate Graduate Studies Committee: [Signature] Date: 16/11/83

Senate: \_\_\_\_\_ Date: \_\_\_\_\_

PROPOSED COURSE IN: ENUMERATION

- (a) Outline: This course would be an introduction to the important classes of enumeration problems and the methods used to attack them.

These problems arise in connection with permutations, sequences, partitions, lattice walks and graphs. Methods used include: constructing combinatorial conferences, manipulation of generating functions, permanents and MacMahon's Master Theorem, formal language theory.

Some emphasis would be placed on computation of exact and asymptotic values of the coefficients of generating functions and also on applications of enumeration theory to such areas as distribution-free statistics, statistical physics and computer science.

- (b) Prof's Alspach, Brown, Godsil and Hell are all competent to teach a graduate course in this area. Godsil has a number of papers studying generating functions arising in graph theory.
- (c) Current library facilities are adequate.

SIMON FRASER UNIVERSITY

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: MATHEMATICS Course Number: 826-4

Title: Posets and Matroids

Description: An introduction to the theory of posets, geometric lattices  
and matroids

Credit Hours: 4 Vector: \_\_\_\_\_ Prerequisite(s) if any: \_\_\_\_\_

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: 5 When will the course first be offered: SPRING 85

How often will the course be offered: Once per two years.

JUSTIFICATION:

Posets and matroids form an important part of discrete mathematics which  
can currently only be covered at the expense of the standard material (designs,  
finite geometry), if at all.

RESOURCES:

Which Faculty member will normally teach the course: Atspach/Godsil/Hell/Heinrich

What are the budgetary implications of mounting the course: None

Are there sufficient Library resources (append details): Yes

- Appended: a) Outline of the Course
- b) An indication of the competence of the Faculty member to give the course.
- c) Library resources

Approved: Departmental Graduate Studies Committee: [Signature] Date: 15-08-83

Faculty Graduate Studies Committee: [Signature] Date: 15 Sept

Faculty: [Signature] Date: Oct 24 1983

Senate Graduate Studies Committee: [Signature] Date: 16/11/83

Senate: \_\_\_\_\_ Date: \_\_\_\_\_

PROPOSED COURSE ON: POSETS AND MATROIDS

- (a) An introduction to ordered combinatorial structures. Material to be covered chosen from:
- (a) basic results in finite lattice theory (structure of distributive and geometric lattices)
  - (b) theory of Möbius inversion, posets and topology
  - (c) Sperner theory of posets
  - (d) linear extensions of posets
  - (e) matroid theory and its applications
- (b) Prof's Alspach, Godsil, Heinrich and Hell are all competent to teach this course. Hell has published several papers in matroid theory.
- (c) Current library facilities are adequate.

SIMON FRASER UNIVERSITY

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: Mathematics Course Number: 827-4

Title: Discrete Mathematics: Selected Topics

Description: \_\_\_\_\_

Credit Hours: 4 Vector: \_\_\_\_\_ Prerequisite(s) if any: -

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: 5 When will the course first be offered: Fall 84 *[Signature]*

How often will the course be offered: As required

JUSTIFICATION:

We are having an increasing number of experts in Discrete Mathematics visiting us; with this course available they can offer a graduate course on their specialities.

RESOURCES:

Which Faculty member will normally teach the course: Visitors and Faculty

What are the budgetary implications of mounting the course: -

Are there sufficient Library resources (append details): Yes (nothing extra needed).

- Appended: a) Outline of the Course
- b) An indication of the competence of the Faculty member to give the course.
- c) Library resources

Approved: Departmental Graduate Studies Committee: *[Signature]* Date: 15.08.83  
 Faculty Graduate Studies Committee: *[Signature]* Date: 15 Sept  
 Faculty: *[Signature]* Date: OCT 24 1983  
 Senate Graduate Studies Committee: *[Signature]* Date: 16/11/83  
 Senate: \_\_\_\_\_ Date: \_\_\_\_\_

This is a special topics course, to be given by visiting discrete mathematicians on areas in which they have special knowledge.

SINON FRASER UNIVERSITY

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: Mathematics Course Number: 839-4

Title: Topology I

Description: Please note that we are only changing the number from  
Math 822-4 to Math 839-4 - course content is still the same.

Credit Hours: 4 Vector: \_\_\_\_\_ Prerequisite(s) if any: \_\_\_\_\_

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: \_\_\_\_\_ When will the course first be offered: \_\_\_\_\_

How often will the course be offered: \_\_\_\_\_

JUSTIFICATION:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

RESOURCES:

Which Faculty member will normally teach the course: \_\_\_\_\_

What are the budgetary implications of mounting the course: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Are there sufficient Library resources (append details): \_\_\_\_\_

- Appended: a) Outline of the Course
- b) An indication of the competence of the Faculty member to give the course.
- c) Library resources

\_\_\_\_\_  
\_\_\_\_\_

Approved: Departmental Graduate Studies Committee [Signature] Date: 15.08.83

Faculty Graduate Studies Committee [Signature] Date: 15 Sept

Faculty: [Signature] Date: OCT 24 1983

Senate Graduate Studies Committee [Signature] Date: 16/11/83

Senate: \_\_\_\_\_ Date: \_\_\_\_\_

SIMON FRASER UNIVERSITY

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: Mathematics Course Number: 840-4

Title: Topology II

Description: Please note that we are only changing the number from Math 823-4 to Math 840-4 - course content is still the same.

Credit Hours: 4 Vector: \_\_\_\_\_ Prerequisite(s) if any: \_\_\_\_\_

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: \_\_\_\_\_ When will the course first be offered: \_\_\_\_\_

How often will the course be offered: \_\_\_\_\_

JUSTIFICATION:

RESOURCES:

Which Faculty member will normally teach the course: \_\_\_\_\_

What are the budgetary implications of mounting the course: \_\_\_\_\_

Are there sufficient Library resources (annend details): \_\_\_\_\_

- Appended: a) Outline of the Course
- b) An indication of the competence of the Faculty member to give the course.
- c) Library resources

Approved: Departmental Graduate Studies Committee: GAC Graham Date: 15.08.83  
 Faculty Graduate Studies Committee: B.D. Thomson Date: 15 Sept  
 Faculty: J.F. Cochran Date: OCT 24 1983  
 Senate Graduate Studies Committee: [Signature] Date: 16/11/83  
 Senate: \_\_\_\_\_ Date: \_\_\_\_\_

SINON FRASER UNIVERSITY

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: Mathematics Course Number: 841-4

Title: Topology: Selected Topics

Description: Please note that we are only changing the number from Math 824-4 to Math 841-4 - course content is still the same.

Credit Hours: 4 Vector: \_\_\_\_\_ Prerequisite(s) if any: \_\_\_\_\_

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: \_\_\_\_\_ When will the course first be offered: \_\_\_\_\_

How often will the course be offered: \_\_\_\_\_

JUSTIFICATION:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

RESOURCES:

Which Faculty member will normally teach the course: \_\_\_\_\_

What are the budgetary implications of mounting the course: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Are there sufficient Library resources (append details): \_\_\_\_\_

- Appended: a) Outline of the Course
- b) An indication of the competence of the Faculty member to give the course.
- c) Library resources

\_\_\_\_\_  
\_\_\_\_\_

Approved: Departmental Graduate Studies Committee: [Signature] Date: 15.08.83

Faculty Graduate Studies Committee: [Signature] Date: 15 Sept

Faculty: [Signature] Date: OCT 24 1983

Senate Graduate Studies Committee: [Signature] Date: 16/11/83

Senate: \_\_\_\_\_ Date: \_\_\_\_\_