

## SIMON FRASER UNIVERSITY

## MEMORANDUM

S.80-34

To.....	SENATE	From.....	H. M. EVANS, SECRETARY
			SENATE COMMITTEE ON
			UNDERGRADUATE STUDIES
Subject.....	FACULTY OF INTERDISCIPLINARY STUDIES - PROPOSED B.SC. DEGREE WITH MAJOR AND HONORS PROGRAM IN MANAGEMENT AND SYSTEMS SCIENCE.	Date.....	February 28, 1980.

Actions undertaken by the Senate Committee on Academic Planning at its meeting of December 12, 1979, and by the Senate Committee on Undergraduate Studies at its meeting of February 26, 1980, lead to the following motion:-

MOTION: "That Senate approve and recommend approval to the Board of Governors, as set forth in S.80-34, the proposal for a B.Sc. degree with a Major Program and Honors Program in Management and Systems Science, including the following:-

- (a) Requirements for a Major Program
- (b) Requirements for an Honors Program
- (c) Availability of the Major Program and of the Honors Program in the Cooperative Education mode.
- (d) New courses
  - MSSC 480-1 Undergraduate Seminar in Management and Systems Science
  - MSSC 481-1 Undergraduate Seminar in Management and Systems Science."

In discussion it was identified that this would be a high quality program and that large enrollments were not anticipated. The program utilizes courses already in place in a number of departments and requires only two new one semester credit hour seminar courses in Management and Systems Science. It is anticipated that a number of those who undertake the program may follow with graduate work.

The program will operate under the Faculty of Interdisciplinary Studies through a steering committee with representatives from the Departments of Business Administration, Economics, Computing Science and Mathematics. It is proposed that one of the members of the committee would act as program coordinator for cooperative education purposes.

Students would be able to undertake the regular major program or honors program, - or with approval could take the cooperative education mode under the usual regulations pertaining to cooperative education. For these purposes students would be able to utilize, with approval, the practicum courses in Computing Science, or in Mathematics, or in a combination of Computing Science and Mathematics practica.

Although this is a new program, the resource implications are minimal since most courses are already in place. Because of the combinations of courses involved, announcement of the availability of the program would be made as early as possible following approval by the Board of Governors and Universities Council.

HME/lm

MEMORANDUM

To..... S.C.U.S.	From..... H.M. EVANS, SECRETARY
Subject..... PROPOSED PROGRAM B.Sc. DEGREE WITH MAJOR AND HONOURS PROGRAM IN MANAGEMENT AND SYSTEMS SCIENCE	Date..... 21ST FEBRUARY, 1980

At its meeting of December 12, 1979, S.C.A.P. approved the abovementioned programs with understanding that some revisions would be made prior to transmittal to S.C.U.S.

The attached document represents the present proposal.

Encl.  
HME:bc

SIMON FRASER UNIVERSITY

SCAP 79-12

MEMORANDUM

Dr. John Chase, Secretary  
Senate Committee on Academic Planning  
Subject New Program Proposal I.S.C. 79-20  
Management and Systems Science

From Janet Blanchet, Secretary to the  
Faculty of Interdisciplinary Studies  
Undergraduate Curriculum Committee

Date 4 December 1979

The attached New Program Proposal for an Undergraduate Degree in Management and Systems Science (I.S.C. 79-20) was approved by the Faculty of Interdisciplinary Studies Undergraduate Curriculum Committee at its meeting on 4 December 1979.

Would you please place this item on the agenda for the next meeting of the Senate Committee on Academic Planning.

Janet Blanchet  
Janet Blanchet

JB:jk

Attachments

cc: H. Evans

Proposal

for a B.Sc. Degree with a Major Program and an Honors Program in

Management and Systems Science

Simon Fraser University

prepared by

B. R. Alspach, Mathematics

D.A.R. Seeley, Computing Science

R.C. Vergin, Economics & Commerce

K.L. Weldon, Mathematics

## Objectives:

1. To provide a coherent and integrated undergraduate Major program and an Honors program in the areas traditionally known as Operations Research and Management Science. These subjects have a modern orientation as a consequence of both theoretical and practical developments associated with computers and information systems.
2. To produce graduates of high calibre with the ability to blend technical knowledge from several fields in the solution of practical problems in industry and government, or to proceed to more intensive training in graduate school.
3. To accommodate the needs of the Co-op programs.

## Proposal

It is proposed that Simon Fraser University offer a B.Sc. degree with a Major program and an Honors program in Management and Systems Science. The program would be jointly sponsored by the Departments of Business Administration, Economics, Computing Science, and Mathematics. It would be administered through the Faculty of Interdisciplinary Studies by a steering committee consisting of representatives from these departments.

As detailed below, the proposal would rely almost entirely on courses already offered at S.F.U. It simply creates a more visible package with the aim of attracting capable students and encouraging the co-operation of business and industry in employing students who are in the program or have graduated from it. It also provides a challenging constellation of courses to those students with good math abilities that ordinarily would not be easy to obtain in their applied fields.

It is proposed that there be available a Major program and an Honors program; in addition to the University requirements for these programs students would be required to obtain credit as noted in the following to qualify for the B.Sc. degree.

Requirements for a B.Sc. Degree with a Major Program in Management  
and Systems Science

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- (a) Under University regulations a General degree requires completion of a minimum of 45 upper division credit hours in courses numbered 300 and above, completion of at least 120 credit hours, and completion of the Major program.
- (b) Six elective credit hours must be completed outside of courses taken from the Departments of Business Administration, Economics, Computing Science, the Departments of the Faculty of Science.
- (c) Completion is required of all lower division and upper division courses shown below.

Lower Division Courses as Prerequisites

Business Administration

<del>BUS.</del> <i>BUS.</i> 103-3	<i>BUSINESS IN SOCIETY, OR ANY 100-DIVISION ECON COURSE</i>
BUS. 221-3	Introduction to Accounting
BUS. 270-3	Introduction to Organizational Behavior and Decision Making

Economics

<del>ECON</del> <i>ECON</i> 1---3	Any 100 division <del>ECON</del> <i>ECON</i> course, <i>OR BUS. 103-3</i>
ECON. 200-3	Principles of Economics (I) : Microeconomics
ECON. 205-3	Principles of Economics (I) : Macroeconomics

Computing Science

CMPT 103-3	Introduction to a High Level Programming Language I
CMPT 105-3	Fundamental Concepts of Computing
CMPT 118-3	Computing Projects in the Arts and Sciences
CMPT 201-4	Data & Program Organization
CMPT 205-3	Introduction to Formal Topics in Computing Science or MATH 243-3.

Mathematics

MATH 308-3 Linear Programming  
MATH 343-3 Combinatorial Aspects of Computing  
MATH 372-3 Mathematical Statistics II  
MATH 408-3 Discrete Optimization

Management and Systems Science

MSSC 480-1 Senior Seminar  
MSSC 481-1 Senior Seminar

(see prerequisites for these courses)

Requirements for a B.Sc. Degree with an Honors Program in Management and Systems Science

- (a) Under University regulations an Honors degree requires completion of a minimum of 60 upper division credit hours in courses numbered 300 and above including at least 50 upper division credit hours in the Honors program, and completion of at least 132 credit hours. Completion must be with minimum specified grade point average.
- (b) For this degree students must complete all of the requirements as specified above for the degree with the Major program. In addition the student must complete :

CMPT 405-3

MATH 443-3

MATH 472-3

At least 3 credit hours in Business Administration or in Economics at the 400 division.

Mathematics

MATH	104-3	Elementary Computational Methods
MATH	151-3	Calculus I
MATH	152-3	Calculus II
MATH	251-3	Calculus III (per 80-1)
MATH	232-3	Elementary Linear Algebra
MATH	243-3	Discrete Mathematics or CMPT 205-3
MATH	272-3	Introduction to Probability and Statistics

Upper Division Courses Required

(For the major in Management and Systems Science students must have credit for a minimum of 34 upper division credit hours from the following; however this major is recognized for use only toward this full B.Sc. degree program. For the degree, all of the following upper division courses are required.)

Business Administration

<del>BUS.</del>	<del>301-3</del>	<del>Intermediate Microeconomics or BUS. 307-3, Managerial Economics</del>
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BUSINESS ADMINISTRATION

BUS.	337-3	Data Processing in Business or CMPT 370-3
BUS.	373-5	Production Management
BUS.	428-3	Management Information Systems
BUS.	371-3	Organization Theory

Computing Science

CMPT	301-3	System Development Methodology
CMPT	305-3	Computer Simulation and Modelling I
CMPT	354-3	Information Organization & Retrieval
CMPT	370-3	Management & Information Systems I or BUS. 337-3
CMPT	371-3	Management & Information Systems II



For students undertaking the B.Sc. degree with a Major program or an Honors program in Management and System Science the following upper division elective courses are recommended.

BUS. 312-4	Business Finance
BUS. 343-3	Marketing
BUS. 488-3	Human Relations in Business
ECON 396-3	The Structure of Industry
ECON 431-5	Mathematical Economics II
CMPT 405-3	Design and Analysis of Algorithms
MATH 304-3	Statistical Analysis of Sample Surveys
MATH 310-3	Introduction to Ordinary Differential Equations
MATH 316-3	Numerical Analysis I
MATH 404-3	Design of Experiments
MATH 443-4	Combinatorial Theory
MATH 472-3	Linear Models in Mathematical Statistics

#### Co-operative Education System

The degree with a Major program or an Honors program may be undertaken under normal regulations, or with approval may be taken in the Co-operative Education mode and is very suitable for this mode. For these purposes the required practicum courses may be taken, with approval, using the practicum courses of the Department of Computing Science, or of the Department of Mathematics, or of a combination of these.

## Appendix A

### Further Calendar Entries

Calendar entries would appear as one of the programs in the Faculty of Interdisciplinary Studies (see E.1 below), and in program descriptions of each of the participating departments: Business Administration, Economics, Computing Science, Mathematics.

E.1 The Faculty of Interdisciplinary Studies offers, in concert with the Departments of Business Administration, Economics, Mathematics and with its Computing Science department, a Major Program and an Honors Program in Management and Systems Science leading to a B.Sc. degree. These are highly structured programs providing a multidisciplinary approach to the application of quantitative methods to business and industry in an environment of expanding computerization. A seminar in which problems requiring a broad perspective are presented and discussed has been designed for upper level students in the programs.

E.2 The Mathematics (or Computing Science, or Business Administration, or Economics) Department contributes to the undergraduate degree program in Management and Systems Science administered through the Faculty of Interdisciplinary Studies. The Major Program and Honor Program combines the teaching resources of the departments of Mathematics, Business Administration, Economics, and Computing Science to offer students a structured program which will give them a balanced understanding of the role of quantitative methods for business and industry in an environment of expanding computerization. The programs lead to a B.Sc. degree. For more details about the requirements see the entry listed under the Faculty of Interdisciplinary Studies.

SENATE COMMITTEE ON UNDERGRADUATE STUDIESNEW COURSE PROPOSAL FORM

1. Calendar Information 480 Department: Interdisciplinary Studies  
&  
Abbreviation Code: MSCC Course Number: 481 Credit Hours: 1 Vector: -

Title of Course: Undergraduate Seminar in Management and Systems Science

Calendar Description of Course:

A seminar for students undertaking a major or an honors program in Management and Systems Science.

Nature of Course Seminar

Prerequisites (or special instructions): Completion of all required lower division courses and at least 15 upper division credits required in the program.

What course (courses), if any, is being dropped from the calendar if this course is approved: None

2. Scheduling

How frequently will the course be offered? Twice yearly

Semester in which the course will first be offered? 82-1

Which of your present faculty would be available to make the proposed offering possible: Alspach, Weldon (Math), Hell (Comp. Sci.), Vergin (Bus. Admin./Econ.) and others

Objectives of the Course

To emphasize the application of concepts learned in lecture courses to practical problems experienced in government and industry.

4. Budgetary and Space Requirements (for information only)

What additional resources will be required in the following areas:

Faculty 1 unit of teaching credit per offering

Staff

Library

Audio Visual none

Space

Equipment

5. Approval

Date: \_\_\_\_\_ 5 March 1980 FEB 26 '80

\_\_\_\_\_  
Department Chairman

*J. K. Robert*  
\_\_\_\_\_  
Dean

*Don R. Birch*  
\_\_\_\_\_  
Chairman, SCUS

SCUS 73-34b:- (When completing this form, for instructions see Memorandum SCUS 73-34a. Attach course outline).

## Appendix B

MSSC 480-1  
MSSC 481-1

### Undergraduate Seminar in Management and Systems Science

#### Prerequisites :

Completion of all lower division courses required on the program and at least 15 upper division credit hours required in the program.

Open only to students undertaking a Major or Honors in Management and Systems Science.

(A student taking a full load of courses would normally register for this course in two of his last three semesters in the program on campus.)

#### Content :

The seminar would emphasize the application of concepts learned in lecture courses to practical problems experienced in government and industry. Practitioners would be invited to present case studies involving success or failure of textbook techniques, and the resulting course of action taken. Students with practical experience would present some aspect of their experience with reference to the applicability of approaches suggested by formal course work. Students without practical experience would be required to present a review of the applied literature in some technical area related to the program.

#### Style:

Seminar for 2 hours, once weekly. The first hour would typically involve some sort of presentation (either by a student or by an invited practitioner) while the following hour would involve discussion and development of issues raised by the presentation.

#### Administration :

The co-ordinator of the B.Sc. program in Management and Systems Science will be responsible for the organization of this course. He will arrange each session and be present to chair the discussion. He will be responsible for the development of any materials needed to supplement the presentations. It is assumed that he would receive appropriate teaching credit for this.

Rationale :

1. to emphasize the importance of a thorough understanding of the theory underlying technical procedures for the wise application of these procedures, and also the importance of substantive knowledge in the field of application of these procedures. Graduates of this program should be familiar with the interaction between theory and application. This seminar is an attempt to move towards this goal, and at the same time to develop attitudes in students which will motivate them to develop expertise in this area following graduation.
2. to provide an input to the program from the community of employers (via the practitioner presentations).
3. to make use of the unique ability of students to relate practical experiences they may have had to the courses they have taken.

Information for Committee and Senate Considerations

Summary of Required Semester Hours :

<u>Course Division</u>	<u>Computer Science</u>	<u>Business Admin. Economics</u>	<u>Math</u>	<u>M.S.S.</u>	
100	9	3	6	0	
200	5 1/2 (3)	12	13 1/2 (3)	0	
300	13 1/2 (1)	11 (1) (2)	9	0	
400	0	4 1/2 (2)	3	2	
All	28	30 1/2	31 1/2	2	<u>Total : 92</u>

(1) A choice exists between CMPT 370 and COMM 337 and the three hours are divided equally for this table.

(2) A choice exists between COMM 371 and COMM 488 and the three hours are divided equally for this table.

(3) A choice exists between MATH 243 and CMPT 205 and the three hours are divided equally for this table.

The university regulations for a major program concerning total semester hours in upper and lower division courses and grade point average requirements apply to this program.

Rationale :

The proposed requirements are demanding but will ensure a high quality in students completing them. Graduates of the program will be well prepared to enter graduate programs in this field at other universities. They will also be highly employable in industry and government.

We also think that students in this degree program would be ideally suited to the co-operative education mode. Students would be able to do so by using the existing co-op machinery in either Computing Science or Mathematics. In fact, at the present time Computing Science and Mathematics co-op students are being administered in one group for their work terms. It would be natural to include Management and Systems Science students in the same group.

This program will be an attractive one for students with the interest and ability to handle it. We anticipate that it will attract some new students to SFU. Internally, it will probably attract some Mathematics Majors and Computing Science Majors. We anticipate that it will attract a relatively larger group of Econ/Business Administration Majors with the ability to do serious quantitative work. Heretofore, such students have not had a quantitative option of this nature at SFU. This program will be ideally suited to them.

The degree program would be unique within British Columbia postsecondary institutions. Programs having some relationship to the proposed one at SFU exist at UBC and BCIT, but not at the University of Victoria. BCIT offers a two-year program in its Business Management Division called Computer Programming and Systems Technology - Management Science Option. It emphasizes computer programming and is relatively light in economics and mathematics. The BCIT courses do not overlap with the proposed SFU upper division requirements. The UBC Faculty of Commerce has an Accounting and Management Information Systems Option. The lower division requirements are very light in Computing Science. Moreover, the lower division mathematics courses are taught by the Commerce Department, suggesting an orientation appropriate for their upper division but not for the very different upper division requirements proposed for the SFU program. These differences are apparent even from a count of required semester hours in the programs, displayed in the following table.

Lower Division

	SFU(7)	UBC	BCIT
Computing Science	13	3	53(8)
Business Admin./Economics	15	36	27(8)
Mathematics	15	18	24(8)

Upper Division

Computing Science	16 1/2	0	0
Business Admin./Economics	15 1/2	50	0
Mathematics	17	0	0

Required Semester Hours in Three Programs of Similar Name

(7) Major Program

(8) Hours shown are not comparable on a one-for-one basis with those of SFU and UBC due to different educational style, but relative numbers of hours still reveal the emphasis.

Proposed Steering Committee and Support Staff

The members of the committee could be the faculty involved or the appropriate departmental advisors. However, one of this committee would be a program co-ordinator, appointed for a year at a time. The co-ordinator would manage the senior seminar, liase with the co-op programs on campus, and prepare an annual report to the Dean of Interdisciplinary Studies. These duties should be given the equivalent credit of the teaching of one 3-unit course per year. In addition a small amount of stenographic support would be required from the co-ordinator's home department.