SIMON FRASER UNIVERSITY

MEMORANDUM

To: SENATE	From: SENATE COMMITTEE ON UNDERGRADUATE STUDIES
Subject: DIVISION OF GENERAL STUDIES - NEW COURSE PROPOSALS - COMPUTER SCIENCE 100-3 AND COMPUTER SCIENCE 102-2	Date: SEPTEMBER 21, 1972.

MOTION 1:   "That Senate approve the new course proposals

of the Division of General Studies, as set

forth in Paper S.72-114, for

　　　Computer Science 100-3 - Introduction

　　　to Concepts and Procedures in

　　　Computer Science　　　　and

　　　Computer Science 102-2 - Introduction

　　　to PL/1 Programming."

If the courses are approved:-

MOTION 2:   "That Senate waive the normal two-semester time

lag requirement to permit offering of Computer

Science 100-3 commencing in the Spring Semester

1973, and of Computer Science 102-2 commencing

in the Summer Semester 1973."

SIMON FRASER UNIVERSITY   S.72-114

MEMORANDUM

To ....SENATE

Subject Division of General Studies –
New Course Proposals, Computer
Science CMPT 100-3, CMPT 102-2

From...... I. Mugridge......
Chairman, Senate Committee
on Undergraduate Studies ....

Date.   September 21, 1972..

The Senate Committee on Undergraduate Studies has approved
the new course proposals of the Division of General Studies,
as set forth in SCUS 72-22 and SCUS 72-19, for

> Computer Science 100-3 – Introduction to Concepts
> and Procedures in Computer Science   and

> Computer Science 102-2 – Introduction to PL/1
> Programming

and recommends approval to Senate.

If the courses are approved waiver is requested of the normal
two-semester time lag requirement to permit offering of
Computer Science 100-3 commencing in the Spring Semester 1973
and of Computer Science 102-2 commencing in the Summer Semester
1973.

SIMON FRASER UNIVERSITY
MEMORANDUM

To .. Mr. Harry Evans
Secretary, Senate Committee on
Undergraduate Studies

From Robert C. Brown

Dean, Division of General Studies

Subject Computing Sciences

Date September 14, 1972.

I have the following information for the members of SCUS regarding the computing science Courses which are now before the Committee.

Background

At the August meeting of SCUS discussion occurred as to the potential existence of overlap between Mathematics 106-3 and 205-3 and the proposed Computing Science courses. There also was discussion as to how the courses, if approved, could be implemented to provide a maximum of co-operation between the two programs. Since these issues could not be properly aired in the absence of Dr. Lardner and Dr. Sterling the discussion was postponed until the September meeting of SCUS.

New Information

On September 12th Dean Aronoff, Dr. Lardner, Dr. Sterling and I met to discuss the above questions. These discussions provided the following:

(1) There is no direct overlap between Math 106 and CS 102. Math 106 is a FORTRAN course while CS 102 deals with PL/1. The problem is that the two languages are not directly interchangeable and the new Computing Science program, when approved, will emphasize PL/1. This could create some short run problems for students currently taking the math courses who intend to go on in Computing Science.

(2) There is no overlap between any present math course and CS 100-3.

(3) Dr. Lardner and Dr. Sterling have agreed that Math 106 should be offered in Spring 1973. CS 102 will not be offered during that semester, but will be offered in Summer 1973, and thereafter as scheduled. Whether or not Math 106 will be continued following Spring Semester 1973 will be discussed in the Mathematics Department, but since no direct overlap occurs this does not offer an immediate problem.

(4) Computing Science 100-3, if approved by Senate, will be offered during the Spring 1973 semester. Students will be informed by special notice in the course guide that if they intend to continue in Computing Science, they will need to take both Math 106 and CS 100 during the Spring Semester. In addition students who are taking Math 106 during the present (Fall 1972) semester will be required to take

Math 205 during the Spring Semester 1973.

(5) Mathematics will not offer Math 205 after the Spring Semester 1973 and will subsequently ask Senate to remove the course from the Calendar. (This has already been recommended by the Departmental Undergraduate Studies Committee.)

I hope that this information will clarify any points of concern that might exist in the minds of the Committee. As a personal note I would add that the co-operation exhibited between Dr. Lardner and Dr. Sterling in these negotiations has been highly refreshing and commendable.

RCB:jc

It has been agreed between Dr. Sterling and the Mathematics Department that qualified faculty in the Mathematics Department will participate in the teaching of Comp.Sci. 100 and Comp.Sci 102 during the initial years of the Computing Science programme. The form of such participation will be either individual or team teaching - to be decided by Dr. Sterling.

SIMON FRASER UNIVERSITY

MEMORANDUM

To: All Members
Senate Committee on Undergraduate Studies

From: H. M. Evans
Registrar and
Secretary of SCUS

Subject: New Course Proposals - Division of General Studies - Computer Science.

Date: August 10, 1972.

The attached proposals have been received from the Division of General Studies covering the following new proposed courses:-

Computer Science 100-3   :   Introduction to Concepts and Procedures in Computer Science.

Computer Science 102-2   :   Introduction to PL/1 Programming.

HME:jb

1. CALENDAR INFORMATION

    Program. Computer Science   Course Number: *CMPT* 100-3   Title: Introduction to Concepts and
                                                                      Procedures in Computer Science.
    Sub-title or Description:
    An introduction to the syntax, vocabulary and semantics of language structures
    through which computers may be made to implement procedures and solve problems.

    Credit Hours: 3   Vector Description: 2 - 1 - 1

    Pre-Requisite(s):
    None

2. ENROLMENT AND SCHEDULING

    Estimated Enrolment: 60

    Semester Offered (e.g. yearly, every Spring, twice yearly, Fall and
                                    Spring):
    Twice yearly.

    When will course first be offered?
    Spring 1973

3. JUSTIFICATION

    A. What is the detailed description of the course including
        differentiation from lower level courses, from similar courses
        in the same department, and from courses in other departments
        in the University?
    This course introduces the student to the fundamentals through which computers
    may be made to implement procedures and solve problems. The student learns
    increasingly powerful language structures for a succession of progressively
    complex machines that enable him to solve more and more sophisticated problems.
    This course is prerequisite to most other courses in the computer science program.
    There is some overlap between this course and Math 106-3, but this problem is
    being resolved by direct negotiation with the Dept. of Mathematics.

    B. What is the range of topics that may be dealt with in the course?
    Organizational concepts of modern computers, machine readable notation,
    algorithms and use of flowcharts to describe them, prototype machine languages
    and assemblers, formal description of programming languages, implementing hard
    and soft ware systems.

C. How does this course fit the goals of the program?

Prerequisite for most other courses in the program.

D. How does this course affect degree requirements?

Core course of new Computer Science program.

E. What are the calendar changes necessary to reflect the addition of this course?

New course addition.

F. What course, if any, is being dropped from the calendar if this course is approved?

None.

G. What is the nature of student demand for this course?

Empirical evidence based upon part non-credit courses and enrolments in Math 106-3 indicate considerable demand.

H. Other reasons for introducing the course.

4. BUDGETARY AND SPACE FACTORS
   A. Which faculty will be available to teach this course?

   Dr. T.D. Sterling; Dr. Harrop; Dr. Russell; Dr. Graham; Dr. Pechlaner.

   B. What are the special space and/or equipment requirements
      for this course?

   Lecture room, computing time.

   C. Any other budgetary implications of mounting this course:

   None (T.A.'s?)

Approval:

    Dean of Division: *Robert C Brown*

    Senate:

SYLLABUS FOR THE BASIC FIRST LEVEL COURSE IN COMPUTER SCIENCE

INTRODUCTION TO CONCEPTS AND PROCEDURES   100-3

This course introduces the student to the syntax, vocabulary, and semantics of language structures through which computers may be made to implement procedures and solve problems. The student learns increasingly powerful languages for a succession of progressively complex machines that enable him to solve more and more sophisticated problems. (2-1-1)

The sequence of machines and languages for specifying procedures on them are taught with the aid of special "simulators" that already have been implemented on the Simon Fraser computer. The historical growth of concepts relevant to computing is included whenever possible.

The course covers the following materials:

1. The instrumentation - computation - logic complex - The simplest case: The Turing Machine. The student learns to program a Turing machine and writes a number of programs solving simple problems. (2 weeks).

2. Organizational concepts of modern computers (1 week).

3. Notation for representing alphabetic, numeric, and other characters in a form that can be handled by automatic devices (2 weeks).

4. Principles of procedures to solve a variety of logical, numerical, and non-numerical problems. (Using flow charting language). (1 week).

5. Implementing programs using a prototype machine language (consisting of a simplified set of instructions for input/output, arithmetic,

and control of processing) (3 weeks).

6. Knowledge of fundamental concepts surrounding construction and use of assemblers and higher order languages are developed using the student's experience with machine language as the basis. A number of problems are solved using a simulated symbolic assembler. (3 weeks).

7. Formal notation for the description of languages and processing systems (1 week).

8. Description of hardwear features of modern computers and of related softwear that makes possible the implementation of processing aims. (2 weeks).

Text: - Sterling, T.D. and Pollack, S. V., Computing and Computing Science, MacMillan, 1970.

- Simulator Manuals (now being written)

- Approximate computer time per student needed - 8 minutes CPU time.

DIVISION OF GENERAL STUDIES

NEW COURSE PROPOSAL

1. CALENDAR INFORMATION

CMPT

Program. Computer Science   Course Number: 102-2   Title: Introduction to PL/1
Programming.

Sub-title or Description:
Introduction to the PL/1 programming language.

Credit Hours: 2   Vector Description: 1 - 0 - 1

Pre-Requisite(s):
None.

2. ENROLMENT AND SCHEDULING

Estimated Enrolment: 60

Semester Offered (e.g. yearly, every Spring, twice yearly, Fall and
Spring):
Twice yearly.

When will course first be offered?
Summer 1973

3. JUSTIFICATION

A. What is the detailed description of the course including
differentiation from lower level courses, from similar courses
in the same department, and from courses in other departments
in the University?
PL/1 is the most comprehensive and versatile programming language in existense
and will serve as key language for most subsequent courses in the Computer Science
program. The aim of the course is to make the student into a reasonably competent
programmer, giving him tools he can use in his other work besides its use in upper
level computer science courses.

B. What is the range of topics that may be dealt with in the course?
Representation of data in PL/1 programs, internal operations, decision statements,
Input/Output operations, advanced topics and exercises.

C. How does this course fit the goals of the program?
   Teaches the key programming language that will be used subsequently
   in other computer science and related applications courses.

D. How does this course affect degree requirements?
   It will be a basic course in the Computer Science program.

E. What are the calendar changes necessary to reflect the addition
   of this course?

   New course addition.

F. What course, if any, is being dropped from the calendar if
   this course is approved?

   Math (?)

G. What is the nature of student demand for this course?
   Undetermined.

H. Other reasons for introducing the course.

4. BUDGETARY AND SPACE FACTORS
   A. Which faculty will be available to teach this course?
      Dr. T.D. Sterling; Dr. Harrop; Dr. Russell; Dr. Graham; Dr. Pechlaner.

   B. What are the special space and/or equipment requirements
      for this course?

      Classroom, computing time.

   C. Any other budgetary implications of mounting this course:

      None   (T.A.'s?)

Approval:

      Dean of Division: *Robert C Brown*

      Senate:

SYLLABUS FOR THE BASIC FIRST LEVEL PROGRAMMING COURSE IN

COMPUTER SCIENCE

INTRODUCTION TO PL/1 PROGRAMMING 102-2

This course will introduce the student to the PL/1 language.
PL/1 serves as the key language for most subsequent courses in the
Computer Science Program, because it is the most comprehensive and versatile
high level language in existence. The purpose of this course is to make the
student into a reasonably competent programmer, giving him a tool he can use
for his other work besides its use in upper level computing science courses.
The course could be taught by itself without requiring Introduction to Concepts
and Procedures - 100. However, it is recommended that it be taken simul-
taneously with the introductory course. (In one sense, C.S. 102 is a lab
course paralleling C.S. 100). (1-0-1).

The course covers the following materials:

1. An outline of PL/1. (Just enough of the language to enable
the student to write simple programs) (1 week)

2. Representation of data in PL/1 programs: Notation of constants
and declaration of single, arrays, and structures of variables (2 weeks).

3. Internal Operations: Basic assignment statements, internal
handling of data collections, function procedures, logical variables (3 weeks).

4. Decision Statements: The IF statement, branching, cyclic
operations (3 weeks).

5. Input/Output operations: list, data, edit directed I/O (2 weeks).

6. Advanced Topics and exercises (4 weeks).

Text: Pollack, S. V. and Sterling, T. D., _A Guide to PL/1_, Holt, Reinhart,

and Winston, 1969.

Problems will be designed to run under PL/C. Approximate computer

time for student needed - 4 minutes CPU time.