SIMON FRASER UNIVERSITY

S79-84

MEMORANDUM

To: Senate

From: N. R. Reilly, Chairman, Senate Committee on Undergraduate Studies

Subject: New Course Proposal: CMPT 393-4 - Systems Software for Minicomputers & Microcomputers

Date: 9 August 1979

Acting taken by the Senate Committee on Undergraduate Studies at its meeting on 31 July, 1979, gives rise to the following motion:

MOTION

That Senate approve and recommend approval to the Board of Governors of the introduction of the new course CMPT 393-4, Systems Software for Minicomputers and Microcomputers, as outlined in paper S79-84 .

This course replaces the previously existing course CMPT 293-3, Introduction to Minicomputers and Microprocessors. It has been the experience with this course that the students are not adequately prepared and therefore, in particular, the level and prerequisites for the course are being revised via the introduction of this new course.

NOTE. SCUS has approved the waiver of the two-semester time limit on the offering of new courses for CMPT 393-4, subject to the approval of the course by Senate and the Board of Governors.

N. R. Reilly

/kb

SIMON FRASER UNIVERSITY

SCUS 79-20

MEMORANDUM

Mr. H.M. Evans
Registrar & Secretary, SCUS

From J. Blanchet, Secretary of the
Faculty of Interdisciplinary Studies
Undergraduate Curriculum Committee

Subject I.S.C. 79-5 New Course Proposal
CMPT 393-4 Systems Software for
Minicomputers and Microcomputers

Date July 20, 1979

The attached New Course Proposal for CMPT. 393-4 - Systems Software for Minicomputers and Microcomputers was approved on July 10, 1979 by the Faculty of Interdisciplinary Studies Undergraduate Curriculum Committee.

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

Janet Blanchet
Janet Blanchet

JB:jk

Attachment

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. **Calendar Information** **Department:** COMPUTING SCIENCE

Abbreviation Code: CMPT **Course Number:** 393 **Credit Hours:** 4 **Vector:** 3-0-2

Title of Course: Systems Software for Minicomputers and Microcomputers

Calendar Description of Course: See attachment.

Nature of Course Lecture/Laboratory

Prerequisites (or special instructions):

CMPT 290 or CMPT 291, and CMPT 201. Students with credit for CMPT 293 may not take this course for further credit.

What course (courses), if any, is being dropped from the calendar if this course is approved: CMPT 293

2. **Scheduling**

How frequently will the course be offered? About 3 times every 2 years.

Semester in which the course will first be offered? Spring, 1980.

Which of your present faculty would be available to make the proposed offering possible? R. Hobson, J. Barenholtz

3. **Objectives of the Course** Students should develop a sound, working knowledge of what can be done in minicomputer or microcomputer environments. This is important because small computers contribute to a substantial and growing portion of the professional computer scene.

4. **Budgetary and Space Requirements** (for information only)

What additional resources will be required in the following areas:

Faculty	None
Staff	TA or lab instructor
Library	None
Audio Visual	None
Space	Existing space is adequate for a restricted enrollment (20).
Equipment	Existing equipment is adequate for a restricted enrollment (20).

5. **Approval**

Date: 7/16/79 19 July 79. 29 August 1979

Department Chairman Dean Chairman, SCUS

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

Calendar Description

CMPT 393-4 - Systems Software for Minicomputers and Microcomputers

(3-0-2)

The course provides hands-on practical experience in minicomputer and microcomputer environments. Low level computer architecture features are discussed. Hardware components to be examined include central processors, the teletype, terminals, printers, tapes, and disks. Lecture topics include instruction sets, bootstrapping, stand-alone control, memory management, interrupts, debugging machine (assembler) and high level language code, device communication, multiprogramming, time sharing, operating system control and operating system generation. Laboratory work includes device communication, interrupt handling, real time multiuser applications, and operating system maintenance.

Prerequisite: CMPT 290 or CMPT 291, and CMPT 201.
Students with credit for CMPT 293 may not take this course for further credit.

Rationale

CMPT 293 is not working out as a low level course because students have not had enough exposure to computational techniques and computer architecture to appreciate the course material. By promoting CMPT 293 to CMPT 393 and imposing prerequisites CMPT 201 and CMPT 290 or CMPT 291, both of these objections are satisfactorily neutralized.

The change in credit value is warranted by the demanding nature of the course, viz., five contact hours plus several hours hands-on work (possibly red-eye specials).

COURSE OUTLINE

Systems Software for Minicomputers and Microcomputers

PART I: Basic Concepts (Use varian V75 to demonstrate)

WEEKS 1-2

Lectures
- Varian CPU design, registers, machine language instruction set.
- Introduction to assembler, device communication.
- Implications of device speed vs CPU speed.

Labs
- Varian hardware orientation (various peripherals and CPU).
- Power up/down procedure.
- Stand-alone control, bootstrapping, introduction to I/O.
- Debugging machine (assembler) code.

WEEKS 3-4

Lectures
- Communicating with slow speed devices.
- High speed communication.
- Direct memory access and I/O.
- Operating system control I (I/O drivers, logical devices).

Labs
- Practical device communication problems.

WEEKS 5-6

Lectures
- Interrupts
- Memory management.
- Operating system control II (Tasks, Software, System Generation).
- Software Conventions.
- Spooling.

Labs
- Interrupt handling
- Bootstrapping the operating system.
- Operating system utilities.
- Text entry, compilation, load module generation.
- Debugging.

PART II: Comparison of V75 with PDP 11/34 and other minicomputer systems

WEEKS 7-8

Lectures
- PDP 11 design and machine instruction set.
- Comparison of V75 and PDP11 with some generalization.
- The UNIX operating system.
- Comparison of VORTEX, UNIX, and DEC Software.
- Communication problems relived.

Labs
- Familiarization with PDP 11/34.
- User environment on the 11 (Software, utilities etc.).

PART III: Microprocessor environments.

WEEKS 9-13

Lectures
- Intel 8085 (8080) MPU design.
- Our 8085 development system.
- The CPM operating system.
- Building up a microcomputer development system.
- Communication with terminals, cassettes, and floppy dis
- Other development systems.

Labs
- Familiarization with our 8085 system.
- Introduction to CPM.
- Communication with devices.

REFERENCE MATERIALS

- Vortex Reference Manual (required)
- V75 System Handbook (required)
- PDP 11/34 Processor Handbook
- CPM User's Manuals
- UNIX Time-Sharing System, Special Edition, The Bell System Technical Journal, Vol. 57, No. 6, Pt. 2, July-Aug., 1978.
- Brian W. Kernighan and John R. Mashey, "The UNIX Programming Environment", Software-Practice and Experience, Vol. 9, 1979, p. 1-15.

Course materials will be produced from appropriate sections of these documents (except required material) in the form of a booklet or booklets. A charge covering duplication costs will be levied.

SIMON FRASER UNIVERSITY

MEMORANDUM

JUL 5 - 1979

RECEIVED

AUG 13 1979

REGISTRAR'S OFFICE
MAIL DESK

From / To: Mr. Larry Thomas
Assistant Librarian

Subject: New Course Proposals CMPT 393 & C.S. 227

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

Date: June 29, 1979

The attached new course proposals will be considered at the next meeting of the Faculty of Interdisciplinary Studies Undergraduate Curriculum Committee. Would you please review them in terms of Library resources, and let us have your comments as soon as it is conveniently possible.

J. Blanchet
Janet Blanchet

JB:jk

Attach.

Janet,

We find that indeed our library resources are adequate.

Larry Thomas

RECEIVED
JUN 29 1979
UBC
LIBRARIAN'S
OFFICE