S. 86-75

SIMON FRASER UNIVERSITY

MEMORANDUM

To: Senate

From: Senate Committee on Undergraduate Studies

Subject: Department of Physics Curriculum Changes

Date: October 15, 1986

Action undertaken by the Senate Committee on Undergraduate Studies at its meeting of October 14, 1986 gives rise to the following motions:

MOTION 1:

"That Senate approve and recommend approval to the Board of Governors, as set forth in S.86- 75, the proposed

New courses - PHYS 130-2 General Physics Laboratory A
PHYS 430-5 Digital Electronics and Interfacing

Deletion of - PHYS 432-4 Advanced Physics Laboratory II"

MOTION 2:

"That Senate approve and recommend approval to the Board of Governors, as set forth in S.86- 75, the proposed

Changes in part of the Physics Honors requirement"

FOR INFORMATION:

Acting under delegated authority at its meeting of October 14, 1986 the Senate Committee on Undergraduate Studies approved

Course revisions including:

PHYS 131-2 Change of title and prerequisites
PHYS 326-3 Change of corequisites
PHYS 331-3 Change of corequisites

SCUS-86-27

SIMON FRASER UNIVERSITY
MEMORANDUM

To: R. Heath,
Secretary to Senate

From: P. Dobud
Administrative Assistant
to the Dean of Science

Subject: Calendar Changes,
PHYSICS Programs

Date: October 6,1986

This is to inform that the Faculty of Science, in its meeting held on Monday September 29,1986 has approved the following calendar changes for the PHYSICS programs. I would appreciate it very much if you would place these motions in the agenda of the next SCUS meeting for consideration and approval.

a) **New course proposals: PHYS 130-2, & PHYS 430-5**

"That the following new course proposals for PHYS 130-2 & PHYS 430-5 be approved as follows:

PHYS 130-2 : General Physics Laboratory A . (0-0-3).
Elementary experiments in optics, electricity, mechanics and heat that are designed to augment the general survey courses.
Corequisites: *PHYS 102 should be taken concurrently or may precede; or by permission of the Department. Student may not count more than one of PHYS 130 or 131 for credit.*

PHYS 430-5 : Digital Electronics and Interfacing . (2-0-4)
Digital logic design with particular application to interfacing computers to physical apparatus. Construction and use of interface devices for various laboratory experiments. Computer data reduction.
Prerequisites: *PHYS 326 and PHYS 331 ; or permission of the instructor."*

b) **Deletion of PHYS 432-4.**
"To delete from the calendar the following course: PHYS 432-4 Advanced Physics Laboratory II ".

c) **Change of title and prerequisites for PHYS 131-2.**
"That the title and the prerequisites for PHYS 131 be changed as follows :

From: **PHYS 131-2 General Physics Laboratory.**
Elementary experiments in optics, electricity, mechanics and heat that are designed to augment the general survey courses.
Corequisites: PHYS 102 or 121 should be taken concurrently or may precede; or by permission of the department.

To: ***PHYS 131-2 General Physics Laboratory B.***
Elementary experiments in optics, electricity, and mechanics that are designed to augment the general survey courses.
Corequisites: *PHYS 121 should be taken concurrently or may precede; or by permission of the department. Student may not count more than one of PHYS 130 or 131 for credit."*

d) **Change of corequisites for PHYS 326-3 and PHYS 331-3.**

"***That the corequisites for PHYS 326 and 331 be changes as follows :***

PHYS 326-3

From: Prerequisites: PHYS 221.

To : ***Prerequisites:*** *PHYS 221.*
Corequisites: *PHYS 331 laboratory must be taken concurrently.*

and

PHYS 331-3

From: Prerequisites: At least 2 semester hours of credit in 200 division Physics laboratories. PHYS 326 must precede or be taken concurrently.

To: ***Prerequisites:*** *At least 2 semester hours of credit in 200 division Physics laboratories.*
Corequisites: *PHYS 326 must be taken concurrently."*

e) **Changes in part of the PHYSICS HONORS requirements.**

"To approve the following changes in part of the PHYSICS HONORS requirement:

FROM: (page 135, 1986-87 calendar)

Either
PHYS 332-3 Optics Lab.
or PHYS 432-4 Advanced Physics Lab. II

Three of
PHYS 332-3 Optics Lab.
PHYS 432-4 Advanced Physics Lab.II
PHYS 465-3 Solid State Physics
PHYS 484-3 Methods of Theoretical Physics II

TO:

Either
PHYS 332-3 Optics Lab.
or PHYS 430-5 Digital Electronics and Interfacing

(Physics:Calendar Changes)

Three of

PHYS 332-3 Optics Lab.
PHYS 430-5 Digital Electronics and Interfacing
PHYS 455-3 Laser Physics
PHYS 465-3 Solid State Physics
PHYS 484-3 Methods of Theoretical Physics II "

Thank you

cc: Dr. J. C. Irwin, Chairman Department of Physics.

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. **Calendar Information** Department: Physics

Abbreviation Code: PHYS Course Number: 130 Credit Hours: 2 Vector: 0-0-3

Title of Course: GENERAL PHYSICS LABORATORY A

Calendar Description of Course:

Elementary experiments in optics, electricity, mechanics and heat that are designed to augment the general survey course.

Nature of Course:
Laboratory

Prerequisites (or special instructions):
Corequisite: PHYS 102 should be taken concurrently or may precede; or by permission of the Department. Student may not count more than one of PHYS 130 or 131 for credit.

What course (courses), if any, is being dropped from the calendar if this course is approved:
None, but the number of scheduled PHYS 131 lab periods will be reduced as required.

2. **Scheduling**

How frequently will the course be offered? 3 times per year.

Semester in which the course will first be offered: 86-3

Which of your present faculty would be available to make the proposed offering possible?

All faculty

3. **Objectives of the Course**

To provide a laboratory that is better suited to life science students taking PHYS 102. Our present PHYS 131 laboratory has become heavily oriented towards students in engineering and the physical sciences.

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

What additional resources will be required in the following areas:

Faculty	NONE
Staff	NONE
Library	NONE
Audio Visual	NONE
Space	NONE
Equipment	NONE

5. **Approval**

Date: April 22/86	July 9/86	
Department Chairman	Dean	Chairman, SCUS

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

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. Calendar Information

Department: Physics

Abbreviation Code: PHYS Course Number: 430 Credit Hours: 5 Vector: 2-0-4

Title of Course: DIGITAL ELECTRONICS AND INTERFACING

Calendar Description of Course:
Digital logic design with particular application to interfacing computers to physical apparatus. Construction and use of interface devices for various laboratory experiments. Computer data reduction.

Nature of Course:
Lecture/Laboratory

Prerequisites (or special instructions):
PHYS 326 and PHYS 331; or permission of instructor.

What course (courses), if any, is being dropped from the calendar if this course is approved: PHYS 432-4

2. Scheduling

How frequently will the course be offered? once per year

Semester in which the course will first be offered: 87-3

Which of your present faculty would be available to make the proposed offering possible?

M. Thewalt & others

3. Objectives of the Course

To provide students with the skills required to design and perform computer-controlled experiments.

4. Budgetary and Space Requirements (for information only)

What additional resources will be required in the following areas:

Faculty	None
Staff	Part-time Laboratory Instructor (desired but not essential)
Library	None
Audio Visual	None
Space	None
Equipment	$70,000 (microcomputers, components & diagnostic equipment)

5. Approval

Date: April 22/86 July 9/86 _____

Department Chairman Dean Chairman, SCUS

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

PROPOSAL - PHYS 430-5 (2-0-4)

Digital Electronics and Interfacing

Proposed course outline for a new fourth year course comprising one lab period and two hours of lectures per week.

Course Description

The course will provide a working knowledge of digital logic design with particular application to interfacing digital computers to external apparatus. While all logic families will be briefly discussed and compared, the emphasis will be on TTL logic. The course will concentrate on the construction of custom-made interfaces connected directly to the computer bus, although standardized interface protocols such as RS232 and IEEE488 will also be discussed. While interfacing concepts will be introduced at a general level, the specific examples and lab experiments will be solely concerned with the IBM PC bus. The detailed internal working of the computer will not be covered, nor will machine-language programing. By the end of the course several interface devices suitable for performing physical experiments in the lab will have been constructed and used. These experiments will also require data reduction on the computer.

Outline: (lab experiments will be coupled to these topics)

- logic families
- logic design and minimization, Boolean algebra, Karnaugh maps
- more complicated devices: counters, shift registers, decoders, etc.
- synchronous vs. asynchronous design
- standard interface protocols: RS 232, IEEE488
- interfacing to the computer bus, special LSI circuits useful in interfacing
- the IBM PC bus
- advanced interfacing: interrupts and direct memory access
- construction and use of complete hardware devices for performing physical experiments

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

TITLE, PREREQUISITE AND CALENDAR DESCRIPTION CHANGES

1. **Calendar Information**

Department: Physics

Abbreviation Code: PHYS Course Number: 131 Credit Hours: 2 Vector: 0-0-3

Title of Course: GENERAL PHYSICS LABORATORY B

Calendar Description of Course:

Elementary experiments in optics, electricity and mechanics that are designed to augment the general survey course.

Nature of Course:
Laboratory

Prerequisites (or special instructions):
Corequisite: PHYS 121 should be taken concurrently or may precede; or by permission of the Department. Student may not count more than one of PHYS 130 or 131 for credit

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

2. **Scheduling**

How frequently will the course be offered?

Semester in which the course will first be offered:

Which of your present faculty would be available to make the proposed offering possible?

3. **Objectives of the Course**

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

What additional resources will be required in the following areas:

Faculty	None
Staff	
Library	
Audio Visual	
Space	
Equipment	

5. **Approval**

Date: April 22/86 July 9/86

Department Chairman Dean Chairman, SCUS

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

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

~~NEW COURSE PROPOSAL FORM~~ - COREQUISITE CHANGE

1. **Calendar Information** Department: Physics

Abbreviation Code: PHYS Course Number: 326 Credit Hours: 3 Vector: 3-1-

Title of Course: ELECTRONICS AND INSTRUMENTATION

Calendar Description of Course:

Nature of Course:

Prerequisites (or special instructions): PHYS 221
Corequisite: PHYS 331 laboratory must be taken concurrently.

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

2. **Scheduling**

How frequently will the course be offered?

Semester in which the course will first be offered:

Which of your present faculty would be available to make the proposed offering possible?

3. **Objectives of the Course**

The requirement that the PHYS 326 course and the PHYS 331 lab must be taken concurrently will enhance the effectiveness of the 3rd year electronics courses.

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

What additional resources will be required in the following areas:

Faculty	None
Staff	
Library	
Audio Visual	
Space	
Equipment	

5. **Approval**

Date: April 22/86 July 4/86

J.C. Irwin — Department Chairman

Dean

Chairman, SCUS

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

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

~~NEW COURSE PROPOSAL FORM~~ COREQUISITE CHANGE

1. **Calendar Information**

Department: Physics

Abbreviation Code: PHYS Course Number: 331 Credit Hours: 3 Vector: 0-0-4

Title of Course: ELECTRONICS LABORATORY

Calendar Description of Course:

Nature of Course:

Prerequisites (or special instructions): At least 2 semester hours of credit in 200 division Physics labs. PHYS 326 must be taken concurrently.

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

2. **Scheduling**

How frequently will the course be offered?

Semester in which the course will first be offered:

Which of your present faculty would be available to make the proposed offering possible?

3. **Objectives of the Course**

The requirement that the PHYS 326 course and the PHYS 331 lab must be taken concurrently will enhance the effectiveness of the 3rd year electronics courses.

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

What additional resources will be required in the following areas:

Faculty	None
Staff	
Library	
Audio Visual	
Space	
Equipment	

5. **Approval**

Date: April 22/86 July 9/86 _____

Department Chairman Dean Chairman, SCUS

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

II 4.15.

SIMON FRASER UNIVERSITY

MEMORANDUM

To: Pablo Dobud Assistant, Dean of Science	From: J.C. Irwin, Chairman Department of Physics
Subject: Physics Honors Requirement	Date: April 29, 1986

If the proposed course PHYS 430 Digital Electronics and Instrumentation is approved by the Faculty of Science Undergraduate Curriculum Committee, the following change in the Physics Honors requirement should be introduced:

PHYS 430 should replace PHYS 432 in the Calendar list of Required Courses for Physics Honors.

J.C. Irwin

JCI/bem

SIMON FRASER UNIVERSITY

MEMORANDUM

To: P. Dobud, Admin. Assistant to the Dean of Science	From: J.C. Irwin, Chairman Department of Physics
Subject: CALENDAR ENTRY	Date: September 12, 1986

The Department of Physics has decided that PHYS 455-3 (Laser Physics) should be included in the Honours selection currently stated as "Three of PHYS 332, 432, 465, 484".

Please include this item on the agenda of the next Faculty of Science Undergraduate Curriculum Committee Meeting.

J.C. Irwin

JCI/mrb

dk.01-06