

SIMON FRASER UNIVERSITY

S.74-28

MEMORANDUM

To SENATE

From SENATE COMMITTEE ON UNDERGRADUATE
STUDIES

Subject FACULTY OF SCIENCE - NEW COURSE
PROPOSAL - PHYSICS 333-4

Date JANUARY 23, 1974

MOTION: "That Senate approve, as set forth in S.74-28,
the new course proposal, Physics 333-4 -
Introduction to Instrumentation in the Life
Sciences."

If Senate approved the above motion,

MOTION: "That Senate waive the normal two semester
time lag requirement in order that this
course may be first offered in the Fall
semester 74-3."

SIMON FRASER UNIVERSITY

S.74-28

MEMORANDUM

To..... Senate

From..... Senate Committee on Undergraduate
Studies

Subject..... FACULTY OF SCIENCE - NEW COURSE
PROPOSAL - PHYSICS 333-4

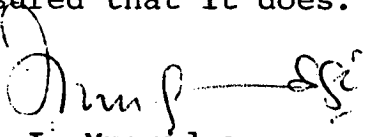
Date..... 23 January, 1974

On the recommendation of the Faculty of Science the Senate Committee on Undergraduate Studies has approved, as set forth in SCUS 74-4, the new course proposal Physics 333-4 - Introduction to Instrumentation in the Life Sciences and recommends approval to Senate.

The Committee also recommends that the usual two-semester time lag be waived in order that the course may be first offered in the Fall semester 74-3.

This course was initially submitted as a Kinesiology course but referred back to SCUS for discussion with the Physics Department with a view to offering the course within that department, which possessed the laboratory facilities necessary to mount it. Although it now appears as a proposal from the Physics Department and a majority of SCUS agreed that this was appropriate, lengthy discussion took place on the advisability of offering this course as a Physics or a Kinesiology course as some members of the Committee felt that the original location for this course in the latter department was also appropriate.

It should also be noted that the Registrar has consulted the Kinesiology Department to ascertain whether the course meets their requirements and has been assured that it does.


I. Mugridge
Chairman

:md

SIMON FRASER UNIVERSITY SCUS 74-4

MEMORANDUM

To	Senate Committee on	From	J.S. Barlow, Chairman
	Undergraduate Studies		Faculty of Science
			Undergraduate Curriculum Cttee.
Subject	NEW COURSE PROPOSAL - PHYS 333-4	Date	December 28, 1973

Attached are replies from the Departments of Biological Sciences and Psychology with regard to the proposed course PHYS 333-4 "Introduction to Instrumentation in the Life Sciences" as requested by SCUS at its meeting of July 18, 1973.

lw



SIMON FRASER UNIVERSITY

MEMORANDUM

To..... Dr. L. H. Palmer,

..... Physics Department

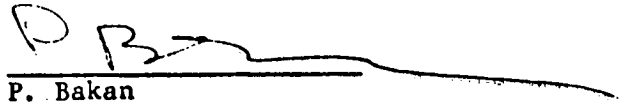
Subject..... Physics 333-4

From..... P. Bakan, Acting Chairman,

..... Department of Psychology

Date..... 8 November 1973

Your proposed course Physics 333-4 would not satisfy the needs of students in the Psychology Department, I think the idea for such a course is a good one and I can see the possibility for development of this type of course that would more closely meet the needs of Psychology students.


P. Bakan

PB/no

SIMON FRASER UNIVERSITY

MEMORANDUM

To Prof. J. S. Barlow,
Assoc. Dean of Science.

Subject PHYS 333 (PROPOSED NEW COURSE)

From A. L. Turnbull,
Chairman, Dept. Bio. Science
Undergrad. Curric. Comm.

Date 28th November, 1973.

The proposed new Physics Course, Physics 333-4 seems to fulfill its intended purpose satisfactorily, i.e. as a service course to students of Kinesiology. The course is of marginal concern to the Dept. of Biological Sciences, but we find no objections to it.

ALT/LJ

A. L. Turnbull,
Chairman, Dept. Bio. Science
Undergrad. Curric. Comm.

SIMON FRASER UNIVERSITY SCUS 73-23

MEMORANDUM

To Senate Committee on
..... Undergraduate Studies
Subject NEW COURSE PROPOSAL -- Physics 333-4 Date June 28, 1973

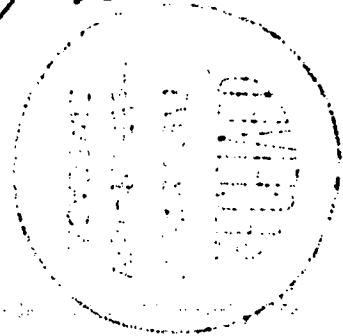
From J.S. Barlow
..... Associate Dean of Science

The attached new course proposal for Physics 333-4, "Introduction to Instrumentation in the Life Sciences", was approved by the Faculty of Science at its meeting of June 26, 1973, and is now forwarded to SCUS for approval.

lw

Enclosure

J.S. Barlow



SIMON FRASER UNIVERSITY

Dept. of Physics

NEW COURSE PROPOSAL

I CALENDAR INFORMATION

Department: Physics

Course Number: 333-4 Title:
Introduction to instrumentation in
the life sciences.

Sub-title or Description:

Introduction to the principles of analog and digital electronic
circuits and their application to problems of measurement in the life
sciences.

Credit Hours: 4

Vector Description: 2-0-3

Prerequisite(s): Physics 102-3

II ENROLMENT AND SCHEDULING

Estimated Enrolment: 15

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

Fall Semester, every ~~second~~ year

When course will first be offered:

Fall Semester, ~~1973~~ 1974

III 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?

See attached.

B. What is the range of topics that may be dealt with in the course?

See attached.

C, How does this course fit the goals of the department?

To serve the University Community

D, How does this course affect degree requirements?

No effect

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

Addition of this course to the calendar.

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?

Numerous student requests

H, Other reasons for introducing the course.

Request from Kinesiology Department

IV

BUDGETARY AND SPACE FACTORS

A. Which faculty will be available to teach this course?

T. Calvert of Kinesiology is currently available

From the Physics Department: D. Crozier, L. Palmer, D. Huntley,
S. Gyax, J.C. Irwin

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

Most of the equipment is available in existing undergraduate laboratories. It would be most helpful to add five oscilloscope cameras (Tektronix model C59) at a cost of approximately \$2250. The estimated cost for expendable supplies is \$500.

- C. Any other budgetary implications of mounting this course:

None. Existing library and audio-visual facilities are adequate.

APPROVAL - Faculty Curriculum Committee:

Baird

Faculty:

Baird

Senate:

NEW COURSE PROPOSAL

Physics 333-4

Introduction to Instrumentation in the Life Sciences

Vector: 2-0-3

Prerequisite: Physics 102-3

This course is generally suitable for upper level students in ~~Biology~~, Kinesiology or ~~Biology~~. The aim is to provide a one semester course in which the principles of electronic instrumentation are introduced and are applied to a variety of problems in the life sciences. Because the course has been developed at the specific request of the Kinesiology Department, it will emphasize instrumentation related to the measurement of human function. There is no similar course currently available in the university. The only other route a student could take would involve Physics 205-2 and 331-3, and these courses would normally give no application of electronics to the life sciences.

The course will involve two lectures and one laboratory per week. The laboratory experiments will illustrate the principles developed in lectures and will involve the students in practical measurement problems on living systems.

Course Outline

1. Measurement of voltage, current and power
2. Electrical shock hazards
3. Simple resistive, capacitive and inductive circuits
(transient and steady state analysis)
4. The electrical properties of living tissue
5. Diodes and simple logic circuitry
6. Transistors - applications as amplifiers and switches
7. The response characteristics of simple amplifiers
8. Potentials measured on the body surface (ECG, EEG, EMG, GSR)
9. Hazards involved in measurements on the body
10. Other measurement techniques (impedance, ultrasound, thermal, optical, etc.)
11. Measurements within the body (extra-cellular and intra-cellular)