

SIMON FRASER UNIVERSITY

S.73-93

MEMORANDUM

To SENATE

From SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Subject FACULTY OF SCIENCE - NEW COURSE
PROPOSAL - BISC 432-3 - CHEMICAL
PESTICIDES AND THE ENVIRONMENT

Date JULY 19, 1973

MOTION: "That Senate approve the new course proposal for
BiSc 432-3 - Chemical Pesticides and the Environment,
as set forth in Paper S.73-93."

If the above motion is approved,

MOTION: "That the normal two semester time lag requirement be
waived in order that BiSc 432-3 may be first offered
in the Spring Semester 74-1."

SIMON FRASER UNIVERSITY

S.73-93

MEMORANDUM

To SENATE

From Senate Committee on Undergraduate Studies

Subject Faculty of Science New Course
Proposal - BIO-Sciences 432-3
Chemical Pesticides and the Environment

Date July 23, 1973

On the recommendation of the Faculty of Science, the Senate Committee on Undergraduate Studies has approved the new course proposal, set forth in SCUS 73-24, for Bio-Sciences 432-3 Chemical Pesticides and the Environment. The Committee now recommends approval to Senate.

It is further recommended that Senate approve waiver of the normal two semester time lag requirement so that this course may be first offered in the Spring semester, 1974.

It should be noted that the major question concerning this course which was raised in the Senate Committee on Undergraduate Studies was its relationship to the new Master of Pest Management Degree and to any proposed undergraduate program in pestology. The Committee was assured by the representatives of the Faculty of Science although the Department of Biological Sciences and the Faculty of Science as a whole recognized the real need for a course of this kind and although it would be strongly recommended for any student entering the Master of Pest Management program from this University, it was not the intention of the Department to introduce an undergraduate program in Pestology.

I. Mugridge

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SIMON FRASER UNIVERSITY

SCUS 73-24

MEMORANDUM

As updated July 18, 1973

To: Senate Committee on Undergraduate

From: J.S. Barlow

Studies

Associate Dean of Science

Subject: NEW COURSE PROPOSAL - Bi.Sc 432-3

Date: June 28, 1973

Attached is a new course proposal for Bio-Science 432 - Chemical Pesticides and the Environment, approved by the Faculty of Science at its meeting of June 26, 1973. This proposal is now submitted to the SCUS for approval.

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Appendix I

FACULTY OF SCIENCE

NEW COURSE PROPOSAL

I CALENDAR INFORMATION

Department: BioSciences

Course Number: 432 Title: Chemical
Pesticides and the Environment

Sub-title or Description:

The properties, uses, modes of action, and good and bad consequences of the use of chemicals to prevent or control pest damage and plant diseases.

Credit Hours: Three

Vector Description: 3-1-0

Pre-requisite(s): Biol 301 or permission of instructor.

Note: This course is strongly recommended for those who wish entry to the

II

M.P.M. Program
ENROLMENT AND SCHEDULING

Estimated Enrolment: 25-40

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

Yearly, normally every Spring.

When course will first be offered: 1974-1.

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?

Subject touched upon in BiSc 435, Introduction to Pestology, but no comparable course offered at either SFU or UBC.

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

Properties of chemical insecticides, herbicides, fungicides, nematocides, acaricides, etc. Principles underlying their use, formulation and application. Modes and measurement of toxicity. Movement and fate in the environment and effects on non-target organisms and on man. Economics of pesticide use. Relation of benefits to risks. Principles and consequences of laws that govern pesticide sale and use.

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

(a) Broadening of offerings for undergraduate BioSciences.

D. How does this course affect degree requirements?

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

Additional entry

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?

Interest in the environment and its management.

H. Other reasons for introducing the course.

Will be strongly recommended for entry to the M.P.M. Program.

IV

BUDGETARY AND SPACE FACTORS

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

P. C. Oloffs, Dip. Agr. (Göttingen), MSA (UBC), Ph.D. (Wisc.),
Assistant Professor; and

J. S. Barlow, BSA (OAC), M.A., Ph.D. (Toronto), Professor, as a
possible alternate.

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

Nothing special.

C. Any other budgetary implications of mounting this course:

Salary of one Teaching Assistant.

APPROVAL -

Faculty Undergraduate Curriculum Committee:

Faculty:

Senate:

J. Barlow

J. Barlow

of lectures

BIOLOGICAL SCIENCES 432 (3-1-0)

Introduction to Pesticides

6 1) Types and Classes of Pesticides (with one or more specific examples for each).

- Insecticides
- Herbicides
- Fungicides
- Nematocides
- Acaricides
- Rodenticides
- Bactericides
- Attractants
- Repellents

1 2) Physical and Chemical Properties and Their Implications (to be illustrated on above specific examples):

- Solubility
- Vapour Pressure
- Chemical Stability

2 3) Principles of Formulating and Application:

- Active Ingredient vs. Marketable Product
- Liquids
- Solids
- Concentrated vs. Ready-to-use Formulations
- Reduction of Hazards

10 4) Toxic (biological) Properties:

- Mode of Action
- Measurement of Acute Effects
- Evaluation of Chronic (non-lethal) Effects:
 - general health hazards
 - mutagenicity
 - teratogenicity
 - carcinogenicity
- Interactions:
 - synergism)
 - antagonism) by design and accidental

of Lectures

4) Toxic (biological) Properties (cont'd.)

Other Factors Affecting Toxicity:

temperature

sex

age

disease

2

5) Specificity: Broad-spectrum vs. Specific Pesticides and Factors Accounting for Specificity.

3

6) Metabolism: Activation
Detoxification
Elimination (Secretion)

5

7) Movement and Fate in the Environment:

Soil (Accumulation and soil types; leaching, erosion).

Water (Movement into water from other locations; behaviour in water and factors affecting it).

Atmosphere (global distribution of pesticides via the atmosphere).

Food Chain.

1

8) Economics of Pesticide Use: when is a "pest" a pest?

1

9) Criteria for Pesticide Applications:

Benefit/Risk Evaluations.

1

10) Development of a New Pesticide:

Search for new compounds.

Cost and time required from finding one to marketing.

Influence (neg. and pos.) of the public and governments on this process, and the role of universities.

2

11) Legislation:

Federal P.C.P. Act (Dept. of Agriculture, Food and Drug Directorate, Dept. of the Environment).
Provincial Acts (B.C. Pharmacy Act).

12) Analytical Methods:

- Recent Progress in Methodology.
- Sampling (How to sample).
- Extractions and Clean-up Methods.
- Instruments and Detectors.
- Reliability and Reproducibility of Results.