

SIMON FRASER UNIVERSITY

S.71-140

MEMORANDUM

To..... SENATE

From..... SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Subject..... FACULTY OF SCIENCE
NEW COURSE PROPOSAL - BISC 430-3

Date..... NOVEMBER 18, 1971

MOTION: "That Senate approve the new course proposal
from the Faculty of Science, as set forth in
Paper S.71-140:

Bisc 430-3 : Plant Pathology."

SIMON FRASER UNIVERSITY

S.71-140

MEMORANDUM

To..... SENATE

From..... SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Subject..... FACULTY OF SCIENCE - NEW COURSE
PROPOSAL - BISC 430-3

Date..... NOVEMBER 17, 1971

The Senate Committee on Undergraduate Studies has approved the new course proposal from the Faculty of Science --

Bisc 430-3 : Plant Pathology

and recommends approval by Senate.

SIMON FRASER UNIVERSITY

SCUS 71-26

MEMORANDUM

To: H. Evans, Secretary

From: S. Aronoff

Senate Committee on Undergraduate Studies

Dean of Science

Subject: New Course Proposal - Bisc 430-3

Date: November 10, 1971

Attached is a new course proposal for Plant Pathology, Bisc. 430-3. The proposal was recommended for adoption at the Faculty of Science meeting of November 9, 1971, and is hereby submitted for the approval of the Senate Committee on Undergraduate Studies and Senate.

S. Aronoff

la

Enclosure

cc: J. Chase

SIMON FRASER UNIVERSITY

MEMORANDUM

U-71-21
F-71-18

To..... Dean of Science

From..... Dr. G. H. Geen

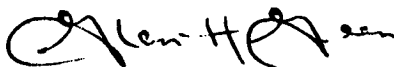
..... Biological Sciences

Subject New Undergraduate Course
Proposal

Date August 20, 1971

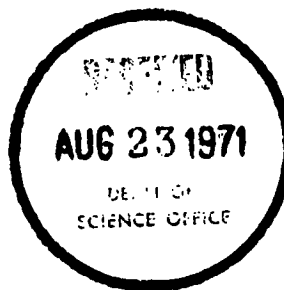
Attached as Appendix A is form C recommending the introduction of BISC. 430-3 Plant Pathology into the offerings of this Department.

This new course has been approved by the Departmental Undergraduate Curriculum Committee and the Department as a whole.



Glen H. Geen
Acting Chairman

GHG:kmb
Attachment



APPENDIX A

FACULTY OF SCIENCE

NEW COURSE PROPOSAL

I CALENDAR INFORMATION

Department: Biological Sciences

Course Number:
430-3

Title:
Plant Pathology

Sub-title or Description:

Fungi, bacteria, viruses, nematodes, parasitic higher plants and insect vectors as agents of plant disease will be considered. Etiology and ecology of host-parasite relationships will be emphasized via examination of selected, economically and/or aesthetically important plant diseases.

Credit Hours: 3

Vector Description: 2-0-3

Pre-requisite(s): Bisc 201 recommended.

II ENROLMENT AND SCHEDULING

Estimated Enrolment: 10-20

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

Once yearly, preferably in fall semester to allow field trips and collection of specimens.

When course will first be offered: 72-3

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?

Please see attached sheet.

B. What is the range of topics that may be dealt with in the course?
See Appendix II (Course Outline: Biological Sciences 430-3).

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

This course will provide students with a basic knowledge of the biology of plant-parasitic relationships as well as a practical understanding of the factors affecting disease processes in plants and the methods for their diagnosis and control. In addition it will provide essential background for students who continue into areas related to pestology.

D. How does this course effect degree requirements?

It would provide an additional 3 credit option within the group of courses in Biological Sciences numbered 300 or above.

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

Insertion of new course number and description.

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

See III, A.

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

Undergraduate students interested in the biology and microbiology of fungi, bacteria, viruses, etc. as plant parasites, and the application of this knowledge for the control of plant diseases.

H. Other reasons for introducing the course.

None

IV

BUDGETARY AND SPACE FACTORS

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

Dr. J. E. Rahe

- B. What are the special space and/or equipment requirements for this course? Laboratory space to accommodate 10-20 students. Major equipment consisting of dissecting and compound microscopes and autoclave facilities are presently available. Other equipment such as moist chambers, incubators, culture tools, etc. are available or may be constructed locally at nominal cost. The laboratory requirements are essentially similar to those of Biological Sciences 408, and coordination and sharing of facilities and equipment would be essential.
- C. Any other budgetary implications of mounting this course: Teaching assistant for laboratory. Initial cost for culture materials and tools, moist chamber construction and related items should be under \$1000, and nominal in following years.

APPROVAL -

Faculty Undergraduate Curriculum Committee:

Sept. 7, 1971

Faculty:

Nov. 9, 1971

Senate:

NEW COURSE PROPOSAL

Biological Sciences 430-3: Plant Pathology.

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 of the University?

Basic biological relationships of plant pathogens and pathogenic interactions, as well as applied aspects of diagnosis, prevention and control of plant diseases will be presented. The subject matter is quite distinct from that of Biological Sciences 408, which is essentially animal oriented. This course proposal constitutes one part of a collective proposal which also includes deletion of Biological Sciences 841-3: Economic Organisms II, and addition of 8XX-3: Biochemistry and Physiology of Plant-Parasite Interaction. The net effect of this curriculum change would be to transfer the essentially undergraduate-level content of BISC. 841-3 to the undergraduate programme and replace it with current, basic, graduate-level material dealing with biochemical and physiological aspects of parasitism in plants.

APPENDIX II

COURSE OUTLINE

BIOLOGICAL SCIENCES 4XX-3

Plant Pathology

NO. OF
HRS.

TOPIC

- | | |
|------|---|
| (1) | INTRODUCTION, HISTORY, SCOPE AND FUNCTION OF PLANT PATHOLOGY; CONCEPT OF DISEASE IN PLANTS, REVIEW OF PLANT PHYSIOLOGY |
| (2) | NON-PARASITIC DISEASES: MINERAL DEFICIENCIES AND TOXICITIES, TEMPERATURE AND MOISTURE EXTREMES, HERBICIDE DAMAGE, AIR POLLUTANTS |
| (11) | PLANT PARASITES |
| (5) | FUNGI AS PLANT PATHOGENS
CLASSIFICATION OF FUNGI
VEGETATIVE AND REPRODUCTIVE MORPHOLOGY
SEXUALITY IN FUNGI
SPORES AND THE INFECTION PROCESS
INTERACTION OF HOST AND FUNGUS
ENVIRONMENTAL AND PHYSIOLOGICAL INFLUENCES
ABOVE FACTORS TO BE EXEMPLIFIED AND CONTRASTED BY EXAMINATION OF SPECIFIC DISEASES, RELEVANT TO B. C. AND CANADIAN ECONOMY: ROOT AND BUTT ROTS OF CONIFERS, APPLE SCAB, PEACH LEAF CURL, STEM RUST OF WHEAT, WHITE PINE BLISTER RUST, POWDERY MILDEW, DAMPING OFF, DUTCH ELM DISEASE (INSECT VECTOR), AND DISEASES OF HISTORIC IMPORTANCE: ERGOT OF RYE AND LATE BLIGHT OF POTATO. |
| (2) | BACTERIA AS PLANT PATHOGENS
BIOLOGY AND MORPHOLOGY
CLASSIFICATION OF BACTERIAL PLANT PATHOGENS
DISSEMINATION OF BACTERIA
NATURE OF INFECTION PROCESSES
MECHANISMS OF PATHOGENESIS
ENVIRONMENTAL AND PHYSIOLOGICAL INFLUENCES
SPECIFIC EXAMPLES: FIRE BLIGHT OF APPLE AND PEAR (INSECT VECTOR), CROWN GALL, ROOT NODULES (MUTUALISM OR PARASITISM?), SCAB OF POTATO (ACTINOMYCETE: FUNGUS OR BACTERIUM?) |
| (2) | VIRUSES AS PLANT PATHOGENS
BIOLOGY AND MORPHOLOGY
VIRUSES DISEASES AND THEIR EFFECTS
TRANSMISSION OF VIRUSES: VIRUS-VECTOR RELATIONSHIPS
THE INFECTION PROCESS; LOCALIZED VS SYSTEMIC INFECTIONS
LATENCY, ANTAGONISM, SYNERGISM, INTERFERENCE
SPECIFIC EXAMPLES: TMV, POTATO VIRUS X, LITTLE CHERRY, PEACH YELLOWS |
| (1) | NEMATODES AS PLANT PATHOGENS
BIOLOGY AND MORPHOLOGY
INFECTION BY NEMATODES
HOST-PARASITE INTERACTIONS
SPECIFIC DISEASES: ROOT KNOTS, GOLDEN NEMATODE. |
| (1) | PARASITIC HIGHER PLANTS
BIOLOGY AND MORPHOLOGY
INFECTION AND PATHOGENESIS
DISSEMINATION
SPECIFIC EXAMPLES: DWARF MISTLETOE OF CONIFERS, DODDER |
| (1) | REVIEW AND SUMMARY |
| (1) | EXAM |

COURSE OUTLINE

BIOLOGICAL SCIENCES 430-3

Plant Pathology

NO. OF
HRS.

TOPIC

- | | |
|-----|---|
| (3) | DISEASE DYNAMICS |
| | THE ENVIRONMENT |
| | CLIMATE AND WEATHER |
| | THE SOIL |
| | AIR TRANSPORT |
| | VECTORS |
| | OVERWINTERING |
| | THE PATHOGEN |
| | SOURCES, RESERVOIRS |
| | SURVIVAL, MUTATION |
| | TRANSFER, DEPOSITION |
| | THE INFECTION PROCESS |
| | POPULATIONS |
| | FACTORS AFFECTING EPIDEMICS: REPRODUCTIVE CAPACITY OF PATHOGEN, |
| | TIMING, WEATHER, CROP ROTATION |
| | SOCIO-ECONOMIC CONSIDERATIONS |
| (2) | DIAGNOSIS OF PLANT DISEASES |
| | INDIVIDUAL DISEASED SPECIMENS -- KOCH'S POSTULATES |
| | EPIDEMICS AND DISEASE FORECASTING -- I. R. AND COMPUTERIZED DETECTION AND |
| | ANALYSIS |
| (3) | CONTROL |
| | BREEDING: RESISTANT GENE POOLS |
| | ERADICATION, EXCLUSION, QUARANTINE |
| | CHEMICAL CONTROL |
| (1) | REVIEW AND SUMMARY |
| (1) | OPEN |

WEEK #

LABORATORY OUTLINE
BIOLOGICAL SCIENCES 430-3

- INTRODUCTION AND ORIENTATION. THE DISSECTING MICROSCOPE, THE COMPOUND MICROSCOPE; PREPARATION OF DISEASED MATERIAL FOR OBSERVATION.
- 2 MEDIA PREPARATION AND STERILE TECHNIQUE -- MEDIA OF GENERAL USE TO PLANT PATHOLOGISTS
- 3 FIELD TRIP TO HANEY RESEARCH FOREST -- FOREST PATHOLOGY
- 4 EXAMINATION OF DISEASED (FRESH AND PREPARED) PLANT MATERIALS; MORPHOLOGY OF PLANT-PATHOGENIC FUNGI
- 5,6,7 ISOLATION OF BACTERIA; ISOLATION OF FUNGI
KOCH'S POSTULATES; INFECTION PROCESSES UNDER LABORATORY CONDITIONS.
HISTOLOGY OF FUNGAL INFECTION
- 8 INDUCED-PROTECTION WITH FUNGI
- 9 BIO-ASSAY OF FUNGITOXIC SUBSTANCES
- 10,11,12 VIRUS INFECTIONS -- LOCALIZED AND SYSTEMIC; NEMATOLOGY
- 13 EXAM

NOTE: THE PROPOSED LABORATORY PROGRAM IS SUBJECT TO MODIFICATION PENDING A TRIAL-RUN OF EXPERIMENTS TO CHECK FOR SUITABILITY WITH RESPECT TO INDIVIDUAL AND/OR SMALL GROUP INVESTIGATION, TIMING, POSITIVE OUTCOME, ETC. IN ANY EVENT, THE OVERALL OBJECTIVE OF PROVIDING SIMPLE BUT LEADING EXPOSURE TO VARIOUS TYPES OF PLANT PATHOGENS (FUNGI, BACTERIA, VIRUSES, NEMATODES) WILL BE ADHERED TO.