

# SIMON FRASER UNIVERSITY

## MEMORANDUM

S.76-170

SENATE

From SENATE GRADUATE STUDIES COMMITTEE

Subject CHANGES IN THE MPM PROGRAM

Date NOVEMBER 17, 1976

### MOTION:

"That Senate approve, and recommend approval to the Board of Governors, as set forth in S.76-170, changes in the Master of Pest Management Program including:

- i) New Courses: BISC 850-3 - Weed Biology and Control  
BISC 851-3 - Vertebrate Pests  
BISC 852-3 - Medical and Veterinary Entomology  
BISC 853-3 - Plant Disease Vectors
- ii) Changes in Title and Course Descriptions for  
BISC 816-3, BISC 840-3, BISC 841-3, BISC 842-3,  
BISC 844-3, BISC 847-3, BISC 849-5 (title change only)
- iii) Change in credits and related items for BISC 601, BISC 602 (and title change and description change), BISC 603 (and description change), BISC 604, BISC 605 (and credit change), together with necessary editorial changes following from these."

SIMON FRASER UNIVERSITY

To: Members of Senate

From: Office of the Dean  
of Graduate Studies

Subject: Calendar Changes

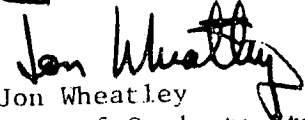
Date: November 17, 1976

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MOTION: That Senate approve Graduate Calendar changes  
for:

- i) Department of Kinesiology
- ii) MPM Program
- iii) Department of Chemistry

These changes were approved by the Senate Graduate Studies Committee  
on November 15, 1976.

  
Jon Wheatley  
Dean of Graduate Studies.

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# SIMON FRASER UNIVERSITY

## MEMORANDUM

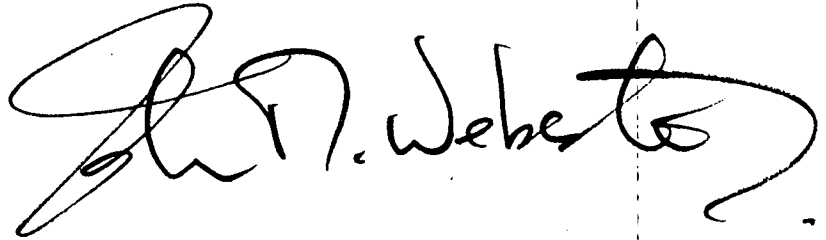
To..... M. McGinn, Secretary, Senate.....	From..... J. M. Webster.....
.....Graduate Studies Committee.....	.....Dean of Science.....
Subject... Changes for 1977-78 Calendar.....	Date... 20 October 1976.....

At a meeting held on 14 October 1976, the Faculty of Science approved changes in the Graduate Program of the Faculty as follows:

Revisions in the M.P.M. Program (see F-76-17 attached)

Revised Calendar entry, Chemistry (see F-76-18 attached).

The above items are herewith forwarded to SGSC for consideration.



# SIMON FRASER UNIVERSITY

## MEMORANDUM

F-76-17

To... Members of the Faculty of Science	From... B.P. Clayman, Chairman
Graduate Studies Committee	Faculty G.S.C.
Subject... REVISIONS IN THE M.P.M. PROGRAMME	Date... August 4, 1976

Attached are proposed revisions to the M.P.M. programme in the department of Biological Sciences, as approved by the Departmental Graduate Studies Committee. They consist mainly of four new courses, changes in emphasis in several existing courses, and increases in the credit hours assigned to the 600-level courses along with a commensurate increase in the minimum number of credit hours of these courses required for the degree.

The net effect on the students in the programme is the doubling of the length of time devoted to BISC 605 (see page 23), and an increase in the number of courses from which to choose. The department states that budgetary implications of adding these courses are minimal which, I have been informed, means things such as Xeroxing and the use of minor A.V. equipment, not the hiring of personnel.

I feel that the proposed revisions represent a minor realignment of the program along lines suggested by three years of experience. I therefore suggest that this committee can deal with the matter expeditiously. Please indicate your response below and return this sheet to me before 12 August.

*B.P. Clayman*

I approve the proposal

I request a meeting of the G.S.C.

I reject the proposal

BPC/pel

\_\_\_\_\_  
(Signature)

Approved unanimously by Faculty of Science Graduate Studies Committee in mail ballot as shown above.

*NA*  
N.Heath, Administrative Assistant

6 October 1976

# SIMON FRASER UNIVERSITY

## MEMORANDUM

To Dr. I.S. Barlow, Chairman,  
DGSC, Biological Sciences  
Subject Revisions in the MPM Programme

From Dr. B.P. Beirne, Director,  
Pestology Centre, BioSciences  
Date June 10, 1976.

The Master of Pest Management program has been in full operation since 1973-3. The individual courses that comprise it were examined recently to identify evolutionary changes in content and changes that are needed to eliminate major gaps or areas of overlap.

The resulting recommendations are given in the following pages. In summary, they are of three main kinds: -

1. That four new graduate courses be established. Each fills a major gap in the MPM programme, each can now be taught by one or more present faculty members, and each has already been taught at least once as a Special Topics course.
2. That various MPM graduate course titles and/or descriptions be reworded, without changing the general nature and purpose of those courses, for two main reasons:
  - a) to account for deleted material that is now covered in the new courses, or for other changes in emphasis in course content;
  - b) to reduce ambiguous, superfluous, vague, or inadequate wording.
3. That the credit hours of 600-level courses (and therefore the total required to complete the MPM) be increased to make them reflect more realistically than hitherto the actual amount of time or work involved.

Other than a recommendation that the duration of one 600-level course be increased from one week to two, these recommended changes do not mean any actual change, upward or downward, in amount of student work requirements.

*Bryan P. Beirne*

Bryan P. Beirne.

BPB:ct

New Graduate Course Proposal Form

New

1. CALENDAR INFORMATION:

Department: Biological Sciences Course Number: 850

Title: Weed Biology and Control

Description: A survey of the biological and ecological characteristics of weeds, the types and magnitudes of damage they cause, and the theory and principles of control.

Credit Hours: 3 Vector: 3-0-0 Prerequisite(s) if any: N11

2. ENROLLMENT AND SCHEDULING:

Estimated Enrollment: 10 When will the course first be offered: 1977-1

How often will the course be offered: Once a year or as required.

JUSTIFICATION:

Economic losses due to weeds exceed those of any other group of pests. Although this course has been given three times under BISC 859-3, Special Topics, there is a need for a formalized course given on a regular basis in the MPM program.

4. RESOURCES:

Which Faculty member will normally teach the course: R. W. Mathewes

What are the budgetary implications of mounting the course: Minimal

Are there sufficient Library resources (append details): Yes

- Appended:
- a) Outline of the Course
  - b) An indication of the competence of the Faculty member to give the course.
  - c) Library resources

Approved: Departmental Graduate Studies Committee: \_\_\_\_\_ Date: \_\_\_\_\_

Faculty Graduate Studies Committee: \_\_\_\_\_ Date: \_\_\_\_\_

Faculty: \_\_\_\_\_ Date: \_\_\_\_\_

Senate Graduate Studies Committee: \_\_\_\_\_ Date: \_\_\_\_\_

COURSE OUTLINE

BISC 850 Weed Biology and Control

- Literature, basic definitions and concepts, economic impact of weeds;
- Provincial noxious weed legislation, Federal and Provincial agencies, a survey of typical weed problems of western Canada;
- Classification of weeds, genetic characteristics, life cycle characteristics, vegetative reproduction;
- Seed ecology; seed production, dispersal, dormancy, periodicity of germination;
- Competition and allelopathy, mechanisms of causing yield reductions in crops;
- Prevention, cultural and mechanical control methods. Biological control methods. Chemical control methods, herbicide classification, modes of action, specificity;
- Selected topics for individual study: Range and pasture weeds; Forest weed problems; Industrial weed control; Aquatic weed problems; Turf weeds; and Weeds in small crops;
- Interactions of different control approaches, environmental aspects of weed control.

Selected literature

A. Books in Library (Selected Titles)

1. Ashton, F. M. and A. S. Crafts. 1973. Mode of Action of Herbicides. John Wiley and Sons. SB 951-4, A84.
2. Frankton, C. and G. A. Mulligan. 1970. Weeds of Canada. Canada Dept. of Agriculture. SB 613, C1-3, F68.
3. Freyer, J. and R. Makepeace. 1968. Weed Control Handbook, 7th ed., Vol. II, Recommendations. Blackwell Publications. SB 611 B57.
4. Freyer, J. D. and S. A. Evans. 1968. Weed Control Handbook, Vol. I, Principles. Blackwell Publications. SB 611, B67.
5. Harper, J. L. ed. 1960. The Biology of Weeds. Blackwell Scientific Publications, Oxford. QK 911 B7 A35.
6. Hughes, E. C. 1972-73. Chemical Weed Control Guide. B.C. Dept. of Agriculture.
7. Kingsbury, J. M. 1967. Poisonous Plants of the United States. Prentice-Hall Inc. SB 617, K5.
8. Klingman, G. C. 1961. Weed Control as a Science. John Wiley & Sons. SB 611 K55
9. Kolk, H. 1962. Viability and dormancy of dry stored weed seeds. Institute of Plant Husbandry, Sweden. Almquist & Wiksells, Uppsala.

BISC 850 Weed Biology and Control

Selected Literature (continued)

10. Muzik, T. J. 1970. Weed Biology and Control. McGraw-Hill.  
SB 611, M88
11. Robson, T. O. 1968. The Control of Aquatic Weeds. Bull. No.  
194, Ministry of Agriculture, Fisheries and Food, London.
12. Salisbury, Sir Edward. 1964. Weeds and Aliens. Collins,  
London, SB 613, G7, S2.
13. Sculthorpe, C. D. 1967. The Biology of Aquatic Vascular Plants.  
St. Martin's Press, N.Y.
14. Wilkinson, R. E. and H. F. Jacques. 1972. How to know the Weeds.  
M. C. Brown Co., Dubuque, Iowa.
15. Whittet, J. N. 1968. Weeds. Govt. Printer, Australia.

B. Journals in Library

1. Weed Abstracts, V18 - 1969 →
2. Pesticide Science, V2, 1972 → Great Britain
3. Pesticide Monitoring Journal, VI - 1967 →
4. Weed Research. Official Journal of the European Weed Research  
Council. Great Britain. 1975 →
5. Weed Science. Journal of the Weed Science Society of America,  
U.S.A. 1975 →
6. Weeds Today → ordered.

LIBRARY RESOURCES

The library resources are adequate (see above list).



BISC 850-3 COURSE INSTRUCTOR

Mathewes, R. F. Assistant Professor. B.S. 1969 (S.F.U.)  
Ph.D. 1973 (U.B.C.)

Gave this course in 1975 as a Special Topics course. Other courses:  
BISC 336, BISC 404.

## Career:

Teaching Assistant, Botany, U.B.C.	1969-73
Visiting Assistant Professor, Geography, SFU	1973
Postdoctoral Fellow, Botany, Cambridge University	1974
Environmental Consultant, F.F. Slaney Co., Vancouver	1974-75
Visiting Assistant Professor, BioSciences, SFU	1974
Assistant Professor, BioSciences, SFU	since 1975

Specialties: pollenosis, pollen and spore analysis and its  
application to biogeography, plant systematics, and  
paleoecology. Research publications: 6.

1. CALENDAR INFORMATION:

Department: Biological Sciences Course Number: 851

Title: Vertebrate Pests

Description: An evaluation of the biology and of the economic and social impacts of vertebrates that are in conflict with human activities; and a discussion and evaluation of actual and potential control techniques as applied to such animals.

Credit Hours: 3 Vector: 3-0-0 Prerequisite(s) if any: Nil

2. ENROLLMENT AND SCHEDULING:

Estimated Enrollment: 10-15 When will the course first be offered: 1977-1

How often will the course be offered: Once per year or when required.

3. JUSTIFICATION:

This course enables MPM students to cover a major group of pests not dealt with adequately in other courses. Other MPM animal courses concentrate on invertebrates. It is particularly appropriate that this course be offered in Canada as there are many economic vertebrate problems in this country. Course has been already given under heading of Special Topics.

4. RESOURCES:

Which Faculty member will normally teach the course: R.M. Sadleir

What are the budgetary implications of mounting the course: Minimal

Are there sufficient Library resources (append details): Yes

- Appended:
- a) Outline of the Course
  - b) An indication of the competence of the Faculty member to give the course
  - c) Library resources

Approved: Departmental Graduate Studies Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
 Faculty Graduate Studies Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
 Faculty: \_\_\_\_\_ Date: \_\_\_\_\_

COURSE OUTLINE

BISC 851 Vertebrate Pests

This course consists of two parts. The first (smaller) section centres on the biology, damage and control of rodent pests (particularly rats and mice). The second section involves a series of case history reviews of vertebrate pest situations. In each the general biology of the species is first reviewed, and the nature of its interaction with human activities is considered. Finally, past, present and potential means of control or nuisance alleviation are discussed.

Weekly topics:

1. Discussion on format, evaluation. Introduction to rodent biology.
2. Biology and control of rodents.
3. Biology and control of rodents.
4. The Great Lakes Lamprey.
5. The weaver bird (Quelea) of Central Africa.
6. Australian rabbits (Myxomatosis and 1080).
7. Control of vertebrate predators - a special problem.
8. Coyote control in North America - the Caine report.
9. Rodent eradication in Alberta.
10. The Alberta rabies vector control program.
11. Bears and people in Canada - recreation and urban control.
12. Birds and airports.
13. Agricultural bird pests.

Other topics can be substituted in the event of particular student interest and expertise.

Selected Literature

- Advisory Committee on Predator Control (1972) "Predator Control - 1971" Report to U.S. Council on Environmental Quality and U.S. Dept. of Interior. 207 pp.
- Calhoun, J. (1962) Ecology and Sociology of the Norway Rat. U.S. Dept. Public Health. Public. 1008. 288 pp.
- Dagg, A. I. (1974) Canadian Wildlife and Man. (McClelland and Stewart). 192 pp.
- Farmer, G. J. and F.W.M. Beamish. (1973) Sea lamprey predation of fresh water teleosts. J. Fish. Res. Board, Can. 30: 601-605.
- Hansson, L. and B. Nilsson (Eds.) (1975) Biocontrol of Rodents. Swedish Nat. Sci. Res. Council. Ecol. Bull. 19. 306 pp.

BISC 851 Vertebrate Pests

Selected Literature (continued)

- Hardisty, M. W. and I. C. Potter (Eds.) (1971) Biology of lampreys.  
(Academic Press).
- Herread, S. (Ed.) (1972) Bears - Their Biology and Management.  
I.U.C.N. Public (N.S.) 23 - 371 pp.
- Murton, R. K. and E. N. Wright (1968) Problems of Birds as Pests.  
(Academic Press) 254 pp.
- Solmon, V.E.F. (Ed.) (1971) Studies of bird hazards to aircraft.  
Can. Wildl. Serv. Report 14, 105 pp.
- The PROceedings of Vertebrate Pest Conferences 1 (1962) to 6 (1975).

LIBRARY RESOURCES

The library resources are adequate for this course.

BISC 851      COURSE INSTRUCTOR

Sadleir, R.M.F.S. Professor. B.Sc. 1958, Ph.D. 1961 (Univ. Western Australia).

Gave this course in 1974 as a Special Topics course. Other courses: BISC 316, 409, 836.

Career:

Resident Tutor, University Western Australia	1959-61
Postdoctoral Fellow, Zoology, UBC	1961-63
Postdoctoral Fellow, Nature Conservancy and University of Aberdeen	1964
Ford Foundation Fellow in Reproductive Biology, Zoological Soc. London	1964-67
External Lecturer, University of London	1965-66
Assistant Professor, BioSciences, SFU	1967-69
Lecturer, Capilano College	1968
Associate Professor, BioSciences, SFU	1969-75
Professor, BioSciences, SFU	since 1975

Specialties: vertebrate reproductive ecology; population ecology of pest vertebrates. Research publications: about 35, including 2 books.

1. CALENDAR INFORMATION:Department: Biological Sciences Course Number: 852Title: Medical and Veterinary EntomologyDescription: Analyses of problems in the management of insects and related organisms that directly harm or that carry diseases of man or livestock.Credit Hours: 3 Vector: 3-0-0 Prerequisite(s) if any: Nil2. ENROLLMENT AND SCHEDULING:Estimated Enrollment: 6 to 12 When will the course first be offered: 1977-1How often will the course be offered: Annually or when required3. JUSTIFICATION:Such pests are of major importance. We have no lecture course specifically on them.The proposed course fills that gap. It has already been given as a Special Topics course, to a class of 17 graduate students.4. RESOURCES:Which Faculty member will normally teach the course: P. P. BeirneWhat are the budgetary implications of mounting the course: MinimalAre there sufficient Library resources (append details): SatisfactoryAppended: a) Outline of the Course  
b) An indication of the competence of the Faculty member to give the course.  
c) Library resources

Approved: Departmental Graduate Studies Committee: \_\_\_\_\_ Date: \_\_\_\_\_

Faculty Graduate Studies Committee: \_\_\_\_\_ Date: \_\_\_\_\_

Faculty: \_\_\_\_\_ Date: \_\_\_\_\_

Senate Graduate Studies Committee: \_\_\_\_\_ Date: \_\_\_\_\_

Senate: \_\_\_\_\_ Date: \_\_\_\_\_

COURSE OUTLINE

BISC 852-3 Medical and Veterinary Entomology

1. General Topics: the effects of arthropods and some other organisms on the health, well-being, and survival of man and livestock; and problems and procedures in managing or eradicating them to reduce their effects.
2. Consequences of direct attack: blood loss, myiasis, envenomization, nervous stress.
3. Consequences of role of arthropods as vectors of diseases of man and animals caused by:
  - Viruses (yellow fever, dengue, encephalitis)
  - Rickettsias (typhus, spotted fever)
  - Bacteria (plague, tularemia, relapsing fever)
  - Protozoa (malaria, trypanosomiasis, leishmaniasis)
  - Helminths (filariasis, onchocerciasis, schistosomiasis).
  - Nidality, epidemiological patterns, and mechanisms of transmissions of those diseases.
4. Problems in managing different kinds of arthropods and related organisms that are of medical or veterinary importance:
  - Mosquitoes
  - Sandflies, blackflies, and midges
  - Tsetse flies
  - Blowflies and horseflies
  - Fleas, lice, and bugs
  - Bot flies and warble flies
  - Mites, ticks, and spiders
  - Aquatic snails
5. Selected Literature:
  - Snow, K. R. 1974. Insects and Disease, Routledge & Kegan Paul.
  - Benenson, A. S. 1970. Control of Communicable Diseases in Man, 11th Ad. Amer. Pub. Health Assoc.
  - Mattingly, P. F. 1969. The Biology of Mosquito-borne Disease. Amer. Elsvier Publ. Co.
  - Smith, G. V. 1973. Insects and Other Arthropods of Medical Importance. Brit. Mus. (N.H.)
  - Tipton, V. J. (ed.) 1973. Medical Entomology. Ent. Soc. Amer.
  - Hinman, E. H. 1966. World eradication of infectious Diseases. C.C. Thomas.
  - World Health Organization, Bulletin and Monograph of (Various References).
  - Busvine, J.R. 1975. Arthropod vectors of diseases. Inst. Biol. Stud. in Biol. No. 55. Crane, Russack & Co., N.Y.

LIBRARY RESOURCES

The library resources are adequate for this course.

BISC 852 COURSE INSTRUCTOR

Beirne, B.P. Professor of Pest Management. B.Sc., M.Sc., M.A., Ph.D.  
(Dublin), MRIA.

Gave this in 1976 as a Special Topics course. Other courses: BISC 102,  
435, 604, 847.

Career:

Demonstrator, Zoology, Dublin University	1936-39
Demonstrator, Biology, Royal College of Surgeons of Ireland	1938-39
Overseas Scholar, Royal Commission for the Exhibition of 1851	1939-42
Instructor, Zoology, Dublin University	1942-43
Assistant Director, Museum of Zoology and Comparative Anatomy, Dublin University	1943-49
Lecturer in Entomology, Dublin University	1943-49
Consultant on pest problems, and operator of pest control business	1942-49
Section Leader, Entomology Research Institute, Ottawa, Agriculture Canada	1949-55
Director, Belleville Research Institute, Agriculture Canada	1955-67
Professor of Pest Management, Director of Pestology Centre, SFU	since 1967

Specialty: Theory, principles, and practice of biological control and of  
pest management; ecology of agricultural pests; insect taxonomy and  
zoogeography. Research publications: about 140, including 6 books.



CALENDAR INFORMATION:

Department: Biological Sciences

Course Number: BISC 853

Title: Plant Disease Vectors

Description: Biology and control of arthropod vectors of plant diseases, especially physiological ecology and population regulation of aphids, and specificity of vector-plant interactions.

Credit Hours: 3 Vectors: 3-0-0 Prerequisite(s) if any: None

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: 6-15 When will the course first be offered: 1977-3

How often will the course be offered: Once per year, or when required.

3. JUSTIFICATION:

Aphids and other vectors of plant diseases are of major economic importance. A similar course on "Aphid biology and control" has been given twice in the past as a Special Topics course.

4. RESOURCES:

Which Faculty member will normally teach the course: M. Mackauer

What are the budgetary implications of mounting the course: Minimal

Are there sufficient Library resources (append details): Yes

- Appended: a) Outline of the Course
- b) An indication of the competence of the Faculty member to give the course
- c) Library resources

Approved: Departmental Graduate Studies Committee: \_\_\_\_\_ Date: \_\_\_\_\_

Faculty Graduate Studies Committee: \_\_\_\_\_ Date: \_\_\_\_\_

Faculty: \_\_\_\_\_ Date: \_\_\_\_\_

Senate Graduate Studies Committee: \_\_\_\_\_ Date: \_\_\_\_\_

Senate: \_\_\_\_\_ Date: \_\_\_\_\_

COURSE OUTLINE

BISC 853 Plant Disease Vectors

1. General characteristics of plant pathogens.
2. Mechanisms of transmission:
  - Through injury;
  - Through feeding;
  - Through oviposition;
  - Other modes of transmission.
3. Ecological aspects of transmission by aphids
  - Vector population ecology:
    - Population structure;
    - Flight and dispersal;
    - Abundance.
  - Aphid - host plant interactions:
    - Host selection;
    - Host alternation;
    - Host reactions to feeding;
    - Host races and biotypes.
4. Plant susceptibility to infections.
5. Epidemiology
  - Disease transmission and progress;
  - Measurement of population numbers;
  - Crop losses;
  - Simulation of epidemics.
6. Control of vectors and of plant diseases:
  - Breeding for plant resistance;
  - Cultural and agro-production controls;
  - Biological controls;
  - Integrated controls.

Selected Literature

- Carter, W. 1973. Insects in relation to plant disease. Sec. edition.  
Corbet, M. K. and H. D. Sisler (Eds.). 1964. Plant virology.  
van Emden, H.F. (Ed.). 1972. Aphid technology.  
Kranz, J. (Ed.). 1974. Epidemics of plant disease.  
Maramorosch, K. (Ed.). 1969. Viruses, vectors, and vegetation.  
de Wilde, J. and L. M. Schoonhoven (Eds.). 1969. Insect and host plant.

LIBRARY RESOURCES

The library resources are adequate for this course.

BISC 853 COURSE INSTRUCTOR

Mackauer, J.P.M. Professor. Dr. Phil. Nat. 1959 (University Frankfurt M.)

Gave the main content of this as a Special Topics course in 1971 and 1975. Other courses: BISC 202, 317, 408, 605, 844.

Career:

Research Associate, Zoology, Univ. Frankfurt M.	1959-61
Research Scientist, Belleville Research Institute, Agriculture Canada	1961-67
Group Leader, Belleville Research Institute, Agriculture Canada	1964-67
Professor, BioSciences, SFU	since 1967
Chairman, BioSciences Dept., SFU	from 1976

Specialties: Biological controls, especially host-parasite relations; simulation models of interacting systems; parasites of aphids.  
Research publications: about 80.

EXISTING 800-LEVEL COURSES

The changes recommended are all in course titles and/or descriptions.

BISC 816-3

Title change  
Description change

Present calendar title and description: -

BISC 816-3 Biology of Forest Insects.  
Major groups of forest insects with specific examples. Forest insect biology, ecology, and influence on forest ecosystems.

Change to: -

BISC 816-3 Biology and Management of Forest Insects.  
Bionomics, ecology, economic impact, and management of the major groups of forest insects, based on intensive reviews of information on representative species.  
Students with credit for BISC 816-3 under its former title may not take this course for further credit.

Explanation: -

Proposed changes are to make the title and description more accurately descriptive, notably by including the term "management", which was merely implied in the original. No significant change in the nature or content of the course is intended or implied.

BISC 840-3

Title change  
Description change

Present calendar title and description: -

BISC 840-3 Economic Organisms I.  
Survey of the types of harm caused by insects, mites, vertebrates, weeds and other macro-organisms, in relation to their biology, structure and taxonomy and their interrelationship with one another and with other organisms.

BISC 840-3

(continued)

Change to: -

BISC 840-3 Analyses of Insect Pest Situations.  
A seminar course, based on selected readings, that evaluates past and current research related to economic thresholds and control and management procedures for representative pest insects, mainly in agriculture.  
Students with credit for BISC 840-3 under its former title may not take this course for further credit.

Explanation: -

The main change is deletion of some subjects, such as weeds and vertebrates, that in practice were never dealt with in this course and that are subjects of other courses (Special Topics hitherto; proposed herewith as new courses BISC 850-3 and 851-3). Otherwise the proposed changes merely make the title and description more accurately descriptive than hitherto, of what is actually done.

BISC 841-3

Title change  
Description change

Present calendar title and description: -

BISC 841-3 Economic Organisms II.  
Plant and disease pathology. Survey of the types of harm caused by nematodes, fungi, protozoa, bacteria, and viruses, in relation to their biology, structure and taxonomy; and their interrelationships with one another.

Change to: -

BISC 841-3 Plant Disease Development and Control.  
An examination of the major factors that lead to development of soil-associated and foliar plant diseases in cultivated crops, in relation to the nature, underlying principles, application, and limitations of various types of control practices. Students with credit for BISC 841-3 under its former title may not take this course for further credit.

BISC 841-3

(continued)

Explanation: -

The introductory information that originally had to be included in this course is now given in an undergraduate course on Plant Pathology, BISC 430, and nematodes are now dealt with in a separate course, BISC 848-3, Nematology. A consequence is that the subject of this course can be dealt with in greater depth than formerly. Otherwise the proposed changes are in the interest of improved descriptive accuracy and do not represent any change in the general nature, purpose, and organization of the course.

BISC 842-3

Title change  
Description change

Present calendar title and description: -

BISC 842-3 Internal Processes.  
Survey of the physiological, biochemical and other internal mechanisms and processes, mainly in insects, that influence growth, development, reproduction, and survival of the individual, and that relate to pestology

Change to: -

BISC 842-3 Insect Development and Reproduction.  
Analyses of hormonal and nutritional factors that influence growth, development, and reproduction in insects, with emphasis on the use of hormone analogues and antimetabolites for population management.  
Students with credit for BISC 842-3 under its former title may not take this course for further credit.

Explanation: -

The changes do not represent or imply any significant change in the nature, content or purpose of the course. They merely reflect the actual course content more truly than before.

BISC 844-3

Title change  
Description change

Present calendar title and description: -

BISC 844-3 Biology of Entomophagous Insects. Bionomics, ecology, and physiology of Insect parasites, with emphasis on parasitic Hymenoptera. Selected topics of insect parasitism including host specificity, immune reactions, and genetics and evolution of host-parasite associations. Principles of biological controls.

Change to: -

BISC 844-3 Biological Controls. Principles, theory, and practice of the use of living organisms in the natural regulation and the control of organisms. Emphasis will be on parasitic insects, and include host specificity, genetics, genetic controls, and the evolution of host-parasite associations. Students with credit for BISC 844-3 under its former title may not take this course for further credit.

Explanation: -

The proposed changes do not imply any major changes in content or purpose, because biological controls are predominantly by entomophagous insects. The proposed changes recognize what is done in practice for the course to cover biological control agents and targets additional to insects.

BISC 847-3

Title change  
Description change

Present calendar title and description -

BISC 847-3 Pest Prevention and Control Systems. Principles and special problems of integrated control programs and of pest management systems, organization of research and application programs and agencies, communications in pestology and similar general and special topics.

BISC 847-3

(continued)

Change to: -

BISC 847-3 Pest Management in Practice.

Status and special problems of pest management programs in different kinds of ecosystems; organization, special characteristics, practices, and problems of pest management agencies; interactions and communication. Students with credit for BISC 847-3 under its former title may not take this course for further credit.

Explanation: -

Rewordings are for improved clarity. No change in general nature or content of the course is implied or intended.

BISC 849-5

Title change

Present calendar title and description: -

BISC 849-5 Individual Project in Pestology.  
A supervised analysis in detail and depth of an aspect of pestology and the preparation of a scholarly paper on it.

Change to: -

BISC 849-5. Professional Paper in Pestology.  
A supervised individual analysis in detail and depth of an aspect of pestology and the preparation of a scholarly paper on it.  
Students with credit for BISC 849-5 under its former title may not take this course for further credit.

Explanation: -

The students tend to treat the project report as about equivalent to a thesis. Consequently they consider "Individual Project" to be an inadequate term for the status of the work. They request that it be replaced by the term "Professional Paper".



600-LEVEL COURSES

Recommended changes are in credit hours and some course titles and/or descriptions.

BISC 601 to 605: Proposed credit hour increases

Present calendar entries (1976-77 calendar, pp 140 & 141)

- p. 140, last 2 lines: "at least 35 credit hours..."
- p. 141, line 16: "And twelve credit hours...."
- p. 141, lines 20 to 24: BISC 601-3, BISC 602-3, BISC 603-3, BISC 604-2, BISC 605-1.

Change to: -

- p. 140, last 2 lines, to "at least 44 credit hours..."
- p. 141, line 16, to "And 21 credit hours..."
- p. 141, lines 20 to 24, to, respectively, BISC 601-5, BISC 602-5, BISC 603-5, BISC 604-3, and BISC 605-3.

Note: A recommendation to increase BISC 605 from 1 to 2 weeks (and therefore to 3 credit hours) is made on p. 23 of this memorandum. Apart from this, the changes recommended above do not indicate or imply any change in student work load or in course content.

Explanation: -

All the 600-level courses are required of MPM students and normally are not available to others. They are intensive "internship" professional courses given largely in the field or at research and operational centres outside the university. They include instruction by about 70 experts from outside the University.

The courses are given on an all-day, five-day week basis. The credit hours were assigned originally on an arbitrary basis of one week equaling one hour. Experience has shown that this formula underrates the credit hours. Each course actually involves a minimum of 35 contact hours per 5-day week, typically an average of 15 hours lecture and 20 hours field or laboratory work.

It is considered that the present credit hours are unduly low, and that a more fair rating would be 3 for a two-week course of about 70 contact hours and 5 for a three week course of about 105 contact hours.

BISC 601-3

Credit Change Only

Present calendar credit: 601-3

Change to: 601-5

Students with credit for BISC 601-3 may not take this course for further credit.

Explanation: see covering memorandum (p. 21).

BISC 602-3

Credit change  
Title change  
Description change

Present calendar credit, title, and description: -

BISC 602-3. Forest, Wildland, and Watershed Pest Management. Pests and their management of forest trees, with emphasis on weeds, and of recreational areas.

Change to: -

BISC 602-5. Forest Pest Management. Management of pests of forest regeneration, growing and mature forests, and forest products, and of forest rights-of-way and recreation areas. Students with credit for BISC 602-3 under its former title may not take this course for further credit.

Explanation: -

Reason for increase in credit hours is explained in covering memorandum. Change in title is for conciseness. Change in description is for improved accuracy and does not imply any change in content except a reduction in the emphasis on weeds which now are covered in a separate course (Special Topics hitherto; proposed as new course BISC 850-3 herewith). This permits increased emphasis on other aspects.

BISC 603-3

Credit change  
Description change

Present calendar credit, title, and description: -

BISC 603-3. Vegetable, Cereal, and Forage Crop Pest Management. Agricultural pests and their management, with emphasis on insects, nematodes, crop diseases and birds, and including garden and greenhouse pests.

BISC 603-3

(continued)

Change to: -

BISC 603-5. Vegetable, Cereal, and Forage Crop Pest Management. Agricultural pests and their management, with emphasis on insects and crop diseases, and including garden and greenhouse pests. Students with credit for BISC 603-3 under its former title may not take this course for further credit.

Explanation: -

Reason for increase in credit hours is explained in the covering memorandum (p.21). Change in the course description is because of reduced emphasis on nematodes and birds because they are now dealt with in separate courses (BISC 848-3, and new course BISC 851-3 proposed herewith, respectively).

BISC 604-2

Credit change only

Present calendar credit: 604-2

Change to: 604-3

Students with credit for 604-2 may not take this course for further credit.

Explanation: see covering memorandum (p. 21).

BISC 605-1

Credit change  
Description change

Present calendar credit and description: -

BISC 605-1. Management of Animal Disease Vectors. Insects and other organisms that attack man or livestock or that are vectors of diseases of man or animals, and their management, including biting flies.

Change to: -

BISC 605-3. Management of Animal Disease Vectors. Management of vectors, especially arthropods, of human and animal diseases, especially microbial; selected topics in epidemiology. Students with credit for BISC 605-1 may not take this course for further credit.

Explanation: -

Change in credit hours from 1 to 3 is for two reasons: because the one week of instruction was insufficient to enable the subject to be dealt with adequately, two weeks are recommended; and, as explained in the covering memorandum (p.21), a 2-week 600-level course warrants 3 credit hours. Thus, during a practical course, emphasis on circumstances of Western Canada. It complements the content of BISC 850.