SIMON FRASER UNIVERSITY S.85-52

MEMORANDUM

To: Senate

From: Senate Committee on Undergraduate Studies

Subject: Department of Biological Sciences - Calendar Changes

Date: November 6, 1985

Action undertaken by the Senate Committee on Undergraduate Studies at its meeting of October 29, 1985 gives rise to the following motions:

MOTION 1:

"That Senate approve and recommend approval to the Board of Governors, as set forth in S.85-52, the changes in the minor program in Biological Sciences."

MOTION 2:

"That Senate approve and recommend approval to the Board of Governors, as set forth in S.85-52, the proposed new courses

BISC 312-3 Environmental Toxicology I
BISC 313-3 Environmental Toxicology II
BISC 445-3 Environmental Physiology of Animals"

MOTION 3:

"That Senate approve and recommend approval to the Board of Governors, as set forth in S.85-52, the deletion of

BISC 311-3 Introduction to Environmental Toxicology"

MOTION 4:

"That Senate approve and recommend approval to the Board of Governors, as set forth in S.85-52, the changes to the Environmental Toxicology Minor Program and the Environmental Toxicology ESD Program."

.... 2

FOR INFORMATION:

Acting under delegated authority at its meeting of October 29, 1985 the Senate Committee on Undergraduate Studies approved -

Changes in prerequisites for BISC 301, 302, 304, 305, 404, 422 and 201.

Change of vector for BISC 400 to 3-1-0.

SCUS 85-25

SIMON FRASER UNIVERSITY

MEMORANDUM

To: R. Heath
Secretary to Senate

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

Subject: Calendar Changes: Department of Biological Sciences

Date: October 16,1985

Please find attached the documentation related to Calendar Changes for the Department of Biological Sciences approved in the Faculty of Science meeting held on October 15,1985.

I would appreciate it very much if you would place these items on the agenda of the next SCUS meeting for consideration and approval.

1) Changes in the Minor Program in Biological Sciences. (PAPER : FSC-85-6)
That the changes for the required courses for the minor in Biological Sciences be approved as follows:

From:

Courses in Biological Sciences	*Semester Hours*
BISC 101-4 Introduction to Biology	*4*
BISC 102-4 Introduction to Biology	*4*

Plus any 14 to 18 hours of upper division credits in BISC for which students have obtained the necessary prerequisites.

To:

Courses in Biological Sciences	Semester Hours
BISC 101-4 Introduction to Biology	4
BISC 102-4 Introduction to Biology	4
At least two of	
BISC 201-3 Cell Biology	3
BISC 202-3 Genetics	3
BISC 203-3 Developmental Biology	3
BISC 204-3 Introduction to Ecology	3

Plus any 15 hours of Upper Division credit in Biological Sciences, or closely related subject areas (including Marine Sciences courses), as approved by the department.
The statement regarding grade point average should be deleted.

2) Changes in Prerequisites: a) BISC 301,BISC 302, BISC 304, BISC 305, BISC404 and BISC 422 and b) BISC 201. (PAPER: FSC-85-7)

a) That the following prerequisites be added to the Biological Sciences Calendar entries:

to BISC 301-3	Prerequisites:	BISC 201,CHEM 251, CHEM 256
to BISC 302-3	"	BISC 202
to BISC 304-3	"	BISC 204
to BISC 305-3	"	BISC 201
to BISC 404-3	"	BISC 204
to BISC 422-3	"	BISC 202, MATH 102

b) That the course CHEM 251-3 be dropped as a prerequisite for BISC 201-3.

3) Change of course vector: BISC 400. (PAPER: FSC-85-8)

That the course vector for BISC 400-3, Evolution, be changed from (2-2-0) to (3-1-0) .

4) New course proposals : a) BISC 312 and BISC 313 and b) BISC 445. (PAPER: FSC: 85-9)

a) That the following new course proposals for BISC 312 and BISC 313 be approved as follows, and that the course BISC 311-3 be deleted.

BISC 312-3, Environmental Toxicology I
An introductory course in environmental toxicology which will concentrate on the biologist's perspective and will "bridge the gap" between traditional biology courses and formal toxicology courses. The course is required for a minor and ESD in environmental toxicology.
Prerequisites :Lower Division Core for Biological Sciences or permission of the Department.

BISC 313-3, Environmental Toxicology II
This course introduces students to basic principles of toxicology and several classes of widely encountered environmental pollutants. Emphasis is on toxicology as an interdisciplinary science. This course is a prerequisite for all advanced toxicology courses.
Prerequisites: BISC 301 or BICH 302, CHEM 252. BISC 312 is a pre or corequisite. Students with credit for BISC 311-3 will not receive credit for BISC 313-3.

The course BISC 313-3 will replace the current course BISC 311-3, Introduction to Environmental Toxicology.

b) To approve the following new course proposal :

BISC 445-3, Environmental Physiology of Animals
A discussion of the physiological mechanisms and adaptations which permit animals to live in diverse environments. The course will adopt a comparative approach to physiology.
Prerequisites : BISC 305 or permission of the department.

5) Changes to: a) the Environmental Toxicology Minor Program and b) the Environmental Toxicology ESD Program. (PAPER: FSC-85-10)

a)To approve that the course requirements for the Environmental Toxicology Minor Program be changed as follows:

Lower Division requirements:

BISC	101-4	Introduction to Biology
	102-4	Introduction to Biology
	201-3	Cell Biology
CHEM	104-3	General Chemistry I
	105-3	General Chemistry II
	115-2	General Chemistry Lab I
	118-2	General Chemistry Lab II
	251-3	Organic Chemistry I
	252-3	Organic Chemistry II
	256-2	Organic Chemistry Lab I
MATH	102-3	Introduction to Statistics B
	154-3	Calculus I for the Biological Sciences (or MATH 151-3)
	155-3	Calculus II for the Biological Sciences (or MATH 152-3)
PHYS	101-3	General Physics (or PHYS 120-3)
	102-3	General Physics (or PHY 121-3)

Upper Division requirements

BISC	301-3	Biochemistry-Intermediary Metabolism
	312-3	Environmental Toxicology I
	313-3	Environmental Toxicology II
	432-3	Chemical Pesticides and the Environment

plus two of

BISC	445-3	Environmental Physiology of Animals (prerequisite is BISC 305-3)
CHEM	371-3	Chemistry of the Environment (prerequisite is CHEM 261-3)

GEOG 319-3 Mass Transfers in the Biosphere (prerequisite is GEOG 111-3)

b) That the requirement for the Environmental Toxicology Extended Studies Diploma Program be approved as follows:

Prerequisites:
a) B.Sc. degree
b) BISC 301 or BICH 302 or equivalent; CHEM 252 or equivalent.

Course requirements:

BISC	312-3	Environmental Toxicology I
BISC	313-3	Environmental Toxicology II
BISC	432-3	Chemical Pesticides and the Environment

Plus two of

BISC	445-3	Environmental Physiology of Animals (prerequisite is BISC 305-3)
CHEM	371-3	Chemistry of the Environment (prerequisite is CHEM 261-3)
GEOG	319-3	Physical Interaction in the Environment (prerequisite is GEOG 111-3)

One technical course chosen from among

BISC 329, BISC 449, CHEM 357, CHEM 416 and KIN. 336

Plus

BISC	650-3	Industrial Toxicology
BISC	651-3	Food & Drug Toxicology
BISC	652-3	Problem Analysis in Environmental Toxicology
BISC	846-3	Insecticide Chemistry & Toxicology.

Thank you.

c.c. Dr. R. Frindt, Chairman, Faculty of Science Undergraduate Curriculum Committee.
Dr. L.M.Srivastava,Chairman,Department of Biological Sciences.

FSC-85-6

SIMON FRASER UNIVERSITY

MEMORANDUM

To: Dr. R. Frindt,
Chairman, Faculty of Science,
Undergraduate Curriculum Committee.

From: A.T. Beckenbach,
Dept. of Biological Sciences.

Subject: MINOR IN BIOLOGICAL SCIENCES

Date: January 23, 1985

As per a motion that was passed at the Departmental meeting on October 18, 1983, please replace the information on p. 133 of the current Calendar regarding the Biological Sciences Minor Program, with the following:

"BIOLOGICAL SCIENCES MINOR PROGRAM

Students will be required to obtain the following credits or standing in the subjects shown to fulfill the requirements for a minor in Biological Sciences:

Courses in Biological Sciences		Semester Hours
BISC 101-4	Introduction to Biology	4
BISC 102-4	Introduction to Biology	4
At least two of		
BISC 201-3	Cell Biology	3
BISC 202-3	Genetics	3
BISC 203-3	Developmental Biology	3
BISC 204-3	Introduction to Ecology	3

Plus any 15 hours of upper division credits in ~~BISC chosen in consultation with the Department.~~ Biological Sciences, or closely related subject areas (including MASC), as approved by the Department.

DELETE ~~A grade point average of 2.0 or better is required for the courses used to make up the minor in Biological Sciences."~~

The 200 level courses are considered core courses in Biology. This change provides more specific guidelines as to how much of the "core" that we will require of BISC minors. These changes were considered in the 4 May 1984 meeting of the F.S.U.C.C. and, for reasons no one can recall any more, were tabled.

Andy Beckenbach

A.T. Beckenbach

ATB:em

cc. Pablo Dobud

Pablo - Please place on next meeting - R7.

File: D1

FSC 85-7a)

SIMON FRASER UNIVERSITY

MEMORANDUM

To: Faculty of Science Undergraduate Curriculum Committee	From: Dr. L. M. Srivastava, Acting Chairman, Dept. of Biological Sciences
Subject: CALENDAR CHANGES	Date: March 2 , 1985.

The following items were approved at a Department meeting held on March 12, 1985 and now require your consideration and approval.

a) Add the following to the BISC calendar entry regarding prerequisites:

BISC 301 - BISC 201, CHEM 251, CHEM 256
BISC 302 - BISC 202
BISC 304 - BISC 204
BISC 305 - BISC 201
BISC 404 - BISC 204
BISC 422 - BISC 202, MATH 102

b) Drop CHEM 251 as a prerequisite for BISC 201.

Lalit M. Srivastava

RECEIVED MAR 2 c. 1985

LMS/ms
Encls.

PREREQUISITE CHANGE ONLY

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. Calendar Information

Department: Biological Sciences

Abbreviation Code: BISC Course Number: 301 Credit Hours: 3 Vector: 3-1-0

Title of Course: Biochemistry-Intermediary Metabolism

Calendar Description of Course:

A brief introduction to the structure and function of protein and enzyme molecules; elementary enzyme kinetics; intermediary metabolism with emphasis on the three energy-transducting systems in animals and plants; microsomal electron transport and its biological implications.

Nature of Course

Prerequisites (or special instructions): ADD:

BISC 201, CHEM. 251, 256

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

Staff

Library

Audio Visual

Space

Equipment

5. Approval

Date: 85-06-25 85-10-16

Department Chairman Dean Chairman, SCUS

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

PREREQUISITITE CHANGE ONLY

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. Calendar Information

Department: Biological Sciences

Abbreviation Code: BISC Course Number: 302 Credit Hours: 3 Vector: 2-0-4

Title of Course: Genetic Analysis

Calendar Description of Course:

Discussion and manipulations of some of the organisms and techniques applicable to genetic analysis.

Nature of Course

Prerequisites (or special instructions): ADD:

BISC. 202

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

Staff

Library

Audio Visual

Space

Equipment

5. Approval

Date: 85-06-25 85-10-16

Department Chairman Dean Chairman, SCUS

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

PREREQUISITE CHANGE ONLY

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. Calendar Information

Department: Biological Sciences

Abbreviation Code: BISC Course Number: 304 Credit Hours: 3 Vector: 3-1-0

Title of Course: Animal Ecology

Calendar Description of Course:

A study of the interrelationships of animals and their physical and biotic environment.

Nature of Course

Prerequisites (or special instructions): ADD:

BISC 204

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

Staff

Library

Audio Visual

Space

Equipment

5. Approval

Date: 85-06-25 16/10/85

Department Chairman Dean Chairman, SCUS

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

PREREQUISITE CHANGE ONLY

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. Calendar Information

Department: Biological Sciences

Abbreviation Code: BISC Course Number: 305 Credit Hours: 3 Vector: 3-0-4

Title of Course:

Calendar Description of Course: Animal Physiology

A comparative study of basic physiological mechanisms in invertebrates and vertebrates.

Nature of Course

Prerequisites (or special instructions): ADD:

BISC 201

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

Staff

Library

Audio Visual

Space

Equipment

5. Approval

Date: 85-09-01-25 OCT 16 1985

Department Chairman Dean Chairman, SCUS

SCUS 73-34b:- (Wh[illegible]ompleting this form, for instructions see Memorandum SCUS 73-34a.

PREREQUISITE CHANGE ONLY

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. Calendar Information

Department: Biological Sciences

Abbreviation Code: BISC Course Number: 404 Credit Hours: 3 Vector: 2-0-4

Title of Course: Plant Ecology

Calendar Description of Course:

Quantitative and qualitative aspects of the distribution, dynamics and ecology of terrestrial plants. A field trip of one to four days normally is a required part of the course.

Nature of Course

Prerequisites (or special instructions): ADD:

BISC 204

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

Staff

Library

Audio Visual

Space

Equipment

5. Approval

Date: 85-06-25 OCT 15 '85

Department Chairman Dean Chairman, SCUS

SCUS 73-34b:- (Wh... ...ompletinq this form, for instructions see Memorandum SCUS 73-34a.

PREREQUISITE CHANGE ONLY

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. Calendar Information

Department: Biological Sciences

Abbreviation Code: BISC Course Number: 422 Credit Hours: 3 Vector: 3-1-0

Title of Course: Population Genetics

Calendar Description of Course:

Theoretical and experimental aspects of inheritance at the population level. Topics include Hardy-Weinberg, one-and two-locus selection theory, introduction to quantitative genetics, and Fisher's fundamental theorem of natural selection.

Nature of Course

Prerequisites (or special instructions): ADD:

BISC 202, MATH 102

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

Staff

Library

Audio Visual

Space

Equipment

5. Approval

Date: 85-06-25

OCT 16 1985

Department Chairman

Dean

Chairman, SCUS

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

II 4.15.

SIMON FRASER UNIVERSITY

MEMORANDUM

FSC 85-76)

To: Faculty of Science Undergraduate Curriculum Committee	From: C. L. Kemp, Acting Chairman Dept. of Biological Sciences
Subject: CALENDAR CHANGES	Date: June 26, 1985

The prerequisite additions noted on the accompanying SCUS forms will enable non-Departmental counsellors to appropriately advise students. They do not represent changes to counselling within the Department.

The prerequisite deletion of CHEM 251 for students entering BISC 201-3 conforms to the current student practice. The lack of this course does not adversely affect student performance at this stage of their careers.

C. L. Kemp

CLK/ms
Encls.

JUN 27 1985

O.K. dfc For the Committee

PREREQUISITE CHANGE ONLY

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. Calendar Information

Department: Biological Sciences

Abbreviation Code: BISC Course Number: 201 Credit Hours: 3 Vector: 3-1-0

Title of Course: Cell Biology

Calendar Description of Course:

A study of the properties and functions of cells and of their molecular constituents.

Nature of Course

Prerequisites (or special instructions):

DROP CHEM 251

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

Staff

Library

Audio Visual

Space

Equipment

5. Approval

Date: 85-06-25 16-10-85

Department Chairman Dean Chairman, SCUS

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

Vector Change Only

FSC 85-8

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. Calendar Information

Department: Biological Sciences

Abbreviation Code: BISC Course Number: 400 Credit Hours: 3 Vector: 3-1-0

Title of Course:

Calendar Description of Course:

See calendar.

Nature of Course

Prerequisites (or special instructions):

What course (courses), if any, is being dropped from the calendar if this course is approved: Change made to more accurately reflect the current mode of instruction.

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

Staff

Library

Audio Visual

Space

Equipment

5. Approval

Date: 85/07/18 16-10-85

Department Chairman Dean Chairman, SCUS

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

II 4.15.

FSC-85-9 a)

SIMON FRASER UNIVERSITY

MEMORANDUM

To: Faculty of Science Undergraduate Curriculum Committee.

From: Dr. K.K. Nair, Chairman, Dept. of Biological Sciences.

Subject:

Date: June 19, 1985

The following items (attached) were approved at a Department meeting held on May 29, 1985 and now require your consideration and approval.

a) New Course.

BISC 312 Environmental Toxicology I

Replacement course for current BISC 311-3. BISC 313-3, Environmental Toxicology II.

ENTOX minor requirement.

K.K. Nair

KKN:em

encls.

BISC 312-3 Environmental Toxicology I

BISC 313-3 Environmental Toxicology II

Rationale:

A single semester course, i.e. BISC 311, is not sufficient to appropriately cover a) the biological aspects of toxicology, and b) the basic principles of toxicology. We intend therefore to provide two courses BISC 312 and 313 which will adequately introduce environmental toxicology. BISC 312 will act as the introductory course and since it will address environmental toxicology from a biological perspective, we feel the environmental toxicology program as a whole will become more attractive to students. These courses would become a required course for a minor and ESD in Environmental Toxicology.

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. Calendar Information

Department: Biological Science

Abbreviation Code: BISC Course Number: 312 Credit Hours: 3 Vector: 3-1-0

Title of Course: Environmental Toxicology I

Calendar Description of Course:

An introductory course in environmental toxicology which will concentrate on the biologist's perspective and will "bridge the gap" between traditional biology courses and formal toxicology courses. The course is required for a minor and ESD in environmental toxicology.

Nature of Course

Prerequisites (or special instructions): Lower Division Core for Biological Sciences or permission of the Department.
~~Normal lower level requirements for BioScience~~

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

~~311~~

2. Scheduling

How frequently will the course be offered? Once a year

Semester in which the course will first be offered? ~~85-3~~ 86-3

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

Farrell

3. Objectives of the Course

To introduce new information on environmental toxicology. It will serve as the first of a series of environmental toxicology courses in the minor and ESD programs. It may also be of interest to Biology majors since it addresses toxicology from a biologist's perspective.

4. Budgetary and Space Requirements (for information only)

What additional resources will be required in the following areas:

Faculty None

Staff None

Library < $200 for new book acquisitions

Audio Visual None

Space None

Equipment None

5. Approval

Date: June 19 85 16-10-85

Department Chairman Dean Chairman, SCUS

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

BISC 312

ENVIRONMENTAL TOXICOLOGY I

COURSE OUTLINE

Scope

The first section of course will introduce basic concepts, principles and terminology relating to environmental toxicology. The second section will address specific toxicants and aspects of pollution. Biological toxins, agricultural and domestic pollutants, pollution via transportation and areas of current concern will be dealt with. The third section will consider briefly the monitoring of the environment. Throughout the course terrestrial, aquatic and aerial environments and their organisms will be discussed separately and as a continuum within the biosphere. A multi-level approach will be used spanning from physiology and biochemistry through to ecology and behaviour.

Details

Section 1

A: What are toxicity and environmental toxicology?
(scope; terminology; dose-response; LD_{50}; ED_{50}; target species; target organs).

B: Are there specific problems in a given ecosystem?
(terrestrial; aquatic; plants; role of microorganisms).

C: What is the fate of pollutants?
(food chains; bioaccumulation; C-cycle; N-cycle; 1/2 life).

Section II

A: Biological toxins
(plants; animals; microbes).

B: Aquatic toxicology
(selected aspects within the field).

C: Terrestrial toxicology
(selected aspects within the field).

D: Aerial toxicology
(selected aspects within the field).

Section III

Monitoring the environment.

Grading System

Two mid-term exams (20% each) and 1 final exam (60%).

Recommended Texts:

Environmental Toxicology. J.H. Duffus. Pub. Edward Arnold. Ltd., London (1980) ISBN 0-7131-2798-8.

Introduction to Environmental Toxicology. Edited F.E. Guthie and J.J. Perry. Pub. Elsevier North Holland Inc., New York ISBN 0-444-00359-2.

Library holdings

The following texts need to be purchased for the library.

Environmental Toxicology. J.H. Duffus. Pub. Edward Arnold. Ltd., London (1980) ISBN 0-7131-2798-8.

Introduction to Environmental Toxicology. Edited F.E. Guthie and J.J. Perry. Pub. Elsevier North Holland Inc., New York ISBN 0-444-00359-2.

2 copies of each.

Principles and Methods of Toxicology. (1982) Raven Press New York. Ed. A.W. Hayes ISBN 0-88167-002-2. 1 copy.

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. Calendar Information

Department: Biological Sciences

Abbreviation Code: BISC Course Number: 313 Credit Hours: 3 Vector: 3-1-0

Title of Course: ENVIRONMENTAL TOXICOLOGY II

Calendar Description of Course:
The course introduces students to basic principles of toxicology and several classes of widely encountered environmental pollutants. Emphasis is on toxicology as an interdisciplinary science. This course is a prerequisite for all advanced toxicology courses.

Nature of Course

Prerequisites (or special instructions):
BISC 301 or BICH 302. CHEM 252.
BISC 312 is a pre- or corequisite. Students with credit for BISC 311-3 will not receive credit for BISC 313-3.
What course (courses), if any, is being dropped from the calendar if this course is approved:
BISC 311

2. Scheduling

How frequently will the course be offered? Once a year.

Semester in which the course will first be offered? ~~85-3~~ 86-1

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

3. Objectives of the Course

The course introduces students to the principles of toxicology which are applicable to a large number of toxicants and living organisms. Students therefore are prepared adequately for the advanced toxicology courses at 600 levels.

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: June 19 85, 16-10-85

Department Chairman Dean Chairman, SCUS

SCUS 73-34b:- (When completing this form, for instructions see Memorandum SCUS 73-34A.

BISC 313

ENVIRONMENTAL TOXICOLOGY II

Course Outline:

This course outline gives students a general understanding of the principles of toxicology and a brief treatment of various classes of toxicants in the environment.

Section I: Basic Principles

Absorption, distribution, excretion and metabolism of toxicants by living organisms
An introduction to toxicokinetics
Factors influencing toxicity
Selective toxicity
Numbers in toxicology
Chemical carcinogenesis
Chemical mutagenesis
Chemical teratogenesis
Genetic toxicology
Evaluation of Safety: toxicological evaluation

Section II: Toxicants

Toxic agents, specific antidotes and mechanisms of antidote action
Pesticides
Chlorinated aromatic hydrocarbons and related chemicals
Solvents and vapours
Food additives and contaminants
Heavy metals and antagonists

Textbook

Toxicology: The Basic Science of Poisons, 2nd edition by J. Doull, C.D. Klassen and M.O. Amdur.

SIMON FRASER UNIVERSITY

File: D1

FSC 85-9 b.)

MEMORANDUM

To: Faculty of Science Undergraduate Curriculum Committee	From: Dr. L. M. Srivastava, Acting Chairman, Dept. of Biological Sciences
Subject: CALENDAR CHANGES	Date: March 2 , 1985.

The following items were approved at a Department meeting held on March 12, 1985 and now require your consideration and approval.

b) New Course: Environmental Physiology of Animals - BISC 445-3 (see attachments).

Lalit M. Srivastava

MAR 2 c. 1985

LMS/ms
Encls.

BISC 445: ENVIRONMENTAL PHYSIOLOGY OF ANIMALS

Rationale

This course has been offered in 1984-3 as BISC 472 with an enrollment of 16. It provides a natural extension of the material covered in BISC 305 in that it develops upon basic knowledge presented in BISC 305, as well as introducing new concepts in physiology. This will mean that BioScience can offer 6 credit hours in animal physiology (the standard offering at most universities). Because BISC 445 uses deductive reasoning to examine how animals adapt to the environment, it will provide information and thought patterns valuable in understanding problems in environmental toxicology. BISC 445 will replace the BISC 405 requirement for the present Environmental Toxicology program.

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. Calendar Information

Department: Biological Sciences

Abbreviation Code: BISC Course Number: 445 Credit Hours: 3 Vector: 3-1-0

Title of Course: ENVIRONMENTAL PHYSIOLOGY OF ANIMALS

Calendar Description of Course:

A discussion of the physiological mechanisms and adaptations which permit animals to live in diverse environments. The course will adopt a comparative approach to physiology.

Nature of Course

Prerequisites (or special instructions):

BISC 305 or permission of the department

What course (courses), if any, is being dropped from the calendar if this course is approved: None

2. Scheduling

How frequently will the course be offered? Once a year

Semester in which the course will first be offered? ~~85-3~~ 86-1

Which of your present faculty would be available to make the proposed offering possible? Dr. A. Farrell

3. Objectives of the Course

To introduce ~~new~~ information on physiology and to apply basic knowledge of physiological mechanisms in order to understand how animals have adapted to and survived the rigours of their environment.

4. Budgetary and Space Requirements (for information only)

What additional resources will be required in the following areas:

Faculty None

Staff None

Library < $200 for new book acquisitions

Audio Visual None

Space None

Equipment None

5. Approval

Date: March 26, 1985 16-10-85

Department Chairman Dean Chairman, SCUS

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

BIOSCIENCE 445
ENVIRONMENTAL PHYSIOLOGY
COURSE OUTLINE

Course objectives

This course aims to provide the student with new information on specific physiological mechanisms which enable animals to adapt to and survive the demands of their environment. The course will also develop upon the basic physiological mechanisms introduced in BISC 305.

Instruction

Dr. A.P. Farrell

Recommended texts

Animal Physiology: Adaptation and environment. K. Schmidt-Nielsen Cambridge University Press, N.Y., 1983, 3rd Ed.

Animal Physiology: Adapations in function. F.R. Hainsworth Addison-Wesley Pub. Co., Don Mills, 1981.

Course Outline

1. Temperature adaptations
   a) Ectotherms
   b) Endotherms
2. Adaptations to low O_2
   a) Anoxia and hypoxia
   b) Breathhold diving
   c) High altitude
3. Water adaptations
   a) Desert life
   b) Fresh water organisms
   c) Saltwater organisms
   d) Acid rain
4. Effects of light

Grading system

The grades will be based on xams and a term paper as follows:

Mid-term exam	30%
Final exam	50%
Term paper	20%

.../2

The midterm exam (2 hr) will be held at the end of 6 weeks and will cover the lecture material up to that time. The final exam (3 hr) will be held at the end of the semester, during the final exam period, and will cover all the lecture material for the whole semester.

The term paper will review or discuss some area of animal physiology. Deadline for approval of topics is the end of the second week in October. Deadline for submission of completed project is the end of the last week in November. Early submissions are encouraged and previews of the term paper can be requested for early submissions. Papers will be graded in order of receipt and late submissions will have 10% subtracted for each week late.

Library holdings

A list of the SFU library holdings in general and comparative physiology is included. Four new library acquisitions are requested at this time. A list of the SFU journal holdings is also included.

1. The Evolution of air breathing in vertebrates. D.J. Randall et. al. (1981) Cambridge Univ. Press. New York. ISBN 0521 22259 1.

2. Microcirculation Volume II. G. Kaley and B.M. Altura. (1980?) University Park Press, Baltimore (ISBN?).

3. Introduction to Comparative Physiology L. Goldstein. (1977). Holt, Rinehart & Winston, Toronto. ISBN 0 03 012411 5.

4. Gills Ed. D.F. Houlihan, J.C. Rankin, and T.J. Shuttleworth. (1982) Cambridge Univ. Press, New York. ISBN 0 521 24083 2.

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SIMON FRASER UNIVERSITY

MEMORANDUM

F5C-85-10

To..... Faculty of Science Undergraduate..... Curriculum Committee.	From... Dr. K.K. Nair, Chairman, ... Dept. of Biological Sciences.
Subject.....	Date... June 19, 1985

The following items (attached) were approved at a Department meeting held on May 29, 1985 and now require your consideration and approval.

3. Modification of a) ENTOX minor requirement.
   b) ENTOX ESD requirement.

K.K. Nair

KKN:em

encls.

PROPOSAL FOR CHANGES TO THE ENVIRONMENTAL TOXICOLOGY PROGRAMS

Rationale

Experience with the current programs has indicated that some minor modifications will enhance these programs' attractiveness as well as their educational effectiveness.

Objectives

- To make the program more attractive and suited to prospective students.
- To integrate the prerequisite and core structure of the ENTOX minor and ESD programs.

CALENDAR ENTRY CHANGES FOR ENVIRONMENTAL TOXICOLOGY MINOR PROGRAM

This program is designed to given undergraduates, who are working towards a degree in the sciences, an opportunity to obtain a thorough overview of the field of environmental toxicology. As a result, students will be better qualified and, consequently, eligible for employment with various industrial and governmental agencies engaged in environmental monitoring and research.

Lower Division Requirements

The following lower division courses are prerequisites in the Environmental Toxicology Minor Program. Most students, pursuing degree programs in science, will already have credit for most of the courses.

BISC	101-4	Introduction to Biology
	102-4	Introduction to Biology
	201-3	Cell Biology
CHEM	104-3	General Chemistry I
	105-3	General Chemistry II
	115-2	General Chemistry Laboratory I
	118-2	General Chemistry Laboratory II
	251-3	Organic Chemistry I
	252-3	Organic Chemistry II
	256-2	Organic Chemistry Laboratory I
MATH	102-3	Introduction to Statistics B
	154-3	Calculus I for the Biological Sciences
or	151-3	Calculus I
	155-3	Calculus II for the Biological Sciences
or	152-3	Calculus II
PHYS	101-3	General Physics I
or	120-3	Physics I
	102-3	General Physics II
or	121-3	Physics II

Upper Division Requirements
(Minimum 15 semester hours)

BISC	301-3	Biochemistry - Intermediary Metabolism
	312-3	Environmental Toxicology I
	313-3	Environmental Toxicology II
	432-3	Chemical Pesticides and the Environment

Plus 2 of

BISC	445-3*	Environmental Physiology of Animals
CHEM	371-3*	Chemistry of the Environment I
GEOG	319-3*	Physical Interactions in the Environment

NOTE: *These courses require prerequisites which do not form part of the (minor) (DET).

A grade point average of 2.0 or higher is required for the courses in the Minor Program.

ENVIRONMENTAL TOXICOLOGY EXTENDED STUDIES DIPLOMA PROGRAM

This program will enable students who already have a degree in the sciences and who are presently engaged in environmental work, to update their training. Practical experience in recent laboratory assay techniques will enable students to critically evaluate the data generated by these techniques.

Prerequisites

1. B.Sc degree
2. CHEM 252-3 or equivalent - Organic Chemistry II, and
3. BICH 302-3 or equivalent - Metabolism

Course Requirements
(Minimum 30 semester hours)

BISC	312-3	Environmental Toxicology I
	313-3	Environmental Toxicology II
	432-3	Chemical Pesticides and the Environment

Plus 2 of

BISC	445-3*	Environmental Physiology of Animals
CHEM	371-3*	Chemistry of the Environment I
GEOG	319-3*	Physical Interactions in the Environment

NOTE: *These courses require prerequisites which do not form part of the Environmental Toxicology Extended Studies Diploma Program.

Plus 1 of

BISC	329-4	Introduction to Experimental Techniques
	449-3	Experimental Techniques III: Histochemistry
CHEM	357-3	Chemical and Instrumental Methods of Identification of Organic Compounds
	416-3	Modern Methods of Analytical Chemistry
or KIN	336-3	Microscopic Anatomy (Histology)

Plus

BISC	650-3	Industrial Toxicology
	651-3	Food and Drug Toxicology
	652-3	Problem Analysis in Environmental Toxicology
	846-3	Insecticide Chemistry and Toxicology