

# SIMON FRASER UNIVERSITY

S.80-88

## MEMORANDUM

Senate

From Senate Committee on  
Undergraduate Studies

Subject Special Topics Courses,  
Faculty of Science, 79-3 &  
80-1

Date 1980-06-18

### FOR INFORMATION

In compliance with the Senate regulation, the Faculty of Science has forwarded to SCUS information on the Special Topics courses given in that Faculty during the 79-3 and 80-1 semesters.

#### Semester 79-3

BISC 471	Advanced Developmental Biology	D. Baillie/A. Smith
BISC 472	Selected Topics in Environmental Toxicology	C. van Netten
BISC 473	Limnology	G.H. Geen
MATH 292	Introduction to Actuarial Mathematics	R. Norman
PHYS 493	Alternate Energy Sources & Energy Conversion	A.S. Barker

#### Semester 80-1

BISC 471	Biometrics	A. Beckenbach
BISC 472	Ecological Modelling	R.M. Peterman
BISC 473	Introduction to Aquatic Pollution	A. Smith
CHEM 469	Topics in Physical Chemistry	P.W. Percival
CHEM 472	Special Topics in Theoretical Chemistry	G.L. Malli
MATH 292	Introduction to Actuarial Mathematics	R. Norman
PHYS 493	The Flying Circus of Physics	A.S. Arrott

Senators who wish to review the submission may do so in the Registrar's office.



MEMORANDUM

H. Evans, Secretary

A.G. Sherwood, Chairman

To.....  
SCUS

From.....  
Faculty of Science Undergraduate  
Curriculum Committee

Subject... Special Topics Course.....

Date.. 80.06.02.....

Enclosed are reports of Special Topics courses given in the faculty of science during the 79-3 and 80-1 semesters.

A.G. Sherwood  
Associate Professor

mpf  
encl.

# SIMON FRASER UNIVERSITY

## MEMORANDUM

To..... Dr. A. G. Sherwood, Chairman  
Faculty of Science UGCC

From..... R. L. Kerr  
Physics Department

Subject..... SPECIAL TOPICS COURSES

Date..... 1980 05 22

80-1  
PHYS 493-3  
Dr. A. S. Arrott  
"The Flying Circus of Physics"

The aim of Natural Philosophy is to increase our understanding of the material world. The course concentrates on those phenomena in which the principal tool of investigation is the eye, aided if necessary by magnification.

79-3  
PHYS 493-3  
Dr. A. S. Barker  
"Alternate Energy Sources and Energy Conversion"

A study of energy resources in Canada and the world; solar heating, solar electricity, wind power, nuclear energy resources, safety and risks, conservation.



R. L. Kerr

RLK/ml

# SIMON FRASER UNIVERSITY

## MEMORANDUM

To..... A.G. Sherwood, Chairman  
..... Faculty of Science  
..... Undergraduate Curriculum Committee

From.. M. Singh, Chairman  
.....  
..... Mathematics Department

Subject.. SPECIAL TOPICS COURSES

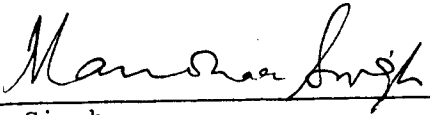
Date.. May 29, 1980

In response to your memo dated 1980 05 21 the following Special Topics course was offered during the 79-3 and 80-1 semesters:

79-3 MATH 292-3, Introduction to Actuarial Mathematics  
(EVE)                      Instructor: Mr. R. Norman

80-1 MATH 292-3, Introduction to Actuarial Mathematics  
(Downtown              Instructor: Mr. R. Norman  
Centre)

Course Description: An introduction to the theory of interest, life insurance and pensions. Topics to be covered include mortgages, annuities, life insurance, registered retirement savings plans and the funding of pension plans.

  
\_\_\_\_\_  
M. Singh

# SIMON FRASER UNIVERSITY

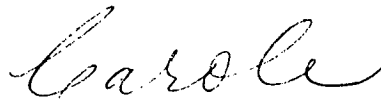
## MEMORANDUM

To.....	Dr. A.G. Sherwood, Chairman	From.....	C.A. Thompson, D.A.
	FUCC, Chemistry Department		Dept. of Biological Sciences
Subject.....	Special Topic Courses	Date.....	80-05-23

Please find attached the information you requested in your memorandum of May 21st to Chairman.

The information covers the following courses:

- 79-3: BISC 471-3, Advanced Developmental Biology - Drs. Baillie/Smith  
472-3, Selected Topics in Environmental Toxicology - Dr. C. van Netten  
473-3, Limnology - Dr. G.H. Geen
- 80-1: BISC 471-3, Biometrics - Dr. Beckenbach  
472-3, Ecological Modelling - Dr. Peterman  
473-3, Introduction to Aquatic Pollution - Prof. A. Smith



Carole Thompson  
Departmental Assistant

CAT/jmy

Encls.

DEPARTMENT OF BIOLOGICAL SCIENCES

COURSE OUTLINE 80-1

2-2-0

BISC. 471-3

PROFESSOR: A. Beckenbach

Special Topics in Biology: BIOMETRICS

This course is addressed to biologists who use biometrical methods as tools. Topics will include experimental design; application and interpretation of some statistical methods in biological research; Poisson models of mutation and microbial infection; diversity indices. Some familiarity with elementary statistical methods is assumed.

COURSE TEXTS:

BIOMETRY - Sokal and Rohlf - W. H. Freeman, 1969

STATISTICAL TABLES - Rohlf and Sokal, W. H. Freeman, 1969

Prerequisites: MATH 101 or CMPT. 103 plus 75 hrs. in Biological Sciences or permission of the Department.

TIMES: Lectures - Tuesday and Thursday 9:30 - 10:20 a.m. AQ 5051  
Tutorial - Wednesday 11:30 - 13:20 AQ 5015

A more formal course outline will be available the first week of classes.

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DEPARTMENT OF BIOLOGICAL SCIENCES

COURSE OUTLINE 80-1

2-0-2

BISC. 472-3

PROFESSOR: R.M. Peterman

Special Topics in Biology: ECOLOGICAL MODELLING

Concepts and methods of computer simulation modelling in ecology. Emphasis on dynamics and processes of ecological systems. Construction and use of computer models to address questions in evolution, experimental design, research and resource management. Note: Introduction to computer programming. Little mathematics required.

COURSE TEXTS:

ECOLOGY AND RESOURCE MANAGEMENT - Watt, 1968 - McGraw-Hill

ADAPTIVE ENVIRONMENTAL ASSESSMENT AND MANAGEMENT - Holling, 1978 (ed.)  
John Wiley & Sons, England

FORTRAN IV WITH WATFOR AND WATFIV - Cress, Dirksen and Graham, 1970 -  
Prentice Hall - paperback

THEORETICAL ECOLOGY: PRINCIPLES AND APPLICATIONS - May, (ed.) 1976  
Blackwell Scientific

Prerequisites: BISC. 304 and MATH 155 or permission of Department

TIMES: Lectures: Monday and Wednesday 11:30 - 12:20 AQ 5007

Laboratory: Wednesday 14:30 - 16:20 AQ 2121

A more formal course outline will be available the first week of classes.

DEPARTMENT OF BIOLOGICAL SCIENCES

COURSE OUTLINE 80-1

3-1-0

BISC. 473-3

INSTRUCTOR: A. Smith

Special Topics in Biology: INTRODUCTION TO AQUATIC POLLUTION.

A survey of toxic materials and their fates in marine and freshwater ecosystems - types of pollutants, sources of pollution, effects on organisms and communities, methods of environmental monitoring.

Prerequisites: BISC. 204 and 306 or permission of the Department.

TIMES: Lectures: Monday, Wednesday, Friday 10:30 - 11:20 a.m.

Tutorial: Wednesday, 8:30 - 9:20 a.m.

A more formal course outline will be available the first week of classes.



DEPARTMENT OF BIOLOGICAL SCIENCES

Course Outline

Fall 1979

BISC 471-3 EVENING

2-2-0

Drs. Baillie & Smith

Special Topics in Biology: Advanced Developmental Biology

Prerequisites: BISC 201, 202 and 203. BISC 301 recommended.

This course is designed to bring the advanced undergraduate student up to date in modern studies of developmental biology. The lectures are concerned with major topic areas such as cytoplasmic localization phenomena, maternal versus embryonic transcriptional events, nuclear totipotency, etc. The lectures cover the classical experiments in these areas followed by an in depth examination of recent experiments at the molecular and biochemical level. The student is expected to be well grounded in basic embryology, biochemistry, and cell biology in preparation for this course.

A more formal course outline will be available the first week of classes.

NOTE: Students who have previously taken this course as BISC 472 in Fall 1977 will not be permitted to take the course for further credit.

COURSE DESCRIPTION

BIOLOGICAL SCIENCES 472-3

Fall 1979

SPECIAL TOPICS: Selected Topics in Environmental Toxicology

Vector: 3-1-0

Instructor: Dr. C. van Netten

This course will investigate the available information regarding the modern chemical environment and its effect on living organisms. Topics dealt with will include heavy metals, pesticides, PCBs, food additives, synthetic hormones, and drugs. Special attention will be given to the physiological and biochemical principles involved and their relationship to cancer.

Recommended prerequisite: BISC 201 or permission of the Department.  
Note: Students who have previously taken this course as BISC 473 in Fall 1978 will not be permitted to take the course for further credit.

Time Schedule: Wednesday evenings, 6 p.m. to 10 p.m.

LIMNOLOGY

BISC 473-3

FALL 1979

Instructor: Dr. Glen H. Geen C8053

T.A.: Mr. Viktor Lewynsky B9219

Lectures: Tuesday, Thursday 8:30 - 9:30 A.M. AQ3153

Labs: Wednesday 1:30 - 5:30 P.M. B8214

Text: 'Limnology' by R. G. Wetzel

Recommended Reading: 'The Algal Bowl' by J.R. Vallentyne

'Limnology in Canada' J.F.R.B. Canada, 31(5): 1974

Lecture Schedule:

1. Introduction
2. Structure of water, hydrologic cycle
- 3 - 5. Lake and stream origin, lake morphometry
- 6 - 8. Light, temperature and water movements in lakes
- 9 -10. Dissolved gases
- 11 -13. TDS, N & P cycles, eutrophication
- 14 -15. Stream organisms, their life histories and adaptations
16. Lake communities, zones and food webs
17. Bacterial populations
18. Phytoplankton populations
- 19 -20. Zooplankton populations
- 21 -22. Littoral & benthic communities
- 23 -24. Major Canadian lake studies
25. Manipulation of lakes

DESCRIPTION OF COURSE

This course will involve a consideration of fresh waters with particular reference to those in British Columbia. The origin of lakes and streams and the physical and chemical parameters of particular importance to plant and animal life will be considered. Much of the emphasis in the lectures, laboratories and field work will focus on the biology of fresh water organisms. There will be 2 lectures and 4 hours of laboratory per week.

Chemistry 472

COURSE OUTLINE

Professor G.L. Malli  
Room C8070  
Ph. 291-3530

Text: F.A. Cotton  
Chemical Applications of Group Theory  
Wiley Interscience, Second Edition, 1971

Course Contents:

1. Groups: subgroups, classes, some examples of groups.
2. Molecular Symmetry and Symmetry Groups: finite groups, classification of molecular symmetry groups, proper axes and rotations, improper axes and rotations, symmetry point groups.
3. Group Representations: matrix representation of groups, character, irreducible representations, group representations.
4. Group Theory and Quantum Mechanics: wavefunctions as bases for IR's, direct product, symmetry adapted linear combinations (SALC), projection operators.
5. Application of Group Theory: molecular orbital theoretical methods and group theory. LCAO/MO/SCF: scheme of Roothaan, selection rules, hybrid orbitals.

Chemistry 469-3 - Topics in Physical Chemistry

COURSE DESCRIPTION

Professor: Dr. P.W. Percival

Advanced techniques of physical chemistry and some of their more exotic applications.

The broad areas to be covered are those of double resonance, time-resolved spectroscopy, and single particle counting. Specific topics will be selected from: ESR, ENDOR, ELDOR, ODMR, flash photolysis, flash photolysis-ESR, RT NMR, pulsed ESR, single photon counting, positron lifetime method, and muon spin rotation.