S.11-21

SFU

OFFICE OF THE ASSOCIATE VICE-PRESIDENT, ACADEMIC AND ASSOCIATE PROVOST

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MEMORANDUM

ATTENTION	Senate	**DATE**	January 7, 2011
FROM	Bill Krane, Chair Senate Committee on Undergraduate Studies	**PAGES**	1/1
RE:	Faculty of Environment (SCUS 11-05)		

For information:

Acting under delegated authority at its meeting of January 6, 2011, SCUS approved the following curriculum revisions effective Fall 2011:

1. Environmental Science

(i) New Course Proposals:

- EVSC 100-3, Introduction to Environmental Sciences
- EVSC 205-3, Methods in Environmental Science
- EVSC 399-1, Environmental Science Seminar - I
- EVSC 499-1, Environmental Science Seminar – II

(ii) Deletion of EVSC 200, 401,
- 491W(Fall 2012)

(iii) Change to Environmental Science Major Program

Senators wishing to consult a more detailed report of curriculum revisions may do so on the Web at http://www.sfu.ca/senate/Senate_agenda.html following the posting of the agenda. If you are unable to access the information, please call 778-782-3168 or email shelley_gair@sfu.ca

SFU

faculty of environment

SCUS 11-05

MEMO

Dean's Office
TASC 2, Suite 8900

Tel: 778-782-8787
Fax: 778-782-8788

www.fenv.sfu.ca

ATTENTION	SCUS
FROM	Duncan Knowler, Chair, FENV Curriculum Committee
RE	Faculty of Environment Course Credit Hour Changes
DATE	December 16, 2010

The following have been approved by the Faculty of Environment (FENV) Curriculum Committee at its meeting of December 6, 2010 and are being forwarded to SCUS for approval and recommendation to Senate.

- Environmental Science (EVSC)
  - EVSC 100-3 (B-Sci): New Course Proposal
  - EVSC 205-3: New Course Proposal
  - EVSC 399-1: New Course Proposal
  - EVSC 499-1: New Course Proposal
  - EVSC 200-3 (B-Sci): Course Deletion
  - EVSC 405-1: Course Deletion
  - EVSC 491W-4: Course Deletion
  - Change in EVSC Program Requirements
  - Changes in Criteria for the Minimum Grade Requirement

SFU ENVIRONMENTAL SCIENCE PROGRAM

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TEL 778.782.8797
FAX 778.782.8788

www.sfu.ca/EVSC

MEMORANDUM

ATTENTION D. Knowler, Chair FEnv CC
FROM L. Bendell, Director Environmental Science Program
RE: Environmental Science curriculum items

DATE November 24th 2010

On November 15th, 2010, the steering committee for the redevelopment of the Environmental Science Program Chaired by Alton Harestad, reached consensus on the following changes to the program.

We are most enthusiastic about our new program and are pleased to submit these changes to the FEnv CC for approval.

New Courses:

EVSC 100-3 Introduction to Environmental Science
EVSC 205-3 Methods in Environmental Science
EVSC 399-1 Environmental Science Seminar-I
EVSC 499-1 Environmental Science Seminar-II

Deleted Courses:

EVSC 200-3 Introduction to Environmental Science
EVSC 401-1 Current Topics in Environmental Science
EVSC 491W-3 Advanced Field Studies in Environmental Science

It is recognized that deletion of 491W removes an UD W required by EVSC for graduation. EVSC 491W will be offered summer 2011 to ensure that EVSC majors have access to an UD W as we implement the redeveloped program in fall of 2011. We will be requesting W certification for ENV/REM 321 Ecological Economics. This course is required for the EVSC major hence it makes good sense for it to also be a W course. We will apply for W status in the next term (Spring of 2011), such that it is available to students in Spring of 2012, i.e., with the new program coming on-line.

Program Changes:

BSc in Environmental Science

- Removing the following areas of emphasis: Chemistry, Quantitative Techniques for Resources Management, Pollutant Transport.
- Changing the following areas of emphasis (including name change) to provide greater flexibility; Applied Biology (formerly Biology), Environmental Earth Systems (formerly Physical Geography), Environmetrics (name remains)
- Introducing a new area of concentration, Water Science.

Changes in Criteria for Minimum Grade Requirement:

Minimum CGPA Requirement 2.0 or better (currently 2.5)

RATIONALE:

The Faculty of Environment has as one of its founding members, the Environmental Science Program. The Environmental Science Program at SFU is an interdisciplinary program that fosters critical thinking about our natural surroundings and educates students to understand and use science to resolve environmental issues. The Environmental Science Program underwent external review in 2006 with key recommendations being the redevelopment and updating of the existing Environmental Science Program.

Basic elements of the redeveloped program include:

- A broad science based lower division which can be completed over a two year time period.
- An EVSC problem based set of courses that begins in first year and builds throughout the four years of undergraduate studies.
- Four areas of concentration;

1) Applied Biology
2) Environmental Earth Systems
3) Environmetrics
4) Water Science.

Throughout the redevelopment of the Environmental Science program recommendations made in the Academic Vision for SFU as well as those of the Environmental Science External Review 2006 were followed. All areas of emphasis have greater flexibility which will allow students more freedom in course selection. The EVSC problem-based set of courses will provide a forum for idea exchange plus team building. Implementation of the proposed changes to the program is to occur September 2011.

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL

COURSE NUMBER EVSC 100-3

COURSE TITLE

LONG — for Calendar/schedule, no more than 100 characters including spaces and punctuation

Introduction to Environmental Science

AND

SHORT — for enrollment/transcript, no more than 30 characters including spaces and punctuation

Environmental Science

CREDITS

Indicate number of credits for: Lecture 3 Seminar _____ Tutorial 1 Lab _____

COURSE DESCRIPTION (FOR CALENDAR). 3-4 LINES MAXIMUM. ATTACH A COURSE OUTLINE TO THIS PROPOSAL.

Introduces students to the importance of science in Environmental Science. Lecture material will be complemented by case studies and guest speakers.

PREREQUISITE

Students with credit for EVSC 200-3 may not take EVSC 100-3 for further credit.

COREQUISITE

none

SPECIAL INSTRUCTIONS

That is, does this course replicate the content of a previously-approved course to such an extent that students should not receive credit for both courses.? If so, this should be **noted in the prerequisiite**.

COURSES(S) TO BE DELETED IF THIS COURSE IS APPROVED
NOTE: APPROPRIATE DOCUMENT FOR DELETION MUST BE SUBMITTED TO SCUS

EVSC 200-3

RATIONALE FOR INTRODUCTION OF THIS COURSE

This course is the gateway course to the study of Environmental Science and has been repositioned at the 100 level to more appropriately serve this purpose. It is complementary to REM 100 which provides a societal perspective on environmental issues.

SCHEDULING AND ENROLLMENT INFORMATION

Indicate effective **term and year** course would first be offered and planned **frequency** of offering thereafter:

Fall 2011 offered annually

(NOTE: There is a two-term wait for implementation of any new course.)

Indicate if there is a waiver required: ☐ YES ☒ NO Will this be a required or elective course in the curriculum? ☒ Required ☐ Elective

What is the probable enrollment when offered? Estimate 100

Which of your present CFL faculty have the expertise to offer this course?

Bendell , Kohfeld

Are there any proposed student fees associated with this course other than tuition fees? ☐ YES ☒ NO
(If yes, attach mandatory supplementary fee approval form.)

RESOURCE IMPLICATIONS

NOTE: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Campus where course will be taught Burnaby

Library report status underway

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For example, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering?

EVSC 100-3 will replace EVSC 200-3. EVSC 200-3 is to be eliminated.
EVSC 100-3 will be offered as a breadth science course.

List any outstanding resource issues to be addressed prior to implementation: space, laboratory equipment, etc:

None

Articulation agreement reviewed? ☐ YES ☐ NO ☒ Not applicable

OTHER IMPLICATIONS

None

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL

APPROVALS

1 Departmental approval indicates that the Department or School has approved the content of the course, and has consulted with other Departments/Schools/Faculties regarding proposed course content and overlap issues.

L. Bendell Digitally signed by Leah Bendell DN: cn=Leah Bendell, o=Simon Fraser University, ou=Biological Sciences, email=bendell@sfu.ca, c=CA Date: 2010.12.14 11:47:03 -08'00'

Chair, Department/School — Date

14/12/2010

Chair, Faculty Curriculum Committee — Date

2 Faculty approval indicates that all the necessary course content and overlap concerns have been resolved, and that the Faculty/School/Department commits to providing the required Library funds.

14/12/2010

Dean or designate — Date

LIST which other Departments, Schools and Faculties have been consulted regarding the proposed course content, including overlap issues. Attach documentary evidence of responses.

Sent to all Faculties; replies attached.

Other Faculties approval indicated that the Dean(s) or Designate of other Faculties AFFECTED by the proposed new course support(s) the approval of the new course:

_____ Date _____

_____ Date _____

3 SCUS approval indicates that the course has been approved for implementation subject, where appropriate, to financial issues being addressed.

COURSE APPROVED BY SCUS (Chair of SCUS):

_____ Date _____

APPROVAL IS SIGNIFIED BY DATE AND APPROPRIATE SIGNATURE.

Course Outline

EVSC 100-3
Introduction to Environmental Science

Instructor: L.I. Bendell

Prerequisites (s): None. Students with credit for EVSC 200-3 may not take EVSC 100-3 for further credit.

Course Description:

An introductory level Environmental Science lecture series and the first year entry into the Environmental Science major program. This course will introduce the importance of science in Environmental Science. It is an important foundation course for EVSC majors and provides context for the subsequent three years of the four year program.

The course will include lectures as well as guest speakers and discussions on key environmental issues now facing our planet. Topics for discussion include; climate change, loss of biodiversity, water scarcity, and contaminants. A key learning objective is to provide students with the grounding needed to appreciate why study of a broad science core is essential.

Grading:

2 Midterms:	35% each
Final paper:	20%
Tutorial participation and assignments	10%

Textbook:

There is no required text for this course. Recommended is: Freedman, B. 2009. ***Environmental Science. A Canadian Perspective. Fifth Edition.*** Pearson Education Canada, Toronto, ON.

UNIVERSITY CURRICULUM & INSTITUTIONAL LIAISON
OFFICE OF THE VICE PRESIDENT ACADEMIC AND PROVOST

MEMO

ADDRESS
8888 UNIVERSITY DRIVE
BURNABY BC V5A 1S6
CANADA

ATTENTION Duncan Knowler, Leah Bendell | TEL

FROM SUSAN RHODES, Assistant Director, University Curriculum and Institutional Liaison

RE B-Sci designation transference

DATE November 16, 2010

TIME 10:56 AM

Please be advised that the Curriculum Office has approved the B-Sci designation transference from:

EVSC 200

to:

EVSC 100

to accommodate the course number and minor course content changes

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL

COURSE NUMBER EVSC 205-3

COURSE TITLE

LONG — for Calendar/schedule, no more than 100 characters including spaces and punctuation

Methods in Environmental Science

AND

SHORT — for enrollment/transcript, no more than 30 characters including spaces and punctuation

Methods in Environmental Science

CREDITS

Indicate number of credits for: Lecture _____ Seminar _____ Tutorial _____ Lab 3

COURSE DESCRIPTION (FOR CALENDAR). 3-4 LINES MAXIMUM. ATTACH A COURSE OUTLINE TO THIS PROPOSAL.

Introduces EVSC students to lab and field methods used in the study of Environmental Science.

PREREQUISITE

EVSC 100-3. Students with credit for 491W-3 may not take EVSC 205-3 for further credit.

COREQUISITE

None

SPECIAL INSTRUCTIONS

That is, does this course replicate the content of a previously-approved course to such an extent that students should not receive credit for both courses.? If so, this should be **noted in the prerequisiite**.

COURSES(S) TO BE DELETED IF THIS COURSE IS APPROVED
NOTE: APPROPRIATE DOCUMENT FOR DELETION MUST BE SUBMITTED TO SCUS

RATIONALE FOR INTRODUCTION OF THIS COURSE

A lab and field course that exposes students early in the program to applied methods in EVSC.

SCHEDULING AND ENROLLMENT INFORMATION

Indicate effective **term and year** course would first be offered and planned **frequency** of offering thereafter:

Spring 2012 offered annually

(NOTE: There is a two-term wait for implementation of any new course.)

Indicate if there is a waiver required: ☐ YES ☒ NO Will this be a required or elective course in the curriculum? ☒ Required ☐ Elective

What is the probable enrollment when offered? Estimate 40

Which of your present CFL faculty have the expertise to offer this course?

Bendell, Salomon

Are there any proposed student fees associated with this course other than tuition fees? ☐ YES ☒ NO
(If yes, attach mandatory supplementary fee approval form.)

RESOURCE IMPLICATIONS

NOTE: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Campus where course will be taught Burnaby

Library report status underway

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For example, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering?

EVSC 205-3 will replace EVSC 491W-3 which is to be deleted.

List any outstanding resource issues to be addressed prior to implementation: space, laboratory equipment, etc:

None

Articulation agreement reviewed? ☐ YES ☐ NO ☒ Not applicable

OTHER IMPLICATIONS

None

APPROVALS

1 Departmental approval indicates that the Department or School has approved the content of the course, and has consulted with other Departments/Schools/Faculties regarding proposed course content and overlap issues.

L Bendall — Digitally signed by Leah Bendall, DN: cn=Leah Bendall, o=Simon Fraser University, ou=Biological Sciences, email=bendell@sfu.ca, c=CA, Date: 2010.12.14 11:45:52 -08'00'

Chair, Department/School — Date

Chair, Faculty Curriculum Committee — Date 14/12/2010

2 Faculty approval indicates that all the necessary course content and overlap concerns have been resolved, and that the Faculty/School/Department commits to providing the required Library funds.

Dean or designate — Date 14/12/2010

LIST which other Departments, Schools and Faculties have been consulted regarding the proposed course content, including overlap issues. Attach documentary evidence of responses.

Sent to all Faculties; replies attached.

Other Faculties approval indicated that the Dean(s) or Designate of other Faculties AFFECTED by the proposed new course support(s) the approval of the new course:

_____ Date _____

_____ Date _____

3 SCUS approval indicates that the course has been approved for implementation subject, where appropriate, to financial issues being addressed.

COURSE APPROVED BY SCUS (Chair of SCUS):

_____ Date _____

APPROVAL IS SIGNIFIED BY DATE AND APPROPRIATE SIGNATURE.

Course Outline

EVSC 205-3
Methods in Environmental Science

Instructor: L.I. Bendell

Course Description:

This lab and field course exposes students to laboratory and field study, and provides an opportunity for students to learn how to conduct research, use equipment, as well as write follow-up reports.

Students will gain experience (i) using field instruments for measuring environmental variables, such as stream flow and ionic concentrations in water, (ii) identifying and assessing abundances of invertebrate and plant species, and (iii) conducting stream surveys. The field component will occur within local ecosystems such as the Stoney Creek Watershed. The course will be more than just a learning experience. For example, the vegetation component will provide data related to the status of riparian areas. This data will contribute to annual observations intended to support monitoring of ecosystems in the Lower Mainland.

Grading :

Research Essay	20%
Participation	25%
Miscellaneous Reports	15%
Problem Analysis	10%
Final Report	30%
Total	100%

Pre-requisite: EVSC 100-3. Students with credit for EVSC 491W-3 may not take EVSC 205-3 for further credit.

Texts: None required. Relevant readings and course manual will be supplied at the beginning of the semester.

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL

COURSE NUMBER EVSC 399-1

COURSE TITLE

LONG — for Calendar/schedule, no more than 100 characters including spaces and punctuation

Environmental Science Seminar-I

AND

SHORT — for enrollment/transcript, no more than 30 characters including spaces and punctuation

Environmental Science Seminar-I

CREDITS

Indicate number of credits for: Lecture _____ Seminar 1 Tutorial _____ Lab _____

COURSE DESCRIPTION (FOR CALENDAR). 3-4 LINES MAXIMUM. ATTACH A COURSE OUTLINE TO THIS PROPOSAL.

Provides Environmental Science students the opportunity to discuss concepts and applications from upper division courses that address social science aspects in the study of Environmental Science.

PREREQUISITE

EVSC 100-3; EVSC 205-3 Students with credit for EVSC 401-1 may not take EVSC 399-1 for further credit.

COREQUISITE

None

SPECIAL INSTRUCTIONS

That is, does this course replicate the content of a previously-approved course to such an extent that students should not receive credit for both courses.? If so, this should be **noted in the prerequisiite.**

COURSES(S) TO BE DELETED IF THIS COURSE IS APPROVED
NOTE: APPROPRIATE DOCUMENT FOR DELETION MUST BE SUBMITTED TO SCUS

EVSC 401-1

RATIONALE FOR INTRODUCTION OF THIS COURSE

Together with EVSC 499-1, provides the opportunity for Environmental Science students to come together on a biweekly basis to discuss the concepts presented in upper division courses in the social sciences.

SCHEDULING AND ENROLLMENT INFORMATION

Indicate effective **term and year** course would first be offered and planned **frequency** of offering thereafter:

Spring 2012 offered annually

(NOTE: There is a two-term wait for implementation of any new course.)

Indicate if there is a waiver required: ☐ YES ☒ NO Will this be a required or elective course in the curriculum? ☒ Required ☐ Elective

What is the probable enrollment when offered? Estimate 40

Which of your present CFL faculty have the expertise to offer this course?

Bendell , Knowler

Are there any proposed student fees associated with this course other than tuition fees? ☐ YES ☒ NO
(If yes, attach mandatory supplementary fee approval form.)

RESOURCE IMPLICATIONS

NOTE: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Campus where course will be taught Burnaby

Library report status underway

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For example, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering?

EVSC 399-1 (with EVSC 499-1) will replace 401-1 (Current Topics in Environmental Science)

List any outstanding resource issues to be addressed prior to implementation: space, laboratory equipment, etc:

None

Articulation agreement reviewed? ☐ YES ☐ NO ☒ Not applicable

OTHER IMPLICATIONS

None

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL

APPROVALS

1 **Departmental approval indicates that the Department or School has approved the content of the course, and has consulted with other Departments/Schools/Faculties regarding proposed course content and overlap issues.**

L Bendell Digitally signed by Leah Bendell DN: cn=Leah Bendell, o=Simon Fraser University, ou=Biological Sciences, email=bendell@sfu.ca, c=CA Date: 2010.12.14 11:46:27 -08'00'

Chair, Department/School — Date

14-12-2010

Chair, Faculty Curriculum Committee — Date

2 **Faculty approval indicates that all the necessary course content and overlap concerns have been resolved, and that the Faculty/School/Department commits to providing the required Library funds.**

14/12/2010.

Dean or designate — Date

LIST which other Departments, Schools and Faculties have been consulted regarding the proposed course content, including overlap issues. Attach documentary evidence of responses.

Sent to all Faculties; replies attached.

Other Faculties approval indicated that the Dean(s) or Designate of other Faculties AFFECTED by the proposed new course support(s) the approval of the new course:

_____ Date _____

_____ Date _____

3 **SCUS approval indicates that the course has been approved for implementation subject, where appropriate, to financial issues being addressed.**

COURSE APPROVED BY SCUS (Chair of SCUS):

_____ Date _____

APPROVAL IS SIGNIFIED BY DATE AND APPROPRIATE SIGNATURE.

Course Outline

EVSC 399-1
Environmental Science Seminar-I

Instructor: L.I. Bendell

Course Description:

This course provides students the opportunity to discuss social science topics as these relate to the study of environmental science.

Common sessions will be held every two weeks for one hour. Sessions will allow Environmental Science students to meet and discuss the concepts and principles of societal aspects as they relate to the Environment.

Prerequisites (s): EVSC 100-3, EVSC 205-3. Students with credit for EVSC 401-1, may not take EVSC 399-1 for further credit.

Grading:

Pass/Fail based on student attendance.

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL

COURSE NUMBER EVSC 499-1

COURSE TITLE

LONG — for Calendar/schedule, no more than 100 characters including spaces and punctuation

Environmental Science Seminar-II

AND

SHORT — for enrollment/transcript, no more than 30 characters including spaces and punctuation

Environmental Science Seminar-II

CREDITS

Indicate number of credits for: Lecture _____ Seminar 1 Tutorial _____ Lab _____

COURSE DESCRIPTION (FOR CALENDAR). 3-4 LINES MAXIMUM. ATTACH A COURSE OUTLINE TO THIS PROPOSAL.

Provides Environmental Science students the opportunity to discuss concepts and applications presented in upper division courses that address social science aspects in the study of Environmental Science.

PREREQUISITE

EVSC 100-3; EVSC 205-3; EVSC 399-1 Students with credit for EVSC 401-1 cannot take EVSC 499-1 for further credit.

COREQUISITE

None

SPECIAL INSTRUCTIONS

That is, does this course replicate the content of a previously-approved course to such an extent that students should not receive credit for both courses.? If so, this should be **noted in the prerequisiite**.

COURSES(S) TO BE DELETED IF THIS COURSE IS APPROVED
NOTE: APPROPRIATE DOCUMENT FOR DELETION MUST BE SUBMITTED TO SCUS

EVSC 401-1

RATIONALE FOR INTRODUCTION OF THIS COURSE

Together with EVSC 399-1 provides the opportunity for Environmental Science students to come together on a biweekly basis to discuss the concepts presented in upper division courses in the social sciences.

SCHEDULING AND ENROLLMENT INFORMATION

Indicate effective **term and year** course would first be offered and planned **frequency** of offering thereafter:

Spring 2012 offered annually

(NOTE: There is a two-term wait for implementation of any new course.)

Indicate if there is a waiver required: ☐ YES ☒ NO Will this be a required or elective course in the curriculum? ☒ Required ☐ Elective

What is the probable enrollment when offered? Estimate 40

Which of your present CFL faculty have the expertise to offer this course?

Bendell , Knowler

Are there any proposed student fees associated with this course other than tuition fees? ☐ YES ☒ NO
(If yes, attach mandatory supplementary fee approval form.)

RESOURCE IMPLICATIONS

NOTE: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Campus where course will be taught Burnaby

Library report status underway

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For example, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering?

EVSC 499-1 (with EVSC 399-1) will replace EVSC 401-1 (Current Topics in Environmental Science)

List any outstanding resource issues to be addressed prior to implementation: space, laboratory equipment, etc:

None

Articulation agreement reviewed? ☐ YES ☐ NO ☒ Not applicable

OTHER IMPLICATIONS

None

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL

APPROVALS

1 Departmental approval indicates that the Department or School has approved the content of the course, and has consulted with other Departments/Schools/Faculties regarding proposed course content and overlap issues.

Chair, Department/School — Date

L Bendell — Digitally signed by Leah Bendell, DN: cn=Leah Bendell, o=Simon Fraser University, ou=Biological Sciences, email=bendell@sfu.ca, c=CA, Date: 2010.12.14 11:47:18 -08'00' — 14/12/2010

Chair, Faculty Curriculum Committee — Date

2 Faculty approval indicates that all the necessary course content and overlap concerns have been resolved, and that the Faculty/School/Department commits to providing the required Library funds.

14/12/2010.

Dean or designate — Date

LIST which other Departments, Schools and Faculties have been consulted regarding the proposed course content, including overlap issues. Attach documentary evidence of responses.

Sent to all Faculties; replies attached.

Other Faculties approval indicated that the Dean(s) or Designate of other Faculties AFFECTED by the proposed new course support(s) the approval of the new course:

_____ Date _____

_____ Date _____

3 SCUS approval indicates that the course has been approved for implementation subject, where appropriate, to financial issues being addressed.

COURSE APPROVED BY SCUS (Chair of SCUS):

_____ Date _____

APPROVAL IS SIGNIFIED BY DATE AND APPROPRIATE SIGNATURE.

Course Outline

EVSC 499-1
Environmental Science Seminar-II

Instructor: L.I. Bendell

Course Description:

This course provides students the opportunity to discuss social science topics as these relate to the study of environmental science.

Common sessions will be held every two weeks for one hour. Sessions will allow Environmental Science students to meet and discuss the concepts and principles of societal aspects as they relate to the Environment.

Prerequisites (s): EVSC 100-3, EVSC 205-3, EVSC 399-1. Students with credit for EVSC 401-1, may not take EVSC 399-1 for further credit.

Grading:

Pass/Fail based on student attendance.

SFU

SENATE COMMITTEE ON
UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION
OCTOBER 2007

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ☐ Title ☐ Description ☐ Prerequisite ☒ Course deletion

Indicate number of hours for: Lecture 3 Seminr _____ Tutorial 1 Lab _____

FROM

Course Number EVSC200-3

Credit Hour _____

TITLE

(1) Long title for calendar and schedule, no more than 100 characters including spaces and punctuation.

Introduction to
Environmental Science

(2) Short title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

DESCRIPTION _____

PREREQUISITE _____

TO

Course Number _____

Credit Hour _____

DESCRIPTION _____

PREREQUISITE _____

RATIONALE Second year environmental science introductory course to be replaced with a first year introduction to environmental science.

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **noted in the prerequisite**.

Effective term and year Fall 2011

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

OCTOBER 2007

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ☐ Title ☐ Description ☐ Prerequisite ☒ Course deletion

Indicate number of hours for: Lecture_____ Seminr 1 Tutorial_____ Lab _____

FROM	**TO**
Course Number EVSC 401-1	Course Number
Credit Hour	Credit Hour

TITLE

(1) Long title for calendar and schedule, no more than 100 characters including spaces and punctuation.

Current Topics in Environmental Science

(2) Short title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

DESCRIPTION	DESCRIPTION
PREREQUISITE	PREREQUISITE

RATIONALE Seminar course to be deleted and replaced with EVSC 399-1 and EVSC 499-1 for implementation of the Environmental Science Program major.

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **noted in the prerequisite**.

Effective term and year Fall 2011

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

OCTOBER 2007

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ☐ Title ☐ Description ☐ Prerequisite ☒ Course deletion

Indicate number of hours for: Lecture _____ Seminr _____ Tutorial _____ Lab 3

FROM

Course Number EVSC 491W-3

Credit Hour 3

TO

Course Number _____

Credit Hour _____

TITLE

(1) Long title for calendar and schedule, no more than 100 characters including spaces and punctuation.

Advanced Field Studies in Environmental Science

(2) Short title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

DESCRIPTION _____

DESCRIPTION _____

PREREQUISITE _____

PREREQUISITE _____

RATIONALE

The revised Environmental Science Program has as one of its major components, a 4 year course set unique to the new program. EVSC 205-3 is the second year component of this set and replaces EVSC 491W-3.

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **noted in the prerequisite**.

Effective term and year Fall 2011

SFU ENVIRONMENTAL SCIENCE PROGRAM

TASC2 8900
8888 University Drive, Burnaby, BC
Canada V5A 1S6

TEL 778.782.8797
FAX 778.782.8788

www.sfu.ca/EVSC

MEMORANDUM

ATTENTION D. Knowler; Chair FEnv CC **DATE** Nov 24th 2010
FROM L. Bendell, Director, Environmental Science Program. Faculty of Environment

RE: Change in EVSC program requirements

We are asking FEnv CC to consider approval of the following change in the BSc program in Environmental Science

FROM

Environmental Science Major Program

Environmental Science Program | Faculty of Environment
Simon Fraser University Calendar 2010-2011

This program provides a broad education with specialization in one of ~~six areas of emphasis: biology, chemistry, environmetrics, physical geography, pollutant transport, and quantitative techniques for resource management.~~ Students choose one of these areas of emphasis, and ~~then~~ complete the requirements as shown below.

Minimum Grades

The minimum cumulative grade point average (CGPA) for continuation and graduation is ~~2.50.~~

Program Requirements

Students complete 120 units, as specified below.

Students choose one of the following areas of emphasis, and complete all the required courses as listed. Additional upper division units will be required to total a minimum of 44 upper division units.

Visit http://www.sfu.ca/evsc/programs for a suggested course sequence and for lists of course groupings.

Environmental Science Honours Program

Environmental Science Program | Faculty of Environment
Simon Fraser University Calendar 2010-2011

This honours program provides a broad education with specialization in one of ~~six areas of emphasis: biology, chemistry, environmetrics, physical geography, pollutant transport, and quantitative techniques for resource management.~~ Students choose one of these areas of emphasis, and ~~then~~ complete the requirements as shown below.

Minimum Grades

The minimum cumulative grade point average (CGPA) for continuation and graduation is 3.00.

Program Requirements

This program requires 132 units including writing, quantitative and breadth requirements. At least 60 units must be in upper division courses, and at least 48 of these upper division units must be in one area of emphasis as shown below. Exceptions must be approved by a faculty advisor. Other courses may be substituted subject to the approval of a faculty advisor.

University and Faculty of Environment regulations also apply.

Visit http://www.sfu.ca/evsc/programs for a suggested course sequence and for lists of course groupings.

Environmental ~~Science~~ Co-operative Education Program

Environmental Science Program | Faculty of Environment
Simon Fraser University Calendar 2010-2011

Program Requirements

This program combines relevant work experience with academic studies. Students alternate study terms with study-related employment. The program includes pre-employment orientation and four full-time paid work terms. ~~A major and honours program leading to an environmental science BSc degree and co-op education are available to qualified students.~~

To enrol, students should ~~attend co-op information meetings held in the term's first two weeks prior to the term in which they wish to work. Also~~ seek advice from Faculty of Science co-op education as early as possible in the university career to facilitate optimal scheduling. For information, contact the co-operative education co-ordinator, Science and Environment Co-op Program, Department of Geography, 7130 Robert C. Brown Hall, 778.782.3115 Tel.

~~**Biology Area of Emphasis**~~

~~Lower Division Requirements~~

~~Students complete all of~~

BISC 101-4 General Biology
BISC 102-4 General Biology
BISC 202-3 Genetics
BISC 204-3 Introduction to Ecology
CHEM 121-4 General Chemistry and Laboratory I
CHEM 122-2 General Chemistry II
CHEM 126-2 General Chemistry Laboratory II
CHEM 215-4 Introduction to Analytical Chemistry
~~CHEM 230-3 Inorganic Chemistry~~
~~CHEM 281-4 Organic Chemistry I~~
~~ECON 103-4 Principles of Microeconomics~~
~~ECON 105-4 Principles of Macroeconomics~~
~~EVSC 200-3 Introduction to Environmental Science~~
GEOG 111-3 Earth Systems
~~MBB 231-3 Cellular Biology and Biochemistry*~~
REM 100-3 Global Change

and one of

MATH 151-3 Calculus I
MATH 154-3 Calculus I for the Biological Sciences
~~MATH 157-3 Calculus for the Social Sciences I~~

and one of

MATH 152-3 Calculus II
MATH 155-3 Calculus II for the Biological Sciences
~~MATH 158-3 Calculus for the Social Sciences II~~

and one of

PHYS 101-3 Physics for the Life Sciences I
PHYS 120-3 Mechanics and Modern Physics

and one of

PHYS 102-3 Physics for the Life Sciences II
PHYS 121-3 Optics, Electricity and Magnetism

and one of

STAT 270-3 Introduction to Probability and Statistics
STAT 201-3 Statistics for the Life Sciences

~~*MBB 231 and 222 are complementary courses and together cover all aspects of cellular structure and function. It is strongly recommended that students complete MBB 222 as an elective.~~

Upper Division Requirements

Students complete all of

~~BISC 304-3 Animal Ecology~~
~~BISC 305-3 Animal Physiology~~
BISC 404-3 Plant Ecology
BISC 414-3 Limnology
~~EVSC 401-1 Current Topics in Environmental Science~~
GEOG 316-4 Global Biogeochemical and Water Cycles
PHYS 346-3 Energy and the Environment
~~REM 455-3 Environmental Toxicology~~
STAT 302-3 Analysis of Experimental and Observational Data
~~STAT 403-3 Intermediate Sampling and Experimental Design~~

~~and any three of~~

BISC 306-3 Invertebrate Biology
~~BISC 310-3 The Natural History of British Columbia~~
BISC 316-3 Vertebrate Biology
BISC 326-3 Biology of Algae and Fungi
BISC 337-3 Plant Biology
BISC 366-3 Plant Physiology
~~BISC 406-3 Marine Biology and Oceanography~~
BISC 407-3 Population Dynamics
~~BISC 416-3 Fish Biology~~
~~BISC 419-3 Wildlife Biology~~
~~EVSC 491W-3 Advanced Field Studies in Environmental Science~~
REM 311-3 Applied Ecology and Sustainable Environments
REM 356-3 Management Institutions
REM 412-3 Environmental Modelling
REM 445-3 Environmental Risk Assessment
REM 471-3 Forest Ecosystem Management

~~Electives~~

~~Additional electives are required to total 120 units, including at least 44 at the upper division.~~

~~**Chemistry Area of Emphasis**~~

~~Lower Division Requirements~~

~~Students complete all of~~

~~BISC 101-4 General Biology~~
~~BISC 102-4 General Biology~~
~~BISC 202-3 Genetics~~

~~BISC 204-3 Introduction to Ecology~~
~~CHEM 121-4 General Chemistry and Laboratory I~~
~~CHEM 122-2 General Chemistry II~~
~~CHEM 126-2 General Chemistry Laboratory II~~
~~CHEM 215-4 Introduction to Analytical Chemistry~~
~~CHEM 230-3 Inorganic Chemistry~~
~~CHEM 281-4 Organic Chemistry I~~
~~ECON 103-4 Principles of Microeconomics~~
~~ECON 105-4 Principles of Macroeconomics~~
~~EVSC 200-3 Introduction to Environmental Science~~
~~GEOG 111-3 Earth Systems~~
~~MBB 231-3 Cellular Biology and Biochemistry*~~
~~REM 100-3 Global Change~~

~~and one of~~

~~MATH 151-3 Calculus I~~
~~MATH 154-3 Calculus I for the Biological Sciences~~
~~MATH 157-3 Calculus for the Social Sciences I~~

~~and one of~~

~~MATH 152-3 Calculus II~~
~~MATH 155-3 Calculus II for the Biological Sciences~~
~~MATH 158-3 Calculus for the Social Sciences II~~

~~and one of~~

~~PHYS 101-3 Physics for the Life Sciences I~~
~~PHYS 120-3 Mechanics and Modern Physics~~

~~and one of~~

~~PHYS 102-3 Physics for the Life Sciences II~~
~~PHYS 121-3 Optics, Electricity and Magnetism~~

~~and one of~~

~~STAT 270-3 Introduction to Probability and Statistics~~
~~STAT 201-3 Statistics for the Life Sciences~~

~~*MBB 231 and 222 are complementary courses and together cover all aspects of cellular structure and function. It is strongly recommended that students complete MBB 222 as an elective.~~

~~Upper Division Requirements~~

~~Students complete all of~~

~~CHEM 236W-3 Inorganic Chemistry Laboratory~~
~~CHEM 282-2 Organic Chemistry II~~
~~CHEM 286-2 Organic Chemistry Laboratory II~~
~~CHEM 360-3 Thermodynamics and Chemical Kinetics~~
~~CHEM 316-4 Introductory Instrumental Analysis~~
~~CHEM 317-2 Analytical Environmental Chemistry~~
~~CHEM 332-3 Chemistry of the Transition Metals~~
~~CHEM 371-3 Chemistry of the Aqueous Environment~~
~~CHEM 372-3 Chemistry of the Atmospheric Environment~~
~~EVSC 401-1 Current Topics in Environmental Science~~
~~PHYS 346-3 Energy and the Environment~~
~~REM 455-3 Environmental Toxicology~~
~~STAT 302-3 Analysis of Experimental and Observational Data~~
~~STAT 403-3 Intermediate Sampling and Experimental Design~~

~~and at least 18 units chosen from~~

~~BISC 305-3 Animal Physiology~~
~~BISC 414-3 Limnology~~
~~CHEM 380-4 Chemical and Instrumental Methods of Identification of Organic Compounds~~
~~CHEM 460-3 Advanced Physical Chemistry~~
~~EVSC 491W-3 Advanced Field Studies in Environmental Science~~
~~GEOG 316-4 Global Biogeochemical and Water Cycles~~
~~GEOG 317-4 Soil Science I~~
~~NUSC 341-3 Introduction to Radiochemistry~~
~~NUSC 342-3 Introduction to Nuclear Science~~
~~NUSC 346-2 Radiochemistry Laboratory~~
~~REM 311-3 Applied Ecology and Sustainable Environments~~
~~REM 356-3 Management Institutions~~
~~REM 412-3 Environmental Modelling~~
~~REM 445-3 Environmental Risk Assessment~~

~~Electives~~

~~Additional electives are required to total 120 units. Of these 1120 units, at least 44 units must be in upper division courses.~~

~~Environmetrics area of emphasis~~

~~Lower Division Requirements~~

~~Students complete all of~~

BISC 101-4 General Biology
BISC 102-4 General Biology
~~BISC 202-3 Genetics~~
~~BISC 204-3 Introduction to Ecology~~

CHEM 121-4 General Chemistry and Laboratory I
CHEM 122-2 General Chemistry II
~~CHEM 126-2 General Chemistry Laboratory II~~
~~CHEM 215-4 Introduction to Analytical Chemistry~~
~~CHEM 230-3 Inorganic Chemistry~~
~~CHEM 281-4 Organic Chemistry I~~
~~ECON 103-4 Principles of Microeconomics~~
~~ECON 105-4 Principles of Macroeconomics~~
~~EVSC 200-3 Introduction to Environmental Science~~
GEOG 111-3 Earth Systems
~~MBB 231-3 Cellular Biology and Biochemistry*~~
REM 100-3 Global Change
STAT 270-3 Introduction to Probability and Statistics

and one of

MATH 151-3 Calculus I
MATH 154-3 Calculus I for the Biological Sciences
~~MATH 157-3 Calculus for the Social Sciences I~~

and one of

MATH 152-3 Calculus II
MATH 155-3 Calculus II for the Biological Sciences
~~MATH 158-3 Calculus for the Social Sciences II~~

and one of

PHYS 101-3 Physics for the Life Sciences I
PHYS 120-3 Mechanics and Modern Physics

and one of

PHYS 102-3 Physics for the Life Sciences II
PHYS 121-3 Optics, Electricity and Magnetism

~~*MBB 231 and 222 are complementary courses and together cover all aspects of cellular structure and function. It is strongly recommended that students complete MBB 222 as an elective.~~

~~Upper Division Requirements~~

~~Students complete all of —~~

~~CHEM 360-3 Chemical Kinetics and Thermodynamics~~
~~CHEM 316-4 Introductory Instrumental Analysis~~
~~CHEM 317-2 Analytical Environmental Chemistry~~
~~CHEM 371-3 Chemistry of the Aqueous Environment~~

~~EVSC 401-1 Current Topics in Environmental Science~~
~~MATH 232-3 Elementary Linear Algebra~~
~~MATH 251-3 Calculus III~~
~~PHYS 346-3 Energy and the Environment~~
~~STAT 285-3 Intermediate Probability and Statistics~~
~~STAT 335-3 Linear Models in Applied Statistics~~
STAT 402-3 Generalized Linear and Nonlinear Modelling
STAT 410-3 Statistical Analysis of Sample Surveys
STAT 430-3 Statistical Design and Analysis of Experiments

~~and at least three courses from~~

~~BISC 304-3 Animal Ecology~~
~~BISC 414-3 Limnology~~
~~CHEM 372-3 Chemistry of the Atmospheric Environment~~
~~EVSC 491W-3 Advanced Field Studies in Environmental Science~~
~~GEOG 214-3 Climatology I~~
~~GEOG 316-4 Global Biogeochemical and Water Cycles~~
~~GEOG 354-4 Introduction to Geographic Information Systems~~
~~REM 311-3 Applied Ecology and Sustainable Environments~~
~~REM 356-3 Management Institutions~~
~~REM 412-3 Environmental Modelling~~
~~REM 445-3 Environmental Risk Assessment and Management of Hazardous Substances~~
~~REM 455-3 Environmental Toxicology~~
~~REM 471-3 Forest Ecosystem Management~~

~~Electives~~

~~Additional electives are required to total 120 units. Of these 120 units, at least 44 units must be in upper division courses~~

~~Physical Geography area of emphasis~~

~~Lower Division Requirements~~

~~Students complete a total of 60 lower division courses, including all of~~

BISC 101-4 General Biology
BISC 102-4 General Biology
CHEM 121-4 General Chemistry and Laboratory I
CHEM 122-2 General Chemistry II
~~CHEM 126-2 General Chemistry Laboratory II~~
GEOG 111-3 Earth Systems
GEOG 213-3 Introduction to Geomorphology
GEOG 214-3 Climatology and the Environment
~~ECON 103-4 Principles of Microeconomics~~
~~ECON 105-4 Principles of Macroeconomics~~

~~EVSC 200-3 Introduction to Environmental Science~~
REM 100-3 Global Change

and one of

MATH 151-3 Calculus I
MATH 154-3 Calculus I for Biological Sciences
~~MATH 157-3 Calculus I for Social Sciences~~

and one of

MATH 152-3 Calculus II
MATH 155-3 Calculus II for Biological Sciences
~~MATH 158-3 Calculus II for Social Sciences~~

and one of

PHYS 101-3 Physics for the Life Sciences I
PHYS 120-3 Mechanics and Modern Physics

and one of

PHYS 102-3 Physics for the Life Sciences II
PHYS 121-3 Optics, Electricity and Magnetism

~~and one of~~

BISC 204-3 Introduction to Ecology
GEOG 215-3 Biogeography

and one of

STAT 201-3 Statistics for the Life Sciences
STAT 270-3 Introduction to Probability and Statistics

~~and one of~~

~~GEOG 250-3 Cartography I~~
GEOG 253-3 Aerial Photographic Interpretation
GEOG 255-3 Geographical Information Science I

~~and an additional eight units of electives which should include courses that will satisfy the University's writing, quantitative and breadth requirements.~~

~~Upper Division Requirements~~

~~Students complete all of~~

~~EVSC 401-1 Current Topics in Environmental Science~~
GEOG 311-4 Hydrology
GEOG 316-4 Global Biogeochemical and Water Cycles
GEOG 317-4 Soil Science
~~PHYS 346-3 Energy and the Environment~~
~~STAT 302-3 Analysis of Experimental and Observational Data~~

~~and one of~~

GEOG 352-4 ~~Techniques in~~ Spatial Analysis ~~II~~
~~STAT 403-3 Intermediate Sampling and Experimental Design~~

~~and two of~~

GEOG 313-4 River Geomorphology
GEOG 314-4 Weather and Climate
GEOG 315-4 World Ecosystems
GEOG 411-4 Advanced Hydrology
GEOG 412-4 Glacial Processes and Environments
GEOG 413-4 Advanced River Geomorphology
GEOG 414-4 Advanced Climatology
GEOG 415-4 Advanced Biogeography
GEOG 417-4 Advanced Soil Science

~~and three of~~

~~BISC 310-3 Plants and Animals of British Columbia~~
~~BISC 366-3 Plant Physiology*~~
~~BISC 367-3 Plant Physiology laboratory*~~
BISC 404-3 Plant Ecology
BISC 414-3 Limnology
~~BISC 416-3 Fish Biology*~~
BISC 434-3 Paleoecology and Palynology
~~CHEM 371-3 Chemistry of the Aqueous Environment*~~
~~CHEM 372-3 Chemistry of the Atmospheric Environment*~~
EASC 303-3 Environmental Geoscience
EASC 304-3 Hydrogeology*
~~EASC 403-3 Quaternary Geology~~
~~EASC 409-3 Rivers: Environments and Engineering*~~
~~EASC 410-3 Groundwater Geochemistry and Contaminant Transport*~~
~~EVSC 491W-3 Advanced Field Studies in Environmental Science~~
REM 311-3 Applied Ecology and Sustainable Environments
~~REM 356-3 Management Institutions~~
REM 412-3 Environmental Modelling

REM 445-3 Environmental Risk Assessment
REM 471-3 Forest Ecosystem Management

~~and one of~~

GEOG 351-4 Cartography and Visualization
GEOG 353-4 Remote Sensing
GEOG 355-4 Geographical Information Science II

~~Electives~~

~~Additional electives are required to total 120 units. Of these 120 units, at least 44 units must be in upper division courses.~~
~~*requires prerequisites that are to be completed as electives~~

~~Pollutant Transport area of emphasis~~

~~Lower Division Requirements~~

~~Students complete all of~~

~~BISC 101-4 General Biology~~
~~CHEM 121-4 General Chemistry and Laboratory I~~
~~CHEM 122-2 General Chemistry II~~
~~CHEM 126-2 General Chemistry Laboratory II~~
~~CHEM 281-4 Organic Chemistry I~~
EASC 101-3 Physical Geology
~~EASC 102-3 Historical Geology~~
~~EASC 201-3 Stratigraphy and Sedimentation~~
~~EASC 206-1 Field Geology I~~
~~EVSC 200-3 Introduction to Environmental Science~~
~~MATH 232-3 Elementary Linear Algebra~~
~~MATH 251-3 Calculus III~~
~~REM 100-3 Global Change~~
~~STAT 270-3 Introduction to Probability and Statistics~~

~~and one of~~

~~CMPT 120-3 Introduction to Computing Science Programming I~~
~~CMPT 102-3 Introduction to Scientific Computer Programming*~~

~~and one of~~

~~MATH 151-3 Calculus I*~~
~~MATH 154-3 Calculus I for the Biological Sciences~~
~~MATH 157-3 Calculus for the Social Sciences I~~

~~and one of~~

MATH 152 3 Calculus II*
MATH 155 3 Calculus II for the Biological Sciences
MATH 158 3 Calculus for the Social Sciences II

and one of

PHYS 101 3 Physics for the Life Sciences I
PHYS 120 3 Mechanics and Modern Physics*

and one of

PHYS 102 3 Physics for the Life Sciences II
PHYS 121 3 Optics, Electricity and Magnetism*

*recommended

Upper Division Requirements

Students complete all of

BISC 102 4 General Biology
EASC 202 3 Mineralogy
EASC 304 3 Hydrogeology
EASC 410 3 Groundwater Geochemistry and Contaminant Transport
EVSC 401 1 Current Topics in Environmental Science
GEOG 311 4 Hydrology
MATH 252 3 Vector Calculus
MATH 310 3 Introduction to Ordinary Differential Equations
MATH 314 3 Boundary Value Problems
STAT 285 3 Intermediate Probability and Statistics

and one of

GEOG 214 3 Climate and Environment
GEOG 213 3 Introduction to Geomorphology

and one of

BISC 204 3 Introduction to Ecology
GEOG 215 3 Biogeography

and at least 24 upper division units from the following (some courses may require prerequisites.)

BISC 414 3 Limnology
CHEM 316 4 Introductory Instrumental Analysis
CHEM 317 3 Analytical Environmental Chemistry
CHEM 360 3 Chemical Kinetics and Thermodynamics
CHEM 371 3 Chemistry of the Aqueous Environment

~~CHEM 372-3 Chemistry of the Atmospheric Environment~~
~~EASC 303-3 Environmental Geoscience~~
~~EASC 307-3 Applied Geophysics~~
~~EASC 313-3 Introduction to Soil and Rock Engineering~~
~~EASC 403-3 Quaternary Geology~~
~~EASC 416-3 Field Techniques in Hydrogeology~~
~~EVSC 491W-3 Advanced Field Studies in Environmental Science~~
~~GEOG 313-4 River Geomorphology~~
~~GEOG 314-4 Weather and Climate~~
~~GEOG 315-4 World Ecosystems~~
~~GEOG 316-4 Global Biogeochemical and Water Cycles~~
~~GEOG 317-4 Soil Science~~
~~GEOG 354-4 Introduction to Geographic Information Systems~~
GEOG 414-4 Advanced Climatology
~~GEOG 415-4 Advanced Biogeography~~
~~MATH 322-3 Complex Variables~~
~~MATH 415-3 Ordinary Differential Equations~~
~~MATH 416-3 Numerical Analysis II~~
~~MATH 418-3 Partial Differential Equations~~
~~MATH 462-3 Fluid Dynamics~~
~~MATH 467-3 Dynamical Systems~~
~~MACM 316-3 Numerical Analysis I~~
~~NUSC 341-3 Introduction to Radiochemistry~~
~~PHYS 346-3 Energy and the Environment~~
~~REM 311-3 Applied Ecology and Sustainable Environments~~
~~REM 356-3 Management Institutions~~
REM 412-3 Environmental Modelling
REM 445-3 Environmental Risk Assessment and Management of Hazardous Substances
~~REM 455-3 Environmental Toxicology~~
~~STAT 403-3 Intermediate Sampling and Experimental Design~~

~~Electives~~

~~Additional electives are required to total 120 units. Of these 120 units, at least 44 units must be in upper division courses.~~

~~Quantitative Techniques in Resource Management area of emphasis~~

~~Lower Division Requirements~~

~~Students complete all of~~

~~BISC 101-4 General Biology~~
~~BISC 102-4 General Biology~~
~~BISC 204-3 Introduction to Ecology~~
~~CHEM 120-3 General Chemistry I~~
~~CHEM 122-2 General Chemistry II~~
~~ECON 103-4 Principles of Microeconomics~~

ECON 105-4 Principles of Macroeconomics
ECON 260-3 Environmental Economics
EVSC 200-3 Introduction to Environmental Science
GEOG 111-3 Earth Systems
MATH 232-3 Elementary Linear Algebra
MATH 251-3 Calculus III
REM 100-3 Global Change
STAT 270-3 Introduction to Probability and Statistics

and one of

CMPT 120-3 Introduction to Computing Science and Programming I
CMPT 102-3 Introduction to Scientific Computer Programming

and one of

MATH 151-3 Calculus I
MATH 154-3 Calculus I for the Biological Sciences
MATH 157-3 Calculus for the Social Sciences I

and one of

MATH 152-3 Calculus II
MATH 155-3 Calculus II for the Biological Sciences
MATH 158-3 Calculus for the Social Sciences II

and one of

PHYS 101-3 Physics for the Life Sciences I
PHYS 120-3 Mechanics and Modern Physics

and one of

PHYS 102-3 Physics for the Life Sciences II
PHYS 121-3 Optics, Electricity and Magnetism

Upper Division Requirements

Students complete all of

BISC 304-3 Animal Ecology
BISC 407-3 Population Dynamics
EVSC 401-1 Current Topics in Environmental Science
MACM 316-3 Numerical Analysis I
MATH 308-3 Linear Programming
MATH 309-3 Continuous Optimization
MATH 310-3 Introduction to Ordinary Differential Equations
PHYS 346-3 Energy and the Environment

STAT 285-3 Intermediate Probability and Statistics
STAT 350-3 Linear Models in Applied Statistics
STAT 402-3 Generalized Linear and Nonlinear Modelling
STAT 410-3 Statistical Analysis of Sample Surveys
STAT 430-3 Statistical Design and Analysis of Experiments

and at least four of

BISC 300-3 Evolution
BISC 305-3 Animal Physiology
ECON 261-3 Resources and the Economy of British Columbia
EVSC 491W-3 Advanced Field Studies in Environmental Science
GEOG 354-4 Introduction to Geographic Information Systems
REM 311-3 Applied Ecology and Sustainable Environments
REM 356-3 Management Institutions
REM 412-3 Environmental Modelling
REM 445-3 Environmental Risk Assessment and Management of Hazardous Substances
REM 471-3 Forest Ecosystem Management

Electives

Additional electives are required to total 120 units. Of these 120 units, at least 44 units must be in upper division courses.

TO

Environmental Science Major Program

Environmental Science Program | Faculty of Environment
Simon Fraser University Calendar 2011-2012

This program provides a broad education with specialization in one of four areas of concentration: Applied Biology, Environmental Earth Systems, Environmetrics, and Water Science. Students choose one of these areas of concentration and complete the requirements as shown below.

Minimum Grades

The minimum cumulative grade point average (CGPA) for continuation and graduation is 2.00.

Program Requirements

Students complete 120 units, as specified below.

Students choose one of the following areas of concentration, and complete all the required courses as listed. Additional upper division units will be required to total a minimum of 44 upper division units.

Visit http://www.sfu.ca/evsc/programs for a suggested course sequence and for lists of course groupings.

Environmental Science Honours Program

Environmental Science Program | Faculty of Environment
Simon Fraser University Calendar 2011-2012

This honours program provides a broad education with specialization in one of four areas of concentration: Applied Biology, Environmental Earth Systems, Environmetrics, and Water Science. Students choose one of these areas of concentration and complete the requirements as shown below.

Minimum Grades

The minimum cumulative grade point average (CGPA) for continuation and graduation is 3.00.

Program Requirements

This program requires 132 units including writing, quantitative and breadth requirements. At least 60 units must be in upper division courses, and at least 48 of these upper division units must be in one area of emphasis as shown below. Exceptions must be approved by a faculty advisor. Other courses may be substituted subject to the approval of a faculty advisor.

University and Faculty of Environment regulations also apply.

Visit http://www.sfu.ca/evsc/programs for a suggested course sequence and for lists of course groupings.

Environment Co-operative Education Program

Environmental Science Program | Faculty of Environment
Simon Fraser University Calendar 2011-2012

Program Requirements

This program combines relevant work experience with academic studies. Students alternate study terms with study-related employment. The program includes pre-employment orientation and four full-time paid work terms.

To enrol, students should review the program requirements: www.sfu.ca/coop/env. Students are encouraged to seek advice from the Co-ordinator of the Environment Co-op Program as early as possible in the university career to facilitate optimal scheduling. For information, contact the Co-ordinator, Environment Co-op Program, Department of Geography, 7130 Robert C. Brown Hall, 778.782.3115 Tel.

Applied Biology area of concentration

Lower Division Requirements
Students complete all of

BISC 101-4 General Biology
BISC 102-4 General Biology
BISC 202-3 Genetics
BISC 204-3 Introduction to Ecology
CHEM 121-4 General Chemistry and Laboratory I
CHEM 122-2 General Chemistry II
CHEM 126-2 General Chemistry Laboratory II
CHEM 215-4 Introduction to Analytical Chemistry
EVSC 100-3 Introduction to Environmental Science
EVSC 205-3 Methods in Environmental Science
GEOG 111-3 Earth Systems
REM 100-3 Global Change

and one of

MATH 151-3 Calculus I
MATH 154-3 Calculus I for the Biological Sciences

and one of

MATH 152-3 Calculus II
MATH 155-3 Calculus II for the Biological Sciences

and one of

PHYS 101-3 Physics for the Life Sciences I
PHYS 120-3 Mechanics and Modern Physics

and one of

PHYS 102-3 Physics for the Life Sciences II
PHYS 121-3 Optics, Electricity and Magnetism

and one of

STAT 201-3 Statistics for the Life Sciences
STAT 270-3 Introduction to Probability and Statistics

Upper Division Requirements
Students complete all of

BISC 316-3 Vertebrate Biology
BISC 337-3 Plant Biology
EVSC 399-1 Environmental Science Seminar-I
EVSC 499-1 Environmental Science Seminar-II
GEOG 316-4 Global Biogeochemical and Water Cycles
REM 311-3 Applied Ecology and Sustainable Environments
REM 321-3/ENV 321-3 Ecological Economics
REM 445-3 Environmental Risk Assessment
STAT 302-3 Analysis of Experimental and Observational Data

and one of

CMNS 347-4 Communication in Conflict and Intervention
FNST 301-3 Issues in Applied First Nations Studies Research
FNST 332-3 Ethnobotany of British Columbia First Nations
FNST 443-4 Aboriginal Peoples, History and the Law
GEOG 322-4 World Resources
GEOG 325-4 Geographies of Consumption
GEOG 363-4 Urban Planning and Policy
GEOG 381-4 Political Geography
GEOG 389W-4 Nature and Society
REM 356-3 Institutional Arrangements for Sustainable Environmental Management
SA 326-4 Ecology and Social Thought
SA 371-4 The Environment and Society

Note: occasionally third or fourth year Special Topics courses may be offered that can fulfill this requirement; check the EVSC website for information

and three from the following (or any upper division course selected by the student with permission from the Director)

BISC 300-3 Evolution

BISC 306-4 Invertebrate Biology
BISC 309-3 Conservation Biology
BISC 326-3 Biology of Algae and Fungi
BISC 366-3 Plant Physiology
BISC 403-3 Current Topics in Cell Biology
BISC 404-3 Plant Ecology
BISC 407-3 Population Dynamics
BISC 414-3 Limnology
PHYS 346-3 Energy and the Environment
REM 412-3 Environmental Modeling
REM 471-3 Forest Ecosystem Management
STAT 403-3 Intermediate Sampling and Experimental Design

Environmental Earth Systems area of concentration

Lower Division Requirements
Students complete all of

BISC 101-4 General Biology
BISC 102-4 General Biology
CHEM 121-4 General Chemistry and Laboratory I
CHEM 122-2 General Chemistry II
EASC 101-3 Physical Geology
EVSC 100-3 Introduction to Environmental Science
EVSC 205-3 Methods in Environmental Science
GEOG 111-3 Earth Systems

and one of

GEOG 100-3 Society, Space, Environment: Introducing Human Geography
REM 100-3 Global Change

and one of

MATH 151-3 Calculus I
MATH 154-3 Calculus I for the Biological Sciences

and one of

MATH 152-3 Calculus II
MATH 155-3 Calculus II for the Biological Sciences

and one of

PHYS 101-3 Physics for the Life Sciences I
PHYS 120-3 Mechanics and Modern Physics

and one of

PHYS 102-3 Physics for the Life Sciences II
PHYS 121-3 Optics, Electricity and Magnetism

and one of

STAT 201-3 Statistics for the Life Sciences
STAT 270-3 Introduction to Probability and Statistics

and two of

GEOG 213-3 Introduction to Geomorphology
GEOG 214-3 Climate and Environment
GEOG 215-3 Biogeography or BISC 204-3 Introduction to Ecology

and one of

GEOG 253-3 Aerial Photographic Interpretation
GEOG 255-3 Geographical Information Science I

Upper Division Requirements
Students complete all of

EVSC 399-1 Environmental Science Seminar-I
EVSC 499-1 Environmental Science Seminar-II
REM 321-3/ENV 321-3 Ecological Economics

and one of

CMNS 347-4 Communication in Conflict and Intervention
FNST 301-3 Issues in Applied First Nations Studies Research
FNST 332-3 Ethnobotany of British Columbia First Nations
FNST 443-4 Aboriginal Peoples, History and the Law
GEOG 322-4 World Resources
GEOG 325-4 Geographies of Consumption
GEOG 363-4 Urban Planning and Policy
GEOG 381-4 Political Geography
GEOG 389-4 Nature and Society
REM 356-3 Institutional Arrangements for Sustainable Environmental Management
SA 326-4 Ecology and Social Thought
SA 371-4 The Environment and Society

Note: occasionally third or fourth year Special Topics courses
may be offered that can fulfill this requirement; check the EVSC website for information

and six of, with at least two from the 400-level

BISC 414-3 Limnology
EASC 303-3 Environmental Geoscience
EASC 304-3 Hydrogeology
EASC 314-3 Principles of Glaciology
GEOG 310-4 Physical Geography Field Course
GEOG 311-4 Hydrology
GEOG 313-4 River Geomorphology
GEOG 314-4 Weather and Climate
GEOG 315-4 World Ecosystems
GEOG 316-4 Global Biogeochemical and Water Cycles
GEOG 317-4 Soil Science
GEOG 411-4 Advanced Hydrology
GEOG 412-4 Glacial Processes and Environments
GEOG 413-4 Advanced River Geomorphology
GEOG 414-4 Advanced Climatology
GEOG 415-4 Advanced Biogeography
GEOG 417-4 Advanced Soil Science

and one of

BISC 309-3 Conservation Biology
BISC 404-3 Plant Ecology
BISC 434-3 Paleoecology and Palynology
REM 311-3 Applied Ecology and Sustainable Environments
REM 445-3 Environmental Risk Assessment
REM 471-3 Forest Ecosystem Management

and one of

EASC 305-3 Quantitative Methods for the Earth Sciences
GEOG 351-4 Cartography and Visualization
GEOG 352-4 Spatial Analysis
GEOG 353-4 Remote Sensing
GEOG 355-4 Geographical Information Science II
GEOG 356-4 3D Geovisualization
REM 412-3 Environmental Modeling
STAT 302-3 Analysis of Experimental and Observational Data

Environmetrics area of concentration

Lower Division Requirements
Students complete all of

BISC 101-4 General Biology
BISC 102-4 General Biology
CHEM 121-4 General Chemistry and Laboratory I
CHEM 122-2 General Chemistry II
EVSC 100-3 Introduction to Environmental Science
EVSC 205-3 Methods in Environmental Science
GEOG 111-3 Earth Systems
MATH 232-3 Applied Linear Algebra
MATH 251-3 Calculus III
REM 100-3 Global Change
STAT 270-3 Introduction to Probability and Statistics
STAT 285-3 Intermediate Probability and Statistics

and one of

MATH 151-3 Calculus I
MATH 154-3 Calculus I for the Biological Sciences

and one of

MATH 152-3 Calculus II
MATH 155-3 Calculus II for the Biological Sciences

and one of

PHYS 101-3 Physics for the Life Sciences I
PHYS 120-3 Mechanics and Modern Physics

and one of

PHYS 102-3 Physics for the life Sciences II
PHYS 121-3 Optics, Electricity and Magnetism

Upper Division Requirements
Students complete all of

EVSC 399-1Environmental Science Seminar-I
EVSC 499-1 Environmental Science Seminar-II
REM 321-3/ENV 321-3 Ecological Economics
STAT 350-3 Linear Models in Applied Statistics
STAT 402-3 Generalized Linear and Nonlinear Modelling
STAT 410-3 Statistical Analysis of Sample Surveys
STAT 430-3 Statistical Design and Analysis of Experiments

and one of

CMNS 347-4 Communication in Conflict and Intervention
FNST 301-3 Issues in Applied First Nations Studies Research
FNST 332-3 Ethnobotany of British Columbia First Nations
FNST 443-4 Aboriginal Peoples, History and the Law
GEOG 322-4 World Resources
GEOG 325-4 Geographies of Consumption
GEOG 363-4 Urban Planning and Policy
GEOG 381-4 Political Geography
GEOG 389-4 Nature and Society
REM 356-3 Institutional Arrangements for Sustainable Environmental Management
SA 326-4 Ecology and Social Thought
SA 371-4 The Environment and Society

Note: occasionally third or fourth year Special Topics courses may be offered that can fulfill this requirement; check the EVSC website for information

plus 16 upper division units from the Faculty of Environment or the Faculty of Science with approval from the Director

Water Science area of concentration

Lower Division Requirements
Students complete all of

BISC 101-4 General Biology
BISC 102-4 General Biology
CHEM 121-4 General Chemistry Laboratory I
CHEM 122-2 General Chemistry II
CHEM 126-2 General Chemistry Laboratory II
EASC 101-3 Physical Geology
EVSC 100-3 Introduction to Environmental Science
EVSC 205-3 Methods in Environmental Science
GEOG 111-3 Earth Systems
GEOG 213-3 Introduction to Geomorphology
GEOG 214-3 Climate and Environment

and one of

PHYS 101-3 Physics for the Life Sciences I
PHYS 120-3 Mechanics and Modern Physics

and one of

PHYS 102-3 Physics for the Life Sciences II
PHYS 121-3 Optics, Electricity and Magnetism

and one of

MATH 151-3 Calculus I
MATH 154-3 Calculus I for the Biological Sciences

and one of

MATH 152-3 Calculus II
MATH 155-3 Calculus II for the Biological Sciences

and one of

STAT 201-3 Statistics for the Life Sciences
STAT 270-3 Introduction to Probability and Statistics

and one of

GEOG 215-3 Biogeography
BISC 204-3 Introduction to Ecology

and one of

GEOG 253-3 Aerial Photographic Interpretation
GEOG 255-3 Geographical Information Science I

Upper Division Requirements
Students complete all of

BISC 414-3 Limnology
EASC 304-3 Hydrogeology
EASC 412-3 Groundwater Geochemistry
EVSC 399-1 Environmental Science Seminar-I
EVSC 499-1 Environmental Science Seminar-II
GEOG 311-4 Hydrology
GEOG 313-4 River Geomorphology
GEOG 316-4 Global Biogeochemical and Water Cycles
REM 321-3/ENV 321-3 Ecological Economics

and one of

CMNS 347-4 Communication in Conflict and Intervention
FNST 301-3 Issues in Applied First Nations Studies Research
FNST 332-3 Ethnobotany of British Columbia First Nations
FNST 443-4 Aboriginal Peoples, History and the Law
GEOG 322-4 World Resources
GEOG 325-4 Geographies of Consumption
GEOG 363-4 Urban Planning and Policy
GEOG 381-4 or Political Geography
GEOG 389-4 Nature and Society
REM 356-3 Institutional Arrangements for Sustainable Environmental Management
SA 326-4 Ecology and Social Thought
SA 371-4 The Environment and Society

Note: occasionally third or fourth year Special Topics courses may be offered that can fulfill this requirement; check the EVSC website for information

and four of, with at least two from the 400-level

EASC 314-3 Principles of Glaciology
EASC 405-3 Water Cycles and Resources: Environmental and Climate Change Impacts
EASC 410-3 Groundwater Contamination and Transport
EASC 416-3 Field Techniques in Hydrogeology
GEOG 310-4 Physical Geography Field Course
GEOG 314-4 Weather and Climate
GEOG 317-4 Soil Science
GEOG 411-4 Advanced Hydrology
GEOG 412-4 Glacial Processes and Environments
GEOG 413-4 Advanced River Geomorphology
GEOG 414-4 Advanced Climatology
GEOG 417-4 Advanced Soil Science
REM 412-3 Environmental Modeling
REM 445-3 Environmental Risk Assessment

SFU

faculty of environment

MEMO

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Changes in Criteria for the Minimum Grade Requirement in the Environmental Science program, Faculty of Environment

The EVSC program currently requires a minimum CGPA of 2.50 for continuation and graduation. The redeveloped program proposes that the minimum CGPA for continuation and graduation be changed to 2.00. A Major in Environmental Science Program with a minimum CGPA of 2.00 for continuation and graduation would increase opportunities for a broader range of students and also help retain students on their chosen career path of Environmental Science during periods when they encounter difficulties or circumstances that affect they grades. This change would make the minimum CGPA consistent with that for a Major in the Department of Geography and a Major in most Departments and Programs in the Faculty of Science.