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www.sfu.ca/vpacademic**MEMORANDUM**

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<b>ATTENTION</b>	Senate	<b>DATE</b>	July 5, 2013
<b>FROM</b>	Gordon Myers, Chair Senate Committee on Undergraduate Studies	<b>PAGES</b>	1/1
<b>RE:</b>	Faculty of Environment (SCUS 13-34)		

A handwritten signature in blue ink, appearing to read "Gordon Myers", written over a horizontal line.

**For information:**

Acting under delegated authority at its meeting of July 4, 2013, SCUS approved the following curriculum revision effective Summer 2014:

**1. Environmental Science Program**

- (i) Changes to the Upper Division Requirements for the Water Science Concentration and the Envirometrics Concentration

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April 19, 2013

Alex Clapp  
Associate Dean, Undergraduate  
Faculty of Environment  
Simon Fraser University  
Burnaby, BC V5A 1S6  
Canada

RE: EVSC Program changes

Dear Alex,

Please find attached 2 changes to the Environmental Science program. The first change corrects an error in the calendar that lists EASC 315-3 *Geochemistry of Natural Waters* as EASC 412-3 *Groundwater Geochemistry* in the Water Science Concentration. The second change is deletion of STAT 402-3 *Generalized Linear and Nonlinear Modelling*, which is no longer offered and replacement with a choice of 4 courses in the Envirometrics Concentration.

These changes were discussed and approved at the Environmental Science Steering Committee meeting on March 22, 2013.

Should you require any further information, you are welcome to contact me.

Yours truly,  
Jeremy Venditti

Director of Environmental Science  
Faculty of the Environment  
Simon Fraser University  
8888 University Drive  
Burnaby BC, V5A 1S6  
Canada

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## SFU Calendar Entry for Environmental Science

### **FROM:**

#### ***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](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](http://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 (or 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 399-1 Environmental Science Seminar-1  
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 (or 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

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 fit 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 Calendar Entry for Environmental Science

### ***Environmental Science Major Program***

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

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### ***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

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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](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](http://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 (or 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 399-1 Environmental 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 410-3 Statistical Analysis of Sample Surveys  
STAT 430-3 Statistical Design and Analysis of Experiments

and one of  
STAT 340 Introduction to Statistical Computing and Exploratory Data Analysis  
STAT 445 Applied Multivariate Analysis  
STAT 475 Applied Discrete Data Analysis  
STAT 485 Applied Time Series Analysis

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 (or 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 315 Geochemistry of Natural Waters

EVSC 399-1 Environmental Science Seminar-1  
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

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 fit 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