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MEMORANDUM

ATTENTION	Senate	DATE	November 7, 2014
FROM	Gordon Myers, Chair Senate Committee on Undergraduate Studies	PAGES	1/1
RE:	Faculty of Environment (SCUS 14-45)		

A handwritten signature in blue ink, appearing to read 'Gordon Myers', is written over the 'RE:' field of the memorandum.

For information:

Acting under delegated authority at its meeting of November 6, 2014 SCUS approved the following curriculum revisions.

1. Faculty of Environment (SCUS 14-45a)

- (i) Admission requirements for the Bachelor of Environment
- (ii) New Course Proposal: ENV 452-8, Environmental Education
 - Q/B-Sci designation
- (iii) Prerequisite change to ENV 222
- (iv) B-Soc and B-Sci designation for ENV 222

2. Department of Geography (SCUS 14-45b)

- (i) Lower Division requirement changes to the Geography Major program
- (ii) Upper Division requirement changes to the Physical Geography Minor program
- (iii) Upper and Lower Division requirement changes to the Physical Geography Major program
- (iv) GEOG 241- B-Soc designation



faculty of environment

MEMO

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ATTENTION Gordon Myers, Chair, SCUS

FROM Alex Clapp, Associate Dean (Undergraduate),

RE Faculty of Environment Curricular Proposals

DATE October 27, 2014

Attached please find a clarification of admission requirements to the new Bachelor of Environment.

The following were approved by the Faculty of Environment Undergraduate Curriculum Committee at its meeting of October 7, 2014 meeting and are being forwarded to SCUS for approval.

Faculty Curriculum Submissions:

- a. FENV Submissions
 - i. ENV 452 – New Course Proposal (attached with Q/B-Sci documentation)
 - ii. ENV 222 – Course change (attached with B-Soc/B-Sci documentation)
- b. GEOG Submissions
 - i. Geography Major Program Changes (attached)
 - ii. Physical Geography Minor Program Changes (attached)
 - iii. Physical Geography Major Program Changes (attached)
 - iv. B-Soc designation for GEOG 241
- c. REM Submissions
 - i. Minor in Resource and Environmental Management Full Program Proposal (attached)

Would you please place these proposals on the agenda of the next meeting of SCUS.

Thank you,

Alex Clapp



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MEMORANDUM

ATTENTION	SCUS	DATE	October 28, 2014
FROM	Alex Clapp, Associate Dean, Undergraduate	PAGES	1/1
RE:	Admission Requirements, Bachelor of Environment		

Further to the approval of the Bachelor of Environment, this is a motion from the Faculty of Environment to specify the admission requirements for this credential. Admission was addressed in the FPP for the Joint Major in Business and Environment, but not in the FPPs for Environmental Resource Management and Global Environmental Systems. Passage of this motion would rectify that omission.

The Faculty of Environment moves that the requirements be exactly the same as for admission into the Bachelor of Arts in the Faculty of Environment, for all bases of admission. The text for the admissions requirements in the calendar shall be the same as for the Bachelor of Arts in the Faculty of Environment:

<http://www.sfu.ca/students/admission-requirements.html>

Rather than listing all of those requirements for every category of admission (which would take consume many pages), it may help to illustrate the requirements for the two most popular categories of admission for the BA:

BC Secondary:

http://www.sfu.ca/students/admission-requirements/cdn-highschool/bc_yukon.html

These are the requirements for a BC grade 12 student:

General requirements

- English language requirements
- English 11 (or Français première langue 11)
- Language 11 (includes beginner's language 11, American sign language 11 or 12, and language 12 courses)
- Science 11 (includes Applications of Physics 12, Biology 11, Chemistry 11, Earth Science 11, Forests 11, IB Environmental Systems 11, Principles of Physics 11)
- Foundations of Math 11 with a minimum grade of 60% (or Pre-Calculus 11/Foundations of Math 12/Pre-Calculus 12/Calculus 12 with a minimum grade of 60%)
- English 12 with a minimum final blended grade of 60% (or English 12 First Peoples, or Français première langue 12 with a minimum final blended grade of 60%)
- High School graduation

Program-specific Requirements

English 12 and three additional approved Grade 12 courses from the following list:

BC First Nations Studies 12, Calculus 12, Comparative Civilization 12, Economics 12, English Literature 12, Foundations of Math 12, French 12 or français langue seconde 12, German 12, History 12, Japanese 12, Law 12, Mandarin 12, Philosophy 12 (4 units), Pre-Calculus 12, Punjabi 12, Social Justice 12, Spanish 12, Sustainable Resources 12, Biology 12, Chemistry 12, Geography 12, Geology 12, Physics 12. Only one of Foundations of Math 12 or PreCalculus 12 may be used.

BC College:

<http://www.sfu.ca/students/admission-requirements/canadian-transfer/college-university.html.html>

These are the requirements for a BC College Transfer student:

- The University's English Language admission requirement
- The University's Quantitative and Analytical skills requirement
- A minimum 24 units of transferable course work

Rather than listing the requirements for all other bases of admission (degree holders, university transfers, BC college transfers, other Canadian college transfers, BC technical program admission, other Canadian technical program admission, secondary admission for every province and territory, exchange entry, visiting entry), this motion reiterates that the admission requirements to be the same as for the Bachelor of Arts programs in the Faculty of Environment.



SENATE COMMITTEE ON
UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL

1 OF 3 PAGES

COURSE SUBJECT/NUMBER ENV 452-8

COURSE TITLE

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

AND

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

CAMPUS where course will be taught: Burnaby Surrey Vancouver Great Northern Way Off campus

COURSE DESCRIPTION (FOR CALENDAR), 50-60 WORDS MAXIMUM. ATTACH A COURSE OUTLINE TO THIS PROPOSAL.

Examines problems entailed in developing awareness and understanding of the environment. Explores issues through a multi-disciplinary approach and develops an understanding of challenges, opportunities, strategies and possible solutions. Includes a laboratory component. Students with credit for EDUC 452 may not take this course for further credit.
Students may be required to complete a Criminal Record Check.

REPEAT FOR CREDIT NO YES How many times? Within a term? YES NO

LIBRARY RESOURCES

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.

In Process

Library report status

RATIONALE FOR INTRODUCTION OF THIS COURSE

Environmental issues form a unique problem for education because of their complex multidisciplinary basis. This environmental education course was developed to serve as a cross-listed course option to consider education and learning issues within Faculty of Environment majors. Additionally, the course may also serve other programs as an elective course. While course educational goals provide a framework for course delivery, flexibility in the focus of course projects allow the course to be used by different types of undergraduate programs. This course or its cross-listed Education 452 equivalent will form the core coursework within a number of collaboratively offered fieldschools in Metro Vancouver, Haida Gwaii and Indonesia (with SFU International).

Environmental awareness as well as associated conceptual and philosophical understandings of social and environmental issues have been an important consideration for educators for some

SCHEDULING AND ENROLLMENT INFORMATION

Indicate effective **term and year** course would first be offered and planned **frequency** of offering thereafter:
Summer 2015, Up to twice per year.

Will this be a required or elective course in the curriculum? Required Elective

What is the probable enrollment when offered? Estimate:
14 initially, up to 20

Course Description (for Calendar):

Examines problems entailed in developing awareness and understanding of the environment. Explores issues through a multi-disciplinary approach and develops an understanding of challenges, opportunities, strategies and possible solutions. Includes a laboratory component. Students with credit for EDUC 452 may not take this course for further credit.

Prerequisite: 90 units. Students may be required to complete a Criminal Record Check. Quantitative/Breadth-Science.

Rationale:

Environmental issues form a unique problem for education because of their complex multidisciplinary basis. This environmental education course was developed to serve as a cross-listed course option to consider education and learning issues within Faculty of Environment majors. Additionally, the course may also serve other programs as an elective course. While course educational goals provide a framework for course delivery, flexibility in the focus of course projects allow the course to be used by different types of undergraduate programs. This course or its cross-listed Education 452 equivalent will form the core coursework within a number of collaboratively offered fieldschools in Metro Vancouver, Haida Gwaii and Indonesia (with SFU International).

Environmental awareness as well as associated conceptual and philosophical understandings of social and environmental issues have been an important consideration for educators for some time. While there may be many definitions for environmental education, all necessarily involve multidisciplinary, cross-curricular and inquiry based approaches in the consideration of complex social and environmental issues:

“Environmental education is a way of understanding environments, and how humans are part of, and influence, environments. It integrates concepts and principles of the sciences and social sciences such as ecology, biogeography, sociology, environmental chemistry, environmental psychology, politics, and economics. It provides students with the opportunity to learn about their connections to the natural environment through traditional subjects and direct experience ...” (BC Ministry of Education, 2007)



CREDITS
Indicate number of credits (units): **8**

Indicate number of hours for: Lecture Seminar Tutorial Lab Other
8 (field experience)

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

WQB DESIGNATION (attach approval from Curriculum Office)
Quantitative/Breadth Science

PREREQUISITE
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.**
90 units

COREQUISITE
n/a

STUDENT LEARNING OUTCOMES
Upon satisfactory completion of the course students will be able to:

Consider multidisciplinary, and inquiry based approaches in the communication or teaching of complex social and environmental issues.

Consider theories about how Environmental Education and Education for Sustainable Development are conceptualized in local / global contexts.

Develop appropriate models / methods for communicating about the environmental in the contexts of informal learning and/or workplace settings.

Critically evaluate available instructional materials and resources from a variety of sources including web, video and print based materials.

Compare / contrast learning outcomes and resource guidelines published by Governments with

FEES
Are there any proposed student fees associated with this course other than tuition fees? YES NO



RESOURCES

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

OTHER IMPLICATIONS

Articulation agreement reviewed? YES NO Not applicable
Exam required: YES NO
Criminal Record Check required: YES NO

APPROVALS: APPROVAL IS SIGNIFIED BY DATE AND APPROPRIATE SIGNATURE.

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.

Signature: Daniel Bruce Date: October 27, 2014
Chair, Department/School

Signature: [Signature] Date: Oct 27, 2014
Chair, Faculty Curriculum Committee

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.

Signature: [Signature] Date: Oct 27, 2014
Dean or designate

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

Faculty of Education

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

Signature lines with Date labels

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):

Signature line with Date label



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

Course number Credit Title Description Prerequisite Course deletion Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM Course Subject/Number ENV 222-3 **TO** Course Subject/Number _____

Credits _____ Credits _____

TITLE

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

FROM: _____ **TO:** _____

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

FROM: _____ **TO:** _____

DESCRIPTION

FROM: _____ **DESCRIPTION**

TO: _____

PREREQUISITE

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**.

FROM: Two of the following: GEOG 102 or REM 100 and EVSC 100 or GEOG 111.

PREREQUISITE

TO: One of the following: ARCH 100, EVSC 100, GEOG 102, GEOG 111, REM 100 or REM 200 and completion of 24 units.

LEARNING OUTCOMES

RATIONALE

Effective term and year

Summer 2015



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MEMORANDUM

ATTENTION Alex Clapp, Associate Dean, FENV **DATE** September 3, 2014

FROM Susan Rhodes, Director **PAGES** 1
University Curriculum & Institutional Liaison

RE: ENV 222 – B-Soc/Sci designation approval

The University Curriculum Office has approved **B-Soc and B-Sci** designations for the following FENV course, effective Summer 2015 (1154):

ENV 222 – Environmental Controversy: An interdisciplinary study of environmental issues

cc: Dan Burns, FENV



DEPARTMENT OF GEOGRAPHY

MEMORANDUM

**Department of Geography
Simon Fraser University**

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TO:	Alex Clapp Associate Dean FE / Chair FEnv Curriculum Committee
FROM:	Ivor Winton, Chair UGSC, Geography
SUBJECT:	UNDERGRADUATE CURRICULUM CHANGES
DATE:	September 29, 2014

Enclosed please find proposed changes to Geography degree programs, as approved at a departmental meeting on September 25, 2014. Would you please bring these proposed changes to the Faculty of Environment Curriculum Committee for consideration.

Program Changes:

- ~ Addition to BA Geography Major
- ~ Addition to the BSc Physical Geography Minor
- ~ Recalibration of the BSc Physical Geography Major

Note: single addition on p. 7; rationale on p. 8.

FROM:

Geography Major

Program Requirements

Students complete 120 units, as specified below.

Lower Division Requirements

Students complete a total of 18 units, including all of

GEOG 100 - Society, Space, Environment: Introducing Human Geography (3)

GEOG 111 - Earth Systems (3)

GEOG 221 - Economic Geography (3)

GEOG 241 - Social Geography (3)

and one of

GEOG 213 - Introduction to Geomorphology (3)

GEOG 214 - Weather and Climate (3)

GEOG 215 - Biogeography (3)

and one of

GEOG 251 - Quantitative Geography (3)

GEOG 253 - Introduction to Remote Sensing (3)

GEOG 255 - Geographical Information Science I (3)

GEOG 318 - Soils in Our Environment (4)

GEOG 319 - Landscape Ecology (4)

and any three other courses from the full list of 300 level geography courses

and one of

GEOG 420 - Cultural Geography (4)

GEOG 432 - Problems in Environmental History (4)

GEOG 440 - Law and Geography (4)

GEOG 441 - Cities, Space, and Politics (4)

GEOG 442 - A World of Cities (4)

GEOG 449 - Environmental Processes and Urban Development (4)

GEOG 486 - Health Care Geographies (4)

and any one other course from the full list of 400 level geography courses

and any additional courses, in geography and across the University, to complete the required total of 45 upper division units.

RESOURCES, ECONOMY, AND ENVIRONMENT CONCENTRATION

Students choosing this concentration complete two of

GEOG 321 - Geographies of Global Capitalism (4)

GEOG 322 - World Resources (4)

GEOG 323 - Industrial Location (4)

GEOG 324 - Geography of Transportation (4)

GEOG 327 - Geography of Tourism (4)

GEOG 383 - Regional Development and Planning (4)

GEOG 385 - Agriculture and the Environment (4)

GEOG 389W - Nature and Society (4)

TO:

Geography Major

Program Requirements

Students complete 120 units, as specified below.

Lower Division Requirements

Students complete a total of 18 units, including all of

GEOG 100 - Society, Space, Environment: Introducing Human Geography (3)

GEOG 111 - Earth Systems (3)

GEOG 221 - Economic Geography (3)

GEOG 241 - Social Geography (3)

and one of

GEOG 213 - Introduction to Geomorphology (3)

GEOG 214 - Weather and Climate (3)

GEOG 215 - Biogeography (3)

and one of

GEOG 251 - Quantitative Geography (3)

GEOG 253 - Introduction to Remote Sensing (3)

GEOG 255 - Geographical Information Science I (3)

In addition, GEOG 261-3 is strongly recommended to students who intend to take upper division courses in urban geography.

and any three other courses from the full list of 300 level geography courses

and one of

- GEOG 420 - Cultural Geography (4)
- GEOG 432 - Problems in Environmental History (4)
- GEOG 440 - Law and Geography (4)
- GEOG 441 - Cities, Space, and Politics (4)
- GEOG 442 - A World of Cities (4)
- GEOG 449 - Environmental Processes and Urban Development (4)
- GEOG 486 - Health Care Geographies (4)

and any one other course from the full list of 400 level geography courses

and any additional courses, in geography and across the University, to complete the required total of 45 upper division units.

RESOURCES, ECONOMY, AND ENVIRONMENT CONCENTRATION

Students choosing this concentration complete two of

- GEOG 321 - Geographies of Global Capitalism (4)
- GEOG 322 - World Resources (4)
- GEOG 323 - Industrial Location (4)
- GEOG 324 - Geography of Transportation (4)
- GEOG 327 - Geography of Tourism (4)
- [GEOG 328 - Labour Geographies \(3\)](#)
- GEOG 383 - Regional Development and Planning (4)
- GEOG 385 - Agriculture and the Environment (4)
- GEOG 389W - Nature and Society (4)

and one of

GEOG 311 - Hydrology (4)
GEOG 312 - Geography of Natural Hazards (4)
GEOG 313 - River Geomorphology (4)
GEOG 314 - The Climate System (4)
GEOG 315 - World Ecosystems (4)
GEOG 316 - Global Biogeochemical and Water Cycles (4)
GEOG 317 - Soil Science (4)
GEOG 318 - Soils in Our Environment (4)
GEOG 319 - Landscape Ecology (4)

and any three other courses from the full list of 300 level geography courses

and one of

GEOG 421 - Geographical Political Economy (4)
GEOG 422 - Theories and Practices of Development (4)
GEOG 424 - Cities, Transportation, Infrastructure (4)
GEOG 426 - Industrial Change and Local Development (4)
GEOG 427 - Selected Topics in the Geography of Tourism (4)
GEOG 428 - World Forests (4)
GEOG 445 - Resource Planning (4)
GEOG 468 - Society and Environment in China (4)

and any one other course from the full list of 400 level geography courses

and any additional courses, in geography and across the University, to complete the required total of 45 upper division units.

Rationale:

Incorporation of new course into BA major.

Note: single addition on p. 10; rationale on p. 11.

FROM:

Physical Geography Minor

Lower Division Requirements

GEOG 100 - Society, Space, Environment: Introducing Human Geography (3)

GEOG 111 - Earth Systems (3)

and one of

GEOG 253 - Introduction to Remote Sensing (3)

GEOG 255 - Geographical Information Science I (3)

Upper Division Requirements

A minimum of 15 units is required, to be selected from the following, or their equivalents.

GEOG 311 - Hydrology (4)

GEOG 313 - River Geomorphology (4)

GEOG 314 - The Climate System (4)

GEOG 315 - World Ecosystems (4)

GEOG 316 - Global Biogeochemical and Water Cycles (4)

GEOG 317 - Soil Science (4)

GEOG 319 - Landscape Ecology (4)

GEOG 411 - Advanced Hydrology (4)

GEOG 412W - Glacial Processes and Environments (4)
GEOG 413 - Advanced River Geomorphology (4)
GEOG 414 - Climate Change (4)
GEOG 415 - Conservation Biogeography (4)
GEOG 417W - Advanced Soil Science (4)

TO:

Physical Geography Minor

Lower Division Requirements

GEOG 100 - Society, Space, Environment: Introducing Human Geography (3)
GEOG 111 - Earth Systems (3)

and one of

GEOG 253 - Introduction to Remote Sensing (3)
GEOG 255 - Geographical Information Science I (3)

Upper Division Requirements

A minimum of 15 units is required, to be selected from the following

GEOG 310 - Physical Geography Field Course (4)
GEOG 311 - Hydrology (4)
GEOG 313 - River Geomorphology (4)
GEOG 314 - The Climate System (4)

GEOG 315 - World Ecosystems (4)
GEOG 316 - Global Biogeochemical and Water Cycles (4)
GEOG 317 - Soil Science (4)
GEOG 319 - Landscape Ecology (4)
GEOG 411 - Advanced Hydrology (4)
GEOG 412W - Glacial Processes and Environments (4)
GEOG 413 - Advanced River Geomorphology (4)
GEOG 414 - Climate Change (4)
GEOG 415 - Conservation Biogeography (4)
GEOG 417W - Advanced Soil Science (4)

Rationale:

Incorporation of Physical Geography field course into Physical Geography BSc Minor.

Note: deletions and additions passim; rationale on p. 31.

FROM:

Department of Geography

Simon Fraser University Calendar | Fall 2014

Physical Geography Major

BACHELOR OF SCIENCE

The department offers a bachelor of science (BSc) program in physical geography.

The program can be completed ~~with~~ one of three streams: biogeophysical science, physical geography and spatial information science, geoscience. ~~The~~ biogeophysical science ~~stream~~ offers a broad range of environmental science courses in physical geography. The physical geography and spatial information science stream focuses on the linkages between physical geography and spatial information science. Students completing this stream may also apply to receive a Certificate in Spatial Information Systems. The geoscience stream targets the academic requirements for registration as a professional geoscientist (environmental geoscience) in British Columbia. ~~This stream is recommended to students who are interested in focusing their academic program in the areas of~~ geomorphology, hydrology, soils, climatology, biogeography ~~and spatial information science.~~ Requirements for each stream are below. Students should contact the student advisor to plan their course work.

Program Requirements

Students complete 120 units, as specified below.

Lower Division Requirements

COMMON REQUIREMENTS

All students, regardless of the stream they choose, will complete a total of ~~32~~ **33** units, including all of

CHEM 121 - General Chemistry and Laboratory I (4)

~~CHEM 122 - General Chemistry II (2)~~

EASC 101 - Dynamic Earth (3)

GEOG 100 - Society, Space, Environment: Introducing Human Geography (3)

GEOG 111 - Earth Systems (3)

and one of

MATH 150 - Calculus I with Review (4)

MATH 151 - Calculus I (3)

MATH 154 - Calculus I for the Biological Sciences (3)

and one of

MATH 152 - Calculus II (3) *

MATH 155 - Calculus II for the Biological Sciences (3)

and one of

PHYS 101 - Physics for the Life Sciences I (3) **

PHYS 120 - Mechanics and Modern Physics (3)

and one of

~~PHYS 102 - Physics for the Life Sciences II (3) **~~

~~PHYS 121 - Optics, Electricity and Magnetism (3)~~

and one of

~~PHYS 130 - Physics for the Life Sciences Laboratory (2)~~

~~PHYS 131 - Physics Laboratory I (2)~~

and one of

STAT 101 - Introduction to Statistics (3)

STAT 201 - Statistics for the Life Sciences (3)

STAT 270 - Introduction to Probability and Statistics (3)

~~See PHYS courses for possible physics course substitutions.~~

BIOGEOPHYSICAL SCIENCE STREAM

In addition to the common requirements as shown above, students who choose this stream will also complete 20 units, including both of

BISC 101 - General Biology (4)

BISC 102 - General Biology (4)

and two of

GEOG 213 - Introduction to Geomorphology (3)

GEOG 214 - Weather and Climate (3)

GEOG 215 - Biogeography (3)

and one of

GEOG 221 - Economic Geography (3)

GEOG 241 - Social Geography (3)

and one of

GEOG 253 - Introduction to Remote Sensing (3)

GEOG 255 - Geographical Information Science I (3)

GEOSCIENCE STREAM

In addition to the common requirements as shown above, students who choose this stream will also complete 33 units, including all of

EASC 201 - Stratigraphy and Sedimentation (3) ***

~~EASC 202 - Introduction to Mineralogy (3) ***~~

EASC 204 - Structural Geology I (3) ***

~~EASC 205 - Introduction to Petrology (3) ***~~

EASC 207 - Introduction to Applied Geophysics (3) ***

EASC 210 - Historical Geology (3) ***

GEOG 213 - Introduction to Geomorphology (3)

GEOG 214 - Weather and Climate (3)

GEOG 215 - Biogeography (3)

GEOG 221 - Economic Geography (3)

and one of

GEOG 253 - Introduction to Remote Sensing (3)

GEOG 255 - Geographical Information Science I (3)

PHYSICAL GEOGRAPHY AND SPATIAL INFORMATION

SCIENCE STREAM

In addition to the common requirements shown above, students who choose this stream will **also** complete 23 units, including all of

BISC 101 - General Biology (4)

BISC 102 - General Biology (4)

GEOG 253 - Introduction to Remote Sensing (3)

GEOG 255 - Geographical Information Science I (3)

and two of

GEOG 213 - Introduction to Geomorphology (3)

GEOG 214 - Weather and Climate (3)

GEOG 215 - Biogeography (3)

and one of

GEOG 221 - Economic Geography (3)

GEOG 241 - Social Geography (3)

* students in the Geoscience stream must take Math 152

~~** a minimum grade may be required for this course to serve as a prerequisite to certain Faculty of Science courses; students in the Geoscience stream must have a grade of B or better~~

~~*** with a C grade or better in prerequisite courses~~

Upper Division Requirements

BIOGEOPHYSICAL SCIENCE STREAM

Students who choose this stream will complete a minimum **total** of

44 units, including **three** of

- GEOG 310 - Physical Geography Field Course (4)
- GEOG 311 - Hydrology (4)
- GEOG 313 - River Geomorphology (4)
- GEOG 314 - The Climate System (4)
- GEOG 315 - World Ecosystems (4)
- GEOG 316 - Global Biogeochemical and Water Cycles (4)
- GEOG 317 - Soil Science (4)
- GEOG 319 - Landscape Ecology (4)

and one of

- GEOG 321 - Geographies of Global Capitalism (4)
- GEOG 322 - World Resources (4)
- GEOG 323 - Industrial Location (4)
- GEOG 324 - Geography of Transportation (4)
- GEOG 325 - Geographies of Consumption (4)
- GEOG 327 - Geography of Tourism (4)
- GEOG 362 - Geography of Urban Built Environments (4)
- GEOG 363 - Urban Planning and Policy (4)
- GEOG 381 - Political Geography (4)
- GEOG 382 - Population Geography (4)
- GEOG 383 - Regional Development and Planning (4)
- GEOG 385 - Agriculture and the Environment (4)
- GEOG 386 - Health Geography (4)
- GEOG 387 - Geography and Gender (4)
- GEOG 389W - Nature and Society (4)

and one of

- GEOG 351 - Multimedia Cartography (4)
- GEOG 352 - Spatial Analysis (4)
- GEOG 353 - Advanced Remote Sensing (4)
- GEOG 355 - Geographical Information Science II (4)

GEOG 356 - 3D Geovisualization (4)

~~and two of~~

GEOG 411 - Advanced Hydrology (4)

GEOG 412W - Glacial Processes and Environments (4)

GEOG 413 - Advanced River Geomorphology (4)

GEOG 414 - Climate Change (4)

GEOG 415 - Conservation Biogeography (4)

GEOG 417W - Advanced Soil Science (4)

and a minimum of 16 upper division units from BISC, CHEM, CMPT, EASC, EVSC, GEOG, MACM, MASC, MATH, MBB, PHYS or STAT courses. At least eight of these must be GEOG units.

GEOSCIENCE STREAM

Students must complete a minimum of ~~49-51~~ units including all of

~~EASC 304—Hydrogeology (3)***~~

GEOG 310 - Physical Geography Field Course (4)

GEOG 311 - Hydrology (4)

~~GEOG 313—River Geomorphology (4)~~

GEOG 317 - Soil Science (4)

GEOG 412W - Glacial Processes and Environments (4)

and one of

GEOG 322 - World Resources (4)

GEOG 323 - Industrial Location (4)

GEOG 325 - Geographies of Consumption (4)

GEOG 327 - Geography of Tourism (4)

GEOG 382 - Population Geography (4)

GEOG 385 - Agriculture and the Environment (4)
 GEOG 389W - Nature and Society (4)

~~and one of~~

GEOG 352 - Spatial Analysis (4)
 GEOG 353 - Advanced Remote Sensing (4)

~~and five (18-20 units) of the following. This five will include no more than eight units from GEOG 314, 315, 316, 414 and 417, and no more than six units from EASC 303, 307 and 313.~~

~~EASC 307 - Applied Geophysics (3) ***~~

EASC 313 - Introduction to Soil and Rock Engineering (3) ***

GEOG 312 - Geography of Natural Hazards (4)

GEOG 314 - The Climate System (4)

GEOG 315 - World Ecosystems (4)

GEOG 316 - Global Biogeochemical and Water Cycles (4)

GEOG 411 - Advanced Hydrology (4)

GEOG 413 - Advanced River Geomorphology (4)

GEOG 414 - Climate Change (4)

~~GEOG 415 - Conservation Biogeography (4)~~

GEOG 417W - Advanced Soil Science (4)

PHYSICAL GEOGRAPHY AND SPATIAL INFORMATION SCIENCE STREAM

Students who choose this stream will complete a minimum **total** of 44 units, including three of

GEOG 310 - Physical Geography Field Course (4)

GEOG 311 - Hydrology (4)

GEOG 313 - River Geomorphology (4)

GEOG 314 - The Climate System (4)

GEOG 315 - World Ecosystems (4)

GEOG 316 - Global Biogeochemical and Water Cycles (4)
GEOG 317 - Soil Science (4)
GEOG 319 - Landscape Ecology (4)

and one of

GEOG 321 - Geographies of Global Capitalism (4)
GEOG 322 - World Resources (4)
GEOG 323 - Industrial Location (4)
GEOG 324 - Geography of Transportation (4)
GEOG 325 - Geographies of Consumption (4)
GEOG 327 - Geography of Tourism (4)
GEOG 362 - Geography of Urban Built Environments (4)
GEOG 363 - Urban Planning and Policy (4)
GEOG 381 - Political Geography (4)
GEOG 382 - Population Geography (4)
GEOG 383 - Regional Development and Planning (4)
GEOG 385 - Agriculture and the Environment (4)
GEOG 386 - Health Geography (4)
GEOG 387 - Geography and Gender (4)
GEOG 389W - Nature and Society (4)

and three of

GEOG 351 - Multimedia Cartography (4)
GEOG 352 - Spatial Analysis (4)
GEOG 353 - Advanced Remote Sensing (4)
GEOG 355 - Geographical Information Science II (4)
GEOG 356 - 3D Geovisualization (4)

~~and two of~~

GEOG 411 - Advanced Hydrology (4)
GEOG 412W - Glacial Processes and Environments (4)
GEOG 413 - Advanced River Geomorphology (4)

GEOG 414 - Climate Change (4)
GEOG 415 - Conservation Biogeography (4)
GEOG 417W - Advanced Soil Science (4)

and two of

GEOG 451 - Spatial Modeling (4)
GEOG 453 - Theoretical and Applied Remote Sensing (4)
GEOG 455 - Theoretical and Applied GIS (4)
GEOG 457 - Geovisualization Interfaces (4)

TO:

Department of Geography
Simon Fraser University Calendar | Fall 2014

Physical Geography Major

BACHELOR OF SCIENCE

The department offers a bachelor of science (BSc) program in physical geography.

The program can be completed through one of three streams: biogeophysical science; geoscience; and physical geography and spatial information science. (1) Biogeophysical science offers students a broad range of environmental science courses in physical geography, with emphasis on geomorphology, climatology, hydrology, soils, and biogeography. (2) The geoscience stream is similarly broad-ranging but targets the

academic requirements [needed to apply](#) for registration as a professional geoscientist (environmental geoscience) in British Columbia. (3) The physical geography and spatial information science stream focuses on the linkages between physical geography and spatial information science. Students completing this stream may also apply to receive a Certificate in Spatial Information Systems. Requirements for each stream are [given](#) below. Students should contact the student advisor to plan their course work.

Program Requirements

Students complete 120 units, as specified below.

Lower Division Requirements

COMMON REQUIREMENTS

All students, regardless of the stream they choose, will complete a total of [25-27](#) units, including all of

CHEM 121 - General Chemistry and Laboratory I (4)

EASC 101 - Dynamic Earth (3)

GEOG 100 - Society, Space, Environment: Introducing Human Geography (3)

GEOG 111 - Earth Systems (3)

and one of

MATH 150 - Calculus I with Review (4) *

MATH 151 - Calculus I (3) *

MATH 154 - Calculus I for the Biological Sciences (3)

and one of

MATH 152 - Calculus II (3) *

MATH 155 - Calculus II for the Biological Sciences (3)

and one of

PHYS 101 - Physics for the Life Sciences I (3)

PHYS 120 - Mechanics and Modern Physics (3) **

PHYS 125 - Mechanics and Special Relativity (3) **

PHYS 140 - Studio Physics - Mechanics and Modern Physics (4)

and one of

STAT 101 - Introduction to Statistics (3)

STAT 201 - Statistics for the Life Sciences (3)

STAT 270 - Introduction to Probability and Statistics (3)

* students in the geoscience stream must take MATH 150 or 151; and 152

** students in the geoscience stream are encouraged to complete the standard (PHYS 120) or advanced (PHYS 125) PHYS course

BIOGEOPHYSICAL SCIENCE STREAM

In addition to the common requirements shown above, students who choose this stream will complete 20 units, including both of

BISC 101 - General Biology (4)

BISC 102 - General Biology (4)

and two of

GEOG 213 - Introduction to Geomorphology (3)

GEOG 214 - Weather and Climate (3)

GEOG 215 - Biogeography (3)

and one of

GEOG 221 - Economic Geography (3)

GEOG 241 - Social Geography (3)

GEOG 261 - Introduction to Urban Geography (3)

and one of

GEOG 253 - Introduction to Remote Sensing (3)

GEOG 255 - Geographical Information Science I (3)

GEOSCIENCE STREAM

The Professional Environmental Geoscience syllabus requirements of APEGBC (Association of Professional Engineers and Geoscientists of British Columbia) can be met through this stream and selected courses in other university departments. Students must choose elective courses in consultation with an academic advisor because APEGBC has specific groupings of elective courses in its Environmental Geoscience syllabus.

In addition to the common requirements shown above, students who choose this stream will complete 27 units, including all of

EASC 201 - Stratigraphy and Sedimentation (3)

EASC 204 - Structural Geology I (3)

EASC 210 - Historical Geology (3)

GEOG 213 - Introduction to Geomorphology (3)

GEOG 214 - Weather and Climate (3)

GEOG 215 - Biogeography (3)

and one of

EASC 207 - Introduction to Applied Geophysics (3)

EASC 313 - Introduction to Soil and Rock Engineering (3)

and one of

GEOG 221 - Economic Geography (3)

GEOG 241 - Social Geography (3)

GEOG 261 - Introduction to Urban Geography (3)

and one of

GEOG 253 - Introduction to Remote Sensing (3)

GEOG 255 - Geographical Information Science I (3)

PHYSICAL GEOGRAPHY AND SPATIAL INFORMATION SCIENCE STREAM

In addition to the common requirements shown above, students who choose this stream will complete 23 units, including all of

BISC 101 - General Biology (4)

BISC 102 - General Biology (4)

GEOG 253 - Introduction to Remote Sensing (3)

GEOG 255 - Geographical Information Science I (3)

and two of

GEOG 213 - Introduction to Geomorphology (3)

GEOG 214 - Weather and Climate (3)

GEOG 215 - Biogeography (3)

and one of

GEOG 221 - Economic Geography (3)

GEOG 241 - Social Geography (3)

GEOG 261 - Introduction to Urban Geography (3)

Upper Division Requirements

BIOGEOPHYSICAL SCIENCE STREAM

Students who choose this stream will complete a minimum of 44 units, including five of the following (at least one of which must be at the 400 division)

GEOG 310 - Physical Geography Field Course (4)

GEOG 311 - Hydrology (4)

GEOG 313 - River Geomorphology (4)

GEOG 314 - The Climate System (4)

GEOG 315 - World Ecosystems (4)

GEOG 316 - Global Biogeochemical and Water Cycles (4)

GEOG 317 - Soil Science (4)

GEOG 319 - Landscape Ecology (4)

GEOG 411 - Advanced Hydrology (4)

GEOG 412W - Glacial Processes and Environments (4)

GEOG 413 - Advanced River Geomorphology (4)

GEOG 414 - Climate Change (4)

GEOG 415 - Conservation Biogeography (4)

GEOG 417W - Advanced Soil Science (4)

and one of

GEOG 321 - Geographies of Global Capitalism (4)
 GEOG 322 - World Resources (4)
 GEOG 323 - Industrial Location (4)
 GEOG 324 - Geography of Transportation (4)
 GEOG 325 - Geographies of Consumption (4)
 GEOG 327 - Geography of Tourism (4)
 GEOG 362 - Geography of Urban Built Environments (4)
 GEOG 363 - Urban Planning and Policy (4)
GEOG 377 - Environmental History (4)
 GEOG 381 - Political Geography (4)
 GEOG 382 - Population Geography (4)
 GEOG 383 - Regional Development and Planning (4)
 GEOG 385 - Agriculture and the Environment (4)
 GEOG 386 - Health Geography (4)
 GEOG 387 - Geography and Gender (4)
 GEOG 389W - Nature and Society (4)
GEOG 440 - Property, Land, Society (4)
GEOG 462 - The Geography of the United States (4)

and one of

GEOG 351 - Multimedia Cartography (4)
 GEOG 352 - Spatial Analysis (4)
 GEOG 353 - Advanced Remote Sensing (4)
 GEOG 355 - Geographical Information Science II (4)
 GEOG 356 - 3D Geovisualization (4)

and a minimum of 16 upper division units from BISC, CHEM, CMPT, EASC, EVSC, GEOG, MACM, MASC, MATH, MBB, PHYS or STAT courses. At least eight of these must be GEOG units.

GEOSCIENCE STREAM

Students who choose this stream must complete a minimum of 44 units including all of

GEOG 310 - Physical Geography Field Course (4)
 GEOG 311 - Hydrology (4)
GEOG 316 - Global Biogeochemical and Water Cycles (4)
 GEOG 317 - Soil Science (4)
 GEOG 412W - Glacial Processes and Environments (4)

and five (20 units) of the following, including at least three (12 units) from Physical Geography (GEOG 31x or 41x courses)

GEOG 312 - Geography of Natural Hazards (4)
 GEOG 313 - River Geomorphology (4)
 GEOG 314 - The Climate System (4)
 GEOG 315 - World Ecosystems (4)
GEOG 351 - Multimedia Cartography (4)
 GEOG 352 - Spatial Analysis (4)
 GEOG 353 - Advanced Remote Sensing (4)
GEOG 355 - Geographical Information Science II (4)
GEOG 356 - 3D Geovisualization (4)
 GEOG 411 - Advanced Hydrology (4)
 GEOG 413 - Advanced River Geomorphology (4)
 GEOG 414 - Climate Change (4)
 GEOG 417W - Advanced Soil Science (4)
GEOG 451 - Spatial Modeling (4)
GEOG 453 - Theoretical and Applied Remote Sensing (4)
GEOG 455 - Theoretical and Applied GIS (4)
GEOG 457 - Geovisualization Interfaces (4)

and one of

GEOG 321 - Geographies of Global Capitalism (4)
 GEOG 322 - World Resources (4)
 GEOG 323 - Industrial Location (4)

- [GEOG 324 - Geography of Transportation \(4\)](#)
- [GEOG 325 - Geographies of Consumption \(4\)](#)
- [GEOG 327 - Geography of Tourism \(4\)](#)
- [GEOG 362 - Geography of Urban Built Environments \(4\)](#)
- [GEOG 363 - Urban Planning and Policy \(4\)](#)
- [GEOG 377 - Environmental History \(4\)](#)
- [GEOG 381 - Political Geography \(4\)](#)
- [GEOG 382 - Population Geography \(4\)](#)
- [GEOG 383 - Regional Development and Planning \(4\)](#)
- [GEOG 385 - Agriculture and the Environment \(4\)](#)
- [GEOG 386 - Health Geography \(4\)](#)
- [GEOG 387 - Geography and Gender \(4\)](#)
- [GEOG 389W - Nature and Society \(4\)](#)
- [GEOG 440 - Property, Land, Society \(4\)](#)
- [GEOG 462 - The Geography of the United States \(4\)](#)

PHYSICAL GEOGRAPHY AND SPATIAL INFORMATION SCIENCE STREAM

Students who choose this stream will complete a minimum of 44 units, including [five of the following \(at least one of which must be at the 400 division\)](#)

- [GEOG 310 - Physical Geography Field Course \(4\)](#)
- [GEOG 311 - Hydrology \(4\)](#)
- [GEOG 313 - River Geomorphology \(4\)](#)
- [GEOG 314 - The Climate System \(4\)](#)
- [GEOG 315 - World Ecosystems \(4\)](#)
- [GEOG 316 - Global Biogeochemical and Water Cycles \(4\)](#)
- [GEOG 317 - Soil Science \(4\)](#)
- [GEOG 319 - Landscape Ecology \(4\)](#)
- [GEOG 411 - Advanced Hydrology \(4\)](#)
- [GEOG 412W - Glacial Processes and Environments \(4\)](#)
- [GEOG 413 - Advanced River Geomorphology \(4\)](#)

GEOG 414 - Climate Change (4)
GEOG 415 - Conservation Biogeography (4)
GEOG 417W - Advanced Soil Science (4)

and one of

GEOG 321 - Geographies of Global Capitalism (4)
GEOG 322 - World Resources (4)
GEOG 323 - Industrial Location (4)
GEOG 324 - Geography of Transportation (4)
GEOG 325 - Geographies of Consumption (4)
GEOG 327 - Geography of Tourism (4)
GEOG 362 - Geography of Urban Built Environments (4)
GEOG 363 - Urban Planning and Policy (4)
[GEOG 377 - Environmental History \(4\)](#)
GEOG 381 - Political Geography (4)
GEOG 382 - Population Geography (4)
GEOG 383 - Regional Development and Planning (4)
GEOG 385 - Agriculture and the Environment (4)
GEOG 386 - Health Geography (4)
GEOG 387 - Geography and Gender (4)
GEOG 389W - Nature and Society (4)
[GEOG 440 - Property, Land, Society \(4\)](#)
[GEOG 462 - The Geography of the United States \(4\)](#)

and three of

GEOG 351 - Multimedia Cartography (4)
GEOG 352 - Spatial Analysis (4)
GEOG 353 - Advanced Remote Sensing (4)
GEOG 355 - Geographical Information Science II (4)
GEOG 356 - 3D Geovisualization (4)

and two of

- GEOG 451 - Spatial Modeling (4)
- GEOG 453 - Theoretical and Applied Remote Sensing (4)
- GEOG 455 - Theoretical and Applied GIS (4)
- GEOG 457 - Geovisualization Interfaces (4)

Rationale:

The changes proposed here aim to improve the accessibility, flexibility, and focus of the three streams in the Physical Geography Major.

Their immediate catalyst is the need to make changes to the Geoscience stream. This stream prepares students for professional accreditation as a geoscientist, that is to say, for membership in APEGBC [Association of Professional Engineers and Geoscientists of BC]. Accordingly, our course requirements in the Geoscience stream must always reflect the requirements set out by that professional body. Because of APEGBC's recent adoption of Canada-wide "Geoscience Knowledge Requirements," the Geoscience stream must now be recalibrated to reflect the new *national* syllabus.

The proposed changes balance that need – to bring the Geoscience stream in line with the new Canada-wide geoscience requirements – with a sound academic program focused on earth surface processes, the very cornerstone of Physical Geography. Given certain changes in the Geoscience stream, a few parallel changes are proposed for the remaining two Physical Geography streams.



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MEMORANDUM

ATTENTION Alex Clapp, Associate Dean, FENV **DATE** October 9, 2014

FROM Susan Rhodes, Director
University Curriculum & Institutional Liaison **PAGES** 1

RE: FENV Q and B designation approvals

The University Curriculum Office has approved the following designations for FENV course, effective Summer 2015 (1154):

ENV 452-8 – Environmental Education (proposed cross-list with EDUC 452) – Q/B-Sci

GEOG 241-3 – Social Geography – B-Soc

cc: Dan Burns, FENV
Ivor Winton, Geography Undergraduate Chair