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MEMORANDUM

ATTENTION	Senate	DATE	February 2, 2024
FROM	Peter Hall, Chair Senate Committee on Undergraduate Studies	PAGES	1/2
RE:	Program Changes		

For information:

Acting under delegated authority at its meeting of February 1, 2024 SCUS approved the following curriculum revisions effective Fall 2024.

a. Beedie School of Business (SCUS 24-21)

(i) Requirement changes to the Business Foundation Program

(ii) Requirement changes to the:

- Business Major
- Mechatronic Systems Engineering and Business Double Degree Program Major
- Business Honours
- Business and Economics Joint Honours
- Business and Communication Joint Major
- Business and Economics Joint Major
- Business and Psychology Joint Major
- Business, Philosophy and the Law Joint Major
- Geo Business Joint Major
- Information Systems in Business Administration and Computing Science Joint Major
- Interactive Arts and Technology and Business Joint Major BA or BBA
- Sustainable Business Joint Major
- Business Foundation Program

(iii) Requirement changes to the Course Access Information and Grade Requirements

(iv) Requirement changes to the Beedie School of Business Non-Business Elective Requirements:

- Business Major
- Business Honours

b. Faculty of Communication, Art and Technology (SCUS 24-22)

1. School of Communication

(i) Upper division requirement changes to the:

- Communication and Interactive Arts and Technology Joint Major BA

2. School for the Contemporary Arts

(i) Upper and lower division requirement changes to the Theatre and Performance Major

(ii) Lower division requirement changes to the Theatre and Performance Honours

c. Faculty of Environment (SCUS 24-23)

1. School of Environmental Science

(i) Requirement changes to the:

- Environmental Science Major
- Environmental Science Honours

2. Department of Geography

(i) Requirement changes to the:

- Human Geography Major
- Human Geography Honours
- Global Environmental Systems Major
- Global Environmental Systems Honours
- Geo Business Joint Major

(ii) Upper and lower division requirement changes to the Geographic Information Science Major (SCUS 24-12)

Senators wishing to consult a more detailed report of curriculum revisions may do so on the Senate DocuShare repository at <https://docuShare.sfu.ca/dsweb/View/Collection-12682>.



<p>Name of Program or Name of Faculty</p> <p>Beedie School of Business</p>
<p>Rationale for change:</p> <p>Through a review of the Business Foundation Program along with analyses of student progression, these proposed updates provide an opportunity to support student progress in the BBA by emphasizing course taking expectations. This supports SFU's goals to encourage timely degree completion.</p> <p>The adjustments proposed clear up the language and the intent of this curriculum component as it outlines students first term BBA program requirements dependent on their admissions pathway. It also allows the BBA to designate within SIMS a "tag" on student groups to place them into the correct pathway upon admissions (BFP – Transfer and BFP – High School). This ensures students are in the correct BUS 201/202 course. The indicator is then utilized to audit and ensure students meet their first term course requirement.</p>
<p>Effective term and year:</p> <p>Fall 2024</p>
<p>The following program(s) will be affected by these changes:</p> <p>Business Foundation Program</p>

Calendar Change: "to" and "from" sections are not required. All deletions should be crossed out as follows: ~~sample~~. All additions should be marked by a **bold**.

<p>Business Foundation Program Pathways</p> <p>Newly admitted students beginning their business studies at Simon Fraser University on the Surrey or Burnaby campus will complete the Business Foundation Program. The Business Foundation Program is an interdisciplinary first year program where students will gain foundational skills and knowledge for success in their academic and experiential pursuits within the Beedie School of Business. An emphasis on applied business knowledge, communication and collaboration will be expressed through complementary</p>

~~weekly workshops, as well as career/professional development workshops via the Business Career Passport.~~

To support students completing a bachelor of business administration degree, students are welcomed to the Beedie School of Business through a series of components such as: orientation and transition programming, a first term business course, and a professional development series. These components enable students to gain foundational skills and knowledge for success in their academic and experiential pursuits within the Beedie School of Business with an emphasis on applied business knowledge, communication and collaboration.

The Business Foundation Program ~~Program~~ **Pathways** contains two **pathways** streams: ~~the high school stream~~ for newly admitted high school students and ~~the transfer stream~~ for internal and external transfer students. Each ~~stream~~ **pathway** is designed to address the transition needs of the respective student group. ~~Both streams must complete the Career Passport requirements.~~

Program Requirements

Students will be provided with a professional development series of courses within their degree progression. These will provide students with opportunities to prepare, explore, and reflect on their academic and learning journey.

BUS 203 – Professional Development - Launch (1)
BUS 300 – Professional Development – Planning (1)
BUS 496 – Professional Development – Summit (1)

High School ~~Stream~~ **Pathway**

In their first term, students must complete

BUS 201 - Introduction to Business (3)
BUS 203 – Professional Development – Launch (1)

and are ~~recommended~~ **required** to take ~~two~~ **three** to four additional courses from the following

one of

ECON 103 - Principles of Microeconomics (4)
ECON 113 - Introduction to Microeconomics (3)

or one of

ECON 105 - Principles of Macroeconomics (4)
ECON 115 - Introduction to Macroeconomics (3)

or one of

MATH 150 - Calculus I with Review (4)
MATH 151 - Calculus I (3)
MATH 154 - Mathematics for the Life Sciences I (3)
MATH 157 - Calculus I for the Social Sciences (3) ^^

and/or one of

ENGL 111W - Literary Classics in English (3)
ENGL 112W - Literature Now (3)
ENGL 113W - Literature and Performance (3)
ENGL 114W - Language and Purpose (3)
ENGL 115W - Literature and Culture (3)
ENGL 199W - Writing to Persuade (3)
PHIL 100W - Knowledge and Reality (3)
PHIL 105 - Critical Thinking (3)
PHIL 120W - Moral and Legal Problems (3)
WL 101W - Writing in World Literature (3)
WL 103W - Early World Literatures (3)
WL 104W - Modern World Literatures (3)

and/or elective course(s) that may be applied toward the non-Business requirement within the bachelor of business administration or toward the university's WQB requirements.

^^ **Recommended for business major program students.**

Transfer Stream Pathway

In their first term, students must complete

BUS 202 - Foundations of Business (3)
BUS 203 - Professional Development - Launch (1)

and are ~~recommended~~ **required** to take ~~two~~ **three** to four additional business courses and/or elective course(s) that may be applied toward the non-Business requirement within the bachelor of business administration or toward the university's WQB requirements.

[...]



<p>Name of Program or Name of Faculty</p> <p>Beedie School of Business</p>
<p>Rationale for change:</p> <p>Career Passport requirements are being embedded into BUS 203, 300 and 496.</p>
<p>Effective term and year:</p> <p>Fall 2024</p>
<p>The following program(s) will be affected by these changes:</p> <p>Business Major Mechatronic Systems Engineering and Business Double Degree Program Major Business Honours Business and Economics Joint Honours Business and Communication Joint Major Business and Economics Joint Major Business and Psychology Joint Major Business, Philosophy and the Law Joint Major Geo Business Joint Major Information Systems in Business Administration and Computing Science Joint Major Interactive Arts and Technology and Business Joint Major BA or BBA Sustainable Business Joint Major Business Foundation Program</p>

Calendar Change: “to” and “from” sections are not required. All deletions should be crossed out as follows: ~~sample~~. All additions should be marked by a **bold**.

~~Business Career Passport Requirements~~

~~Business Career Passport (BCP) is a mandatory program for Bachelor of Business Administration (BBA) students to kick-start their career.~~

- ~~• Students admitted to the BBA program for the Fall 2017 term onwards are required to complete the program within 12 months of the start of their program.~~
- ~~• Students admitted to the BBA program from the Fall 2012 term to the Summer 2017 term are required to complete the program prior to graduation.~~

~~For more information, click here.~~



Name of Program or Name of Faculty Beedie School of Business
Rationale for change: Course number change.
Effective term and year: Fall 2024
The following program(s) will be affected by these changes: Course Access Information and Grade Requirements https://www.sfu.ca/students/calendar/faculties-research/faculty-business/course-access-info-and-grade-requirements.html

Calendar Change: “to” and “from” sections are not required. All deletions should be crossed out as follows: ~~sample~~. All additions should be marked by a **bold**.

Information About Access to Business Courses LOWER DIVISION BUSINESS COURSE ENROLLMENT RESTRICTIONS Students other than those accepted into a program in business may enroll in lower division business courses, except for the following courses, which are reserved for students in a business program and do not open at any time: BUS 100 BUS 203 , BUS 201, BUS 202, and BUS 217W. [...]



Name of Program or Name of Faculty
Beedie School of Business
Rationale for change:
Beedie School of Business Non-Business Elective Requirements
In Fall 2022 Beedie School of Business (BsB) Undergraduate Program introduced Group A and Group B non-business elective requirements. The requirements are an elaboration of the current BBA requirement for students to complete a minimum of 36 units outside of the BsB and will direct students to learning experiences, outside of business, that are centered around the BsB themes of Global Perspective, Innovation and Social Responsibility and to support calls for indigenization of SFU’s curricula.
In consultation with the Faculty of Arts and Social Sciences and the Department of Indigenous Studies, identified courses will be added as non-business elective options to Group A and Group B.
Effective term and year: Fall 2024
The following program(s) will be affected by these changes:
Business Major Business Honours

Calendar Change: “to” and “from” sections are not required. All deletions should be crossed out as follows: ~~sample~~. All additions should be marked by a **bold**.

Beedie School of Business Non-Business Elective Requirements
Students admitted to the BBA program for the Fall 2023 term onwards are required to complete a minimum of nine units, outside of the Beedie School of Business, that is centered around the School’s Calling and offers an Indigenous perspective.
Students must complete a minimum of six units from Group A and a minimum of three units from Group B.
Group A

Students must complete a minimum of six units from the following list of courses:

GLOBAL PERSPECTIVE

- GA 101 - Introduction to Global Asia (3)
- GEOG 100 - Our World: Introducing Human Geography (3)
- HIST 231 - History of Africa to the 19th Century: From Ancient Times to the Slave Trade (3)
- HUM 101W - Introduction to Global Humanities (3)
- IS 101 - Global Challenges of the 21st Century: An Introduction to International Studies (3)
- IS 200 - Security and Global Governance: Interdisciplinary Perspectives (3)
- IS 210 - Comparative World Politics: Trajectories, Regimes, Challenges (3)
- IS 220 - Wealth and Poverty of Nations (3)
- IS 315 - Introduction to Middle East Politics (4)
- IS 427 - Globalization, Poverty and Inequality (4)
- LBST 312 - Migration, Migrants, and Work: A Global Perspective (3)
- POL 141 - International Relations (3)
- SA 302W - Global Problems and the Culture of Capitalism (SA) (4)
- WL 100 - What is World Literature? (3)**

INNOVATION

- CA 381 - Thriving as a Cultural Entrepreneur (3)
- CMNS 110 - Introduction to Communication Studies (3)
- HIST 135 - Capitalism and the Making of the Modern World (3)
- IAT 110 - Visual Communication Design (3)
- IAT 210 - Introduction to Game Studies: Theory and Design (3)
- POL 150 - Science, Policy, and Innovation (3)
- POL 253 - Introduction to Public Policy (3)
- PSYC 106 - Psychological Issues in Contemporary Society (3)
- SA 150 - Introduction to Sociology (S) (4)
- SEE 110 - Energy, Environment and Society (3)
- TEKX 101 - Introduction to 3D Printing and Laser Scanning Technologies (3)

SOCIAL RESPONSIBILITY

- GSWS 100 - Sex Talk: Introduction to Contemporary Issues in Sexuality Studies (3)
- INDG 305 - Treaties in Canada (1)**
- LBST 100 - Equality and Inequality at Work (3)
- LBST 101 - Work and Worker's Rights: Introducing Labour Studies (3)
- PHIL 121 - Global Justice (3)
- REM 100 - Global Change (3)
- REM 350 - Energy Management for a Sustainable Climate and Society (4)
- SA 200W - Power, Conflict and Change in Canadian Society (SA) (4)
- SD 281 - Introduction to Sustainability (3)

MULTIPLE THEMES (GLOBAL PERSPECTIVE, INNOVATION, SOCIAL RESPONSIBILITY)

ARCH 101 - Reconstructing the Human Past (3)
 BPK 140 - Contemporary Health Issues (3)
 EASC 104 - Geohazards - Earth in Turmoil (3)
 EASC 107 - Economic Geological Resources (3)
 ECON 102 - The World Economy (3)
 EDUC 100W - Selected Questions and Issues in Education (3)
 GEOG 104 - Climate Change, Water, and Society (3)
 GEOG 333 - Climate Crisis: Understanding a World on Fire (4)
 MBB 302 - Energy: From Cells to Society (3)
 PLAN 100 - Introduction to Planning (3)
 REM 320W - Ethics and the Environment (3)
 REM 321 - Ecological Economics (4)
 REM 355 - Sustainable Transportation for a Zero-Emissions World (3)
 REM 357 - Planning for Sustainable Food Systems (3)

Group B

Students must complete a minimum of three units from the following list of courses*:

ENGL 360 - Popular Writing by Indigenous Authors (4)
 INDG 101 - Introduction to Indigenous Studies (3)
~~INDG 102 - Indigenous Academic Research (4)~~
 INDG 110W - International Indigenous Lifewriting (4)
 INDG 201W - Indigenous Peoples' Perspectives on History (3)
ARCH 200 - Special Topics in World Prehistory (3)
INDG 360- Popular Writing by Indigenous Authors (4)
 REM 207 - Indigenous Peoples and Resource Management (3)

* Students may satisfy this requirement by completing any INDG course with a minimum of three units.



<p>Name of Program or Name of Faculty BA CMNS/IAT joint major</p>
<p>Rationale for change: CMNS 363 is no longer taught by the School of Communication and will not be offered again in the future.</p>
<p>Effective term and year: Fall 2024</p>
<p>The following program(s) will be affected by these changes: Communication and Interactive Arts and Technology Joint Major BA</p>

Calendar Change: “to” and “from” sections are not required. All deletions should be crossed out as follows: ~~sample~~. All additions should be marked by a **bold**.

<p>Upper Division Requirements</p> <p>COMMUNICATION</p> <p>Students complete five upper division CMNS courses (minimum of 22 upper division units) including</p> <ul style="list-style-type: none"> • CMNS 362 - Evaluation Methods for Applied Communication Research (6) • CMNS 363 - Approaches to Media and Audience Research (6) • two upper division CMNS courses of the student's choice • two upper division CMNS courses from one of the following three groups: <p>[...]</p>



Calendar Entry Change

Name of Program or Name of Faculty

Rationale for change:

- Specify the number of lower division units needed for major
- Allow students more options for the lower division Production and Design course requirement (flexibility for completing the requirement).
- Remove requirement of “an additional 15 upper division units” because it’s not a Theatre Performance Major-specific requirement – it’s referencing the elective upper division credit students need to complete for their degree. The specific CA courses listed + the 3 additional upper division units of CA outside Theatre add up to the 30 upper division CA units needed of Theatre Majors. Reasons for removing the line “an additional 15 upper division units”:
 - We don’t include the specific amount of elective credit needed for the degree in any of our other major calendar pages
 - Students understand they need to complete elective credit as part of their degree, and are aware that a BFA degree requires 120 units, including 44 upper division units (it’s in their Academic Progress Report)
 - 15 is incorrect – it would require Theatre Performance majors to complete a minimum of 45 upper division units, but to receive an FCAT BFA they only need to complete a minimum of 44 upper division units

Effective term and year: Fall 2024

The following program(s) will be affected by these changes:

Theatre and Performance Major
Theatre and Performance Honours

Calendar Change: “to” and “from” sections are not required. All deletions should be crossed out as follows: ~~sample~~. All additions should be marked by a **bold**.

Theatre and Performance Major

BACHELOR OF FINE ARTS

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Lower Division Requirements

Students complete ~~the following~~ a **minimum of 47 CA units, including**

Three core courses below

CA 149 - Sound (3)

CA 186 - Art and the Moving Image (3)

CA 285 - Interdisciplinary Studio - Composition/Collaboration (3)

plus one additional CA course outside the major* - the area strongly recommends CA 217.

and all of

CA 151 - Live Acts I (3)

CA 152 - Live Acts II (3)

CA 170 - Introduction to Production Technology (3)

CA 251 - Live Acts III (3)

CA 252 - Live Acts IV (3)

CA 253 - Co-Lab (4)

CA 254 - Body I (2)

CA 255 - Body II (2)

CA 256 - Environments I (3)

CA 257W - Context I (3)

~~CA 271 - Production Ensemble II (6)~~

And one of

CA 270 Production Ensemble I (6)

CA 271 Production Ensemble II (6)

* See advisor for course options.

Upper Division Requirements

Students complete a minimum of 30 CA units, including

CA 350 - Performance as Research I (3)

CA 354 - Social I (2)

CA 355 - Social II (3)

CA 356 - Environments II (3)

CA 357W - Context II (3)



CA 450 - Performance as Research II (5)
CA 451 - Creative Research (3)
CA 452 - Capstone Projects (5)

and an additional three units of upper division units in CA outside the major - the area strongly recommends CA 412W when its topic is performance.

~~and an additional 15 upper division units.~~

Theatre and Performance Honours

BACHELOR OF FINE ARTS

Lower Division Requirements

Students complete the following

Three core courses below

CA 149 - Sound (3)

CA 186 - Art and the Moving Image (3)

CA 285 - Interdisciplinary Studio - Composition/Collaboration (3)

plus one additional CA course outside the major* - the area strongly recommends CA 217

and all of

CA 151 - Live Acts I (3)

CA 152 - Live Acts II (3)

CA 170 - Introduction to Production Technology (3)

CA 251 - Live Acts III (3)

CA 252 - Live Acts IV (3)

CA 253 - Co-Lab (4)

CA 254 - Body I (2)

CA 255 - Body II (2)

CA 256 - Environments I (3)

CA 257W - Context I (3)

~~CA 271 - Production Ensemble II (6)~~

And one of

CA 270 Production Ensemble I (6)

CA 271 Production Ensemble II (6)

* See advisor for course options.

**Name of Program or Name of Faculty**

Bachelor of Science, Major in Environmental Science

Rationale for change:

Two new courses will be offered in the School of Environmental Science: EVSC 206 (Coastal Marine Science) and EVSC 410 (River Restoration). Program modifications are needed to articulate these two courses into the EVSC program. The courses have been added into the groupings of courses in the various streams where they fit most appropriately.

Effective term and year:

Fall 2024

The following program(s) will be affected by these changes:

Environmental Science Major

Calendar Change: All deletions should be crossed out as follows: ~~sample~~. All additions should be marked in **bold font**. Do not use “to” and “from” sections.

Environmental Science Major

Bachelor of Science

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General Environmental Science Stream

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EASC 101 - Dynamic Earth (3)GEOG 111 - Earth Systems (3)REM 100 - Global Change (3)**EVSC 206 – Coastal Marine Science (3)**

Upper Division Requirements

Students complete eight of the following, with at least three courses from EVSC and at least one course from the 400 division

- BISC 306 - Invertebrate Biology (4)
- BISC 308 - Environmental Toxicology: An Ecological Perspective (3)
- BISC 309 - Conservation Biology (3) †
- BISC 313 - Environmental Toxicology: A Mechanistic Perspective (3)
- BISC 316 - Vertebrate Biology (4)
- BISC 317 - Insect Biology (3)
- BISC 327 - Algal Biology (4)
- BISC 328 - Fungal Biology and Ecology (3)
- BISC 337 - Plant Biology (4)
- BISC 407 - Population Dynamics (3)
- BISC 412 - Aquatic Ecology (3)
- BISC 413 - Fisheries Ecology (3) †
- BISC 414 - Limnology (3)
- BISC 420 - Community Ecology (3)
- EASC 304 - Hydrogeology (3) *
- EASC 314 - Principles of Glaciology (3)
- EASC 315W - Geochemistry of Natural Waters (3) *
- EASC 405 - Water, Environment, and Climate Change (3) *
- EVSC 320 - Watershed Ecology (4)
- EVSC 334 - Earth's Past Climates (4) or REM 334 - Earth's Past Climates (4)
- EVSC 395 - Special Topics in Environmental Science (3)
- EVSC 410 - River Restoration (4)**
- EVSC 445 - Environmental Data Analysis (4)
- EVSC 460 - Ecogeomorphology (4)
- EVSC 495 - Special Topics in Environmental Science (3)
- 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 414 - Climate Change (4) *
- GEOG 417W - Advanced Soil Science (4)
- GEOG 418 - Ecohydrology (4)
- PHYS 346 - Energy and the Environment (3)
- REM 311 - Applied Population Ecology (3)
- REM 370 - Global Resource Issues in Oceanography (4)
- REM 375 - Ecology and Conservation of Coastal BC (3)
- REM 423 - Research Methods in Fisheries Assessment (4) *
- REM 431 - Climate Change and Environmental Management (4)
- REM 445 - Environmental Risk Assessment (4)
- REM 471 - Forest Ecosystem Management (4)

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Applied Biology Stream

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Lower Division Requirements

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and one of

EASC 101 - Dynamic Earth (3)

REM 100 - Global Change (3)

EVSC 206 – Coastal Marine Science (3)

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Upper Division Requirements

...

and two of

BISC 309 - Conservation Biology (3) †

BISC 413 - Fisheries Ecology (3) †

EVSC 410 – River Restoration (4)

EVSC 460 - Ecogeomorphology (4)

REM 311 - Applied Population Ecology (3)

REM 375 - Ecology and Conservation of Coastal BC (3)

REM 423 - Research Methods in Fisheries Assessment (4)

REM 445 - Environmental Risk Assessment (4)

REM 471 - Forest Ecosystem Management (4)

...

and one of

BISC 306 - Invertebrate Biology (4) †

BISC 309 - Conservation Biology (3) †

BISC 316 - Vertebrate Biology (4)

BISC 317 - Insect Biology (3)

BISC 327 - Algal Biology (4)

BISC 328 - Fungal Biology and Ecology (3)

BISC 337 - Plant Biology (4)
BISC 407 - Population Dynamics (3)
BISC 412 - Aquatic Ecology (3)
BISC 413 - Fisheries Ecology (3) †
BISC 414 - Limnology (3)
BISC 420 - Community Ecology (3)
EVSC 320 - Watershed Ecology (4)
EVSC 460 - Ecogeomorphology (4)
EVSC 410 - River Restoration (4)
GEOG 315 - World Ecosystems (4)
GEOG 316 - Global Biogeochemical and Water Cycles (4)
REM 311 - Applied Population Ecology (3)
REM 375 - Ecology and Conservation of Coastal BC (3)
REM 423 - Research Methods in Fisheries Assessment (4)
REM 471 - Forest Ecosystem Management (4)

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Environmental Archaeology Stream

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Lower Division Requirements

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and one of

EASC 101 - Dynamic Earth (3)
GEOG 111 - Earth Systems (3)
REM 100 - Global Change (3)
EVSC 206 - Coastal Marine Science (3)

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Upper Division Requirements

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and at least one of

EVSC 320 - Watershed Ecology (4)
EVSC 334 - Earth's Past Climates (4) or REM 334 - Earth's Past Climates (4)
EVSC 395 - Special Topics in Environmental Science (3) *
EVSC 410 - River Restoration (4)



EVSC 445 - Environmental Data Analysis (4)

EVSC 460 - Ecogeomorphology (4)

EVSC 495 - Special Topics in Environmental Science (3) *

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Environmental Earth Systems Stream

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Lower Division Requirements

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and one of

EASC 101 - Dynamic Earth (3)

REM 100 - Global Change (3)

EVSC 206 – Coastal Marine Science (3)

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Upper Division Requirements

Students complete six of, with at least one from the 400 division

BISC 414 - Limnology (3)

EASC 304 - Hydrogeology (3)

EASC 314 - Principles of Glaciology (3)

EVSC 320 - Watershed Ecology (4)

EVSC 334 - Earth's Past Climates (4) or REM 334 - Earth's Past Climates (4)

EVSC 395 - Special Topics in Environmental Science (3)

EVSC 410 – River Restoration (4)

EVSC 460 - Ecogeomorphology (4)

EVSC 495 - Special Topics in Environmental Science (3)

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 412W - Glacial Processes and Environments (4)

GEOG 414 - Climate Change (4)

GEOG 417W - Advanced Soil Science (4)

GEOG 418 - Ecohydrology (4)

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Environmetrics Stream

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Lower Division Requirements

...

and one of

EASC 101 - Dynamic Earth (3)

GEOG 111 - Earth Systems (3)

REM 100 - Global Change (3)

EVSC 206 – Coastal Marine Science (3)

Upper Division Requirements

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and one of

EVSC 320 - Watershed Ecology (4)

EVSC 334 - Earth's Past Climates (4) or REM 334 - Earth's Past Climates (4)

EVSC 395 - Special Topics in Environmental Science (3)

EVSC 410 – River Restoration (4)

EVSC 445 - Environmental Data Analysis (4)

EVSC 460 - Ecogeomorphology (4)

EVSC 495 - Special Topics in Environmental Science (3)

and three of

BISC 306 - Invertebrate Biology (4)

BISC 308 - Environmental Toxicology: An Ecological Perspective (3)

BISC 309 - Conservation Biology (3) †

BISC 313 - Environmental Toxicology: A Mechanistic Perspective (3)

BISC 316 - Vertebrate Biology (4)

BISC 317 - Insect Biology (3)

BISC 327 - Algal Biology (4)

BISC 328 - Fungal Biology and Ecology (3)

BISC 337 - Plant Biology (4)

BISC 407 - Population Dynamics (3)

BISC 412 - Aquatic Ecology (3)
BISC 413 - Fisheries Ecology (3) †
BISC 414 - Limnology (3)
BISC 420 - Community Ecology (3)
EVSC 320 - Watershed Ecology (4)
EVSC 334 - Earth's Past Climates (4) or REM 334 - Earth's Past Climates (4)
EVSC 395 - Special Topics in Environmental Science (3)
EVSC 410 - River Restoration (4)
EVSC 445 - Environmental Data Analysis (4)
EVSC 460 - Ecogeomorphology (4)
EVSC 495 - Special Topics in Environmental Science (3)
GEOG 315 - World Ecosystems (4)
GEOG 316 - Global Biogeochemical and Water Cycles (4)
PHYS 346 - Energy and the Environment (3)
REM 325 - Uncertainty, Risk, and Decision Analysis (3)
REM 370 - Global Resource Issues in Oceanography (4)
REM 375 - Ecology and Conservation of Coastal BC (3)
REM 388 - Wildlife Conservation (3)
REM 412 - Environmental Modeling (4)
REM 423 - Research Methods in Fisheries Assessment (4)
REM 427 - Avalanche Risk Management (4)
REM 431 - Climate Change and Environmental Management (4)
REM 445 - Environmental Risk Assessment (4)
REM 471 - Forest Ecosystem Management (4)
STAT 302 - Analysis of Experimental and Observational Data (3)
STAT 305 - Introduction to Biostatistical Methods for Health Sciences (3)
STAT 403 - Intermediate Sampling and Experimental Design (3)
STAT 445 - Applied Multivariate Analysis (3)
STAT 475 - Applied Discrete Data Analysis (3)
STAT 485 - Applied Time Series Analysis (3)

† Requires BISC 204 and not GEOG 215

Water Science Stream

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Lower Division Requirements

Students who choose this stream will also complete all of

EASC 101 - Dynamic Earth (3)
GEOG 111 - Earth Systems (3)
GEOG 213 - Introduction to Geomorphology (3)
GEOG 214 - Weather and Climate (3)

and one of

EVSC 206 – Coastal Marine Science (3)

GEOG 214 - Weather and Climate (3)

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Upper Division Requirements

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and three of, with at least one from the 400 division

EASC 314 - Principles of Glaciology (3)

EASC 405 - Water, Environment, and Climate Change (3)

EASC 410 - Groundwater Contamination and Transport (3)

EASC 415 - Groundwater Modelling (3)

EASC 416 - Field and Lab Techniques in Hydrogeology (3)

EVSC 320 - Watershed Ecology (4)

EVSC 334 - Earth's Past Climates (4) or REM 334 - Earth's Past Climates (4)

EVSC 445 - Environmental Data Analysis (4)

EVSC 410 – River Restoration (4)

EVSC 460 - Ecogeomorphology (4)

GEOG 310 - Physical Geography Field Course (4)

GEOG 314 - The Climate System (4)

GEOG 317 - Soil Science (4)

GEOG 412W - Glacial Processes and Environments (4)

GEOG 414 - Climate Change (4)

GEOG 417W - Advanced Soil Science (4)

GEOG 418 - Ecohydrology (4)

REM 370 - Global Resource Issues in Oceanography (4)

REM 375 - Ecology and Conservation of Coastal BC (3)

REM 412 - Environmental Modeling (4)

REM 423 - Research Methods in Fisheries Assessment (4)

REM 445 - Environmental Risk Assessment (4)



<p>Name of Program or Name of Faculty</p> <p>Bachelor of Science, Honours in Environmental Science</p>
<p>Rationale for change: Two new courses will be offered in the School of Environmental Science: EVSC 206 (Coastal Marine Science) and EVSC 410 (River Restoration). Program modifications are needed to articulate these two courses into the EVSC program. The courses have been added into the groupings of courses in the various streams where they fit most appropriately.</p>
<p>Effective term and year:</p> <p>Fall 2024</p>
<p>The following program(s) will be affected by these changes:</p> <p>Environmental Science Honours</p>

Calendar Change: All deletions should be crossed out as follows: ~~sample~~. All additions should be marked in **bold font**. Do not use “to” and “from” sections.

<p>Environmental Science Honours</p> <p>Bachelor of Science</p> <p>...</p> <p>General Environmental Science Stream</p> <p>...</p> <p><u>EASC 101 - Dynamic Earth (3)</u></p> <p><u>GEOG 111 - Earth Systems (3)</u></p> <p><u>REM 100 - Global Change (3)</u></p> <p>EVSC 206 – Coastal Marine Science (3)</p> <p>Upper Division Requirements</p>

Students complete eight of the following, with at least three courses from EVSC and at least one course from the 400 division

- BISC 306 - Invertebrate Biology (4)
- BISC 308 - Environmental Toxicology: An Ecological Perspective (3)
- BISC 309 - Conservation Biology (3) †
- BISC 313 - Environmental Toxicology: A Mechanistic Perspective (3)
- BISC 316 - Vertebrate Biology (4)
- BISC 317 - Insect Biology (3)
- BISC 327 - Algal Biology (4)
- BISC 328 - Fungal Biology and Ecology (3)
- BISC 337 - Plant Biology (4)
- BISC 407 - Population Dynamics (3)
- BISC 412 - Aquatic Ecology (3)
- BISC 413 - Fisheries Ecology (3) †
- BISC 414 - Limnology (3)
- BISC 420 - Community Ecology (3)
- EASC 304 - Hydrogeology (3) *
- EASC 314 - Principles of Glaciology (3)
- EASC 315W - Geochemistry of Natural Waters (3) *
- EASC 405 - Water, Environment, and Climate Change (3) *
- EVSC 320 - Watershed Ecology (4)
- EVSC 334 - Earth's Past Climates (4) or REM 334 - Earth's Past Climates (4)
- EVSC 395 - Special Topics in Environmental Science (3)
- EVSC 410 - River Restoration (4)**
- EVSC 445 - Environmental Data Analysis (4)
- EVSC 460 - Ecogeomorphology (4)
- EVSC 495 - Special Topics in Environmental Science (3)
- 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 414 - Climate Change (4) *
- GEOG 417W - Advanced Soil Science (4)
- GEOG 418 - Ecohydrology (4)
- PHYS 346 - Energy and the Environment (3)
- REM 311 - Applied Population Ecology (3)
- REM 370 - Global Resource Issues in Oceanography (4)
- REM 375 - Ecology and Conservation of Coastal BC (3)
- REM 423 - Research Methods in Fisheries Assessment (4) *
- REM 431 - Climate Change and Environmental Management (4)
- REM 445 - Environmental Risk Assessment (4)
- REM 471 - Forest Ecosystem Management (4)

...

Applied Biology Stream

...

Lower Division Requirements

...

and one of

EASC 101 - Dynamic Earth (3)

REM 100 - Global Change (3)

EVSC 206 – Coastal Marine Science (3)

...

Upper Division Requirements

...

and two of

BISC 309 - Conservation Biology (3) †

BISC 413 - Fisheries Ecology (3) †

EVSC 410 – River Restoration (4)

EVSC 460 - Ecogeomorphology (4)

REM 311 - Applied Population Ecology (3)

REM 375 - Ecology and Conservation of Coastal BC (3)

REM 423 - Research Methods in Fisheries Assessment (4)

REM 445 - Environmental Risk Assessment (4)

REM 471 - Forest Ecosystem Management (4)

...

and one of

BISC 306 - Invertebrate Biology (4) †

BISC 309 - Conservation Biology (3) †

BISC 316 - Vertebrate Biology (4)

BISC 317 - Insect Biology (3)

BISC 327 - Algal Biology (4)

BISC 328 - Fungal Biology and Ecology (3)

BISC 337 - Plant Biology (4)
BISC 407 - Population Dynamics (3)
BISC 412 - Aquatic Ecology (3)
BISC 413 - Fisheries Ecology (3) †
BISC 414 - Limnology (3)
BISC 420 - Community Ecology (3)
EVSC 320 - Watershed Ecology (4)
EVSC 460 - Ecogeomorphology (4)
EVSC 410 - River Restoration (4)
GEOG 315 - World Ecosystems (4)
GEOG 316 - Global Biogeochemical and Water Cycles (4)
REM 311 - Applied Population Ecology (3)
REM 375 - Ecology and Conservation of Coastal BC (3)
REM 423 - Research Methods in Fisheries Assessment (4)
REM 471 - Forest Ecosystem Management (4)

...

Environmental Archaeology Stream

...

Lower Division Requirements

...

and one of

EASC 101 - Dynamic Earth (3)
GEOG 111 - Earth Systems (3)
REM 100 - Global Change (3)
EVSC 206 - Coastal Marine Science (3)

...

Upper Division Requirements

...

and at least one of

EVSC 320 - Watershed Ecology (4)
EVSC 334 - Earth's Past Climates (4) or REM 334 - Earth's Past Climates (4)
EVSC 395 - Special Topics in Environmental Science (3) *
EVSC 410 - River Restoration (4)



EVSC 445 - Environmental Data Analysis (4)

EVSC 460 - Ecogeomorphology (4)

EVSC 495 - Special Topics in Environmental Science (3) *

...

Environmental Earth Systems Stream

...

Lower Division Requirements

...

and one of

EASC 101 - Dynamic Earth (3)

REM 100 - Global Change (3)

EVSC 206 – Coastal Marine Science (3)

...

Upper Division Requirements

Students complete six of, with at least one from the 400 division

BISC 414 - Limnology (3)

EASC 304 - Hydrogeology (3)

EASC 314 - Principles of Glaciology (3)

EVSC 320 - Watershed Ecology (4)

EVSC 334 - Earth's Past Climates (4) or REM 334 - Earth's Past Climates (4)

EVSC 395 - Special Topics in Environmental Science (3)

EVSC 410 – River Restoration (4)

EVSC 460 - Ecogeomorphology (4)

EVSC 495 - Special Topics in Environmental Science (3)

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 412W - Glacial Processes and Environments (4)

GEOG 414 - Climate Change (4)

GEOG 417W - Advanced Soil Science (4)

GEOG 418 - Ecohydrology (4)

...

Environmetrics Stream

...

Lower Division Requirements

...

and one of

EASC 101 - Dynamic Earth (3)

GEOG 111 - Earth Systems (3)

REM 100 - Global Change (3)

EVSC 206 – Coastal Marine Science (3)

Upper Division Requirements

...

and one of

EVSC 320 - Watershed Ecology (4)

EVSC 334 - Earth's Past Climates (4) or REM 334 - Earth's Past Climates (4)

EVSC 395 - Special Topics in Environmental Science (3)

EVSC 410 – River Restoration (4)

EVSC 445 - Environmental Data Analysis (4)

EVSC 460 - Ecogeomorphology (4)

EVSC 495 - Special Topics in Environmental Science (3)

and three of

BISC 306 - Invertebrate Biology (4)

BISC 308 - Environmental Toxicology: An Ecological Perspective (3)

BISC 309 - Conservation Biology (3) †

BISC 313 - Environmental Toxicology: A Mechanistic Perspective (3)

BISC 316 - Vertebrate Biology (4)

BISC 317 - Insect Biology (3)

BISC 327 - Algal Biology (4)

BISC 328 - Fungal Biology and Ecology (3)

BISC 337 - Plant Biology (4)

BISC 407 - Population Dynamics (3)

BISC 412 - Aquatic Ecology (3)
BISC 413 - Fisheries Ecology (3) †
BISC 414 - Limnology (3)
BISC 420 - Community Ecology (3)
EVSC 320 - Watershed Ecology (4)
EVSC 334 - Earth's Past Climates (4) or REM 334 - Earth's Past Climates (4)
EVSC 395 - Special Topics in Environmental Science (3)
EVSC 410 - River Restoration (4)
EVSC 445 - Environmental Data Analysis (4)
EVSC 460 - Ecogeomorphology (4)
EVSC 495 - Special Topics in Environmental Science (3)
GEOG 315 - World Ecosystems (4)
GEOG 316 - Global Biogeochemical and Water Cycles (4)
PHYS 346 - Energy and the Environment (3)
REM 325 - Uncertainty, Risk, and Decision Analysis (3)
REM 370 - Global Resource Issues in Oceanography (4)
REM 375 - Ecology and Conservation of Coastal BC (3)
REM 388 - Wildlife Conservation (3)
REM 412 - Environmental Modeling (4)
REM 423 - Research Methods in Fisheries Assessment (4)
REM 427 - Avalanche Risk Management (4)
REM 431 - Climate Change and Environmental Management (4)
REM 445 - Environmental Risk Assessment (4)
REM 471 - Forest Ecosystem Management (4)
STAT 302 - Analysis of Experimental and Observational Data (3)
STAT 305 - Introduction to Biostatistical Methods for Health Sciences (3)
STAT 403 - Intermediate Sampling and Experimental Design (3)
STAT 445 - Applied Multivariate Analysis (3)
STAT 475 - Applied Discrete Data Analysis (3)
STAT 485 - Applied Time Series Analysis (3)

† Requires BISC 204 and not GEOG 215

Water Science Stream

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Lower Division Requirements

Students who choose this stream will also complete all of

EASC 101 - Dynamic Earth (3)
GEOG 111 - Earth Systems (3)
GEOG 213 - Introduction to Geomorphology (3)
GEOG 214 - Weather and Climate (3)

and one of

EVSC 206 – Coastal Marine Science (3)

GEOG 214 - Weather and Climate (3)

...

Upper Division Requirements

...

and three of, with at least one from the 400 division

EASC 314 - Principles of Glaciology (3)

EASC 405 - Water, Environment, and Climate Change (3)

EASC 410 - Groundwater Contamination and Transport (3)

EASC 415 - Groundwater Modelling (3)

EASC 416 - Field and Lab Techniques in Hydrogeology (3)

EVSC 320 - Watershed Ecology (4)

EVSC 334 - Earth's Past Climates (4) or REM 334 - Earth's Past Climates (4)

EVSC 445 - Environmental Data Analysis (4)

EVSC 410 – River Restoration (4)

EVSC 460 - Ecogeomorphology (4)

GEOG 310 - Physical Geography Field Course (4)

GEOG 314 - The Climate System (4)

GEOG 317 - Soil Science (4)

GEOG 412W - Glacial Processes and Environments (4)

GEOG 414 - Climate Change (4)

GEOG 417W - Advanced Soil Science (4)

GEOG 418 - Ecohydrology (4)

REM 370 - Global Resource Issues in Oceanography (4)

REM 375 - Ecology and Conservation of Coastal BC (3)

REM 412 - Environmental Modeling (4)

REM 423 - Research Methods in Fisheries Assessment (4)

REM 445 - Environmental Risk Assessment (4)



Name of Program or Name of Faculty Human Geography, Faculty of Environment
Rationale for change: GEOG 441-4 was mothballed. It will be reactivated and needs to be rearticulated
Effective term and year: Fall 2024
The following program(s) will be affected by these changes: Human Geography Major Human Geography Honours

Calendar Change: “to” and “from” sections are not required. All deletions should be crossed out as follows: ~~sample~~. All additions should be marked by a **bold**.

Upper Division Requirements (...) Urbanization & Urbanism (choose 2) GEOG 324 - Geography of Transportation (4) GEOG 362W - Gentrification and Urban Change (4) GEOG 363 - Urban Planning and Policy (4) GEOG 364 - Cities and Crisis (4) GEOG 365 - Race, Resistance and Urban Space (4) GEOG 385 - Food and the City (4) GEOG 424 - Cities, Transportation, Infrastructure (4) GEOG 441 - Cities, Space, and Politics GEOG 442 - A World of Cities (4) GEOG 449 - City and Environment (4) GEOG 461 - Urban Change Studio (6) (...)
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<p>Name of Program or Name of Faculty Global Environmental Systems, Faculty of Environment</p>
<p>Rationale for change: GEOG 441-4 was mothballed. It will be reactivated and needs to be rearticulated</p>
<p>Effective term and year: Fall 2024</p>
<p>The following program(s) will be affected by these changes: Global Environmental Systems Major Global Environmental Systems Honours</p>

Calendar Change: “to” and “from” sections are not required. All deletions should be crossed out as follows: ~~sample~~. All additions should be marked by a **bold**.

<p>Upper Division Requirements ... Capstone Experience (choose one) GEOG 411 - Advanced Hydrology (4) GEOG 412W - Glacial Processes and Environments (4) GEOG 414 - Climate Change (4) GEOG 417W - Advanced Soil Science (4) GEOG 418 - Ecohydrology (4) GEOG 421 - Geographical Political Economy (4) GEOG 423 - Capitalist Natures (4) GEOG 429 - Racial Capitalism and Beyond (4) GEOG 432 - Problems in Environmental History (4) GEOG 440 - Property, Land, Society (4) GEOG 441 – Cities, Space, and Politics GEOG 442 - A World of Cities (4) GEOG 449 - City and Environment (4) GEOG 451 - Spatial Modeling (4) GEOG 453 - Theoretical and Applied Remote Sensing (4) GEOG 455W - Theoretical and Applied GIS (4) GEOG 457 - Geovisualization Interfaces (4) GEOG 461 - Urban Change Studio (6) GEOG 465 - Geographies of Conquest and Liberation (4) GEOG 497 - International Field Study (5) (...)</p>
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Name of Program or Name of Faculty Faculty of Environment & Beedie School of Business
Rationale for change: GEOG 441-4 was mothballed. It will be reactivated and needs to be rearticulated
Effective term and year: Fall 2024
The following program(s) will be affected by these changes: Geo Business Joint Major

Calendar Change: “to” and “from” sections are not required. All deletions should be crossed out as follows: ~~sample~~. All additions should be marked by a **bold**.

Upper Division Requirements (...) GLOBAL PERSPECTIVES GEOG 321 - Geographies of Global Capitalism (4) GEOG 333 - Climate Crisis: Understanding a World on Fire (4) GEOG 381 - Territory, Power, State (4) or GEOG 381W - Territory, Power, State (4) GEOG 382 - World on the Move (4) GEOG 386 - Health Geography (4) GEOG 389W - Nature and Society (4) GEOG 423 - Capitalist Natures (4) GEOG 429 - Racial Capitalism and Beyond (4) GEOG 441 - Cities, Space, and Politics GEOG 442 - A World of Cities (4) GEOG 465 - Geographies of Conquest and Liberation (4) GEOG 497 - International Field Study (5)



Calendar Entry Change

Name of Program or Name of Faculty – Geographic Information Science Major / Faculty of Environment

Rationale for change:

SFU created a Geographic Information Science Major nearly 20 years ago (in 2004/05) as a collaboration between Geography and Computing Science with primary focus on computing science and mathematical analysis for geoinformation offered through the Faculty of Applied Sciences.

The degree has attracted only a few students, mostly with a Computing Science background, and interested in how GIS could flavor their Computing Science degree. Extensive requirement of Computing Science and Math courses discouraged non-computer science students interested in this Major, with some of these courses felt to be only of peripheral relevance to the degree. In addition, most of the required computer science courses established a reputation for being difficult to access by non-computer science students given high demand within Computer Science programs.

As currently structured, the degree therefore is not attractive to students primarily interested in learning the Geographic Information Sciences. This is unfortunate given that the Geographic Information Sciences are a multi-billion dollar industry with significant employment opportunities for our graduates, implying market demand for a meaningful GIScience degree.

Given the above, Computer Science and Geography at SFU have agreed to transition the Major from Computer Science to Geography in the Faculty of Environment. The transition includes removal of some of the computing science and math intensity to shift focus more on the breadth and depth of the Geographic Information Sciences, including theory, applications, management, as well as societal and ethical implications. Focus will include coverage of geospatial technologies in an era of Digital Earth, Big Data, AI, digital “Smartness” and the Internet of Things (IoT). The proposed shift includes finding ways to improve guaranteed access to computer science courses that will continue to be required for the degree, thereby removing perceived and real bottlenecks. The transition addresses a shift in thinking about and employment demand for experts in the GISciences as a rapidly evolving body of knowledge and technology.

The Department of Geography’s six-member GIScience faculty team bring a multifaceted body of knowledge and experience to training across the many subfields of GIScience. Areas of specialization include but are not limited to: GIS, remote sensing, image analysis, spatial data analysis and modeling, quantitative and qualitative methods, crowdsourcing, community mapping, geocomputation, geosimulation, machine learning, Geo-AI, geovisualization, spatial cognition and reality capture, virtual and augmented realities,



spatial data science as well as ethics and privacy related to ubiquitous spatial data and tracking.

We feel confident that the revised version of this Major will be more attractive to a wider number of students, and that it will meet contemporary demand for sophisticated, full-spectrum GIScientists outside of a more narrow Computer Science domain. We have designed the revised program to serve students seeking in-depth knowledge of GISciences and spatial issues, attracting students from within Geography as well as many of the application areas including but not limited to environmental sciences and studies, ecology, biology, agriculture, oceanography, archaeology, criminology, social data analysis, business and marketing, engineering and public policy. The revised program offers a core in the GISciences while leaving room for electives focusing on applications in areas of specific interest to the students, including computing sciences. The program focuses on developing skills, spatial problem-solving, critical thinking, innovation and public policy.

Effective term and year: Fall 2024

The following program(s) will be affected by these changes:

Geographic Information Science Major / Faculty of Environment and Faculty of Applied Science

Calendar Change: “to” and “from” sections are not required. All deletions should be crossed out as follows: ~~sample~~. All additions should be marked by a **bold**.

Program Requirements

Lower Division Requirements

Complete two of

GEOG 100 - Our World: Introducing Human Geography (3)

GEOG 111 - Earth Systems (3)

GEOG 150 - Digital Earth (3)

and all of

CMPT 120 - Intro Computing Science and Programming I (3)

SDA 250 - Computational Text Analysis (4)

SDA 270 - Data, Ethics and Society (3)

GEOG 251 - Quantitative Geography (3)

GEOG 253 - Introduction to Remote Sensing (3)

GEOG 255 - Geographic Information Science I (3)
GEOG 266W - Geography in Practice (3)

and one of

ARCH 273 - Archaeology of the New World (3)
REM 207 - Indigenous Peoples and Resource Management (3)

and at least six additional units of lower division geography courses with applied geographic information content

and at least six lower division units from the non-GEOG courses listed below *

CMPT 125 - Intro Computing Science and Programming II (3)
MACM 101 - Discrete Mathematics I (3)
CMPT 225 - Data Structures and Programming (3)
EASC 101 - Dynamic Earth (3)
EASC 209W - Environmental Geoscience (4)
EVSC 100 - Introduction to Environmental Science (3)
BISC 101 - General Biology (4)
BISC 102 - General Biology (4)
CRIM 101 - Introduction to Criminology (3)
CRIM 220 - Research Methods in Criminology (3)
HSCI 130 - Foundations of Health Science (4)
HSCI 230 - Evaluating Epidemiological Research (3)
ARCH 101 - Reconstructing the Human Past (3)
ARCH 285 - Archaeological Science (3)
POL 200W - Investigating Politics: Research Design and Qualitative Methods (4)
REM 200 - Introduction to REM (3)

*** Choose courses that fulfill prerequisites for the list of upper division non-GEOG electives of interest. Courses other than those in this list will be considered if students submit a short summary of the GIS content in the course so the Geography Undergraduate Studies Committee can assess if the proposed course is a fit for this requirement.**

Students must complete all of the following

~~CMPT 225 - Data Structures and Programming (3)~~
~~GEOG 100 - Our World: Introducing Human Geography (3)~~
~~GEOG 111 - Earth Systems (3)~~
~~GEOG 253 - Introduction to Remote Sensing (3)~~
~~GEOG 255 - Geographical Information Science I (3)~~
~~MACM 101 - Discrete Mathematics I (3)~~



~~and one of~~

~~CMPT 210 – Probability and Computing (3)~~

~~MACM 201 – Discrete Mathematics II (3)~~

~~and either both of~~

~~CMPT 120 – Introduction to Computing Science and Programming I (3)~~

~~CMPT 125 – Introduction to Computing Science and Programming II (3)~~

~~or both of~~

~~CMPT 130 – Introduction to Computer Programming I (3)~~

~~CMPT 135 – Introduction to Computer Programming II (3)~~

~~and one of~~

~~GEOG 213 – Introduction to Geomorphology (3)~~

~~GEOG 214 – Weather and Climate (3)~~

~~GEOG 215 – The Biosphere (3)~~

~~GEOG 221 – Economic Worlds (3)~~

~~GEOG 241 – People, Place, Society (3)~~

~~GEOG 261 – Encountering the City (3)~~

~~and one of~~

~~GEOG 251 – Quantitative Geography (3)~~

~~STAT 270 – Introduction to Probability and Statistics (3)~~

~~STAT 271 – Probability and Statistics for Computing Science (3)~~

~~and one of~~

~~MATH 150 – Calculus I with Review (4)~~

~~MATH 151 – Calculus I (3)~~

~~MATH 154 – Mathematics for the Life Sciences I (3) †~~

~~MATH 157 – Calculus I for the Social Sciences (3) †~~

~~and one of~~

~~MATH 152 – Calculus II (3)~~

~~MATH 155 – Mathematics for the Life Sciences II (3) †~~

~~MATH 158 – Calculus II for the Social Sciences (3) †~~

~~and one of~~

~~MATH 232 – Applied Linear Algebra (3)~~

~~MATH 240 – Algebra I: Linear Algebra (3)~~

~~† with a grade of B+ or better and permission of the School of Computing Science~~

Upper Division Requirements

Complete seven of the following, with at least two at the 400-level

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 GIScience (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

GSWS 399 - Gender, Sex, and Numbers (4)
LING 450 - Computational Linguistics (3)

and at least four units of additional upper division GEOG courses with advanced applied geographic information content

and at least three upper division units from the non-GEOG electives listed below *

ARCH 376 - Quantitative Research Methods (4)
BISC 360W Techniques in Ecology and Evolution (3) §
BISC 308 - Environmental Toxicology (3)
BISC 309 - Conservation Biology (3) §
BISC 413 - Fisheries Ecology (3) §
BISC 412 - Aquatic Ecology (3)
BISC 414 - Limnology (3)
BISC 420 - Community Ecology (3)
BISC 440W - Biodiversity (3) §
BUS 336 - Data Analysis and Visualization (3) §
BUS 343 - Introduction to Marketing (3)
BUS 347 - Consumer Behaviour (3)
CMPT 340 - Biomedical Computing (3)
CMPT 363 - User Interface Design (3) §
CMPT 354 - Database Systems I (3) §
CMPT 384 - Symbolic Computing (3) §
CMPT 361 - Intro to Visual Computing §
CRIM 320 - Quantitative Research Methods (3)
EASC 305 - Quant methods for the Earth Sciences (3) §§
EASC 411 - Terrain Analysis (3) §
ECON 334 - Data Visualization and Econ Analysis (3) §

EVSC 305 - Methods in Environmental Science (4)
EVSC 320 - Watershed Ecology (4)
EVSC 445 - Environmental Data Analysis (4)
EVSC 460 - Ecogeomorphology (4)
HSCI 341 - Fundamental Epidemiological concepts (3)
HSCI 424 - Strategic Applications of GIS in Health (4) §
POL 315 - Intermediate Quantitative Methods (4)
REM 412 - Environmental Modelling (4)
REM 311 - Applied Population Ecology (3)
REM 334 - Earth's Past Climates (4)
REM 445 - Environmental Risk Assessment (4)
REM 471 - Forest Ecosystem Management (4)
STAT 452 - Statistical Learning (3)

*** courses other than those in this list will be considered if students submit a short summary of the possible GIS content or applications in the proposed courses so the Geography Undergraduate Studies Committee can assess their fit for this degree.**

§ requires one or two prerequisites beyond the lower division course options

§§ requires three prerequisites beyond the lower division course options

~~Students complete a total of 45 upper division units including all of~~

~~CMPT 307 - Data Structures and Algorithms (3)~~

~~CMPT 354 - Database Systems I (3)~~

~~CMPT 361 - Introduction to Visual Computing (3)~~

~~and one of~~

~~CMPT 300 - Operating Systems I (3)~~

~~CMPT 363 - User Interface Design (3)~~

~~CMPT 371 - Data Communications and Networking (3)~~

~~CMPT 384 - Symbolic Computing (3)~~

~~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 GIScience (4)~~

~~and two of~~

~~CMPT 372 - Web II - Server-side Development (3)~~

~~CMPT 412 - Computer Vision (3)~~

~~CMPT 419 - Special Topics in Artificial Intelligence (3)~~

~~CMPT 454 - Database Systems II (3)~~

~~CMPT 461 – Computational Photography and Image Manipulation (3)~~

~~and two of~~

~~GEOG 451 – Spatial Modeling (4)~~

~~GEOG 453 – Theoretical and Applied Remote Sensing (4)~~

~~GEOG 455 – Theoretical and Applied GIS (4) or GEOG 455W Theoretical and Applied GIS (4)~~

~~GEOG 457 – Geovisualization Interfaces (4)~~

~~and four additional upper division units in physical or human geography. Students should consult with the program advisor when choosing these units~~

~~and three additional upper division units in CMPT or MACM courses.~~

Students are encouraged to customize their "GIS Adventure" within the 120 units of this GISci degree (optional but not required) by adding a supplementary focus area of their choice that extends beyond the required courses specified in the base degree. Possible focus areas, suggested by the non-GEOG course lists, could include, but are not limited to, computing science, environmental sciences, resource and environmental management, ecology, biodiversity, earth science, archaeology, criminology, health sciences, social data analysis, business and marketing, and public policy. A focus area can start with choosing pertinent courses from the lists of lower (three units) and upper division (six units) non-GEOG courses that fulfill the base GISci degree requirement. Then more content can be added that could range from just a few extra courses to a more enhanced suite of courses leading to a certificate or minor in some cases.