AGENDA ITEM NO: 10.4

UNIVERSITY COUNCIL
ACADEMIC PROGRAMS COMMITTEE
REPORT FOR INFORMATION

PRESENTED BY: Susan Detmer; chair, academic programs committee

DATE OF MEETING: November 21, 2019

SUBJECT: Bachelor of Science in Environmental Geoscience

COUNCIL ACTION: For Information Only

SUMMARY:
At its October 24, 2019 meeting, the academic programs committee approved the following motion:

- That the Academic Programs Committee approve the Bachelor of Science (B.Sc.) in Environmental Geoscience, effective May 2020.

With the revisions and renaming of the Environmental Earth Sciences program to the Hydrology program (approved at APC on April 17, 2019 and subsequently reported to Council for information in May 2019), there was an opportunity for the Department of Geological Science to establish a distinct undergraduate Environmental Geoscience Program.

Environmental Geoscience is one of three categories of Professional Geoscientist registration with the Association of Professional Engineering and Geoscientists of Saskatchewan (APEGS) and the only one not covered by B.Sc. program offered in the Department of Geological Sciences. This program allows students to focus on geochemistry, mineralogy, and hydrogeology.

As job growth in areas of environmental protection and resource management continue, there will continue to be a demand for environmental geoscientists and there will be a strong market for graduates from this program.

It is anticipated that enrollment growth in this area will reflect the burgeoning employment opportunities and anticipate a steady enrollment, given that jobs in the sector are not tied to fluctuations in the commodity cycles.

The B.Sc. in Environmental Geoscience adheres to existing Arts and Science program templates and so required approval at the Academic Programs Committee (APC). The committee was pleased with the alignment of this degree program with the requirements for professional designation with APEGS.
ATTACHMENTS:
   1. Environmental Geoscience – New Program Proposal
PROPOSAL IDENTIFICATION

Title of proposal: Environmental Geoscience

Degree(s): Bachelor of Science (B.Sc.)

Field(s) of Specialization: Environmental Geoscience

Level(s) of Concentration: Honours, Four-year

Degree College: Arts and Science

Contact person(s) (name, telephone, fax, e-mail):

Matt Lindsay
Department of Archaeology and Anthropology
College of Arts and Science
email: matt.lindsay@usask.ca
306-966-5693

Sam Butler
Head, Department of Geological Sciences
College of Arts and Science
email: sam.butler@usask.ca
306-966-5702

Proposed date of implementation: May 2020
Geoscience is a diverse scientific field with sub-disciplines including geochemistry, sedimentology, geomicrobiology, geophysics, mineralogy, paleontology, and hydrogeology. Geoscientists integrate knowledge of these and other sub-disciplines to improve our understanding of physical, chemical, and biological aspects of the Earth system in the past, present, and future. Geoscience is also fundamental for addressing societal needs that include (i) meeting growing demand for non-renewable and renewable resources and (ii) minimizing environmental impacts of resource development.

The Department of Geological Sciences has a rich history of undergraduate teaching through our Geology, Geophysics, and Palaeobiology programs. We were one of three departments that initiated the undergraduate Environmental Earth Sciences (EES) program, and remain a key partner in the program, which is currently offered by the Department of Geography and Planning. However, the pending EES program revision and renaming to Hydrology presents an opportunity for the Department of Geological Sciences to establish a distinct undergraduate Environmental Geoscience program.

Environmental Geoscience is one of three categories of Professional Geoscientist (P.Geo.) registration with the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) and the only category not currently covered by a B.Sc. program offered through the Department of Geological Sciences. Our new program will allow students to pursue options that were previously available through the EES program, but are no longer the focus of the new Hydrology program. Specifically, our new program will have a strong focus on geochemistry, which is a critical area of expertise for many employment opportunities in the environmental geoscience field.

Undergraduate Environmental Geoscience or related programs are offered by many Geoscience departments at Canadian universities including the University of Alberta, the University of Toronto, and the University of Waterloo. The recent growth in environmental geoscience programs largely reflects employment opportunities. A recent survey by the United States Bureau of Labor predicts substantial growth (i.e., 14%) in geoscience employment from 2016 to 2026. This growth, which is faster than the average for all occupations, is largely attributed to environmental management and land reclamation associated with resource development. Although geoscience-specific predictions were not available, a 2017 study by ECO Canada predicted 24% overall growth in environmental jobs by 2024. The majority of these ~90,000 jobs will be in the areas of environmental protection and resource management, and we anticipate there will be substantial demand for environmental geoscientists.

Reclamation costs for current and historical resource development activities across Canada will likely exceed $150 billion in the coming years and decades. Canada is home to over 10,000 abandoned mine sites and an even larger numbers of orphaned (inactive) oil and gas wells. Reclamation of the Giant Mine (Yellowknife, NT) and the Faro Mine (Faro, YT) are alone expected to cost Canadian taxpayers well over $1 billion. Closer to home, reclamation costs for
the Gunnar Mine (Uranium City, SK) have ballooned from initial estimates of $25 million to well over $250 million with additional increases likely. Orphaned oil and gas wells in Saskatchewan have an estimated liability of $4 billion, while the British Columbia Auditor General recently pegged these costs at $3 billion within that province. The Alberta Energy Regulator has estimated that reclamation costs will approach $25 billion for oil sands operations, while the liability for orphaned oil and gas wells in that province is expected to exceed $100 billion. Successful reclamation of these sites requires diverse expertise, with environmental geoscience—particularly geochemistry, mineralogy, and hydrogeology—central to these activities.

Graduates of this Environmental Geoscience program would gain knowledge and skills that are highly sought after by the private and public sectors. In fact, we reached out to several recent graduates currently working in this field to secure external opinions on (i) the potential demand for Environmental Geoscience graduates and (ii) specific knowledge and skills that would promote success in Environmental Geoscience. Their responses followed two general themes. First, respondents verified that considerable and sustained demand for Environmental Geoscientists exists among potential employers. For example, due to low uranium prices, Cameco Corporation has laid off hundreds of workers and shuttered much of their exploration and production activities in Saskatchewan over the past few years. Nevertheless, their environmental department has maintained and even added recent U of S Geology graduates to ensure they can meet regulatory monitoring and reporting requirements. Second, respondents indicated that quantitative skills in various aspects of geochemistry are critical, while a solid foundation in mineralogy, geomicrobiology, and hydrogeology are also highly beneficial. All respondents work for consulting firms based in western Canada with a focus on environmental management and land reclamation associated with the resource sector.

**Impact on the Department:**

Consistent with enrollment in our undergraduate Geology and Geophysics programs, we anticipate that enrollment in the Environmental Geoscience program will reflect employment opportunities. Enrollment in the Geology and Geophysics programs has decreased over the past three years due to declining mineral, and oil and gas exploration and production in western Canada and globally. As with previous commodity cycles, student enrollment in these programs will recover with resource prices, linked to increases in population, renewable and non-renewable energy requirements, and global economic activity. In contrast, we anticipate moderate initial student demand for the Environmental Geoscience program followed by steady, but modest enrollment growth over time. We also anticipate substantially less fluctuation in enrollment as employment opportunities are not closely aligned with commodity cycles.

Enrollment in our core Geology courses has varied from 50 to 100 over the past decade with graduating cohorts from our Geology and Geophysics programs averaging 40 students over this time. Graduating cohorts for the EES program have ranged from 6 to 8 students over this time.
Students enrolled in our undergraduate Geology programs often complete minors in Water Science, Geomatics, and Chemistry. Demand for senior courses (e.g., Aqueous Geochemistry, Geomicrobiology) and honours research projects with an environmental geoscience focus have also grown in recent years. This trend suggests students will be drawn to this new program. We therefore anticipate moderate initial interest in the Environmental Geosciences program with growing interest thereafter. Based on historical enrollment in our other programs and a growing job market, we anticipate enrollment of approximately 20 students (declared) after three years and between 30 to 40 students (declared) after 5 years. We also anticipate recovering enrollment in our Geology program and, therefore, an overall increase in undergraduate enrollment in our programs over the next 5 years.

Resources:

The Department of Geological Sciences can deliver the new Environmental Geoscience program without any additional resources. All courses to be included in the programs are currently available through our department, other units in the College of Arts and Science, and across campus. Although we will expand our undergraduate course offerings to include a new field school in environmental geoscience (GEOL 3XX.3), the department currently has the resources required to cover this additional course. The new field course will complement recently-approved courses in Geomicrobiology (GEOL 315.3) and Organic Geochemistry (GEOL 350.3), which are included as optional C4 Major Requirement courses in the proposed program.

We plan to implement the new program in September 2020 and we will develop a proposal for the new field school in time for the 2022–2023 academic year. This timing will ensure that students who declare Environmental Geoscience as their major can complete this field school by third year of their program. Current students electing to declare this new major will be permitted to count GEOL 308.3, which is currently listed in P.Geo. licensure requirements for the environmental geoscience stream, toward their program requirements.
College Statement

From Gordon DesBrisay, Vice-Dean Academic

I am pleased to confirm that the College of Arts and Science supports the creation of a major in Environmental Geoscience.

The College of Arts and Science is working to provide innovative program options that meet student need and demand. The new program will enable graduates to be employed in the growing fields of environmental management and land reclamation. The new program continues the College’s tradition of offering education in this area, previously as part of the Environmental Earth Sciences program, but does so in a more structured way that ensures that each graduate will qualify for the Professional Geoscientist licensure.

The Academic Programs Committee (BSc) approved the proposal on September 10, 2019, as did the College Faculty Council on October 10, 2019.
Planning and Priorities Committee

Notice of Intent for New Programs
Bachelor of Science in Environmental Geoscience

The Department of Geological Sciences plans to propose a new B.Sc. in Environmental Geoscience program with Four-year and Honours options that is (i) strongly founded upon core geoscience disciplines and (ii) distinct from existing and proposed environmental programs at the U of S.

Motivation
Geoscience is a diverse scientific field with sub-disciplines including geochemistry, sedimentology, geomicrobiology, geophysics, mineralogy, paleontology, and hydrogeology. Geoscientists integrate knowledge of these and other sub-disciplines to improve our understanding of physical, chemical, and biological aspects of the Earth system in the past, present, and future. Geoscience is also fundamental for addressing societal needs that include (i) meeting growing demand for non-renewable and renewable resources and (ii) minimizing environmental impacts of resource development.

The Department of Geological Sciences has a rich history of undergraduate teaching through our Geology, Geophysics, and Palaeobiology programs. We were one of the three departments that initiated the undergraduate Environmental Earth Sciences (EES) program, and remain a key partner in the program, which is currently offered by the Department of Geography and Planning. However, the pending EES program revision and renaming to Hydrology presents an opportunity for the Department of Geological Sciences to establish a distinct undergraduate Environmental Geoscience program. Environmental Geoscience is one of three categories of Professional Geoscientist (P.Geo.) registration with the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) and the only category not currently covered by a B.Sc. program offered through the Department of Geological Sciences. Our new program will allow students to pursue options that were previously available through the EES program, but are no longer the focus of the new Hydrology program. Specifically, our new program will have a strong focus on geochemistry, which is a critical area of expertise for many employment opportunities in the environmental geoscience field.

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Reclamation costs for current and historical resource development activities across Canada will likely exceed $150 billion in the coming years and decades. Canada is home to over 10,000 abandoned mine sites and an even larger numbers of orphaned (inactive) oil and gas wells. Reclamation of the Giant Mine (Yellowknife, NT) and the Faro Mine (Faro, YT) are alone expected to cost Canadian taxpayers well over $1 billion. Closer to home, reclamation costs for the Gunnar Mine (Uranium City, SK) have ballooned from initial estimates of $25 million to well over $250 million with additional increases likely. Orphaned oil and gas wells in Saskatchewan have an estimated liability of $4 billion, while the British Columbia Auditor General recently pegged these costs at $3 billion within that province. The Alberta Energy Regulator has estimated that reclamation costs will approach $25 billion for oil sands operations, while the liability for orphaned oil and gas wells in that province is expected to exceed $100 billion. Successful reclamation of these sites requires diverse expertise, with environmental geoscience—particularly geochemistry, mineralogy, and hydrogeology—central to these activities.

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**Anticipated Student Demand**
Consistent with enrollment in our undergraduate Geology and Geophysics programs, we anticipate that enrollment in the Environmental Geoscience program will reflect employment opportunities. Enrollment in the Geology and Geophysics programs has decreased over the past three years due to declining mineral, and oil and gas exploration and production in western Canada and globally. As with previous commodity cycles, student enrollment in these programs will recover with resource prices, linked to increases in population, renewable and non-renewable energy requirements, and global economic activity. In contrast, we anticipate moderate initial student demand for the Environmental Geoscience program followed by steady, but modest enrollment growth over time. We also anticipate substantially less fluctuation in enrollment as employment opportunities are not closely aligned with commodity cycles.

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Science, Geomatics, and Chemistry. Demand for senior courses (e.g., Aqueous Geochemistry, Geomicrobiology) and honours research projects with an environmental geoscience focus have also increased in recent years. This trend suggests students will be drawn to this new program. We therefore anticipate moderate initial interest in the Environmental Geosciences program with growing interest thereafter. Based on historical enrollment in our other programs and a growing job market, we anticipate enrollment of approximately 20 students (declared) after three years and between 30 to 40 students (declared) after 5 years. We anticipate an overall increase in undergraduate enrollment in our programs after 5 years.

**Alignment with University Vision**

We believe this new program will help to advance the university’s mission, vision and values. Geoscience, which is defined as the scientific study of the Earth, is an inherently international discipline. Similarly, Environmental Geoscience is not constrained by international borders. Many developed and developing nations worldwide have incredibly poor environmental performance records associated with their resource sectors. For example, active and historical mining operations on all continents have had severe consequences for the environment and human health. These impacts are often disproportionately experienced by marginalized groups including Indigenous communities. The interdisciplinary nature of this Environmental Geoscience program will help ensure its graduates can play a central role in reducing future impacts of resource development.

This new program also aligns with two Signature Areas of Research. Sustainable resource development is a central theme of the *Energy and Mineral Resources* signature area, while minimizing water pollution is a central theme of the *Water Security* signature area. By training undergraduate students in core aspects of these signature areas, the Environmental Geoscience program will contribute to the growing reputation of the U of S as a leader in both water security and sustainable resource development.

Our decision to pursue this new program proposal was bolstered by the new College of Arts and Science plan, entitled “Think Big – Be Bold: Arts and Science 2025”. Our proposal clearly aligns with several aspects of this plan. Our proposed Environmental Geoscience program will help to “sustain, coordinate, [and] expand environmental programming”. It will involve coordination and collaboration with other Arts and Science departments (e.g., Geography and Planning, Chemistry, Physics, Biology, Mathematics and Statistics) and other units across campus (e.g., Soil Science and Civil, Geological and Environmental Engineering). Additionally, the targeted learning outcomes will differ substantially from the proposed Hydrology program and will, therefore, help to expand undergraduate environmental programming available at the University of Saskatchewan.

The academic plan described within the new College plan establishes six key goals. We believe that this new program will directly address most of these goals, either now or in the near future. We expect the Environmental Geoscience program to attract new students to the College and to provide our graduates with new opportunities for future success. As mentioned above, the Environmental Geoscience program will be highly interdisciplinary, reflecting the nature of Geoscience overall. Our students will be required to complete courses in biology, chemistry, computer science, geography, mathematics, physics, soil science, and statistics. The program
will focus also on development of quantitative skills and will provide graduates with a definite path to P.Geo. registration with APEGs. This program also addresses indigenization goals, which will be met through the indigenous learning requirement being implemented in May 2020 by the College of Arts and Science.

**Relationship to Other Programs**

There are currently eight undergraduate programs with an environmental science or engineering focus offered across campus. These programs include:

- Environmental Biology (B.Sc.), College of Arts and Science;
- Environmental Earth Sciences (B.Sc.), College of Arts and Science;
- Environmental Engineering (B.E.), College of Engineering;
- Environmental Science (B.S.A.), College of Agriculture and Bioresources;
- Environment and Society (B.A., Sc.), College of Arts and Science;
- Renewable Resource Management (B.Sc.), College of Agriculture and Bioresources; and
- Toxicology (B.Sc.), College of Arts and Science.

Among existing programs, only the EES program offered through the Department of Geography and Planning has a geoscience focus. However, the pending refocussing and renaming of the EES program affords us the opportunity to develop this distinct new undergraduate program in Environmental Geoscience. Curriculum proposed for the undergraduate Hydrology program represents a shift from the EES program toward hydrology and geomatics, which are core strengths of the Department of Geography and Planning. In contrast, our proposed Environmental Geoscience program will emphasize geochemistry, which is a core strength of the Department of Geological Sciences. Again, all Environmental Geoscience graduates will meet knowledge requirements for P.Geo. registration, which is legally required for practicing geoscience in Saskatchewan and across Canada.

**Resource Requirements**

The Department of Geological Sciences can deliver the new Environmental Geoscience program without any additional resources. All courses to be included in the programs are currently available through our department, other units in the College of Arts and Science, and across campus. Though we do plan to expand our undergraduate course offerings to include a field school in environmental geoscience (GEOL 3XX.3) and a new course in analytical geochemistry (GEOL 4XX.3), the department has the resources to cover these additional courses. These new courses will complement recently-approved courses in Geomicrobiology (GEOL 315.3) and Organic Geochemistry (GEOL 350.3), which will be included as options for the new program.

In addition to GEOL courses, students enrolled in these programs would complete up to 15 credit units of GEOG courses. These GEOG courses are currently listed as optional courses for our undergraduate Geology programs. With recent declines in undergraduate Geology program enrollment, we do not anticipate that overall demand for GEOG courses to exceed historical enrollment in the coming years.
Risks, Assumptions, and Constraints
We do not believe there are any risks associated with the new undergraduate Environmental Geoscience program, particularly as the College and University have goals of increasing environmental programming. Growing interest in Environmental Geoscience courses among our undergraduate students suggests this program will be successful. Due to the strong geoscience focus of this program, we do not foresee a risk to enrollment in other undergraduate environmental science and engineering programs. The program will complement the Geology, Geophysics, and Palaeobiology programs, given the breadth of the sub-disciplines in the geosciences that attract students with varied interests, and thus we also do not believe that enrollment in this program will translate to declining numbers in the other programs in the Department of Geological Sciences.

Implementation
We plan to implement these new programs in September 2020. As described above, we can deliver these programs with existing courses and without additional resources. We will develop proposals for the two additional courses to facilitate their implementation in time for the 2021–2022 academic year. This timing will ensure that students who declare Environmental Geoscience as their major can complete these courses by third year of their program. Current students electing to declare this major will be permitted to count our existing field school (GEOL 308.3) toward their program requirements.
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through the indigenous learning requirement being implemented in May 2020 by the College of Arts and Science.

4. Relationship to Other Programs
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6. Risks, Assumptions, and Constrains
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environmental programming. Growing interest in Environmental Geoscience courses among our undergraduate students suggests this program will be successful. Due to the strong geoscience focus of this program, we do not foresee a risk to enrollment in other undergraduate environmental science and engineering programs. The program will complement the Geology, Geophysics, and Palaeobiology programs, given the breadth of the sub-disciplines in the geosciences that attract students with varied interests, and thus we also do not believe that enrollment in this program will translate to declining numbers in the other programs in the Department of Geological Sciences.

7. Implementation
We plan to implement these new programs in September 2020. As described above, we can deliver these programs with existing courses and without additional resources. We will develop proposals for the two additional courses to facilitate their implementation in time for the 2021–2022 academic year. This timing will ensure that students who declare Environmental Geoscience as their major can complete these courses by third year of their program. Current students electing to declare this major will be permitted to count our existing field school (GEOL 308.3) toward their program requirements.
TO: Dirk de Boer, Chair, Planning and Priorities Committee
FROM: Gordon DesBrisay, Vice-Dean Academic, Arts and Science
DATE: April 15, 2019
RE: Environmental Geoscience Program

I am pleased to confirm that the College of Arts and Science supports the development of a new B.Sc. degree program in Environmental Geoscience with four-year and honours options in the Department of Geological Sciences.

The new program arises partly in response to impending changes made by the Department of Geography and Planning to the outgoing Environmental Earth Sciences (ESS) program, which is being reconfigured as a new Hydrology program (a development the college also supports). The turn to hydrology has opened up fresh opportunities for the Department of Geological Sciences to establish a distinct Environmental Geoscience program with a strong focus on geochemistry and closer alignment with the APEGGS professional registration requirements.

In joining the broad range of environmental studies programs on our campus, we are confident that Environmental Geoscience will enhance but not duplicate existing offerings. The proposed program will provide our students with greater choice in their studies, wide interdisciplinary and experiential learning opportunities, and strong professional opportunities in a field that, being tied to both supporting and cleaning up after resource extraction activities, is less vulnerable to the ups and downs of the resource sector than most other areas of geoscience.

This is a most welcome initiative, and we hope that Planning and Priorities will join us in supporting it.

Gordon DesBrisay
MEMORANDUM

TO: Peta Bonham-Smith, dean, College of Arts & Science; Sam Butler, department head, Department of Geological Sciences; Matt Lindsay, Department of Geological Sciences; Alexis Dahl, director of the Programs Office, College of Arts & Science

FROM: Dirk de Boer, chair, planning and priorities committee of Council

DATE: May 30, 2019

RE: Notice of Intent – Bachelor of Science in Environmental Geoscience

Thank you for attending the planning and priorities committee meeting of May 8, 2019 to discuss the notice of intent for the proposed Bachelor of Science in Environmental Geoscience.

The committee appreciated the effort to offer a clearly structured program focused on a well-defined area of expertise. It was important to the committee that the program would be situated within the overall context of environmental sciences. This program is a good idea and the professional pathways are clear. Consultation with APEGS will be important to ensuring that the program changes are consistent with the demands of prospective employers in the industry.

The committee was generally supportive of the idea but expressed concern about the potential demand, in particular because the new program may simply be moving existing students away from other programs in Arts & Science, including from the other programs offered by the department. Demand for this new program is also a risk in view of decreasing enrolment in geology.

The committee believed that with the present variety of environment-focused undergraduate programs, work needs to be done on distinguishing between the programs and on ensuring that prospective students are aware of the various options, how they are different, and the potential career prospects that the different programs provide. Relatedly, the committee also expressed a desire to see it made easy for students to transfer from one program to another if they find that their skills and interests change, and to ladder into graduate programs.
Finally, concerns were raised about the lack of consultation with other colleges and departments. Consultation with other units, including the Department of Soil Sciences, Agriculture and Bioresources, and SENS are imperative for avoiding any potentially negative consequences of the program changes for students.

Thank you for your work on this program’s development. We encourage you to consider this feedback in the next iteration of the proposal that is presented to the academic programs committee of University Council.

Please do not hesitate to contact me if you have any questions.

Kind regards,

Dirk de Boer

c. Tony Vannelli, provost and vice-president academic
   Beth Bilson, university secretary
   Russell Isinger, registrar
Program Description

Environmental geoscience is the scientific study of relationships between Earth processes, human activities, and the environment. Environmental Geoscientists integrate knowledge of physical, chemical, and biological aspects of the Earth system to investigate how geological processes have influenced the environment over geologic time. They also study recent environmental impacts of human activities, including extraction of energy and mineral resources, and explore ways to minimize these impacts.

With both Four-year and Honours options, the B.Sc. in Environmental Geoscience program ensures students develop a strong foundation in core geoscience disciplines and gain knowledge of interrelated environmental geoscience fields. Consequently, students complete courses in topics including geology, geochemistry, hydrogeology, mineralogy, and geophysics.

All graduates meet knowledge requirements for Professional Geoscientist (P.Geo.) licensure with the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS), which is legally required to practice geoscience in Saskatchewan and across Canada.

Graduates of this program will have wide ranging employment opportunities in both the private and public sector. Ongoing growth of job opportunities in environmental geoscience with resource companies, consulting firms, and governmental agencies make this program an excellent option for students with interest in geoscience and the environment.

B.Sc. in Environmental Geoscience (Honours)

Students interested in entering an Honours program should consult advisors in the department concerned before registering for their second year. Of the 120 credit units required for the B.Sc. Honours degree, at least 66 credit units must be at the senior level. Application for admission to Honours is not considered until successful completion of at least 60 credit units with a Cumulative Weighted Average of at least 70% overall and at least 70% in the subject of Honours. For further details, please see the Academic Policies section.

Note: As this program is structured to ensure graduates meet APEGS knowledge requirements for P.Geo. registration in the Environmental Geoscience stream, the knowledge requirements are noted below where appropriate. These notes will not appear in the Course and Program Catalogue.

C1 College Requirement (15 credit units)

English Language Requirement (6 credit units)

Choose 6 credit units from the following list:

- Approved list.
Indigenous Learning (3 credit units)

Choose **3 credit units** from the following list:

- Approved list.

Quantitative Reasoning (6 credit units)

Complete the following **6 credit units**:

- MATH 110.3  Calculus I  
  APEGS 1A
- MATH 116.3  Calculus II  
  APEGS 1B

C2 Breadth Requirement (6 credit units)

Choose **6 credit units** from the following:

Fine Arts  
Humanities  
Social Sciences  
Arts and Science No Program Type

C3 Cognate Requirement (36 credit units)

Junior Course Requirement (18 credit units)

Complete the following **9 credit units**:

- CHEM 112.3  General Chemistry I  
  APEGS 1A
- CHEM 115.3  General Chemistry II  
  APEGS 1B
- PHYS 115.3  Physics and the Universe  
  APEGS 1A

Choose **3 credit units** from the following list:

- PHYS 117.3  Physics for the Life Sciences  
  APEGS 1B
- PHYS 125.3  Physics and Technology  
  APEGS 1B

Choose **3 credit units** from the following list:

- BIOL 120.3  The Nature of Life  
  APEGS 1B
- BIOL 121.3  The Diversity of Life  
  APEGS 1B
Choose **3 credit units** from the following list:

- CMPT 140.3 Introduction to Creative Computing  
  APEGS 1B
- CMPT 141.3 Introduction to Computer Science  
  APEGS 1B

**Senior Course Requirement (18 credit units)**

Choose **3 credit units** from the following list:

- STAT 241.3 Probability Theory  
  APEGS 1B
- STAT 245.3 Introduction to Statistical Methods  
  APEGS 1B

Complete the following **9 credit units**:

- EVSC 220.3 Environmental Soil Science  
  APEGS 2B
- GEOG 225.3 Hydrology of Canada  
  APEGS 2B
- GEOG 222.3 Introduction to Geomatics  
  APEGS 2B

Choose **3 credit units** from the following list:

- GEOG 322.3 Intro to Geographic Information Systems  
  APEGS 2C
- GEOG 323.3 Remote Sensing  
  APEGS 2C
- GEOG 386.3 Environmental Impact Assessment  
  APEGS 2C

Choose **3 credit units** from the following list:

- CHEM 221.3 Analytical Chemistry I
- EVSC 210.3 Environmental Physics

**C4 Major Requirement (54 credit units)**

**Introductory Geosciences (6 credit units)**

Complete the following **6 credit units**:

- GEOL 121.3 Earth Processes
- GEOL 122.3 Earth History

**Fundamental Geosciences (30 credit units)**

Complete the following **30 credit units**:

- GEOL 206.3 Earth Systems  
  APEGS 2C
- GEOL 224.3 Mineralogy  
  APEGS 2A
• GEOL 226.3 Introductory Petrology APEGS 2C
• GEOL 229.3 Introductory Geochemistry APEGS 2B
• GEOL 245.3 Introduction to Sedimentary Environments APEGS 2A
• GEOL 258.3 Structural Geology APEGS 2A
• GEOL 308.3 Field School Sedimentary Rocks APEGS 2A
• GEOL 384.3 Introduction to Applied Geophysics OR APEGS 2B
  GEOL 334.3 Gravity, Magnetics, Electromagnetic and Radiation Methods APEGS 2B
• GEOL 413.3 Aqueous Geochemistry APEGS 2C
• GEOL 429.3 Isotope Geochemistry APEGS 2C

Environmental Geosciences (18 credit units)

Choose 6 credit units from each of the following categories:

Geochemistry & Mineralogy

• GEOL 315.3 Geomicrobiology APEGS 2C
• GEOL 350.3 Organic Geochemistry APEGS 2C
• GEOL 490.3 Geological Sciences Research APEGS 2C
• GEOL 492.6 Geological Sciences Research APEGS 2C

Hydrogeology & Hydrology

• SLSC 322.3 Environmental Soil Physics APEGS 2C
• GEOG 328.3 Groundwater Hydrology APEGS 2C
• GEOE 375.3 Engineering Hydrogeology APEGS 2C
• GEOL 487.3 Geophysics Field Methods APEGS 2C

Environmental Chemistry

• SLSC 313.3 Environmental Soil Chemistry APEGS 2C
• CHEM 375.3 Environmental Chemistry APEGS 2C
• EVSC 421.3 Contaminated Site Management and Remediation APEGS 2C
• TOX 301.3 Environmental Toxicology APEGS 2C

C5 Electives Requirement (9 credit units)

Arts and Science courses, or those from other Colleges that have been approved for Arts and Science credit, to complete the requirements for 120 credit unit Honours program, of which at least 66 credit units must be at the 200-level or higher.
B.Sc. in Environmental Geoscience (Four-year)

Note: This program meets APEGS knowledge requirements to ensure graduates are eligible for P.Geo. registration in the Environmental Geoscience stream. Consequently, knowledge requirements are noted below where appropriate.

C1 College Requirement (15 credit units)

English Language Requirement (6 credit units)

Choose 6 credit units from the following list:

- Approved list.

Indigenous Learning (3 credit units)

Choose 3 credit units from the following list:

- Approved list.

Quantitative Reasoning (6 credit units)

Complete the following 6 credit units:

- MATH 110.3 Calculus I APEGS 1A
- MATH 116.3 Calculus II APEGS 1B

C2 Breadth Requirement (6 credit units)

Choose 6 credit units from the following:

- Fine Arts
- Humanities
- Social Sciences
- Arts and Science No Program Type

C3 Cognate Requirement (36 credit units)

Junior Course Requirement (18 credit units)

Complete the following 9 credit units:

- CHEM 112.3 General Chemistry I APEGS 1A
- CHEM 115.3 General Chemistry II APEGS 1B
Choose 3 credit units from the following list:

- PHYS 117.3  Physics for the Life Sciences  APEGS 1B
- PHYS 125.3  Physics and Technology  APEGS 1B

Choose 3 credit units from the following list:

- BIOL 120.3  The Nature of Life  APEGS 1B
- BIOL 121.3  The Diversity of Life  APEGS 1B

Choose 3 credit units from the following list:

- CMPT 140.3  Introduction to Creative Computing  APEGS 1B
- CMPT 141.3  Introduction to Computer Science  APEGS 1B

Senior Course Requirement (18 credit units)

Choose 3 credit units from the following list:

- STAT 241.3  Probability Theory  APEGS 1B
- STAT 245.3  Introduction to Statistical Methods  APEGS 1B

Complete the following 9 credit units:

- EVSC 220.3  Environmental Soil Science  APEGS 2B
- GEOG 225.3  Hydrology of Canada  APEGS 2B
- GEOG 222.3  Introduction to Geomatics  APEGS 2B

Choose 3 credit units from the following list:

- GEOG 322.3  Intro to Geographic Information Systems  APEGS 2C
- GEOG 323.3  Remote Sensing  APEGS 2C
- GEOG 386.3  Environmental Impact Assessment  APEGS 2C

Choose 3 credit units from the following list:

- CHEM 221.3  Analytical Chemistry I
- EVSC 210.3  Environmental Physics
C4 Major Requirement (54 credit units)

Introductory Geosciences (6 credit units)

Complete the following 6 credit units:

- GEOL 121.3 Earth Processes
- GEOL 122.3 Earth History

Fundamental Geosciences (30 credit units)

Complete the following 30 credit units:

- GEOL 206.3 Earth Systems APEGS 2C
- GEOL 224.3 Mineralogy APEGS 2A
- GEOL 226.3 Introductory Petrology APEGS 2C
- GEOL 229.3 Introductory Geochemistry APEGS 2B
- GEOL 245.3 Introduction to Sedimentary Environments APEGS 2A
- GEOL 258.3 Structural Geology APEGS 2A
- GEOL 308.3 Field School Sedimentary Rocks APEGS 2A
- GEOL 384.3 Introduction to Applied Geophysics OR APEGS 2B
  GEOL 334.3 Gravity, Magnetics, Electromagnetic and Radiation Methods APEGS 2B
- GEOL 413.3 Aqueous Geochemistry APEGS 2C
- GEOL 429.3 Isotope Geochemistry APEGS 2C

Environmental Geosciences (18 credit units)

Choose 6 credit units from each of the following categories:

Geochemistry & Mineralogy

- GEOL 315.3 Geomicrobiology APEGS 2C
- GEOL 324.3 Igneous Petrology APEGS 2C
- GEOL 325.3 Metamorphic Petrology APEGS 2C
- GEOL 350.3 Organic Geochemistry APEGS 2C

Hydrogeology & Hydrology

- SLSC 322.3 Environmental Soil Physics APEGS 2C
- GEOG 328.3 Groundwater Hydrology APEGS 2C
- GEOE 375.3 Engineering Hydrogeology APEGS 2C
- GEOL 487.3 Geophysics Field Methods APEGS 2C
Environmental Chemistry

- SLSC 313.3  Environmental Soil Chemistry  APEGS 2C
- CHEM 375.3  Environmental Chemistry  APEGS 2C
- EVSC 421.3  Contaminated Site Management and Remediation  APEGS 2C
- TOX 301.3  Environmental Toxicology  APEGS 2C

C5 Electives Requirement (9 credit units)

Arts and Science courses, or those from other Colleges that have been approved for Arts and Science credit, to complete the requirements for 120 credit unit Four-year program, of which at least 66 credit units must be at the 200-level or higher.
Supporting Documentation for
New Program Proposal

B.Sc. in Environmental Geoscience
Department of Geological Sciences
Hi Matt

We discussed your proposal for the BSc in Environmental Geoscience and do not anticipate that it will impact our course delivery. The number of students expected in the program, combined with the current size of the BIOL 120/121 classes are unlikely to pose a burden on our program. Similarly, we do not offer any programming similar to your proposed BSc in Environmental Geoscience.

Good luck as you develop your program and take on your first students.

Ken

On 7/5/2019 3:23 PM, Lindsay, Matt wrote:

Hi Ken,

Thanks for your response and your willingness to review our program. We completely understand that it may take some time during summer.

Have a great weekend, Matt

Thanks Matt

I will go over the proposal with Tracy Marchant, our Undergrad Coordinator, and get back to you soon (summer soon).

I hope you have a great afternoon

Ken

On 7/4/2019 11:33 AM, Lindsay, Matt wrote:

Dear Dr. Wilson,
The Department of Geological Sciences has received approval from the Planning and Priorities Committee to propose a new B.Sc. program in Environmental Geoscience with both four-year and honours options. This program will integrate core geoscience courses with cognate courses to ensure our graduates are well rounded Environmental Geoscientists who are eligible for Professional Geoscientist (P.Geo.) registration with the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS).

The impetus for our proposing this new program is twofold:
- there are substantial and growing employment opportunities for Environmental Geoscientists; and
- the B.Sc. in Environmental Earth Sciences (EES) is currently undergoing a major revision into a B.Sc. in Hydrology.

Consistent with the outgoing EES program, the incoming Hydrology program, and our own B.Sc. in Geology program, we will include the following BIOL courses in the new Environmental Geoscience program to ensure P.Geo. knowledge requirements are met:

C3 Cognate Requirement
- BIOL 120.3, The Nature of Life OR BIOL 121.3, The Diversity of Life

We are also reaching out because the Department of Biology offers the B.Sc. in Environmental Biology program. We need to ensure that our new program does not place any unreasonable demands on your existing courses and does not substantially replicate your program offerings. The proposed program start date will be September 2020 and we currently anticipate enrollment will grow to approximately 8 to 10 students in each year (i.e., 30 to 40 total) by 2024.

I have attached a draft of the (four-year) program for your review. Please let us know if you have any questions or concerns. We are planning to submit our proposal for the September challenge (August 7 deadline) and would be happy to meet with you to discuss the program in the coming weeks. If you do not have any major concerns, we would greatly appreciate a letter of support to accompany our program proposal.

Regards, Matt

Matthew B.J. Lindsay, Ph.D.
Associate Professor
NSERC/Suncrude Industrial Research Chair
Department of Geological Sciences
University of Saskatchewan
114 Science Place
Saskatoon, SK, S7N 5E2, CANADA
T: +1 (306) 966-5693
W: www.mbjlindsay.ca

--

Dr. Kenneth Wilson
Head, Department of Biology
University of Saskatchewan
--
Dr. Kenneth Wilson
Head, Department of Biology
University of Saskatchewan
Saskatoon SK S7N 5E2
Canada
ph# - 1-306-966-4400
Hi Matt,

Chemistry has reviewed the proposal, and we have no real issues. In particular, we like that the proposal would allow students to complete a chemistry minor in a timely fashion.

We have one suggestion, which is to add an option for students to take CHEM 221 (Analytical Chemistry I). In many ways, this would be more rigorous than CHEM 375 and would allow students to gain experience with analytical techniques and statistical methods of analysis that may be of use in the analysis of water and soil samples.

Best regards,
Tim
UAC Chair
Department of Chemistry

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From: Paige, Matthew <matthew.paige@usask.ca>
Sent: Thursday, July 4, 2019 10:54 AM
To: Kelly, Timothy <tim.kelly@usask.ca>
Subject: Fwd: New Program Proposal - Environmental Geoscience

Hi Tim,

Could I get you and UAC to follow up on this? Thanks. I’ll follow up with you when I return.

Thanks,

- Matt.

Sent from my iPhone

Begin forwarded message:

From: "Lindsay, Matt" <matt.lindsay@usask.ca>
Date: July 4, 2019 at 12:00:35 PM EDT
To: "Paige, Matthew" <matthew.paige@usask.ca>
Cc: "Butler, Samuel" <sam.butler@usask.ca>
Subject: New Program Proposal - Environmental Geoscience

Dear Dr. Paige,

The Department of Geological Sciences has received approval from the Planning and Priorities Committee to propose a new B.Sc. program in Environmental Geoscience with both four-year and honours options.
This program will integrate core geoscience courses with cognate courses to ensure our graduates are well rounded Environmental Geoscientists. Consistent with our B.Sc. in Geology program, we plan to include CHEM courses in the new program:

C3 Cognate Requirement
- CHEM 112.3, General Chemistry I (Required)
- CHEM 115.3, General Chemistry II (Required)

C4 Major Requirement
- CHEM 375.3, Environmental Chemistry (Optional)

The proposed program start date is September 2020 and we currently anticipate enrollment will grow to approximately 8 to 10 students in each year (i.e., 30 to 40 total) by 2024. As with our current B.Sc. in Geology program, all of these students would complete both CHEM 112 and CHEM 115. Enrollment in our B.Sc. in Geology program has decreased in recent years due declining resource prices, so we do not anticipate this new program will represent an increase over historical enrollment in these CHEM courses by our students. Although we cannot predict exact numbers, our expectation is that roughly half of Environmental Geoscience students in any given year (i.e., 4 or 5) will enroll in CHEM 375. It is also worth noting that students in this new program will still have the option of completing a Chemistry minor.

I have attached a draft of the (four-year) program for your review. Please let us know if you have any questions or concerns. We are planning to submit our proposal for the September challenge (August 7 deadline) and would be happy to meet with you to discuss the program in the coming weeks.

Regards,

Matt

Matthew B.J. Lindsay, Ph.D.
Associate Professor
NSERC/Syncrude Industrial Research Chair
Department of Geological Sciences
University of Saskatchewan
114 Science Place
Saskatoon, SK, S7N 5E2, CANADA
T: +1 (306) 966-5693
W: www.mblindsay.ca
Hi Matt
Thanks for sending me this information about your new program, it looks great.
I discussed this with relevant stakeholders in our department, and we see no problem accommodating what you are asking for.
You have our support.
Regards,
Amin

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Amin Elshorbagy, Ph.D., P.Eng., P.H.
Acting Head, Department of Civil, Geological, & Environmental Engineering,
Professor of Hydrology & Water Resources Engineering,
Global Institute for Water Security (GIWS),
University of Saskatchewan,
57 Campus Drive, Saskatoon, SK S7N 5A9 CANADA
Phone: 306-966-5414 Fax: 306-966-5205
www.hydropyramids.com
Email: amin.elshorbagy@usask.ca

Associate Editor of Water Resources Research

Dear Dr. Elshorbagy,

The Department of Geological Sciences has received approval from the Planning and Priorities Committee to propose a new B.Sc. program in Environmental Geoscience with both four-year and honours options. The impetus for our proposing this new program is twofold:

- there are substantial and growing employment opportunities for Environmental Geoscientists; and
- the B.Sc. in Environmental Earth Sciences (EES) will be revised to a B.Sc. in Hydrology.

This new program will integrate core geoscience courses with cognate courses to ensure our graduates are well rounded Environmental Geoscientists and also eligible for P.Geo. registration with APEGs. Consistent with our B.Sc. in Geology program, we plan to include GEOE 375.3 as an optional course within the C4 Major Requirement.
The proposed program start date is September 2020 and we currently anticipate enrollment will grow to around 8 to 10 students in each year (i.e., 30 to 40 total) by 2024. Although we cannot predict exact numbers, our expectation is that roughly half of the students in any given year (i.e., 4 or 5) will opt to complete GEOE 375.3.

I have attached a draft of the (four-year) program for your review. Please let us know if you have any questions or concerns. We are planning to submit our proposal for the September challenge (August 7 deadline) and would be happy to meet with you to discuss the program in the coming weeks.

Regards,

Matt

Matthew B.J. Lindsay, Ph.D.
Associate Professor
NSERC/Syncrude Industrial Research Chair
Department of Geological Sciences
University of Saskatchewan
114 Science Place
Saskatoon, SK, S7N 5E2, CANADA
T: +1 (306) 966-5693
W: www.mbjlindsay.ca
Hi Matt

I have had a few comments from my faculty regarding your proposed new B.Sc. in Environmental Geoscience. Our one course EVSC420.3 is not likely to be taught anymore as the instructor in his Chair position has a reduced teaching load. We still plan on offering EVSC421. The addition of 4-5 students each year in the required courses EVSC210 and EVSC220 or the optional courses should not impact the delivery of these courses to any extent. Do you know when the EES program will be changed into the B.Sc. Hydrology and will the EES program then be deleted? If you have any other questions please let me know.

Regards,
Ken

Ken Van Rees, RPF
Head, Department of Soil Science
Director, Centre for Northern Agroforestry and Afforestation
51 Campus Drive
University of Saskatchewan
Saskatoon, Saskatchewan
Canada S7N 5A8
phone 306 966 6853
ken.vanrees@usask.ca
www.saskagroforestry.ca
www.kenvanrees.com
Dear Dr. Van Rees,

The Department of Geological Sciences has received approval from the Planning and Priorities Committee to propose a new B.Sc. program in Environmental Geoscience with both four-year and honours options. The impetus for our proposing this new program is threefold:

i. there are substantial and growing employment opportunities for Environmental Geoscientists who are eligible for registration as Professional Geoscientists (P.Geo.);

ii. the B.Sc. in Environmental Earth Sciences (EES) is currently undergoing a major revision into a B.Sc. in Hydrology, which will have a reduced focus on geoscience topics; and

iii. we anticipate that the new program will offset enrollment declines in GEOL, SLSC, and ENSC courses associated with the major EES program revision.

Our proposed program will integrate core geoscience courses – required to meet knowledge requirements for P.Geo. registration – with cognate courses to ensure our graduates are well rounded Environmental Geoscientists. Consistent with the outgoing EES program, the incoming Hydrology program and our own B.Sc. in Geology program, we hope to include both SLSC and EVSC courses in the new Environmental Geoscience program:

C3 Cognate Requirement
- EVSC 210.3, Environmental Physics (Required)
- EVSC 220.3, Environmental Soil Science (Required)

C4 Major Requirement
- SLSC 322.3, Environmental Soil Physics (Optional)
- SLSC 313.3, Environmental Soil Chemistry (Optional)
- EVSC 420.3, Environmental Fate and Transport of Toxic Substances (Optional)
- EVSC 421.3, Contaminated Site Management and Remediation (Optional)

The proposed program start date is September 2020 and we currently anticipate enrollment will grow to approximately 8 to 10 students in each year (i.e., 30 to 40 total) by 2024. Although we cannot predict an exact number of students electing to take the optional SLSC and EVSC courses, our expectation is roughly half of students in any given year (i.e., 4 or 5) will take these courses. In fact, our reasoning for including the four optional C4 SLSC and EVSC courses was to provide students with additional flexibility and to limit enrollment increases in individual courses.

I have attached a draft of the (four-year) program for your review. We are planning to submit our proposal for the September challenge (August 7 deadline) and would be happy to meet with you to discuss the program in the coming weeks.

Regards, Matt

Matthew B.J. Lindsay, Ph.D.
Associate Professor
NSERC/Syncrude Industrial Research Chair
Department of Geological Sciences
University of Saskatchewan
114 Science Place
Saskatoon, SK, S7N 5E2, CANADA
T: +1 (306) 966-5693
W: www.mbjlindsay.ca
Lindsay, Matt

Hello Matt.

Thank you for touching base on this. I have no significant concerns with your proposed program. It is an undergraduate program so very little of SENS’ activities come into play here. The courses related to the Sustainability Certificate are the only ones. It would likely be good to recommend one of those courses as an option within the Breadth Requirement, if that is allowed (e.g., ENVS 201.3 – Foundations of Sustainability). I also think some of the courses in environmental toxicology and similar would have value, but I can appreciate that you have little flexibility in these matters.

In short, I have no concerns with your submission of the proposed program and I wish you success with your efforts. Hopefully, this message will suffice as a letter of support. If it doesn’t, please let me know and we will prepare something more formal.

Sincerely,

Karsten Liber

From: Liber, Karsten
Sent: July 5, 2019 2:30 PM
To: Lindsay, Matt
Cc: Butler, Samuel; Martin, Jennifer
Subject: RE: New Program Proposal - B.Sc. in Environmental Geoscience

From: Lindsay, Matt <matt.lindsay@usask.ca>
Sent: Thursday, July 4, 2019 11:14 AM
To: Liber, Karsten <karsten.liber@usask.ca>
Cc: Butler, Samuel <sam.butler@usask.ca>; Martin, Jennifer <jennifer.martin@usask.ca>; Eccleston, Andrea <andrea.eccleston@usask.ca>
Subject: New Program Proposal - B.Sc. in Environmental Geoscience

Dear Dr. Liber,

I am contacting you in your roles as both Director of the Toxicology Centre and Interim Executive Director of SENS.

The Department of Geological Sciences has received approval from the Planning and Priorities Committee to propose a new B.Sc. program in Environmental Geoscience with both four-year and honours options. This program will integrate core geoscience courses with cognate courses to ensure our graduates are well rounded Environmental Geoscientists
who are eligible for Professional Geoscientist (P.Geo.) registration with the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS).

The impetus for our proposing this new program is twofold:

- there are substantial and growing employment opportunities for Environmental Geoscientists; and
- the B.Sc. in Environmental Earth Sciences (EES) is currently undergoing a major revision into a B.Sc. in Hydrology.

There are substantial constraints on the course offerings within this new program because it must meet P.Geo. knowledge requirements. Consequently, due to issues with prerequisites (e.g. we can only require BIOL 120.3 or BIOL 121.3, not both) the program does not currently include any TOX courses. Additionally, these constraints mean that our students would not be able to complete the full 21 credit units required to complete the Certificate in Sustainability offered by SENS. However, we do anticipate that graduates of our program may have interest in pursuing graduate programs through SENS and, potentially, Toxicology.

I have attached a draft of the (four-year) program for your review. Please let us know if you have any questions or concerns. We are planning to submit our proposal for the September challenge (August 7 deadline) and would be happy to meet with you to discuss the program in the coming weeks. If you do not have any major concerns, we would greatly appreciate a letter of support to accompany our program proposal.

Regards, Matt

Matthew B.J. Lindsay, Ph.D.
Associate Professor
NSERC/Syncrude Industrial Research Chair
Department of Geological Sciences
University of Saskatchewan
114 Science Place
Saskatoon, SK, S7N 5E2, CANADA
T: +1 (306) 966-5693
W: www.mbjlindsay.ca
Good morning Matt,

I have reviewed the program proposals and note that this new program will provide another path to professional geoscientist registration in the Province of Saskatchewan; this is commendable. The new programs are developed around foundational geosciences courses and complementary environmental geosciences (i.e., chemistry, geomatics, hydrology, soil science, toxicology). I appreciate the inclusion of 12 credit units of GEOG courses in both of the proposed programs, and the option for students to include an additional 3 credit units of GEOG. The inclusion of a course in environmental impact assessment (GEOG 386.3) is relevant to the training of potential environmental geosciences practitioners (e.g., mine site remediation). The programs also allow students majoring in Geology to pursue the Minor in Water Science or the Minor in Geomatics offered by the Department of Geography and Planning. The department has the capacity to serve Geology students who choose these program options.

On behalf of the Department of Geography and Planning, I offer my support for the B.Sc. 4-year and Honours programs in Environmental Geosciences.

Sincerely,

Alec Aitken, Ph.D., P. Geo.
Professor and Head
Department of Geography and Planning
117 Science Place
University of Saskatchewan
Saskatoon, Saskatchewan, Canada S7N 5C8
Telephone: (306) 966-5672/5654
E-mail: alec.aitken@usask.ca

Hello Alec,

I have attached the proposal we will submit next week to the College. I have attached the programs as separate documents because Alexis has offered to enter these into the system for us.

We would greatly appreciate a letter of support if the department remains supportive.
Regards, Matt

--
Matthew B. J. Lindsay, Ph.D.
Associate Professor
NSERC/Syncrude Industrial Research Chair
Department of Geological Sciences
University of Saskatchewan
Saskatoon, SK, Canada, S7N 5E2

T: +1 (306) 966-5693
W: www.mbjlindsay.ca

From: Lindsay, Matt <matt.lindsay@usask.ca>
Sent: July 4, 2019 8:25 AM
To: Aitken, Alec <alec.aitken@usask.ca>; Butler, Samuel <sam.butler@usask.ca>
Cc: Chutko, Krystopher <krys.chutko@usask.ca>; Noble, Bram <b.noble@usask.ca>; Prokopiuk, Tim
    <tim.prokopiuk@usask.ca>
Subject: Re: Proposal - Environmental Geoscience Program

Thanks Alec,

We have structured the new program such that all graduates – without exception – will meet APEGs knowledge requirements for the Environmental Geoscience stream. We have consulted Kate MacLachlan during program development and APGES will also be providing a letter of support for the new program.

We appreciate the willingness to waive the GEOG 280 prerequisite for GEOG 386, which I agree will be of value to students in the new program.

I hope to forward you the full proposal, which has already received approval from the Planning and Priorities Committee, in the coming weeks. We are targeting the September challenge, which has a proposal deadline of August 7.

Regards, Matt

Matthew B.J. Lindsay, Ph.D.
Associate Professor
NSERC/Syncrude Industrial Research Chair
Department of Geological Sciences
University of Saskatchewan
114 Science Place
Saskatoon, SK, S7N 5E2, CANADA
T: +1 (306) 966-5693
W: www.mbjlindsay.ca
Welcome The Environmental Geochemistry Group at the University of Saskatchewan is led by Dr. Matthew Lindsay, who is an Associate Professor in the Department of Geological Sciences and the NSERC/Syncrude Industrial Research Chair in Mine Closure Geochemistry. Our research is focused on understanding biogeochemical controls on water quality within geohydrologic systems.

From: "Aitken, Alec" <alec.aitken@usask.ca>
Date: Thursday, July 4, 2019 at 8:12 AM
To: "Lindsay, Matt" <matt.lindsay@usask.ca>, Samuel Butler <sam.butler@usask.ca>
Cc: "Chutko, Krystopher" <krys.chutko@usask.ca>, "Noble, Bram" <b.noble@usask.ca>, "Prokopiuk, Tim" <tim.prokopiuk@usask.ca>
Subject: Re: Proposal - Environmental Geoscience Program

Good morning Matt and Sam,

Glad to write a letter in support of the new Environmental Geoscience program. As indicated in your correspondence with Bram Noble, I will await the delivery of the full proposal before composing a letter of support. I trust that it is in your department’s best interests to ensure that this new program will meet APEGs knowledge standards for professional registration in Geology or Environmental Geosciences. It will assist me in composing a letter of support if your proposal outlines how the program curricula map to the APEGs knowledge standards. Thank you for your consideration in this matter.

I have no concerns about waiving the GEOG 280 pre-requisite for GEOG 386 for GEOL Majors wishing to enrol in this course. I believe these students will be well-served by their participation in GEOG 386. Regrettably, the course registration system will require these students to submit a pre-requisite waiver form to my department in order to facilitate their registration in the course.

All the best,

Alec Aitken
Professor and Head
Department of Geography and Planning
Hi Matt

I’m copying Alec on this, who is the new department head in geography as of July 1.

Alec – just some background here, and Krys can fill you in on the details:

  i) Krys and I met with Sam a few months back and indicated our strong support for this program. Several of our courses are included, and we indicated that the Department would provide a letter of support for the program.

  ii) Waiving the GEOG 280 pre-requisite for students in their 3rd yr to take GEOG 386 is not a problem. We do it fairly regularly for students in the Toxicology program.

Bram

From: Lindsay, Matt <matt.lindsay@usask.ca>
Sent: July 3, 2019 3:47 PM
To: Noble, Bram <b.noble@usask.ca>; Chutko, Krystopher <krys.chutko@usask.ca>
Cc: Butler, Samuel <sam.butler@usask.ca>
Subject: Proposal - Environmental Geoscience Program

Bram and Krys,

Thank you again for meeting with us to discuss this program proposal. We have received positive feedback from the Planning and Priorities Committee and are currently preparing a full proposal for submission to the College.

I have two questions for you at this time:

  i. Are you still willing to provide a letter in support of our proposed program? We would of course provide you with a copy of the full program proposal before you draft your letter.

  ii. Our UG Advisor, Tim Prokopiuk, noted that we currently list GEOG 386 as an optional course within our C4 Major Requirement, but that we do not list GEOG 280 anywhere in the program. Since GEOG 280 is a pre-requisite for GEOG 386 or permission of the instructor, I am wondering your thoughts on this. There would be room for students to complete GEOG 280 as an elective, but it would be difficult to fit it in as an optional C3 Cognate Requirement. I suppose I am asking if it would be possible for our students (likely not that many) to receive permission to waive the pre-requisite. If not we will revisit before finalizing the proposed program.

I have attached an updated and (nearly) final version of our proposed 4-year BSc program to review.
Again, we greatly appreciate your input on a support of this program.

Regards, Matt

Matthew B.J. Lindsay, Ph.D.
Associate Professor
NSERC/Syncrude Industrial Research Chair
Department of Geological Sciences
University of Saskatchewan
114 Science Place
Saskatoon, SK, S7N 5E2, CANADA
T: +1 (306) 966-5693
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Environmental Geochemistry · University of Saskatchewan

www.mbjlindsay.ca

Welcome The Environmental Geochemistry Group at the University of Saskatchewan is led by Dr. Matthew Lindsay, who is an Associate Professor in the Department of Geological Sciences and the NSERC/Syncrude Industrial Research Chair in Mine Closure Geochemistry. Our research is focused on understanding biogeochemical controls on water quality within geohydrologic systems.
July 10, 2019

Sam Butler, Ph.D.
Professor and Head
Department of Geological Sciences
University of Saskatchewan

Dear: Dr. Butler

Thank you very much for consulting with APEGs about the Environmental Geoscience program that you are proposing in the Department of Geological Sciences.

We support your plan to develop this program and agree that it’s crucial that all graduates will meet the academic requirement for licensure in the environmental geoscience stream.

As outlined, the program should meet the current academic requirements for licensure as a geoscientist-in-training. Once the program has been finalized and approved, we will work with you to ensure that courses to fulfill your program requirements are approved as appropriate, by APEGs Academic Review Committee to meet the academic requirements for licensure.

We look forward to ongoing collaboration with you and hope that students at University of Saskatchewan will soon have the opportunity to take this program.

Sincerely,

Kate MacLachlan, Ph.D., P.Geo.
Director of Academic Review