University of Regina

GEOGRAPHY & ENVIRONMENTAL STUDIES

ACADEMIC UNIT REVIEW SELF STUDY REPORT

FOR THE DECADE ENDING 2016

1. BACKGROUND

2017 marks the 53rd year of courses in Geography on our campus. In 1965, the first geography instructor at the Regina campus of the University of Saskatchewan (Victor Dojcsak) taught *Introduction to Geography*. Our full-time faculty complement has subsequently grown from 3 (in 1967), to 6 (in 1973), and then 8 (1980's). Two of our retired colleagues continue as Professor Emeritus (Paul, Schlichtmann), and one as Instructor Emerita (Lewry). At present (2017), the department has 8 tenured faculty members (Awanyo, Eaton, Hardenbicker, Hodder, Piwowar, Sauchyn, Siemer, Widdis), 1 tenure-track faculty member (Mathews), 1 associate faculty member (Dale), 1 term Lecturer (Chattopadhyay), 1 half-time instructor (Coté), and 1 administrative assistant (Osiowy) and one part-time Technician (Knox). The department hosted the Canada Research Chair in Geomatics and Sustainability (Piwowar) between 2006 and 2016. One tenured professor (Sauchyn) was seconded to the Prairie Adaptation Research Collaborative in 1998, and another (Piwowar) was seconded to Associate Dean (Undergraduate) in 2015. In addition, Dr. Awanyo holds the geography position at Luther College, a federated partner of the University of Regina.

The Department of Geography underwent its last academic unit review in 2002, prior to the incorporation of the Environmental Studies program, and prior to being renamed as The Department of Geography & Environmental Studies in 2013. The interdisciplinary Environmental Studies program was launched in 2009, and now includes courses from ten departments at the University of Regina.

Our Department offers undergraduate programs leading to the BA and BA Honours degrees in Human Geography, the BA degree in Environmental Studies as well as the BSc and BSc Honours degrees in Physical Geography, the BSc Environmental Geosciences degree and the BGISc in Geographic Information Science. We also offer MA, MSc and PhD degrees on a special-case basis. A selection of our courses are recognized by the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) as part of the Environmental Geoscience stream, and contribute to accreditation as a Professional Geoscientist (PGeo).

The governing structure of Department of Geography & Environmental Studies has one Committee of the Department, and three sub-committees: Curriculum, Graduate Applications and Academic Recruitment. The Committee of the Department is responsible for approving internal policy and procedural guidelines on matters pertaining to general programs and operations of the Department of Geography & Environmental Studies. This committee also approves decisions recommended by the Departmental sub-committees on Department-wide matters. Committee membership includes academic staff, support staff, and students – with the exception of the Graduate Applications sub-committee. Faculty also undertake specific support roles for facilities (Teaching Laboratories, Map Library, Webmaster) and for students (Coordinators for BA-ENST and BGISc, Honours program Coordinator, Graduate Coordinator).

2. 2002 UNIT REVIEW

The academic unit review in 2002 identified a number of strengths, challenges and opportunities for the Department of Geography. These challenges and opportunities provide a historical context for the current review. We group, below, the findings at that time into four themes: Administrative, Undergraduate program, Graduate program and Faculty Resources.

2.1. Review Findings: Administrative Matters

External reviewers noted that the discipline of geography, by nature, is one that straddles a wide disciplinary range in both the arts and sciences and also embodies both theoretical and applied perspectives. This situation can create an administrative challenge:

- *"The greatest challenge lies for those departments within Faculties of Arts where there is little tradition (or budgetary allowance) for laboratory- or field-based education. The challenges lie in finding innovative solutions to resource-related problems. While human geographers can often teach and conduct their research with equivalent resources to members of other departments in the Faculty of Arts, physical geographers and those in computer-based geographic techniques cannot. Laboratory-based education is crucial to the education of students in these areas. This requires not only space and equipment but also specialized personnel to help operate and maintain this equipment. The problems associated with Departments of Geography being administered within Arts Faculties are not easily resolved … Currently, physical geographers in Arts Faculties who compete for NSERC awards are disadvantaged because heavier teaching loads reduce their research productivity when compared to scientists from other disciplines."* [1]
- *"In particular there needs to be a recognition by senior administration of the changing nature of modern geography which unlike many other departments in the Faculty of Arts has basic resource needs that exceed other departments. While suggestions have been made concerning how to address such issues through collaborations external to the University, the review team urges the department and the central administration to jointly explore small administrative changes which could lead to substantive improvements in the way in which Geography contributes to the academic objectives of the University of Regina."* [2]

2.2. Review Findings: Undergraduate Program

External Reviewers reported that students perceived our faculty to be dedicated and very supportive, and they also noted very good student/professor relationships. The geography program was noted to produce competent and well-educated students with an appealing breadth to their education. They also recommended a major curriculum revision. Specific comments also included:

- *"With respect to GIS education, current undergraduate students noted that there is a resource problem with GIS and remote sensing classes because computers need upgrading and are not regularly maintained …"* [3]

[1] Report of External Review Team (2002: p2)
[2] Report of External Review Team (2002: p13)
[3] Report of External Review Team (2002: p4)

- *"… the ability to properly train BSc students in physical geography* [requires] *lab work. While faculty manage the best they can by offering labs in lieu of some lectures, lab work is not formally built into the curriculum beyond the first year. The ability to offer labs is constrained by lack of teaching resources (TAs); lab space and lab equipment. This is a notable discrepancy between programs in the Faculty of Arts and those in the Faculty of Science, and yet, almost half of the undergraduate majors are in the Geography BSc program*." [4]

2.3. Review Findings: Graduate Program

Our commitment to graduate students was noted alongside the strong link between the number of tenured/tenure-track faculty and the size of the graduate program, as well as the link between the presence of graduate students and research productivity. Specifically:

- "*Throughout our review there was a strong recognition that the Department had been attempting to become more active in graduate level training and research … We applaud this evolution in thinking and encourage the Department and Senior Administration to make the strategic adjustments required to allow this department to take on a more active research role*." [5]
- "*There has been a significant decline in the number of graduate students since the mid-1990s*." [6]
- "*Teaching in the graduate program is uncredited overload. There is a general feeling amongst faculty that given the nine or ten courses of undergraduate teaching required over a two-year period, that there is little room for graduate teaching*." [7]

2.4. Review Findings: Faculty Resources

External reviewers praised the department for trying to achieve a great deal with a small faculty complement, and our collegial commitment to the discipline of geography. They also noted:

- "*The greatest challenge is finding an appropriate balance between teaching and research … The situation is exacerbated for physical geographers and others competing for NSERC funding because of the fact that physical geographers must compete in the NSERC 09 committee (Environmental Earth Sciences). This committee consists of departments of soil science, oceanography, meteorology, statistics, and interdisciplinary departments such as environmental science. In each of these areas the 'competition' the geographers face on the national stage consist of science based disciplines which for the most part of housed in faculties of science. The heavy teaching loads of physical geographers prevent them from competing successfully, unless administrative solutions are found*." [8]
- "*A challenge for the department and senior administration will be trying to ensure that new faculty can be both recruited and retained – assuming that new faculty wish to pursue a balanced teaching and research agenda*." [9]

[4] ibid
[5] Report of External Review Team (2002: p3)
[6] Report of External Review Team (2002: p6)
[7] ibid
[8] Report of External Review Team (2002: p7)
[9] Report of External Review Team (2002: p8)

3. Staffing and Resources

3.1. Staffing - faculty, instructors, lab instructors, technicians, and support staff

Name	Position and Rank	Notes
Awanyo, Louis	*Associate Professor*	*Luther College*
Coté, Mark	*Instructor*	*Half-time*
Chattopadhyay, Sutapa	*Lecturer*	*Term position 2016-2017*
Dale, Janis	*Associate Member*	*Department of Geology*
Eaton, Emily	*Associate Professor*	
Hardenbicker, Ulrike	*Associate Professor*	*Coordinator, Environmental Studies Program*
Hodder, Kyle	*Associate Professor*	*Head of Department*
Robert Knox	*Technician*	*Part-time allocation to department*
Mathews, Vanessa	*Assistant Professor*	
Osiowy, Lara	*Administrative Assistant*	
Piwowar, Joseph	*Associate Professor*	*Associate Dean, Undergraduate*
Sauchyn, David	*Professor*	*Seconded to PARC*
Siemer, Julia	*Associate Professor*	*Coordinator, BGISc program*
Widdis, Randy	*Professor*	

Name	Position and Rank	Notes
Barrow, Elaine	*Adjunct**	
Kienzle, Stefan	*Adjunct**	*University of Lethbridge*
St Jacques, Jeannine	*Adjunct**	*Concordia University & PARC*
VanRees, Ken	*Adjunct**	*University of Saskatchewan*

**Note: Our Adjunct Members contribute by offering the occasional senior or graduate class, but also by participation in graduate student committees and providing day-to-day guidance on their work.*

3.2. Resources

3.2.1. Teaching Space

Room	Capacity	Function
CL316	*28*	*Map Library*
CL322	*20*	*Equipped wet laboratory space for GEOG121, GEOG323, GEOG327, GEOG329/GEOL329, GEOG429/GEOL429*
CL315	*6*	*Equipped dry laboratory space for GEOG121, GEOG323, GEOG329/GEOL329, GEOG429/GEOL429*

3.2.2.Research Space

Room	Function	Principal Investigators	Funding agency
CL330.2	*TERRA*	*Piwowar, Siemer*	*CFI, NSERC*
CL341	*TERRA*	*Piwowar, Siemer*	*CFI, NSERC*
RI408.4	*PEPL*	*Hodder, Piwowar, Sauchyn*	*CFI, NSERC*
RI435	*PEPL*	*Hodder, Piwowar, Sauchyn*	*CFI, NSERC*

3.2.3.Specialized teaching equipment and instrumentation

Equipment/Instrumentation	Location	Notes
@UofRMetStation	*CL[rooftop]*	*Automated Weather Station*
Infiltrometers	*CL315*	
Field sampling equipment	*CL315*	*Shovels, spades, corers, transit, level, compass, GPS units*
Laboratory instrumentation and equipment	*CL322*	*Distillation unit, drying oven,*
Laboratory instrumentation and equipment	*CL315*	*Metler Precision Balance, Sokkia Level, Oxygen meter, microscope, glassware*
Workstations and color laser device	*CL316*	

3.2.4.Research equipment and instrumentation

Equipment/Instrumentation	Location	Funding agency
AccuPAR Ceptometer	*CL324*	*NSERC/CFI*
Acoustic Doppler (SonTek)	*RI408.4*	*CFI*
Automated water sampler	*RI408.4*	*CFI*
DataSonde (YSI)	*RI435*	*CFI*
Dendrocut (Walesch)	*RI408.4*	*CFI*
Digitizer (Kurta)	*CL330.2*	*NSERC/CFI*
Field sampling equipment - Sediment coring devices, boat, motor, generator, solar chargers, met station, GPS units	*RI408.4, RI435*	*CFI, NSERC*
Field sampling equipment	*2R221*	*NSERC/CFI*
Geomatics workstations	*CL330.2*	*NSERC/CFI*
GPS Field Computer (Trimble)	*CL324*	*NSERC/CFI*
Laboratory instrumentation - Sonication bath, vortex mixer, refrigerated storage, shop tools	*RI408.4, RI435*	*NSERC, UofR*
Laser in-situ scanning transmissometer (Sequoia)	*RI435*	*CFI*
Multispectral camera (ADC)	*CL324*	*NSERC/CFI*
PCs and laptops for data acquisition and analysis	*RI408.4*	*CFI, NSERC*
PCs and laptops for data acquisition and analysis	*2R221*	*NSERC*
Platform (SeaSpider)	*RI408.4*	*CFI*
Precision Scanner	*RI408.4*	*CFI*
Rain gauge (HOBO)	*RI408.4*	*CFI*
Server (PowerEdge)	*ED546*	*CFI*
Spectrometer (ASD)	*CL324*	*NSERC/CFI*
Unmanned Aircraft (DJI)	*RI408.4*	*NSERC*

3.2.5. Research institutes, clusters, and specialized facilities

Map Library (Siemer)
Established in 1968, the Map Library is a specialized facility operated and maintained by the Department. The Map Library houses a comprehensive collection of maps, atlases, cartobibliographies, periodicals, air photos, and other reference materials. The Map Library is extensively used for research, seminars, and teaching purposes by the faculty, students and researchers from various departments of the University.

Prairie Adaptation Research Collaborative (PARC; Sauchyn)
An affiliated unit, PARC is a partnership of the governments of Canada, Alberta, Saskatchewan and Manitoba with a mandate to pursue climate change impacts and adaptation research in the Prairie Provinces. A particular objective of this research network is generation of practical adaptation options to current and future environmental change. PARC hosts a significant number of the department's students as researchers and research assistants. Dr D Sauchyn is the Senior Research Scientist at PARC.

Prairie Environmental Process Laboratory (PEPL; Hodder, Sauchyn, Piwowar).
A specialized lab associated with the department, the PEPL was established with infrastructure funding from CFI, and ongoing funding from NSERC. Dr K Hodder is the Director and Laboratory Manager. Researchers in the PEPL study the environment through the use of surface water and hydrologic budgets; fluxes and accumulations of sediments across the landscape; living things, including bacteria; ice and snowpack change and proxy records of past environmental conditions.

The Environmental Research and Response Applications Lab (TERRA; Siemer, Piwowar)
The TERRA Lab was established in 2003 to serve the advanced geomatics needs of students in Geography and Environmental Studies. Dr J Siemer is the Director of TERRA, and Dr J Piwowar is Associate Director. The Environmental Research and Response Applications (TERRA) Lab is a geomatics facility with GIS, remote sensing and advanced statistical and graphics capabilities supported by digital, print/plotting and file storage infrastructure to address and model environmental, economic, and social responses to innovative advancements in environmental science. TERRA is an integral part of the department's and Faculty's infrastructure. Students and researchers use this facility to address issues of climate change, greenhouse gas emission reductions, wind power generation facility location, environmental stewardship in oil and gas exploration, and a variety of issues related to water management from the local to the international.

4. SCHOLARLY WORK

Research success in the Department of Geography & Environmental Studies has included a focus on natural and human transformations of the Earth, and this work therefore serves as an important component of several inter/trans/cross-disciplinary projects that seek to understand why and how people have constructed and reconstructed the places in which they live (Section 4.2). Our researchers articulate a distinct geographical perspective on the **Prairie region**, in general, and Saskatchewan, in particular. Highlights include:

- the only researcher in the world who is devoted to the study of oil in Saskatchewan; and

- the NSERC Canada Research Chair (2006 – 2016) targeting the climate sensitivities of the northern mixed-grass prairie, a region home to a significant number of species that are listed as extirpated, endangered, or threatened by COSEWIC; and
- a full-time Research Professor devoted to the study of the hydroclimatic variability of the Canadian western interior over the past millennium, a region in which increases in water scarcity associated with environmental change represents a very serious risk; and
- researchers considering prairie precipitation and streamflow of the past millennium, and which have been applied to interdisciplinary studies of social vulnerability to climate change, drought preparedness and regional adaptation planning, and the evaluation of water apportionment and allocation policies; and
- a researcher considering the transformation of post-industrial buildings in Regina into upscale loft spaces alongside changes in Regina's heritage governance at the municipal level; and
- a researcher focusing on historical geography of the Canada-US borderlands, and who has been recognized with the Albert B. Corey Prize for the best book in North American history (2006) and a Visiting Scholar Fellowship by the School of Canadian Studies at Carleton University (2011); and
- a researcher examining the impact of agricultural activities on medicinal and spiritual plants within a First Nation community in the Qu'Appelle Valley; and
- a researcher who specializes in visualization of population characteristics (particularly population of distribution and density), and supervised the production of the first dasymetric map of Saskatchewan's population; and
- a researcher who has investigated the first-ever comprehensive visualization of network connections of artists in Saskatchewan and their impact on sustainability of communities and Saskatchewan's cultural ecology.

Our research success also extends **globally**, and highlights include:

- a researcher focusing on small-scale farmer collaborative community demonstration/experimental farms to disseminate biodiversity-friendly agricultural practices in Africa, and which has empowered the local community by building capacity and expertise; and
- more than one researcher considering the risk of exposure of natural and human systems to climate change and climate variability; and
- the researcher responsible for development of the innovative method of Temporal Mixture Analysis (TMA) to extract climate signals from long temporal series of remote sensing images; and
- a researcher who has pioneered the use of statistical ARMA time series analysis of multi-temporal image data for terrestrial change detection studies; and
- a researcher studying the weathering indices for sediments derived from alluvial fans and landslides, and which has resulted in the first-ever Memorandum of Understanding between Tokyo Metropolitan University and the University of Regina, and also a graduate scholarship through Japan's Ministry of Education, Culture, Sports, Science and Technology (Monbukagakusho); and
- a researcher who studies an indigenous community/group in Andhra Pradesh (India) to understand the struggle of indigenous women for food sovereignty, and specifically to understand and document the effects of contemporary commodification of nature, capitalist

development, and climate and development policies that have systematically marginalized these populations.

4.1. Scholarly output

We use ISI Web of Science and Google Scholar to summarize scholarly output and impact via citations for works that appear in a journal, book, book chapter and other reports for members of the department and which are appropriate[10] for Human, Physical and Geomatics research themes. ISI Web of Science has an established reputation for indexing journals and conference proceedings, while Google Scholar is a comprehensive database of these and a variety of other works – including books and book chapters. Each provides a useful perspective on scholarly productivity and citations. In addition to the *h-index*, we also provide the *g-index* – a measure that gives greater weight to highly-cited works.

Table 1: Citation metrics for members of the department over the 2006 – 2016 period, excluding instructors. Source: Web of Science and Google Scholar, accessed 29 November 2016.

Source	Faculty *(count)*	Works *(count)*	Citations *(count)*	h-index *(mean)*	h-index *(max)*	h-index *(count >3)*
Web of Science	Current (10)	76	572	2.9	12	2
	Former (6)	4	7	0.5	2	0
	total	**80**	**579**			
Google Scholar	Current (10)	188	1139	4.5	13	8
	Former (6)	22	47	1.4	2	0
	total	**210**	**1186**			

The Web of Science database indicates 80 works and 579 citations by members of the department since 2006 (Table 1). Current members of the department authored the majority of these works (76), and generated the majority of citations (572). The Google Scholar database indicates 210 works and 1186 citations by the department since 2006 (Table 1), and current members of the department both authored the majority of these works (188) and generated the majority of citations (1139). The department has evolved to become one in which greater research productivity is demonstrated alongside greater citation rates. There are no readily available metrics in peer-reviewed literature with which to compare our department with other departments of similar size and scope in Canada. However, Coomes et al (2013) compiled citation metrics for 'research-intensive' Geography departments in the United States and Canada; each department selected because they "*offer leading research programs in each country, by reputation and previous rankings*" (Coomes et al, 2013:436). The authors cited an average *h-index* value of 8.2 ±3.2, and also relied Web of Science and Google Scholar for citation metrics. By this measure, the *h-index* for two and four of our current members fall within this range measured via Web of Science and Google Scholar, respectively. Coomes et al (2013) also reported an overall *h-index* range for all faculty in research-intensive departments as between 3.3 and 15.5; the majority of our faculty also lie within this range (Table 1). As we are a department that

[10] Coomes et al (2013). Academic Performance Indicators for Departments of Geography in the United States and Canada. The Professional Geographer 65(3): 433-450.

prioritizes a combination of teaching, research and service, we cite these citations for comparison with research-intensive departments only to highlight that we are competitive with our research-intensive colleagues in the United States and Canada.

Table 2: Statistical summary of scholarly works produced by members 2006-2016

	Number	Notes
Refereed journal articles	103	
Refereed conference proceedings	41	
Technical reports	30	
Book chapters	29	
Books	9	
Other scholarly output:		
Published Book Review	10	
Map Design and Production	10	
Editor-reviewed Encyclopedia Entry	8	
Invited Keynote Lectures	7	
Executive Member, National Association	3	
Invited Contributions to Peer-Reviewed Journals	2	
Associate Editorship for Peer-reviewed Journal	2	
Editorial in peer-reviewed journal	1	
Editor-reviewed Guest Statement in Journal	1	
Conferences hosted by the Department	3	PCAG 2007, Prairie Summit 2010, PCAG 2014

4.2. Grants and Contracts

Members of the department have secured ~$5.8 million in external grants and contracts (Table 3), and ~$2.8 million in other grants and contracts (Table 4), over the review period. For the fiscal years 2007-08 through 2015-16 in the Faculty of Arts, our researchers held 5 of the 13 NSERC Discovery Grants, and 1 of the 7 SSHRC Insight Development Grants. Over this same period, our researchers account for:

- 3 of the 10 NSERC Discovery Grants at the University of Regina with an "Earth Science" subject code (#4000), a group which includes our colleagues in the Department of Geology; and
- 4 of the 7 grants of any kind in the NSERC "Climate and Atmosphere" area (#401); a group which includes our colleagues in Environmental-Systems and Industrial-Systems Engineering; and
- 1 of the 8 NSERC Discovery Grants at the University of Regina in the "Environment" area (#400), a group which includes our colleagues in the Department of Biology, Department of Mathematics & Statistics, and also Environmental Systems Engineering.

We are proud of our success in securing funding from Tri-Council agencies, and they serve as one key indicator of our scholarly accomplishments. However, we note that all but one of these grants were associated with adjustments in other duties to accommodate research activity (e.g. secondments, teaching releases). Whether this productivity can be sustained in the absence of such arrangements is uncertain (cf Section 8).

Table 3: External grants and contracts 2007-2016. Source: Office of Research, Innovation and Partnership.

RESEARCHER	PI?	PROJECT TITLE	AGENCY	PROGRAM	DATE	AMOUNT
Cecil, Bernard	Yes	Bridging the EligAbility Gap	Saskatchewan Environment		2008-04-01	$20,000.00
Cecil, Bernard	No	National Summer Institute for Statistical and GIS analysis of Statistics Canada's Data	SSHRC	CISS Data Training Schools	2007-12-08	$150,000.00
Eaton, Emily	Yes	Mapping the Power of Carbon-Extractive Corporate Resources Sector (Sub-grant: PI: Dr. William Carroll, University of Victoria)	SSHRC	Partnership Grants Full Application	2015-04-01	$5,000.00
Eaton, Emily	Yes	What Sustains Saskatchewan's Oil Economy?	SSHRC	Insight Development Grant	2012-01-23	$40,688.00
Gauthier, David	Yes	IAI Vulnerability-Andean Communities (SGP-HD)	InterAmerican Institute for Global Change Research (IAI)		2007-09-17	$149,820.00
Hodder, Kyle	Yes	Proposal for the Prairie Environmental Process Laboratory (PEPL)	Saskatchewan Advanced Education and Employment	Innovation and Science Fund	2009-12-09	$144,268.00
Hodder, Kyle	Yes	Proposal for the Prairie Environmental Process Laboratory (PEPL)	Canada Foundation for Innovation (CFI)	Leaders Opportunity Fund (LOF)	2009-06-15	$144,269.00
Hodder, Kyle	Yes	Investigating the Role of Cohesive Sediments in Alpine, Hydroclimatic Sedimentary Proxies	NSERC	Discovery Grant	2010-10-23	$110,000.00
Piwowar, Joseph	Yes	Creation of an Environmental Normal for the Northern Mixed grass prairie	NSERC	Discovery Grant	2007-11-01	$75,000.00
Piwowar, Joseph	Yes	Canada Research Chair in Geomatics and Sustainability	Saskatchewan Learning		2006-09-01	$200,000.00
Piwowar, Joseph	Yes	Peatland Change Detection Using Remote Sensing in Northern Manitoba	Manitoba Hydro		2008-05-09	$16,885.00
Piwowar, Joseph	Yes	Mapping anthropogenic disturbances in northern Saskatchewan landscape	Saskatchewan Environment		2013-12-03	$6,000.00
Piwowar, Joseph	Yes	The Facility for Geomatics and Sustainability	Saskatchewan Learning		2006-09-01	$149,102.00
Piwowar, Joseph	Yes	Mapping anthropogenic disturbances in northern Saskatchewan landscape	Saskatchewan Environment		2012-06-13	$45,580.00
Piwowar, Joseph	No	National Summer Institute for Statistical and GIS analysis of Statistics Canada's Data	SSHRC	CISS Data Training Schools	2007-12-08	$150,000.00
Piwowar, Joseph	Yes	Boreal Watershed Management Strategy	Saskatchewan Environment		2013-02-05	$15,000.00
Piwowar, Joseph	Yes	Sub-grant: Shelterbelts as an Agroforestry Management Practice for the Mitigation of GHGs (Van Rees, Ken: University of Saskatchewan)	Agriculture and Agri-Foods Canada		2010-12-07	$118,060.00

Table 3 *(continued)*

RESEARCHER	PI?	PROJECT TITLE	AGENCY	PROGRAM	DATE	AMOUNT
Piwowar, Joseph	No	Developing a Capacity to Understand Practical and Regulatory Issues of Siting an Advanced Technology	Sylvia Fedoruk Canadian Centre for Nuclear Innovation Inc.		2015-10-14	$1,091,925.00
Piwowar, Joseph	Yes	Sub-grant: Shelterbelts as an Agroforestry Management Practice for the Mitigation of GHGs (Van Rees, Ken: University of Saskatchewan)	Agriculture and Agri-Foods Canada		2014-04-01	$4,000.00
Piwowar, Joseph	Yes	Canada Research Chair in Geomatics and Sustainability Renewal of NSERC Tier 2	Canada Research Chair (CRC)	Nomination of NSERC Tier 2	2010-10-15	$500,000.00
Piwowar, Joseph	No	Vulnerability and Adaptation to Climate Extremes in the Americas (VACEA)	International Development Research Centre (IDRC)	Intl Research Initiative on Adaptation to Climate Change	2010-09-15	$1,249,140.00
Piwowar, Joseph	No	Rural and Northern Community Response to Intimate Partner Violence	SSHRC	Community-University Research Alliances	2010-09-17	$1,000,000.00
Piwowar, Joseph	Yes	Field-level crop yield forecasting for AGRISAR 2009	Mitacs	Saskatchewan Graduate Research Internship	2009-05-15	$7,500.00
Piwowar, Joseph	Yes	Field-level crop yield forecasting for AGRISAR 2009	MacDonald Dettwiler & Associates	Saskatchewan Graduate Research Internship (MITACS)	2009-05-15	$7,500.00
Sauchyn, David	Yes	High Resolution Paleoclimate Records and Scenarios of Future Climate	NSERC	Discovery Grant	2005-10-01	$78,000.00
Sauchyn, David	Yes	Sub-grant: Water resources risk assessment for watersheds in Alberta under paleo-present and future climate conditions	University of Lethbridge		2006-09-01	$59,000.00
Sauchyn, David	Yes	Documenting, Understanding and Projecting Changes in the Hydrological Cycle in the American Cordillera	Western Ontario, University of		2006-10-01	$28,028.00
Sauchyn, David	Yes	Past, recent and future hydroclimatic variability, North Saskatchewan River	NSERC	Collaborative Research & Development (CRD)	2007-10-01	$104,000.00
Sauchyn, David	Yes	Sub-Grant: AWRI: Alberta Water Supplies	University of Lethbridge		2010-07-01	$6,000.00
Sauchyn, David	Yes	NRCan Internship	Natural Resources Canada		2010-04-01	$13,200.00
Sauchyn, David	Yes	Natural versus anthropogenic forcing of variability in prairie hydroclimate	NSERC	Discovery Grant	2012-11-01	$165,000.00
Sauchyn, David	Yes	Vulnerability to Climate Extremes in the Americas	International Development Research Centre (IDRC)	Intl Research Initiative on Adaptation to Climate Change	2010-01-07	$30,000.00

Table 3 *(continued)*

RESEARCHER	PI?	PROJECT TITLE	AGENCY	PROGRAM	DATE	AMOUNT
Sauchyn, David	Yes	Future Hydroclimatic Extremes and Adaptive Basin Planning, Oldman and South Saskatchewan River Basins	NSERC	Collaborative Research & Development (CRD)	2013-03-22	$78,000.00
Sauchyn, David	Yes	Climate Impacts on Water Availability for Energy Development	NSERC	Interaction Grants	2012-04-21	$1,920.00
Sauchyn, David	Yes	Projecting climate change impacts on streamflow for river basin management modeling	NSERC	Engage Grants	2012-08-31	$25,000.00
Siemer, Julia	No	National Summer Institute for Statistical and GIS analysis of Statistics Canada's Data	SSHRC	CISS Data Training Schools	2007-12-08	$150,000.00
Siemer, Julia	Yes	Map Production Using Geographic Information System	Regina Qu'Appelle Health Region		2010-03-26	$5,990.00
Siemer, Julia	Yes	Map Production Using Geographic Information System	Regina Qu'Appelle Health Region		2009-12-22	$10,800.00
Siemer, Julia	Yes	Community Data GIS Mapping Project	Regina Qu'Appelle Health Region		2008-03-31	$10,000.00
Widdis, Randy	Yes	Sub-grant: Borders in Globalization: cultures, governance, market forces, history, security, sustainability (PI: Emmanuel Brunet-Jailly, University of Victoria)	SSHRC	Partnership Grants Full Application	2012-11-01	$31,000.00
					Total:	**$5,795,545.00**

Table 4: Other grants and contracts 2007 – 2016.

Principal Investigator [Local investigator[11]]	Funding Agency	Total Amount *(% Assigned Unit)*	Date
Awanyo, Louis	Luther College, University of Regina, President's Research Fund Project: Neoliberalism and Uneven Regional Development in Ghana; Neoliberalism and the Paradoxes of Agricultural Production	14,737 (100%)	2015-2016
Awanyo, Louis	Luther College, University of Regina, President's Research Fund (Project: Rehabilitating Forest-Savannas in Ghana; Environmental Health in Ghana)	13,632 (100%)	2010-2011
Hodder, Kyle	University of Regina Teaching and Learning Scholars	4,067 (100%)	2008
Cade-Menun [**Hodder**]	AAFC-WEBS-II	1,420,390(N/A)[12]	2009-2014
Piwowar, Joseph	University of Regina	5,000 (100%)	2015-2016
Piwowar, Joseph	International Scholarships Canada	10,000 (100%)	2013
Piwowar, Joseph	Regina-Qu'Appelle Health Region	10,000 (100%)	2008
Piwowar, Joseph	University of Regina	4,950 (100%)	2007
Van Rees [**Piwowar**]	Agriculture and Agri-Food Canada	1,500,000 (10%)	2011-2016
Sauchyn, David	Alberta WaterSmart	50,000 (100%)	2016-2017
Sauchyn, David	Environment Canada	60,000 (100%)	2015-2017
Sauchyn, David	WaterSMART Solutions	50,000 (100%)	2014-2016
Sauchyn, David	Alberta Innovates – Water Resources	196,000 (100%)	2013-2015
Sauchyn, David	City of Calgary	64,000 (100%)	2013-2015
Sauchyn, David	EPCOR Water Services Inc	50,000 (100%)	2013-2015
Sauchyn, David	Department of Fisheries and Oceans	9,900 (100%)	2013
Sauchyn, David	Agriculture and Agri-Food Canada	20,820 (100%)	2013
Sauchyn, David	Prairie Provinces Water Board	8,637 (100%)	2013
Sauchyn, David	Environment Canada	195,000 (100%)	2012-2015
Sauchyn, David	WaterSMART Solutions	15,000 (100%)	2012-2013
Sauchyn, David	Department of Fisheries and Oceans	9,900 (100%)	2012
Sauchyn, David	University of Regina (Arts and Vice-President Research)	10,000 (100%)	2012
Sauchyn, David	NSERC Interaction Grant	1,920 (100%)	2012
Sauchyn, David	Royal Alberta Museum	5,000 (100%)	2012
Sauchyn, David	City of Calgary	12,500 (100%)	2012
Sauchyn, David	Prairies Regional Adaptation Collaborative – Theme 100-1A	135,000 (100%)	2011-2012
Sauchyn, David	Prairies Regional Adaptation Collaborative – Theme 100-1A	251,000 (100%)	2010-2011
Sauchyn, David	Alberta Ingenuity Water Center – Water Inventory Project	12,000 (100%)	2010-2011
Sauchyn, David	NSERC – IRIACC Program	30,000 (100%)	2010

[11] Names appear in **bold** for grants where our members co-sign, but do not directly administer grant funding.
[12] For large collaborative grants, "N/A" is used to denote that no specific dollar amount was allocated exclusively to our unit.

Table 4 (continued): Other grants and contracts 2007 – 2016.

Principal Investigator [Local investigator]	**Funding Agency**	**Total Amount** *(% Assigned To Unit)*	**Date**
Sauchyn, David	Environment Canada	7,000 (100%)	2010
Sauchyn, David	Prairies Regional Adaptation Collaborative	168,000 (100%)	2009-2010
Sauchyn, David	SEIMA Green Team Program	7,000 (100%)	2009
Sauchyn, David	Science and Technology Internship Program	64,800 (100%)	2008-2015
Sauchyn, David	Drought Research Initiative	14,000 (100%)	2008-2010
Sauchyn, David	NSERC – CRD	104,000 (100%)	2007-2009
Sauchyn, David	EPCOR	100,000 (100%)	2007-2009
Sauchyn, David	Alberta Environment, Alberta Vulnerability Assessment	30,000 (100%)	2007-2008
Sauchyn, David	Climate Impacts and Adaptation Program, NRCan	40,000 (100%)	2007-2008
Sauchyn, David	Science Horizons	12,000 (100%)	2007-2008
Sauchyn, David	Alberta Environment, Climate Variability Project	49,000 (100%)	2007-2008
Sauchyn, David	Summer Student Experience Program	3,500 (100%)	2007
Sauchyn, David	Alberta Ingenuity Water Centre	173,900 (100%)	2006-2008
Sauchyn, David	CCIAP – Climate Change and First Nations	72,950 (50%)	2006-2008
Sauchyn, David	International Strategic Opportunities Fund	3,500 (100%)	2006-2007
Sauchyn, David	Prairies Chapter, National Assessment of Climate Change	27,000 (100%)	2006-2007
Cook [**Sauchyn**]	NSF (US)	268,050 (2%)	2014-2017
Diaz [**Sauchyn**]	SSHRC Environmental Issues Competition	246,705 (10%)	2009-2011
Diaz [**Sauchyn**]	CIDA Tier II Project "Rural Community Water Conservation"	997,170 (5%)	2006-2007
Diaz [**Sauchyn**]	SSHRC MCRI research grant	2,430,000 (5%)	2006-2007
Goss [**Sauchyn**]	Alberta Innovates – ACWRA Project	586,500 (10%)	2016-2017
Goss [**Sauchyn**]	Alberta Innovates - EES (PAWF Project)	1,000,000 (9%)	2013-16
Hopkinson [**Sauchyn**]	Alberta Innovates – Castle Watershed Project	340,400 (10%)	2016-2017
Huang [**Sauchyn**]	CFI Leading Edge Fund	662,873 (10%)	2012-2013
Hurlbert [**Sauchyn**]	SSHRC Connections Grant	44,000 (5%)	2012
Kahane [**Sauchyn**]	Alberta Climate Dialogues SSHRC CURA	995,904 (5%)	2010-2012
Luckman [**Sauchyn**]	Inter-American Institute for Global Change Research, Collaborative Research Network 2047	900,000 (5%)	2005-2013
Siemer	Regina Qu'Appelle Health Region	16,790 (100%)	2010
Siemer	Faculty of Arts	5,000 (100%)	2008-2009

Table 4 (continued): Other grants and contracts 2007 – 2016.

Principal Investigator [Local investigator]	Funding Agency	Total Amount *(% Assigned To Unit)*	Date
Siemer	**Regina Qu'Appelle Health Region**	**10,000 (100%)**	**2008**
Blackstone **[Siemer]**	SSHRC	25,000 (N/A)	2016
Blackstone **[Siemer]**	SSHRC	200,000 (N/A)	2013-2017
Ramsey **[Siemer]**	President's Fund (SSHRC)	4,747 (25%)	2007-2009
ArtsAction.inc **[Siemer]**	City of Regina Arts Commission	4,400 (25%)	2007-2009
Widdis, Randy	President's SSHRC General Research Grant	3,000 (100%)	2008
	Total	**$ 2,827,396**	

5. Community Service Initiatives

Our researchers are frequently invited to contribute their knowledge in the community. Our contributions take shape in national and international academic bodies, but also through local, provincial and federal government agencies and departments. We are also proud to be invited to give public lectures, media commentary, and assistance to non-profit/community organizations. For example, we hosted The Prairie Summit in 2010, the first joint meeting of the Canadian Association of Geographers (CAG), the Canadian Cartographic Association (CCA), the Canadian Geomorphology Research Group (CGRG) and the Canadian Remote Sensing Society (CRSS). Our members have occupied also board positions in national scholarly bodies, including as National Councillors for The Canadian Association of Geographers, Treasurer for the Canadian Geomorphology Research Group, President of the Canadian Cartographic Association and Treasurer for the Canadian Remote Sensing Society. Our scholars have also served as Associate Editor in the *Canadian Water Resources Journal*, the *Canadian Journal of Remote Sensing*, and the *Journal of Selected Topics in Applied Earth Observations and Remote Sensing*.

Government committees, departments, agencies and crown corporations solicit input and knowledge from our researchers. Examples include:

- Provincial:
  - Saskatchewan Ministry of Advanced Education
  - Saskatchewan Ministry of Agriculture
  - Saskatchewan Premier's Forum on Climate Change
  - SaskEnergy/Transgas
- Federal:
  - Agriculture and Agri-Food Canada: Drought Preparedness Project
  - Environment Canada: Climate Change Scenarios Network
  - Federal Ministry of Water: Dialogue on Climate Change and Water (Mexico)
  - House of Commons Standing Committee on Environment and Sustainable Development (Canada)
  - National Round Table on Economy and Environment (Canada)

  - Natural Resources Canada: GeoConnections Environment and Sustainable Development Advisory Committee
  - Prairie Provinces Water Board
- International:
  - The Intergovernmental Governmental Panel on Climate Change, Fourth (2007) and Fifth (2013) Assessments

Non-profit groups solicit input and knowledge from our researchers, and selected examples include: the Wascana Upper Qu'Appelle Watersheds Association Taking Responsibility, the National Farmer's Union, the Saskatchewan Eco-Network, the Regina Anti-Poverty Ministry, Public Pastures Public Interest, Regina Public Interest Research Group, Regina Open Door Society, Canadian Wheat Board Alliance, Agricultural Producers Association of Saskatchewan, Saskatchewan Federation of Labour, Crown of the Continent Conservation Initiative, Canadian Water and Wastewater Association, Saskatchewan Association of Watersheds, and ICLEI—Local Governments for Sustainability.

Our researchers are regularly sought by media, and have collectively participated in over 220 interviews with media outlets. Although there are too many examples to list here, venues have included: CBC-Radio, CBC-TV, the Globe and Mail, Reuters, the Toronto Star, Global-TV, CKRM-Radio, CJTR-Radio, PrairieDog, Grainews, Regina Leader Post and the Huffington Post.

We are also proud to contribute to our local communities. Examples include:

- Developing a guided tour for the Avonlea Heritage Museum that is designed to introduce visitors to the ecological, geomorphic and geologic characteristics of the Avonlea Badlands and which has been taken up by outreach staff at the museum.
- Organizing the *Land and Community Annual Workshop* to bring farmers, ranchers, Indigenous land defenders and environmentalists together from around the province.
- Supervising the North Central Regina Community Mapping Project.
- Members of our department have long participated as Volunteer Judges in the Regina Regional Science Fair, an annual event which brings together students from grades 5 to 12 in Regina and surrounding communities to present their science projects to a judging base comprised of members of the scientific and professional communities.
- One of our researchers established saskoil.org, a site that aims to provide independent information about the impacts of oil in Saskatchewan and which has become a resource for the media and the public.

The Department hosts *@UofRMetStation*, a teaching resource and social-media feed for meteorological measurements collected atop the campus Classroom Building. The web-feed for this station attracts ~30 unique page views daily, and the Twitter -feed has ~300 followers. We run this station to support education in the BSc Geography and BSc Environmental Geoscience program, and also as a community service.

Between 2009 and 2011, our department co-hosted the *Environmental Research & Studies Seminar Series* along with the Faculty of Science (Geology) and Faculty of Engineering & Applied Science (Environmental Engineering). This seminar series was open to all members of campus, and the public, and each event regularly attracted 30+ participants.

6. PROGRAMS OFFERED

6.1. Programs

The Department of Geography & Environmental Studies offers the following undergraduate programs:

1. BA Major in Geography
2. BA Honours Major in Geography
3. BA Major in Environmental Studies
4. BSc Major in Geography
5. BSc Honours Major in Geography
6. Bachelor of Geographic Information Science (BGISc)
7. BA Combined Major in Economics & Geography
8. BSc Combined Major in Biology & Geography
9. BSc Major in Environmental Geoscience
10. BSc Honours Major in Environmental Geoscience
11. Minor in Geography

The Calendar description of each program is attached in Section 9. All applicants admissible to the Faculty of Arts may choose BA Geography, or BA Environmental Studies, as their Major. All applicants to admissible to the Faculty of Science may also choose BSc Geography as their Major. Students who complete the one-year Certificate in Geographic Information Science for Resource Management from Saskatchewan Polytechnic are admissible to the BGISc degree. Program advising for students in the BA-Geography and BSc-Geography is formally offered by the Department Head, but is also informally offered by all members in the department. The Coordinator of the Environmental Studies Program, and the Coordinator of the BGISc Program, formally offer program advising for students in each program. All BA students can also acquire formal program advising through the Faculty of Arts Student Services Office, while BSc students can consult the Faculty of Science Student Services Office. Undergraduate students in Geography are also eligible to enrol in the Cooperative Education & Internships program through the University of Regina Career Centre. Experiential learning is also available through the thesis research experience in the three Honours programs we offer; the greatest number of Honours programs of any department in the Faculty of Arts.

Our department also offers the following graduate programs:

12. MA in Geography
13. MSc in Geography
14. PhD in Geography

Our graduate programs are Special Case, and are available at the MA, MSc and PhD levels. Special-Case graduate programs are those in which there is no fixed graduate curriculum; the program is uniquely tailored to each student and their thesis/research needs.

6.2. Service teaching in support of other programs

The BSc in Environmental Geoscience is a program offered jointly with the Department of Geology. In addition to the students in that joint program, a significant number of additional students in the Geology-BSc program enrol in our upper-year courses (Section 6.3). Geography courses are also formal options in several Faculty of Education programs, including:

- Elementary BEd (GEOG120)
- Secondary BEd (GEOG100, 120, 210, 316)
- Secondary BEd-After Degree / BEAD (GEOG100, GEOG210)
- Bachelor of Music Education, Social Studies Minor (GEOG100, 120, 210)
- Baccalauréat En Éducation Élémentaire
- Baccalauréat En Éducation Secondaire

6.3. Enrolment trends

Here, we summarize our enrolment trends via different measures: (a) convocations, (b) declared Majors/Minors and (c) course enrolment. We exclude the BGISc program, as it was introduced too recently for trend analysis.

Degree	Major - First	Major - Second	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Grand Total
BA	Economics & Geography	-	1	2	1	1	1	4		1	2	1	14
	Environmental Studies	-					1	1	2	2	5	3	14
		GEOG										1	1
	Geography	-	15	13	8	13	11	8	3	3		5	79
		ECON				1							1
		ENST									1		1
		RLST		2									2
		SOC							1				1
BAHON	Geography	-		2	1								3
BSC	Biology & Geography	-					1					1	2
	Geography	-	9	8	12	11	1	9	3	8	8	5	74
	Geography & Geology	-									1		1
	Geology & Geography	-						1	1	1	1	3	7
BSCHON	Geography	-	2		2		2			1	1	3	11
MA	Geography	-	1	2				1					4
MSC	Geography	-	1	1	1	1	1	4	1	2			12
PHD	Geography	-					1	1					2
Grand Total			29	30	25	27	19	29	11	18	19	22	229

Table 5: Convocations of Majors, and Combined Majors, in the Department of Geography & Environmental Studies by calendar year 2007 through 2016. Source: Office of Resource Planning.

6.3.1.Convocations: 2006-2016.

Convocation statistics capture actual student demand via Majors and Minors in a 'rear view mirror' context since convocation requires students to have completed their degree and program requirements. Between 2007 and 2016, there were 229 convocations in the Major programs offered by the Department (Table 5) and an additional 75 convocations in the Minor program (Table 6). The BA and BSc

Geography programs together account for 80% of the Major convocations (196), with the remainder split between the graduate program (18) and the BA in Environmental Studies (15). There is an upward trend in the number of convocations in the BA Environmental Studies program, contrasting with a downward trend in the number of convocations in the BA Geography program. We anticipate increasing demand in the Environmental Studies program in the future.

Approximately one-third of the convocations in the Geography Minor occurred during the most recent two years, and the overwhelming majority of those students were completing a BSc in the Faculty of Science.

Degree	Major - First	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Grand Total
BA	Economics & History									1		1
	Environmental Studies							1			1	2
	German	1										1
	History						1					1
	International Studies				1	2						3
	Political Science					1						1
	Psychology					1						1
	Sociology		1							1		2
	Spanish	1										1
BAHON	Psychology				1							1
BFA	Film & Video Production								1			1
BHJ	Human Justice	1	1									2
BSC	Biology	1			1	1	2		1	1		7
	Environmental Biology				1	1	2		1		1	6
	Geology		2	1	2	1	6	2	2	10	11	37
	Mathematics			1								1
BSCHON	Biology			1		1						2
	Environmental Biology					1						1
	Geology			1				1		1	1	4
Grand Total		4	4	4	6	9	11	4	5	14	14	75

Table 6: Convocations of Minors, listed by degree and first major, in the Department of Geography & Environmental Studies by calendar year 2007 through 2016. Source: Office of Resource Planning.

Convocations in the BSc programs within Geography account for >7% of all BSc degree convocations in the Faculty of Science over the review period, and reveals no significant trend over time. Convocations in the BA degree programs within the department account for >3% of all degree convocations in the Faculty of Arts over the review period. The number of convocations in the degree programs of the

Faculty of Arts have decreased over the review period, while convocations in the BA programs within the department have continued to account for a greater proportion of those convocations.

6.3.2.Declared Majors and Minors

Declared Major and Minor statistics capture active student demand for our programs (and, indirectly, our courses) during each academic year, as students work toward completion of their program requirements. The number of declared Majors in the BA Environmental Studies program has dramatically increased since inception, and has become the single most popular declared Major in the department (Table 7). In contrast, the number of declared Majors in the BA Geography program has declined over roughly the same period. During the past two years, we have seen a marked increase in declared majors in the BSc-Environmental-Geoscience program.

Declared majors in the BSc programs within Geography account for ~3.7% of all declared BSc students in the Faculty of Science over the review period. Although the number of declared majors in all BSc programs at the University has continued to grow over the review period, we have not seen that growth in our BSc programs. BA degrees in the department account for an average of ~3.3% of all declared BA students in the Faculty of Arts over the review period. Although the number of declared majors in all BA programs at the University has fallen over time, the shrinkage in the number of declared students in the Geography BA exceeds that occurring for all BA-programs. The number of declared majors in the Environmental Studies BA program has only continued to grow; last year accounting for just under 2% of all declared BA majors in the Faculty of Arts.

			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Grand Total
UG	BA	Economics & Geography	5	8	5	7	3	4	4	3	3	2	44
		Environmental Studies			1	8	27	31	31	32	36	38	204
		Geography	59	45	48	31	21	21	13	14	13	11	276
	BAHON	Geography	4	1									5
	BGISC	-									4	3	7
	BSC	Biology & Geography				1	2	5	2	1	1	1	13
		Environmental Geoscience									3	9	12
		Geography	20	30	30	13	21	15	27	13	12	12	193
		Geography & Geology					4	10	3	3	1		21
		Geology & Geography	1	1	1	2	3	6	8	6	8	3	39
	BSCHON	Geography	2	2		3			1	2	3	1	14
GR	MA	Geography	3	4	6	2	3	1			1	1	21
	MSC	Geography	8	8	7	8	9	9	5	2	2	3	61
	PHD	Geography	2	2	2	3	4	4	3	2	2	3	27
Grand Total			104	101	100	78	97	106	97	78	89	87	937

Table 7: Declared Majors 2007 through 2016. Source: Office of Resource Planning.

The number of declared Minors in Geography has held steady (Table 8), and students pursuing the BSc in Biology or the BSc in Geology are two programs that attract our greatest number of declared Minors. The BA in International Studies has also been a source of Geography Minors. In general, our Minor attracts about twice as many students completing a BSc program compared with students completing a BA program.

		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Grand Total
BA	Anthropology		1	1			1	1				4
	Economics								1			1
	English						1	1				2
	Environmental Studies					1	2	2	3			8
	German	1										1
	History					2	1	1	2			6
	International Studies		2	2	2	1	1	1		1	1	11
	Political Science	1		1	3							5
	Psychology		1	1	1	1	1					5
	Sociology	1										1
BAHON	English								1			1
BFA	Visual Arts								1	1	1	3
BHJ	Human Justice	2										2
BSC	Biology	2	1		1	3	2	1				10
	Computer Science									1	1	2
	Environmental Biology				3	1				1	1	6
	Geology	6	6	5	3	4	3	6	9	6	6	54
	Mathematics		1									1
BSCHON	Biology		1									1
	Geology	1	1			1		1	1	1	1	7
Grand Total		14	14	10	13	14	12	14	18	11	11	131

Table 8: Declared Minors in Geography 2007 through 2016, and listed by first Major. Source: Office of Resource Planning.

6.3.3. Undergraduate Course Enrolment

Course enrolment captures immediate student demand via Majors and Minors in each academic year, but also captures student demand via service teaching to other units. The total enrolment in the department has been heavily influenced by two courses: GEOG100 and GEOG210. These two courses once accounted for half of our total undergraduate enrolment; they now account for roughly one-third. Our World Regional Geography (GEOG100) course accounts for about one-third of our total enrolment

over the past decade, and total enrolment in this course has declined markedly since about 2011-12 (Figure 1). The reason for the decline in total enrolment for GEOG100 is not known, but it contributes significantly to the overall enrolment trend for the department. Similarly, although our Canada (GEOG210) course has accounted for ~10% of total enrolments over the past decade, total enrolment in the course has also declined markedly (Figure 1). The average enrolment per section of GEOG100 and GEOG210 has not changed during the review period (~50 and ~30 students, respectively), but the number of sections offered has dropped (maximum of 10 and 5, respectively; Table 9) alongside a shift in the number of instructional staff in the department.

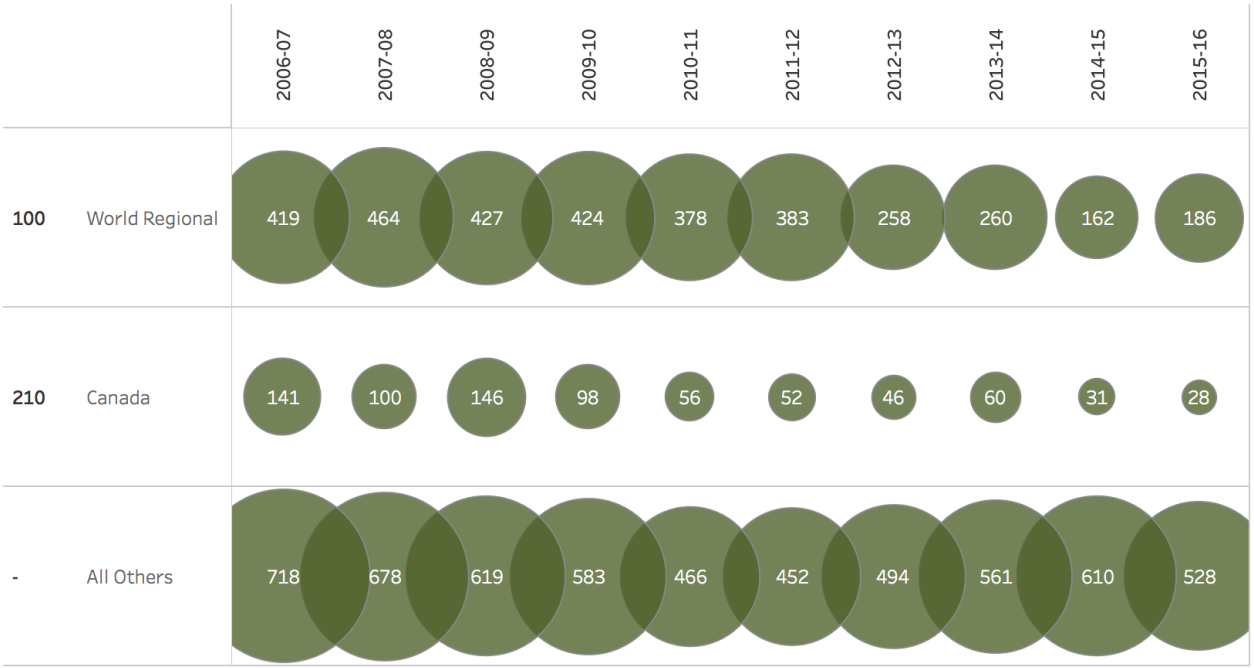

Figure 1: Total undergraduate total enrolment in all sections of GEOG100 and GEOG210 alongside enrolment in all other undergraduate courses for academic years 2006-07 through 2015-16. This table does not include enrolment in laboratory sections. Source: Office of Resource Planning.

Enrolment has also shifted among courses within the department. Demand for both GEOG120 (Human Geography; Table 10) and GEOG121 (Physical Geography; Table 10) are both higher following their re-positioning as first-year courses. Prior to 2011, each was a second-year course (GEOG220 and GEOG221) with the same title and similar themes – although instructed and evaluated at a second-year level. Simultaneous with this change was the inclusion of GEOG121 in the Bachelor of Arts Core as a 'laboratory-science course', and a corresponding increase in service teaching to BA students. The average enrolment per section of the Human Geography course has also doubled following this re-positioning.

Enrolment shifts within the departmental course roster undoubtedly relate, in part, to shifts in declared Majors: the increasing number of Environmental Studies BA Majors and Environmental Geoscience Majors, the steady-demand in Geography BSc Majors, and the decline in Geography BA Majors.

Level	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	Total
GEOG100	5	8	10	8	7	11	5	6	4	4	**74**
GEOG210	5	3	5	3	2	2	1	2	1	1	**30**
Even-numbered courses	17	20	14	17	14	12	11	13	12	8	**157**
Odd-numbered courses	23	20	22	21	25	14	18	14	20	27	**227**
Graduate courses	13	7	11	10	15	10	12	10	7	6	**109**
Total	**63**	**58**	**62**	**59**	**63**	**49**	**47**	**45**	**44**	**46**	**536**

Table 9: Count of sections for selected undergraduate and graduate courses for academic years 2005-06 through 2015-16. Historically, odd-numbered courses have been dominated by themes in Physical Geography and even-numbered courses have been dominated by themes in Human Geography. This table includes neither undergraduate laboratory sections, nor graduate thesis research sections (GEOG901). Source: Office of Resource Planning.

Year	Number / Theme	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	Total
1	100	419	464	427	424	378	383	258	260	162	186	**3783**
	120&220	115	82	81	82	79	125	94	146	137	98	**1117**
	121[13]&221	66	61	84	74	63	82	100	98	97	120	**936**
2	Even	219	184	235	185	104	99	102	99	78	50	**1599**
	Odd	116	112	90	68	54	56	52	82	71	60	**859**
3	Even	69	94	64	61	42	23	17	74	50	16	**581**
	Odd	234	203	178	176	156	108	151	85	182	164	**1814**
4	Even	9	18	6	10	4		3	9		5	**80**
	Odd	31	24	27	25	20	11	21	28	26	43	**292**
	Total	**1278**	**1242**	**1192**	**1105**	**900**	**887**	**798**	**881**	**803**	**742**	**11061**

Table 10: Enrolment in selected undergraduate courses for academic years 2005-06 through 2015-16. Historically, odd-numbered courses have been dominated by themes in Physical Geography and even-

[13] Enrolment in GEOG121 is capped at 50 students per lecture section, with two associated laboratory sections capped at 25 students each. This course regularly operates with enrolment >97% of capacity.

numbered courses have been dominated by themes in Human Geography. This table does not include enrolment in laboratory sections. Source: Office of Resource Planning.

6.4. Successes

Graduates from our programs enjoy success in the academy and beyond. Selected employers, and positions, for graduates in our program over the review period include:

6.4.1.Government and non-profit and public sector

- Access to Information Coordinator, Ministry of Justice, Government of Saskatchewan
- Agroclimate Analyst, Agriculture & Agri-Food Canada
- Army Communication and Information Systems Specialist, Canadian Armed Forces
- Autism Interventionist, Child & Youth Services, City of Calgary
- Candidate, Green Party of Saskatchewan (n = 2)
- Community and Regional Planning, City of Saskatoon
- Data Analyst, Agriculture & Agri-Food Canada
- Elementary Teacher, Saskatoon Public Schools
- Environmental Officer, Aboriginal Affairs & Northern Development Canada
- Geospatial Technician, City of Regina
- GIS Coordinator, Elections Saskatchewan
- GIS Coordinator, Nature Conservancy of Canada
- GIS/Spatial Analysis Project Officer, International Institute for Sustainable Development
- GIS Specialist, Rights & Title Department, shíshálh Nation
- Hydrologist/Environmental Monitor, Canada North Environmental Services
- Payroll Specialist, Government of Saskatchewan
- Planner, Niagara Escarpment Commission
- Planning Consultant, Government of Saskatchewan
- Policy & Business Analyst, Water Security Agency (Saskatchewan)
- Public Justice Intern, Citizens for Public Justice
- Research Officer, Saskatchewan Government Insurance
- Saskatchewan Safety Survey Project Manager, University of Regina
- Senior GIS Analyst, Government of Saskatchewan (n = 2)
- Senior Program Analyst, Saskatchewan Ministry of Advanced Education
- Technician, Moose Jaw River Watershed Stewards
- Technician, University of Regina
- Watershed Technician, Wascana Upper Qu'Appelle Watershed Association

6.4.2.Industry

- Aggregate Exploration and Management Services, JD Mollard & Associates
- Assistant Branch Manager/Planner, Altus Group
- Coach/Consultant, Orchid Awakenings
- Consultant, Natural Resource Management and Conservation
- Contract Geologist, Denison Mines Corp.
- Database Developer, REW.ca

- Environmental Consultant, Secure Energy Services Inc.
- Environmental Data Management Specialist, Evraz Inc
- Environmental Planner, Westmoreland Coal
- Environmental Specialist, iHazmat Regulatory Ltd.
- Exploration Geologist, Cameco Corporation
- Field Technician, Ground Effects Environmental Services Inc.
- Geologist, Cameco Corporation
- Geologist, Encana Corporation
- GIS & Remote Sensing Services, JD Mollard & Associates
- GIS Coordinator, Nature Conservancy of Canada
- GIS-CAD Technician, TransGas Limited
- Junior Mine Geologist, Westmoreland Coal Company
- Lab Technician, McAsphalt Industries
- New Home Sales Consultant, North Ridge Developments
- Pilot, Tranwest Air
- Project Manager, Buffalo Head Environmental
- Registered Holistic Nutritionist, Mint Condition Holistic Nutrition
- Survey Crew Chief, Valard Geomatics
- Surveyor, Compass Geomatics Ltd
- Water Resources Specialist, Urban Systems Ltd.

6.4.3.Academic

- Assistant Cooperative Extension Specialist, University of California (Berkeley)
- JD candidate, Schulich School of Law, Dalhousie University
- MSc candidate, University of Regina (Geography & Environmental Studies; n = 2)
- MSc candidate, University of Regina (Geology)
- MSc candidate, University of Saskatchewan
- PhD candidate, Leiden University, Netherlands
- PhD Candidate, University of Calgary
- PhD Candidate, University of Regina (n = 2)
- PhD candidate, University of Victoria (n = 2)
- Postdoctoral Fellow, University of Waterloo
- Program Assistant, University of Alberta

Our students have been recognized nationally. For example, two of the students in our program have won the President's Prize of the National Student Mapping Competition of the Canadian Cartographic Association. One of our students was selected for the MEXT scholarship by the Government of Japan, and another was selected for a Graduate Student Fellowship by the Indigenous Peoples' Health Research Centre. Finally, one of our students was awarded an NSERC Industrial Postgraduate Scholarship, one was awarded an NSERC Doctoral Postgraduate Scholarship, and two have been awarded NSERC University Undergraduate Student Research Awards; all four of these students completed their research work in the department.

7. UNIT BUDGET

As with the University at large, salaries and benefits are our major operating expenditure. Leaving aside salaries for permanent staff, the bulk of our expenditures (>88%) support our students through teaching resources, student awards and student assistantships (Table 11). The total average annual expenditure in the categories listed below over the 2006-2016 period is ~$68 000.

Other forms of direct student support not directly administered by the department, including Research Assistantships and Graduate Fellowships, are excluded from Table 11.

Table 11: Budget summary 2006 – 2016.

Category	Sub-category	Average (%)	Standard Deviation
Student-related	Student Assistantships[14]	45.0	10.2
	Sessional Staff[15]	30.2	15.8
	Teaching Resources[16]	8.5	8.0
	Student Scholarships and Awards[17]	3.6	10.4
	Student-related Expenses[18]	0.8	1.8
Administrative	Administrative resources[19]	10.6	5.5
	Canadian Association of Geographers[20]	0.5	0.6
	Recruitment[21]	0.2	0.5
Other[22]		0.6	0.5

In an attempt to benchmark our budget relative to that of other units, we compare (Figure 2) the total budget for Student Academic Support/Teaching Assistants, Laboratory Instructors and Miscellaneous Expenditures from the 2015-16 University Budget Book. These expenditures are expressed per student and based upon the total enrolment in lecture sections for each department during the 201530-201610 academic year. Although Geography & Environmental Studies has among the greater budgets per enrolled student in the Faculty of Arts, our budget is smaller than departments in the Faculty of Science with one exception. Students in our natural science programs have unique needs, including laboratory instruction, laboratory equipment, field equipment, laboratory course sections, and field education – many of these same needs are also represented in the departments constituting the Faculty of Science. If the Laboratory Instructor budget category is excluded (not shown), we lead in dollars per enrolled student in the Faculty of Arts – principally because we operate without the benefit of any Laboratory

[14] Teaching assistantships and Map Library assistantships.
[15] Sessional positions are used to provide additional courses for students, or to backfill during sabbatical leaves.
[16] Laboratory equipment, software and field equipment used for student instruction.
[17] Contributions to the Geography Scholarship for Excellence and the Hydrology Award.
[18] Student field trips, sponsorships of student events and student conference fees.
[19] Administrative expenses include printing, telephone, maintenance, office supplies.
[20] Membership in the Prairie Division of the Canadian Association of Geographers.
[21] Recruitment of academic staff.
[22] Sponsorship of public lectures, symposia and fora.

Instructor positions and rely more on student support for laboratory sections. In comparison, and over the same period, departments in the Faculty of Science operated with an average budget for Laboratory Instructors of $176 and $234 per enrolled student in lecture and laboratory sections, respectively.

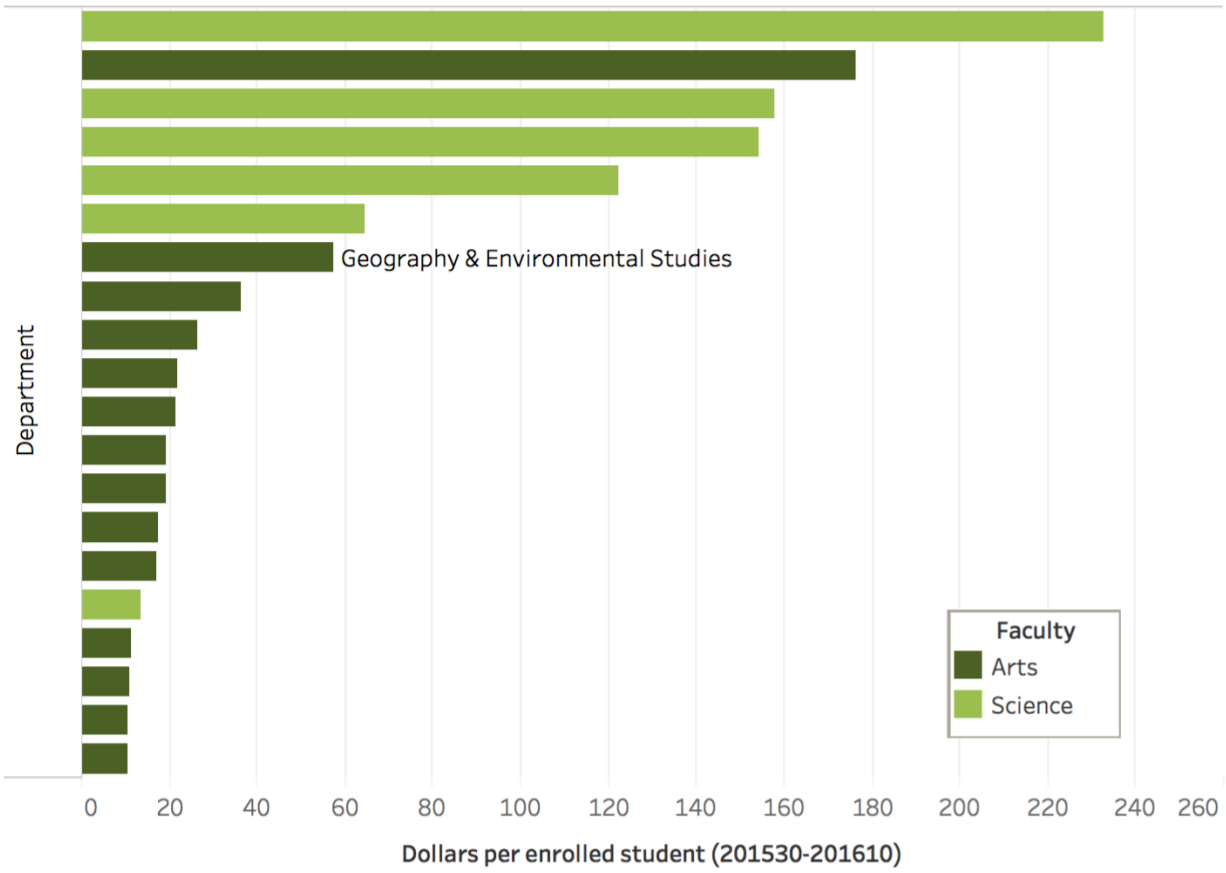

Figure 2: Comparison of the (2015-16) budget per enrolled student (201530-201610) in lecture sections among departments in the Faculty of Arts and Faculty of Science for the combined budget total for: (a) Student Academic Support/Teaching Assistants, and (b) Laboratory Instructors and (c) Miscellaneous Expenditures. Enrolment source: Office of Resource Planning. Budget source: University Budget Book 2015-16.

8. Challenges, Opportunities and Strengths

8.1. Challenges

Our undergraduate course enrolments have undergone a significant shift over the past decade. Our total enrolment in undergraduate courses has declined by about one-third over the past decade, with much of this decline occurring in only two courses (Section 6.3.3). Although the total number of declared majors across all our programs has not changed significantly during this period, the distribution of declared majors within our programs has changed significantly (Section 6.3.2). This shift likely reflects changes in staffing, and also changes in student demand. We have seen six retirements/departures in the past decade, with an additional two expected in the near future, along with three faculty hired. The department has also struggled to retain full-time faculty in the Physical Geography program; many have arranged research/administrative secondments, transferred to the Faculty of Science as a reassignment or (in one case) re-defined their research program away from natural-science themes.

Student demand might also relate to the curricula to which they are exposed in high-school. Over 90% of our students are Canadian citizens, with the majority arriving at the University from a home in Saskatchewan. The most recent curricula for level-10, level-20, and level-30 (high-school) Geography in Saskatchewan date to 1964[23], 1966[24] and 1969[25], respectively. In comparison, the most recent high school curricula for each of level-20 Environmental Science, and level-30 Earth Science, date to 2016[26,27]. It is likely that high-school students have a different understanding of what our programs offer, partly as a result of whether they are exposed to the contemporary state of each discipline. At a minimum, the pace of technological change has resulted in many changes in the nature of geographical applications over the past five decades, including issues related to environmental, social, and urban sustainability.

Along with Economics, we have the greatest number of undergraduate programs of any department in the Faculty of Arts (Section 6.1). We are also one of the few departments that offers both BA and BSc programs, but we also simultaneously show a low total number of majors across all of our programs. In other words, the average count of majors in each of our programs is on the low end of the range within the Faculty of Arts (Figure 3). The diversity of our undergraduate programs is a strength, in that it allows us to represent the disciplinary themes of Geography (human, physical, GIS) and also the discipline of

[23] Saskatchewan Ministry of Education: *Geography Program of Studies for the High School Grade 10*. Published July 1964. Source: https://www.edonline.sk.ca/bbcswebdav/library/curricula/English/Social_Studies/Geography_10_1964.pdf Accessed 14 January 2017.
[24] Saskatchewan Ministry of Education: *Geography Program of Studies for the High School Grade XI*. Published July 1966. Source: https://www.edonline.sk.ca/bbcswebdav/library/curricula/English/Social_Studies/Geography_20_1966.pdf Accessed 14 January 2017.
[25] Saskatchewan Ministry of Education: *Geography Program of Studies for the High School Grade 12 Tentative Course Outline*. Published July 1969. Source: https://www.edonline.sk.ca/bbcswebdav/library/curricula/English/Social_Studies/Geography_20_1966.pdf Accessed 14 January 2017.
[26] Saskatchewan Ministry of Education: *Environmental Science 20.* Published July 2016. Source: https://www.edonline.sk.ca/bbcswebdav/library/curricula/English/Science/Environmental_Science_20_2016.pdf Accessed 14 January 2017.
[27] Saskatchewan Ministry of Education: *Earth Science 30.* Published August 2016. Source: https://www.edonline.sk.ca/bbcswebdav/library/curricula/English/Science/Environmental_Science_20_2016.pdf Accessed 14 January 2017.

Environmental Studies. However, the diversity of programs also means that an equivalent resource pool must be spread amongst a larger range of programs and student needs.

Although our diversity is a strength, it also presents a potential weakness: we do not, in general, have a critical mass of researchers in any single research area to facilitate resource sharing, peer-instruction and a 'research-cluster' approach. As a result, it has occasionally been a challenge to match the need for graduate training with available instructional specialties, or to find thesis committee members that can span the full depth of a research topic, within the department. Many of our research collaborations are external, whether for scholarly works (Table 2) or funding (Table 3). This is not to indicate the absence of collaboration or resource sharing; rather, that the diversity of our research foci requires collaborative arrangements beyond the department.

Geography is an oft-misunderstood discipline, a misunderstanding that represents a serious challenge. As noted in our previous Self Study[28]:

> "*To most, geography is about place names, a category of Trivial Pursuit, and geographic instruction is often equated with conveying information about remote parts of the world. As a consequence, it comes as a surprise to many that geography is relevant to several critical issues facing society today. In fact, geographers, as well as others who use geographic knowledge and perspectives, are engaged in valuable research and teaching on matters ranging from environmental change to social conflict. The unique contribution of geography derives from its tripartite focus on the evolving characteristics and reorganization of the Earth's surface, the ways in which physical and human phenomena interact in space to create distinctive places and regions, and the reciprocal influences places and regions have on a wide range of natural and human events and processes*."

This misunderstanding might, at times, extend not only to members of the general public – but also to the decision-making processes within the University. We are one of the few departments that straddles research themes which are emblematic of both the Faculty of Arts and the Faculty of Science. On the other hand, we perceive far greater understanding, whether on or off campus, about the nature of the Environmental Studies program.

The resource needs for our department via laboratory and field-based activities are, as noted in our previous review, unlike many other departments in the Faculty of Arts (cf Section 7). While some geographers can teach and investigate with equivalent resources to members of other departments in the Faculty of Arts, natural scientists cannot. Laboratory-based and field-based education are fundamental to the education of all students in Geography & Environmental Studies, but especially in the BSc program. The department currently has three courses with fully independent laboratory sections[29]; other courses approach laboratory and field education either within scheduled lecture hours or as an extra-curricular. Although we offer BSc degrees, no distinction is currently made for the needs of students in this program relative to other programs in the budgeting model. Examples of the unique needs for natural science students include laboratory instructors, laboratory equipment, field

[28] 2002 Self Study: Department of Geography, University of Regina. Page 1.
[29] GEOG329 and GEOG429 also have independent laboratory sections, but these courses are instructed by an Associate member of the Department in the Faculty of Science, and supported by laboratory instructors from that program.

equipment, laboratory course sections, and field education. Both of the Faculty of Science and Faculty of Engineering & Applied Science, for example, recognize the need to ensure an ongoing provision for equipment renewal, and each have a faculty-wide budget[30] for teaching equipment; in comparison, the teaching equipment in our program has generally been acquired using our miscellaneous budget (annual average: ~$13 500 over the review period). Although the department has worked to creatively adapt to this constraint, it continues to be a frustrating threat to the future of our program. We are proud of our ongoing efforts to find, and actuate, alternative solutions under these circumstances.

Finally, these structural challenges also have an influence on the ability to support two key aspects of our academic mission: our graduate program, and our research funding. The standard teaching load in our department is 4 undergraduate courses for tenure-stream faculty, with graduate courses mounted on a voluntary basis. The standard teaching load in the Faculty of Science, which houses our BSc students, is fewer than 4 undergraduate courses in most departments. As noted in Section 2.4, competition for research funding can be affected if heavier teaching loads influence research productivity in comparison with researchers in sibling disciplines. Researchers who rely on NSERC, for example, to support their research program also rely on undergraduate- and graduate-student contributions to field-work and laboratory-work. These highly-qualified personnel are a key ingredient in demonstrating both a successful grant outcome, and the merits of a new grant application. Our graduate program was recently re-positioned from a 'regularized' program to a 'special-case' program; in other words, a graduate program in which there is no established curriculum and where the coursework is uniquely determined for each student. This change was initiated by the department, in part, as a result of resource matters that included: instructor willingness to offer overload graduate courses, the availability of members for thesis committees who possess the specific expertise and/or experience to match each unique thesis research project, and the (modest) internal funding available for graduate student support. When taken in combination with a higher undergraduate teaching load, and the structural challenge presented by laboratory-based and field-based education, the additional efforts required to successfully mentor graduate students continues to be a challenge for our department.

8.2. Opportunities

We have partnered with the Centre for Continuing Education (CCE) to offer courses to those students who seek courses outside of the typical weekday/daytime model. In the recent past, we have offered GEOG100/World Regional, GEOG297AA/Geographies of Alcohol, GEOG323/Geomorphology and GEOG327/Hydrology, and will continue to do so. Adding additional courses to our CCE roster is an opportunity to make our programs more accessible, and to increase opportunities for flexible learning; this might also be expanded to online courses. This specifically addresses one of the supporting actions for student success in the 2015-2020 University of Regina Strategic Plan.

We have had some success in supporting the theme of Indigenization in the 2015-2020 Strategic Plan with the *nitôncipâmin omâ* program for first-year Aboriginal students in World Regional Geography (GEOG100). In support of this theme, we have recently added an Indigenous Studies course as an option for students in our BA Environmental Studies program, and we are working with colleagues to add Indigenous Economic Geography (INDG360) and Indigenous Economic, Environmental and Geographic

[30] The Faculty of Science and Faculty of Engineering & Applied Science Teaching Equipment budget are each $200 000 in the 2016-17 University Budget Book.

Systems (INDG236) as options in the BA and BSc Geography programs. However, Indigenization is also a theme that represents an opportunity we have yet to fully realize.

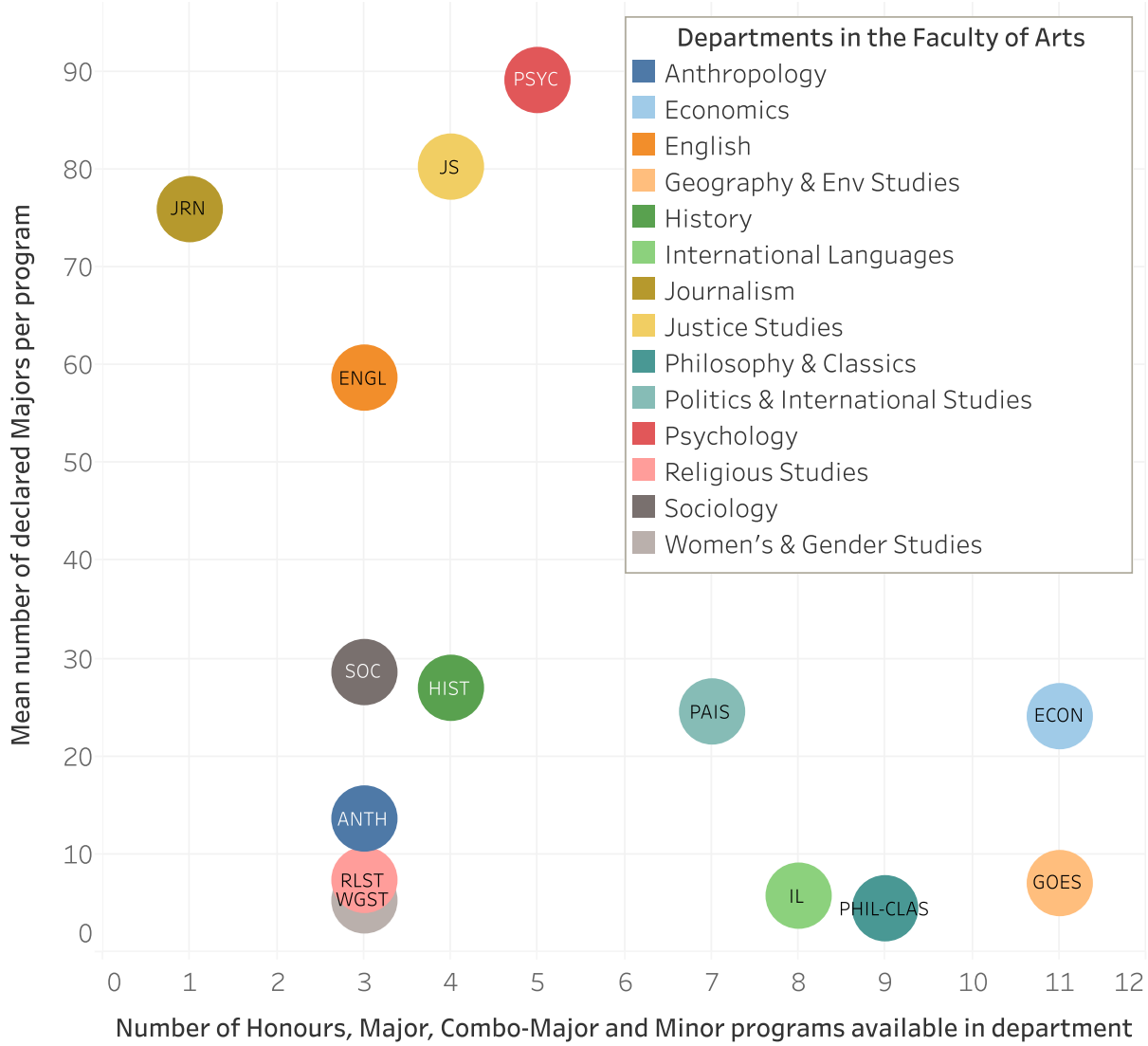

Figure 3: Number of undergraduate programs in departments of the Faculty of Arts, and the corresponding mean number of declared majors across all programs in the department (Fall 2014). Source for count of declared majors: Faculty of Arts Budget Advisory Committee.

8.3. Strengths

We are tied with the department of Economics for having the greatest number of undergraduate programs among departments in the Faculty of Arts (Section 6.1); we are also one of the few departments that offer both BA and BSc programs, and a unique Bachelor's of Geographic Information Science (BGISc) program. The development of interdisciplinary approaches to curriculum design and delivery between Faculties and departments is one of the supporting actions for Student Success within the University of Regina 2015-2020 Strategic Plan; a priority we support and succeed at. For example,

we recently created Environmental Geoscience (BSc) jointly with the Department of Geology, and our students enrol in courses taught by members of that department (and vice versa).

Sustainability[31] is one of two overarching areas of emphasis in the University of Regina 2015-2020 Strategic Plan. Many of the research and teaching foci of our faculty are encompassed by the economic, cultural, social, and environmental themes that constitute sustainability within the strategic plan. Our strengths include researchers with expertise in both quantitative and qualitative techniques, and who are well-cited (Section 4). Research themes in-house include:

Awanyo:	development geography, ecotourism, political ecology
Chattopadhyay:	development politics, food sovereignty, migration
Coté:	atmospheric science, environmental science
Dale:	glacial geomorphology, pedology
Eaton:	natural resource economies, agriculture, oil
Hardenbicker:	erosion, slope stability, land degradation
Hodder:	water and sediment transport, process hydro-geomorphology
Mathews:	urban-cultural geography, urban planning, gentrification
Piwowar:	remote sensing, climate change impacts, northern mixed-grass prairie
Sauchyn:	hydroclimate, response of watersheds to climate change and variability
Siemer:	thematic cartography, cultural mapping, visualization in GIS
Widdis:	cultural-historical geography, rural and population geography

Therefore, Geography & Environmental Studies is well positioned to continue our contributions to the academic objectives of the University of Regina. We have recruited – and retained – new faculty who succeed in the pursuit of their research (and teaching) agendas despite the challenges identified in a previous review (Section 2.4); many of which still exist as challenges today.

Our courses are part of the Environmental Geoscience stream for accreditation with the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) for Professional Geoscientists. There is an increasing student demand for career-directed professional education, a challenge identified[32] in the 2015-2020 University of Regina Strategic Plan. Demand continues to grow for courses from our department included in the APEGS Environmental Geoscience stream. We have also recently been approached by the Saskatchewan Institute of Agrologists (SIA), an organization with the mandate to both license Professional Agrologists in the province, and to regulate the practice of Agrology. We are working with SIA to explore how to include our courses in the accreditation rubric for Agrologists, as we are confident that our students will benefit from the availability of this accreditation pathway. This also helps us meet increasing student demand for career-directed and professional education.

Our collaboration with both APEGS and SIA supports the University Strategic Plan objective to connect and engage with the communities we touch by way of increased number of joint programs and collaborations in the province[33].

[31] Page 9 in the 2015-2020 University of Regina Strategic Plan.
[32] Page 6 in the 2015-2020 University of Regina Strategic Plan.
[33] Page 17 in the 2015-2020 University of Regina Strategic Plan.

9. APPENDIX: CALENDAR DESCRIPTIONS OF PROGRAMS

9.1. BA Major in Geography

Credit hours	Geography BA major, required courses	Student's record of courses completed
Major Requirements		
3.0	GEOG 120	
3.0	GEOG 121	
3.0	GEOG 203 or 207	
3.0	Four GEOG courses at the 200-level	
3.0		
3.0		
3.0		
3.0	Five GEOG courses at the 300- or 400-level	
3.0		
3.0		
3.0		
3.0		
3.0	One 400-level GEOG course	
39.0	**Subtotal: 65% major GPA required**	
Arts Core Requirements		
0.0	ARTS 099	
3.0	ENGL 100	
3.0	Any course in MATH, STAT, CS (except CS 100), PHIL 150, 352, 450, 452, 460, SOST 201, ECON 224	
3.0	Any course in ART, ARTH, CTCH, MAP, FILM, MU, MUCO, MUEN, MUHI, MUTH, THAC, THDS, THEA or THST	
0.0	Any course in ASTR, BIOL, CHEM, GEOL or PHYS that has a laboratory component, or GEOG 121	Requirement met in major
3.0	One of: ENGL 110; RLST 245, 248; PHIL 100; SOST 110	
3.0	Two language courses (or one six-credit class) in any language other than English.	
3.0		
0.0	Any course in ANTH or RLST (except RLST 181, 184, 186, 188, 281, 284, 288), GEOG 100, 120	Requirement met in major
3.0	Any course in HIST or CLAS 100 or IDS 100 or CATH 200	
0.0	Any course in ECON, GEOG (except GEOG 121, 309, 321, 323, 325, 327, 329, 333, 411, 421, 423, 429, or 431), IS, JS, PSCI, PSYC, SOC, SOST or WGST	Requirement met in major
3.0	Any course in INA, INAH, INCA, INDG, INHS or any one of ENGL 214, 310AA-ZZ; GEOG 344; HIST 310; JS 350, 351; KIN 105; PSCI 338 or SOC 214 or other courses approved by the Faculty of Arts as having substantial indigenous content, including special studies	
	Refer to §9.9.1.1 in the Undergraduate Calendar for further details.	
24.0	**Subtotal**	
Open Electives		
57.0	19 elective courses	
120.0	**Total: 60% PGPA & UGPA required**	

9.2. BA Honours Major in Geography

Credit hours	Geography BA Honours major, required courses	Student's record of courses completed
Honours Major Requirements		
3.0	GEOG 120	
3.0	GEOG 121	
3.0	GEOG 203 or 207	
3.0	Four GEOG courses at the 200-level	
3.0		
3.0		
3.0		
3.0	Five GEOG courses at the 300- or 400-level	
3.0		
3.0		
3.0		
3.0		
3.0	400-level GEOG course	
3.0	400-level GEOG course	
6.0	GEOG 499 (499AC, or both 499AA and 499AB)	
48.0	**Subtotal: 75% major GPA required**	
Arts Core Requirements		
24.0	**Same as stated above for the BA in Geography.**	
Open Electives		
48.0	16 elective courses	
120.0	**Total: 70% PGPA & 60% UGPA required**	

9.3. BA Major in Environmental Studies

Credit hours	BA Environmental Studies major, required courses	Student's record of courses completed
Major Requirements		
3.0	BIOL 150	
3.0	BIOL 276	
3.0	ECON 273	
3.0	ENST 200	
3.0	ENST 400	
3.0	GEOG 120	
3.0	GEOG 325	
3.0	GEOG 326	
3.0	GEOG 327	
3.0	GEOG 431	
3.0	GEOG 121	
3.0	JS 100	
3.0	JS 412	
3.0	PHIL 275	
3.0	PSYC 340	
3.0	SOC 201	
3.0	SOC 230	
3.0	SOC 330	
3.0	WGST 201	
57.0	**Subtotal: 65% major GPA required**	
Arts Core Requirements		
0.0	ARTS 099	
3.0	ENGL 100	
3.0	Any course in MATH, STAT, CS (except CS 100), PHIL 150, 352, 450, 452, 460, SOST 201, ECON 224	
3.0	Any course in ART, ARTH, CTCH, MAP, FILM, MU, MUCO, MUEN, MUHI, MUTH, THAC, THDS, THEA or THST	
0.0	Any course in ASTR, BIOL, CHEM, GEOL or PHYS that has a laboratory component, or GEOG 121	Requirement met in major
3.0	One of: ENGL 110; RLST 245, 248; PHIL 100; SOST 110	
3.0	Two language courses (or one six-credit class) in any language other than English.	
3.0		
0.0	Any course in ANTH or RLST (except RLST 181, 184, 186, 188, 281, 284, 288), GEOG 100, 120	Requirement met in major
3.0	Any course in HIST or CLAS 100 or IDS 100 or CATH 200	
0.0	Any course in ECON, GEOG (except GEOG 100, 120, 121, 309, 321, 323, 325, 327, 329, 333, 411, 421, 423, 429, or 431), IS, JS, PSCI, PSYC, SOC, SOST or WGST	Requirement met in major
3.0	Any course in INA, INAH, INCA, INDG, INHS or any one of ENGL 214, 310AA-ZZ; GEOG 344; HIST 310; JS 350, 351; KIN 105; PSCI 338 or SOC 214 or other courses approved by the Faculty of Arts as having substantial indigenous content, including special studies	
	Refer to §9.9.1.1 in the Undergraduate Calendar for further details.	
24.0	**Subtotal**	
Open Electives		
39.0	13 elective courses	
120.0	**Total: 60% PGPA & UGPA required**	

9.4. BSc Major in Geography

Geography courses for the purpose of this degree only shall be deemed to be within the Faculty of Science.

The Bachelor of Science major in Geography is offered by the Faculty of Science. Refer to §16 for additional important information, in particular §16.6 and §16.9 and §16.15.1.

Credit hours	BSc with major in Geography, required courses	Student's record of courses completed
3.0	GEOG 120	
3.0	GEOG 121	
3.0	Three courses from GEOG 203, 207, 226, 297AA-ZZ	
3.0		
3.0		
3.0	Three GEOG courses at the 200-, 300-, or 400-level	
3.0		
3.0		
3.0	Five additional GEOG courses at the 300- or 400-level, from GEOG 303, 307, 309, 321, 323, 325, 327, 329, 333, 391AA-ZZ, 397AA-ZZ, 409, 411, 421, 423, 429, 431, 491AA-ZZ, 497AA-ZZ	
3.0		
3.0		
3.0		
3.0		
3.0	GEOG 400-level	
Cognate courses		
3.0	BIOL 100 or 101 or 150	
3.0	CHEM 104 or PHYS 109	
3.0	CS 110	
3.0	STAT 100 or 160	
3.0	MATH 110	
57.0	**Subtotal: 65% major GPA required**	
3.0	ENGL 100	
3.0	ENGL 110	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Science elective	
3.0	Science elective	
3.0	Science elective	
3.0	Science, Arts, or Media, Art, and Performance elective	
3.0	Science, Arts, or Media, Art, and Performance elective	
3.0	Science, Arts, or Media, Art, and Performance elective	
3.0	Science, Arts, or Media, Art, and Performance elective	
3.0	Science, Arts, or Media, Art, and Performance elective	
3.0	Science, Arts, or Media, Art, and Performance elective	
3.0	Open elective	
3.0	Open elective	
3.0	Open elective	
3.0	Open elective	
3.0	Open elective	
3.0	Open elective	
120.0	**Total: 65% program GPA & 60% UGPA required**	

9.5. BSc Honours Major in Geography

Courses within in the major requirements in geography are considered Science courses only for the purposes of these programs. The Bachelor of Science Honours program is offered by the Faculty of Science. Refer to §16 for additional important information, in particular §16.6, §16.9. and §16.15. Students planning an honours program should consult with the Head of the Geography Department.

Credit hours	BSc Honours with major in Geography, required courses	Student's record of courses completed
3.0	GEOG 120	
3.0	GEOG 121	
3.0	Three courses from GEOG 203, 207, 226, 297AA-ZZ	
3.0		
3.0		
3.0	Three GEOG courses at the 200-, 300-, or 400-level	
3.0		
3.0		
3.0	Five additional GEOG courses at the 300- or 400-level, from: GEOG 303, 307, 309, 321, 323, 325, 327, 329, 333, 391AA-ZZ, 397AA-ZZ, 409, 411, 421, 423, 429, 431, 491AA-ZZ	
3.0		
3.0		
3.0		
3.0		
3.0	GEOG 400-level	
3.0	GEOG 400-level	
6.0	GEOG 499 (499AC, or both 499AA and 499AB)	
Cognate courses		
3.0	BIOL 100 or 101 or 150	
3.0	CHEM 104 or PHYS 109	
3.0	CS 110	
3.0	STAT 100 or 160	
3.0	MATH 110	
69.0	**Subtotal: 75% major GPA required**	
3.0	ENGL 100	
3.0	ENGL 110	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Science elective	
3.0	Science, Arts, or Media, Art, and Performance elective	
3.0	Science, Arts, or Media, Art, and Performance elective	
3.0	Science, Arts, or Media, Art, and Performance elective	
3.0	Science, Arts, or Media, Art, and Performance elective	
3.0	Open elective	
3.0	Open elective	
3.0	Open elective	
3.0	Open elective	
3.0	Open elective	
3.0	Open elective	
120.0	**Total: 70% PGPA & 60% UGPA required**	

9.6. Minor in Geography

Credit hours	Geography minor, required courses	Student's record of courses completed
3.0	GEOG 120	
3.0	GEOG 121	
3.0	GEOG course	
3.0	GEOG course	
3.0	GEOG course	
3.0	GEOG 300- or 400-level course	
18.0	**GEOG Minor – 65% GPA required**	

9.7. Bachelor of Geographic Information Science (BGISc)

The BGIS is a joint program with Saskatchewan Polytechnic (Woodland Campus). For admission into this program, students must meet the regular admission requirements for the Faculty of Arts and have completed the Saskatchewan Polytechnic Certificate in Geographic Information Science for Resource Management with a minimum 65% graduating average. Students meeting admission requirements will be granted 30.0 hours of block transfer credit toward this degree program, which includes Geog 203, Geog 207, Geog 303 and 21 credit hours of elective credit.

Credit hours	Bachelor of Geographic Information Science	Student's record of courses completed
Major Requirements		
3.0	GEOG 120	
3.0	GEOG 121	
3.0	GEOG 203	
3.0	GEOG 207	
3.0	GEOG 210	
3.0	GEOG 226	
1.0	GEOG 255	
3.0	One additional 200-level GEOG course	
3.0	GEOG 303	
3.0	GEOG 307	
3.0	GEOG 309	
1.0	GEOG 355	
3.0	GEOG 409	
1.0	GEOG 455	
3.0	Two GEOG courses at the 300- or 400-level	
3.0		
42.0	**Subtotal: 65% major GPA required**	
Arts Core Requirements		
0.0	ARTS 099	
3.0	ENGL 100	
3.0	Any course in MATH, STAT, CS (except CS 100), PHIL 150, 352, 450, 452, 460, SOST 201, ECON 224	
3.0	Any course in ART, ARTH, CTCH, MAP, FILM, MU, MUCO, MUEN, MUHI, MUTH, THAC, THDS, THEA or THST	
0.0	Any course in ASTR, BIOL, CHEM, GEOL or PHYS that has a laboratory component, or GEOG 121	Requirement met in major
3.0	One of: ENGL 110; RLST 245, 248; PHIL 100; SOST 110	
3.0	Two language courses (or one six-credit class) in any language other than English.	
3.0		
0.0	Any course in ANTH or RLST (except RLST 181, 184, 186, 188, 281, 284, 288), GEOG 100, 120	Requirement met in major
3.0	Any course in HIST or CLAS 100 or IDS 100 or CATH 200	
0.0	Any course in ECON, GEOG (except GEOG 100, 120, 121, 309, 321, 323, 325, 327, 329, 333, 411, 421, 423, 429, or 431), IS, JS, PSCI, PSYC, SOC, SOST or WGST	Requirement met in major
3.0	Any course in INA, INAH, INCA, INDG, INHS or any one of ENGL 214, 310AA-ZZ; GEOG 344; HIST 310; JS 350, 351; KIN 105; PSCI 338 or SOC 214 or other courses approved by the Faculty of Arts as having substantial indigenous content, including special studies	
	Refer to §9.9.1.1 in the Undergraduate Calendar for further details.	
24.0	**Subtotal**	
Open Electives		
54.0	18 elective courses	
120.0	**Total: 60% PGPA & UGPA required**	

9.8. BA Combined Major in Economics and Geography

Credit hours	BA Economics/Geography major, required courses	Student's record of courses completed
Major Requirements		
3.0	ECON 201	
3.0	ECON 202	
3.0	ECON 224	
3.0	ECON 280	
3.0	ECON 301	
3.0	ECON 302	
3.0	ECON 321	
3.0	One of ECON 311, 341, 353, 354, 361, 362, 363, 364, 372, 396, 496	
3.0	ECON 480	
3.0	ECON course	
3.0	STAT 160 or 200	
3.0	GEOG 120	
3.0	GEOG 121	
3.0	GEOG 203 or 207	
3.0	GEOG 222	
3.0	Two additional 200-level GEOG courses	
3.0		
3.0	One 400-level GEOG course	
3.0	Three additional 300- or 400-level GEOG courses	
3.0		
3.0		
63.0	**Subtotal: 65% major GPA required**	
Arts Core Requirements		
0.0	ARTS 099	
3.0	ENGL 100	
0.0	Any course in MATH, STAT, CS (except CS 100), PHIL 150, 352, 450, 452, 460, SOST 201, ECON 224	Requirement met in major
3.0	Any course in ART, ARTH, CTHC, MAP, FILM, MU, MUCO, MUEN, MUHI, MUTH, THAC, THDS, THEA or THST	
0.0	Any course in ASTR, BIOL, CHEM, GEOL or PHYS that has a laboratory component, or GEOG 121	Requirement met in major
3.0	One of: ENGL 110; RLST 245, 248; PHIL 100; SOST 110	
3.0	Two language courses (or one six-credit class) in any language other than English.	
3.0		
0.0	Any course in ANTH or RLST (except RLST 181, 184, 186, 188, 281, 284, 288), GEOG 100, 120	Requirement met in major
3.0	Any course in HIST or CLAS 100 or IDS 100 or CATH 200	
0.0	Any course in ECON, GEOG (except GEOG 100, 120, 121, 309, 321, 323, 325, 327, 329, 333, 411, 421, 423, 429, or 431), IS, JS, PSCI, PSYC, SOC, SOST or WGST	Requirement met in major
3.0	Any course in INA, INAH, INCA, INDG, INHS or any one of ENGL 214, 310AA-ZZ; GEOG 344; HIST 310; JS 350, 351; KIN 105; PSCI 338 or SOC 214 or other courses approved by the Faculty of Arts as having substantial indigenous content, including special studies	
Refer to §9.9.1.1 for further details.		
21.0	**Subtotal**	
Open Electives		
36.0	12 elective courses	
120.0	**Total: 60% PGPA & UGPA required**	

9.9. BSc Combined Major in Biology and Geography

Geography courses for the purpose of this degree only shall be deemed to be within the Faculty of Science.

The Bachelor of Science combined major in Biology/Geography is offered by the Faculty of Science. Refer to §16.6, §16.9 and §16.11.2 for additional important information.

Credit hours	BSc Combined Major in Biology and Geography, required courses	Student's record of courses completed
3.0	BIOL 100	
3.0	BIOL 101	
3.0	BIOL 205	
3.0	BIOL 266	
3.0	BIOL 275	
3.0	BIOL 288	
3.0	BIOL 378	
3.0	BIOL 2XX, 3XX, or 4XX	
3.0	BIOL 402	
3.0	Three courses from: BIOL 316, 335, 341 (or STAT 342), 356, 365, 367, 370, 375, 385, 425, 435, 456, 457, 463, 475	
3.0		
3.0		
3.0	GEOG 120	
3.0	GEOG 121	
3.0	GEOG 203	
3.0	GEOG 207	
3.0	GEOG 210	
3.0	ENST 200	
3.0	GEOG 325	
3.0	Five 300- or 400-level GEOG courses	
3.0		
3.0		
3.0		
3.0		
3.0	CHEM 104	
3.0	CHEM 140	
3.0	GEOL 102	
3.0	CS 110	
3.0	MATH 110	
3.0	MATH 111	
3.0	PHYS 109 and 119, **OR** PHYS 111 and 112	
3.0		
3.0	STAT 100 or 160	
99.0	**Subtotal: 65% major GPA required**	
3.0	ENGL 100	
3.0	ENGL 110	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Open elective	
120.0	**Total: 65% PGPA & 60% UGPA required**	

9.10. BSc Major in Environmental Geoscience

Geography courses for the purpose of this degree only shall be deemed to be within the Faculty of Science.

The Bachelor of Science combined major in Environmental Geoscience is offered by the Faculty of Science. Refer to §§16.6, 16.9, 16.15 and 16.16 for additional important information.

Credit hours	BSc Major in Environmental Geoscience, required courses	Student's record of courses completed
3.0	GEOL 102	
3.0	GEOL 201	
3.0	GEOL 210	
3.0	GEOL 211	
3.0	GEOL 240	
3.0	GEOL 241	
3.0	GEOL 307 or BIOL 456	
3.0	GEOL 314	
3.0	GEOL 329 or GEOG 329	
3.0	GEOL 353	
3.0	GEOL 396 or GEOG 411	
3.0	GEOL 429 or GEOG 429	
3.0	GEOL 460	
3.0	GEOG 121	
3.0	GEOG 203	
3.0	GEOG 207	
3.0	GEOG 303	
3.0	GEOG 309	
3.0	GEOG 321	
3.0	GEOG 323	
3.0	GEOG 327	
3.0	CHEM 104	
3.0	CHEM 105	
3.0	CS 110	
3.0	MATH 110	
3.0 3.0	PHYS 109 and PHYS 119, or PHYS 111 and PHYS 112	
3.0	STAT 100 or 160	
3.0	BIOL 100 or 101	
87.0	**Subtotal: 65% major GPA required**	
3.0	ENGL 100	
3.0	ENGL 110	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Science, Arts or Media, Art, and Performance elective	
3.0	Science elective	
3.0	Open elective	
3.0	Open elective	
3.0	Open elective	
120.0	**Total: 65% PGPA & 60% UGPA required**	

9.11. BSc Honours Major in Environmental Geoscience

Geography courses, for the purpose of this degree only, shall be deemed to be within the Faculty of Science.The Bachelor of Science Honours program is offered by the Faculty of Science. Refer to §16 for additional important information, in particular §§16.6, and 16.9. Students planning an honours program should consult with the Heads of the Geography and Geology Departments.

Credit hours	BSc Honours Major in Environmental Geoscience, required courses	Student's record of courses completed
3.0	GEOL 102	
3.0	GEOL 201	
3.0	GEOL 210	
3.0	GEOL 211	
3.0	GEOL 240	
3.0	GEOL 241	
3.0	GEOL 307 or BIOL 456	
3.0	GEOL 314	
3.0	GEOL 329 or GEOG 329	
3.0	GEOL 353	
3.0	GEOL 396 or GEOG 411	
3.0	GEOL 400AC (or GEOL 400AA and 400AB) or GEOG 499AC (or GEOG 499AA and 499AB)	
3.0		
3.0	GEOL 413 or higher, or GEOG 409 or higher	
3.0	GEOL 429 or GEOG 429	
3.0	GEOL 460	
3.0	GEOG 121	
3.0	GEOG 203	
3.0	GEOG 207	
3.0	GEOG 303	
3.0	GEOG 309	
3.0	GEOG 321	
3.0	GEOG 323	
3.0	GEOG 327	
3.0	CHEM 104	
3.0	CHEM 105	
3.0	CS 110	
3.0	MATH 110	
3.0	PHYS 109 and 119 or PHYS 111 and 112	
3.0		
3.0	STAT 100 or 160	
3.0	BIOL 100 or 101	
96.0	**Subtotal: 75% major GPA required**	
3.0	ENGL 100	
3.0	ENGL 110	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Arts or Media, Art, and Performance elective	
3.0	Science, Arts or Media, Art, and Performance elective	
3.0	Science elective	
120.0	**Total: 70% PGPA & 60% UGPA required**	

10. SHORT CV FOR ACADEMIC STAFF MEMBERS

The hardcopy of this report contains the short CVs for academic staff members.