

# GEOGRAPHY (GEOG)

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**Chair: Associate Professor Christopher Storie;** Professors: D. Blair, B. Buhay, E. Cloutis; Associate Professors: J. Binyamin, N. Casson, J. Distasio, M. Dyce, P. Fitzpatrick, I. Mauro, J. Storie; G. Sylvestre; M. Vachon; Instructors: B.R. McGregor; Cartographer: W. Hiebert; Lab Technician: P. Mann; Map Librarian: B. Russell; Department Assistant: Tania N. Guevara Sandoval; Adjunct Professors: L. Fishback, N. Sims

## DEGREES/PROGRAMS OFFERED

3-Year BA

4-Year BA

Honours BA

3-Year BSc

3-Year BSc (Business Stream)

4-Year BSc

4-Year BSc (Business Stream)

Honours BSc

Minor - Human Geography

Minor - Physical Geography

## INTRODUCTION

The study of Geography is concerned with the Earth in two ways - as the science of interaction between natural elements of the environment, such as weather, plants, soils, and landforms and, secondly, as the science of the distribution and activities of the Earth's population in response to various social and environmental factors. Systematic studies in Geography examine the locations, distributions, arrangements, and associations between groups of interrelated features. In contrast, regional studies examine the totality of geographic phenomena in a particular area. No matter what approach is taken, there are certain skills and techniques that are of particular geographic relevance (e.g., remote sensing, cartography, Geographic Information Systems).

As a reflection of the diversity that exists within the study of Geography and the special skills required, the Department offers courses within five areas of study: General, Physical Geography, Geomatics (formerly Techniques), Systematic Human Geography, and Regional Geography. One may earn either the 3-Year or 4-Year Bachelor's degree in Arts or Science, as well as the BA Honours or BSc Honours degree. Students pursuing a 3-year or 4-year BSc also have the opportunity to take a Business Stream – a set of core courses in the Faculty of Business that will provide them with the skills needed to enter and succeed in industry and business. See the "Science with a Business Stream" section of this Course Calendar.

Geography offers a considerable variety of career opportunities. High schools require a continuing supply of Geography teachers. Various federal and provincial agencies dealing with conservation, urban planning, recreation, landscape architecture, and resource use also provide opportunities, especially to those with Honours or graduate work in Geography. Undergraduate training in the subject is often required for certain business careers, especially in surveying, market assessment, and location and general commercial development. Training in Geographical Information Systems is especially in demand.

## REQUIREMENTS FOR A 3-YEAR BA IN GEOGRAPHY

<b>ADMISSION REQUIREMENT</b>	Students must consult with a member of the Department in planning their course of study.
<b>GRADUATION REQUIREMENT</b>	90 credit hours
<b>RESIDENCE REQUIREMENT</b>	
Degree:	Minimum 30 credit hours
Major:	Minimum 18 credit hours
<b>GENERAL DEGREE REQUIREMENT</b>	
Humanities:	12 credit hours in Humanities
Science:	6 credit hours in Science
Writing:	Minimum 3 credit hours of Academic Writing.
Indigenous:	3 credit hours in designated Indigenous requirement courses
Maximum Introductory Courses:	Students may use a maximum of 42 credit hours at the 1000 level. Of these, maximum of 6 credit hours may be below the 1000 level. As a result, students must take a minimum of 48 credit hours at the 2000-level or above in order to not exceed the maximum number of introductory courses.
Distribution:	Minimum three (3) credit hours from each of five (5) different subjects.
<b>MAJOR REQUIREMENT</b>	
Single Major:	Minimum 30 credit hours/Maximum 48 credit hours.
Double Major:	30 credit hours in Geography and specified number of credit hours in other Major subject or program.

**Required Courses:**Common Geography Requirement (12 credit hours)

- GEOG-1102(3)** Introductory Human Geography: People, Culture and Environment
- GEOG-1103(3)** Introductory Human Geography: Population, Place and Development
- GEOG-1201(3)** Introductory Atmospheric Science
- GEOG-1202(3)** Introductory Earth Science

Regional Geography Requirement (6 credit hours)

- GEOG-3509(3)** Canada's Physical and Human Environments

Three (3) credit hours from among the following:

- GEOG-2503(3)** Manitoba's Physical and Human Environments
- GEOG-3216(3)** Arctic Environments
- GEOG-3508(3)** Geographical Issues in the Developing World
- GEOG-3510(3)** Prairie Landscapes
- GEOG-3511(3)** Topical Regions in Geography
- GEOG-3512(3)** The Human Geography of Northern Canada (fulfils the Indigenous Requirement)

Systematic Human Geography Requirement (6 credit hours)

Minimum of 6 credit hours from the Systematic Human Geography group

Electives (6 credit hours)

Minimum 6 additional credit hours from any area of Geography

**Combined Major:** Minimum 48 credit hours from 2 different Majors with not less than 18 credit hours from each major subject

Prescribed Courses:

- GEOG-1102(3)** Introductory Human Geography: People, Culture and Environment
- GEOG-1103(3)** Introductory Human Geography: Population, Place and Development
- GEOG-1201(3)** Introductory Atmospheric Science
- GEOG-1202(3)** Introductory Earth Science
- GEOG-3509(3)** Canada's Physical and Human Environments

3 additional credit hours from the Physical Geography Group

## REQUIREMENTS FOR A 3-YEAR BSc IN GEOGRAPHY

<b>ADMISSION REQUIREMENT</b>	Students must consult with a member of the Department in planning their course of study.
<b>GRADUATION REQUIREMENT</b>	90 credit hours
<b>RESIDENCE REQUIREMENT</b>	
Degree:	Minimum 30 credit hours
Major:	Minimum 18 credit hours
<b>GENERAL DEGREE REQUIREMENT</b>	
Humanities:	12 credit hours in Humanities
Writing:	Minimum 3 credit hours of Academic Writing.
Indigenous:	3 credit hours in designated Indigenous requirement courses
Maximum Introductory Courses:	Students may use a maximum of 42 credit hours at the 1000 level. Of these, a maximum of 6 credit hours may be below the 1000 level. As a result, students must take a minimum of 48 credit hours at the 2000-level or above in order to not exceed the maximum number of introductory courses.
Distribution:	Minimum three (3) credit hours from each of five (5) different subjects.
<b>MAJOR REQUIREMENT</b>	
Single Major:	Minimum 36 credit hours/Maximum 48 credit hours.
Double Major:	Minimum 36 credit hours in Geography and specified number of credit hours in other Major subject or program.

**Required Courses:**Common Geography Requirement (12 credit hours)

- GEOG-1102(3)** Introductory Human Geography: People, Culture and Environment
- GEOG-1103(3)** Introductory Human Geography: Population, Place and Development
- GEOG-1201(3)** Introductory Atmospheric Science
- GEOG-1202(3)** Introductory Earth Science

Regional Geography Requirement (3 credit hours)

- GEOG-3509(3)** Canada's Physical and Human Environments

Physical Geography/Geomatics Requirement (24 credit hours)

**GEOG-2304(3)** Computer Mapping or **GEOG-2309(3)** Statistical Techniques in Environmental Analysis or STAT-1301(3) Statistical Analysis or the former STAT-1201(6) Introduction to Statistical Analysis

12 credit hours from among:

**GEOG-2207(3)** Climatology  
**GEOG-2210(3)** Meteorology  
**GEOG-2213(3)** Introductory Soil Science  
**GEOG-2214(3)** Soil-Vegetation Systems  
**GEOG-2215(3)** Mineralogy and Petrology  
**GEOG-2216(3)** Physical Geology  
**GEOG-2218(3)** Fluvial and Hillslope Processes  
**GEOG-2219(3)** Glacial and Periglacial Processes  
**GEOG-3210(3)** Hydrology

Minimum 9 additional credit hours from the Physical Geography or Geomatics groups (i.e., where the second digit of the course number is a 2 or 3)

External Science Requirement (18 credit hours)

Minimum of 18 credit hours selected from at least two (2) of the Departments of Biology, Applied Computer Science, Chemistry, Mathematics, Physics, and Statistics.

The following courses do not qualify:

<b>ACS-1453(3)</b>	Introduction to Computers
<b>ACS-1803(3)</b>	Introduction to Computer-based Systems
<b>BIOL-1102(6)</b>	Biology and Human Concerns
<b>BIOL-1103(6)</b>	Human Biology
<b>BIOL-1005(6)</b>	Concepts in Science
<b>BIOL-1106(3)</b>	Environmental Biology
<b>CHEM-0100(3)</b>	Foundations of Chemistry
<b>CHEM-1801(3)</b>	Headline Chemistry
<b>CHEM-2801(3)</b>	Chemistry and Society
<b>MATH/PHIL-2305(3)</b>	Philosophy and Mathematics
<b>MATH-2901(3)</b>	History of Calculus
<b>MATH-2902(3)</b>	Mathematics Prior to 1640
<b>MATH-2903(3)</b>	Mathematics for Early/Middle Years Teachers I
<b>MULT-1005(6)</b>	Concepts in Science
<b>PHYS-1005(6)</b>	Concepts in Science
<b>PHYS-1501(6)</b>	Modern Technology
<b>PHYS-1701(6)</b>	Astronomy
<b>PHYS-2705(6)</b>	Cosmology: Science Fact to Science Fiction
<b>PHYS-2812(3)</b>	The Physics of Music

**Combined Major:** Minimum 48 credit hours from 2 different Majors with not less than 18 credit hours from each major subject

Prescribed Courses:

**GEOG-1102(3)** Introductory Human Geography: People, Culture and Environment  
**GEOG-1103(3)** Introductory Human Geography: Population, Place and Development  
**GEOG-1201(3)** Introductory Atmospheric Science  
**GEOG-1202(3)** Introductory Earth Science  
**GEOG-3509(3)** Canada's Physical and Human Environments

3 additional credit hours from the Physical Geography Group

## **REQUIREMENTS FOR THE 3-YEAR BSc IN GEOGRAPHY WITH A BUSINESS STREAM**

Students must complete the requirements of the 3-year BSc in Geography degree (see previous section) and the set of core courses indicated in the "Science with a Business Stream" section of the Calendar.

# REQUIREMENTS FOR A 4-YEAR BA IN GEOGRAPHY

**ADMISSION REQUIREMENT** Students must consult with the Department Advisor in planning their studies.

**GRADUATION REQUIREMENT** 120 credit hours

## RESIDENCE REQUIREMENT

Degree: Minimum 60 credit hours  
Major: Minimum 30 credit hours

## GENERAL DEGREE REQUIREMENT

Humanities: 12 credit hours  
Science: 6 credit hours  
Social Science: 12 credit hours  
Writing: Minimum 3 credit hours of Academic Writing.  
Indigenous: 3 credit hours in designated Indigenous requirement courses  
Maximum Introductory Courses: Students may use a maximum of 42 credit hours at the 1000 level. Of these, a maximum of 6 credit hours may be below the 1000 level. As a result, students must take a minimum of 78 credit hours at the 2000-level or above in order to not exceed the maximum number of introductory courses.  
Distribution: Minimum three (3) credit hours from each of five (5) different subjects.

## MAJOR REQUIREMENT

Single Major: Minimum 48 credit hours/Maximum 66 credit hours.  
Double Major: Minimum 48 credit hours in each Major subject as specified by the department/program.

## Required Courses:

### Common Geography Requirement (12 credit hours)

**GEOG-1102(3)** Introductory Human Geography: People, Culture and Environment  
**GEOG-1103(3)** Introductory Human Geography: Population, Place and Development  
**GEOG-1201(3)** Introductory Atmospheric Science  
**GEOG-1202(3)** Introductory Earth Science

### Regional Geography Requirement (6 credit hours)

**GEOG-3509(3)** Canada's Physical and Human Environments

Three (3) credit hours from among the following:

**GEOG-2503(3)** Manitoba's Physical and Human Environments  
**GEOG-3216(3)** Arctic Environments  
**GEOG-3508(3)** Geographical Issues in the Developing World  
**GEOG-3510(3)** Prairie Landscapes  
**GEOG-3511(3)** Topical Regions in Geography  
**GEOG-3512(3)** The Human Geography of Northern Canada (fulfills the Indigenous Requirement)

### Systematic Human Geography Requirement (6 credit hours)

Minimum of 6 credit hours in Systematic Human Geography

### Geomatics Requirement (12 credit hours)

**GEOG-2304(3)** Computer Mapping  
**GEOG-2306(3)** Introduction to Geographic Information Systems  
**GEOG-2309(3)** Statistical Techniques in Environmental Analysis or STAT-1301(3) Statistical Analysis or the former  
STAT-1201(6) Introduction to Statistical Analysis  
**GEOG-3330(3)** Research Methods in Geography

### Other Requirements

Students must complete a minimum of 48 credit hours in Geography. From the requirements listed, students must ensure to have taken a minimum of 12 credit hours at the upper level (3000 and 4000) Systematic Human or Geomatics courses with a minimum of 6 of those credit hours at the 4000 level.

**Combined Major:** Minimum 60 credit hours from two (2) different Majors with not less than 24 credit hours from each major subject.

### Prescribed Courses:

**GEOG-1102(3)** Introductory Human Geography: People, Culture and Environment  
**GEOG-1103(3)** Introductory Human Geography: Population, Place and Development  
**GEOG-1201(3)** Introductory Atmospheric Science  
**GEOG-1202(3)** Introductory Earth Science  
**GEOG-3509(3)** Canada's Physical and Human Environments

3 additional credit hours from the Physical Geography Group

# REQUIREMENTS FOR A 4-YEAR BSc IN GEOGRAPHY

<b>ADMISSION REQUIREMENT</b>	Students must consult with the department advisor in planning their studies.
<b>GRADUATION REQUIREMENT</b>	120 credit hours, that is, 90 credit hours meeting the requirements for the 3-Year BSc plus an additional 30 credit hours.
<b>RESIDENCE REQUIREMENT</b>	
Degree:	Minimum 60 credit hours
Major:	Minimum 30 credit hours
<b>GENERAL DEGREE REQUIREMENT</b>	
Humanities:	12 credit hours
Writing:	Minimum 3 credit hours of Academic Writing.
Indigenous:	3 credit hours in designated Indigenous requirement courses
Maximum Introductory Courses:	Students may use a maximum of 42 credit hours at the 1000 level. Of these, a maximum of 6 credit hours may be below the 1000 level. As a result, students must take a minimum of 78 credit hours at the 2000-level or above in order to not exceed the maximum number of introductory courses.
Distribution:	Minimum three (3) credit hours from each of five (5) different subjects.
<b>MAJOR REQUIREMENT</b>	
Single Major:	Minimum 57 credit hours/Maximum 78 credit hours.
Double Major:	Minimum 57 credit hours in Geography and specified number of courses in other Major.

## Required Courses:

### Common Geography Requirement (12 credit hours)

- GEOG-1102(3)** Introductory Human Geography: People, Culture and Environment
- GEOG-1103(3)** Introductory Human Geography: Population, Place and Development
- GEOG-1201(3)** Introductory Atmospheric Science
- GEOG-1202(3)** Introductory Earth Science

### Regional Geography Requirement (3 credit hours)

- GEOG-3509(3)** Canada's Physical and Human Environments

### Physical Geography/Geomatics Requirement (27 credit hours)

- GEOG-2304(3)** Computer Mapping
- GEOG-2306(3)** Introduction to Geographic Information Systems
- GEOG-2309(3)** Statistical Techniques in Environmental Analysis or **STAT-1301(3)** Statistical Analysis or the former **STAT-1201(6)** Introduction to Statistical Analysis
- GEOG-2316(3)** Remote Sensing
- GEOG-3330(3)** Research Methods in Geography

12 credit hours from among

- GEOG-2207(3)** Climatology
- GEOG-2210(3)** Meteorology
- GEOG-2213(3)** Introductory Soil Science
- GEOG-2214(3)** Soil-Vegetation Systems
- GEOG-2215(3)** Mineralogy and Petrology
- GEOG-2216(3)** Physical Geology
- GEOG-2218(3)** Fluvial and Hillslope Processes
- GEOG-2219(3)** Glacial and Periglacial Processes
- GEOG-3210(3)** Hydrology

### Additional Requirements (15 credit hours)

- Minimum of 3 additional credit hours from the Physical or Geomatics groups.
- Minimum of 6 credit hours from the Systematic Human group at the 3000 level
- Minimum of 6 credit hours at the 4000 level also from the Systematic Human Group.

### External Science Requirement (24 credit hours)

- Minimum of 24 credit hours selected from at least two (2) of the Departments of Biology, Applied Computer Science, Chemistry, Mathematics, Physics, and Statistics.

The following courses do *not* qualify:

- ACS-1453(3)** Introduction to Computers
- ACS-1803(3)** Introduction to Computer-based Systems
- BIOL-1005(6)** Concepts in Science
- BIOL-1102(6)** Biology and Human Concerns
- BIOL-1103(6)** Human Biology

<b>BIOL-1106(3)</b>	Environmental Biology
<b>CHEM-0100(3)</b>	Foundations of Chemistry
<b>CHEM-1801(3)</b>	Headline Chemistry
<b>CHEM-2801(3)</b>	Chemistry and Society
<b>MATH/PHIL-2305(3)</b>	Philosophy and Mathematics
<b>MATH-2901(3)</b>	History of Calculus
<b>MATH-2902(3)</b>	Mathematics Prior to 1640
<b>MATH-2903(3)</b>	Mathematics for Early/Middle Years Teachers I
<b>MULT-1005(6)</b>	Concepts in Science
<b>PHYS-1005(6)</b>	Concepts in Science
<b>PHYS-1501(6)</b>	Modern Technology
<b>PHYS-1701(6)</b>	Astronomy
<b>PHYS-2705(6)</b>	Cosmology: Science Fact to Science Fiction
<b>PHYS-2812(3)</b>	The Physics of Music

**Combined Major:** Minimum 60 credit hours from 2 different Majors with not less than 24 credit hours from each major subject.

Prescribed Courses:

- GEOG-1102(3)** Introductory Human Geography: People, Culture and Environment
- GEOG-1103(3)** Introductory Human Geography: Population, Place and Development
- GEOG-1201(3)** Introductory Atmospheric Science
- GEOG-1202(3)** Introductory Earth Science
- GEOG-3509(3)** Canada's Physical and Human Environments

3 additional credit hours from the Physical Geography Group

## REQUIREMENTS FOR THE 4-YEAR BSc IN GEOGRAPHY WITH A BUSINESS STREAM

Students must complete the requirements of the 4-year BSc in Geography degree (see previous section) and the set of core courses indicated in the "Science with a Business Stream" section of the Calendar.

## REQUIREMENTS FOR AN HONOURS BA IN GEOGRAPHY

### ADMISSION REQUIREMENT

Students must have completed a minimum of 30 credit hours to qualify for entry into the Honours program.

Entry, continuing and graduation minimum GPA is 3.0 (B) in Honours Subject courses and 2.5 (C+) in Non-Honours Subject courses.

The minimum 3.0 GPA (B) will be based on all attempts (including course repeats and failures) in Honours Subject courses.

The minimum 2.5 GPA (C+) in all Non-Honours Subject courses will be calculated as for the general degree (i.e., Fs are not included, and in the case of repeated courses, only the highest grade will be used).

**GRADUATION REQUIREMENT** Minimum 120 credit hours

**RESIDENCE REQUIREMENT**  
Degree: Minimum 60 credit hours

### GENERAL DEGREE REQUIREMENT

Humanities: 12 credit hours in Humanities  
 Science: 6 credit hours in Science  
 Writing: Minimum 3 credit hours of Academic Writing.  
 Indigenous: 3 credit hours in designated Indigenous requirement courses

Maximum Introductory Courses: Students may use a maximum of 42 credit hours at the 1000 level. Of these, a maximum of 6 credit hours may be below the 1000 level. As a result, students must take a minimum of 78 credit hours at the 2000-level or above in order to not exceed the maximum number of introductory courses.

Distribution: Minimum three (3) credit hours from each of five (5) different subjects.

### HONOURS REQUIREMENT

Single Honours: Minimum 54 credit hours/Maximum 78 credit hours  
 Minimum 21 credit hours in upper level (3000 and 4000) Honours subject courses of which a minimum of 15 credit hours must be at the 4000 level (including Thesis).

Double Honours: Student must satisfy the requirements for both the Honours BA in Geography and the requirements for the Honours BA in the second Honours department in consultation with the Geography Department Chair.

## Required Courses:

### Common Geography Requirement (12 credit hours)

- GEOG-1102(3)** Introductory Human Geography: People, Culture and Environment
- GEOG-1103(3)** Introductory Human Geography: Population, Place and Development
- GEOG-1201(3)** Introductory Atmospheric Science
- GEOG-1202(3)** Introductory Earth Science

### Regional Geography Requirement (6 credit hours)

GEOG-3509(3) Canada's Physical and Human Environments

Three (3) credit hours from among the following:

- GEOG-2503(3)** Manitoba's Physical and Human Environments
- GEOG-3216(3)** Arctic Environments
- GEOG-3508(3)** Geographical Issues in the Developing World
- GEOG-3510(3)** Prairie Landscapes
- GEOG-3511(3)** Topical Regions in Geography
- GEOG-3512(3)** The Human Geography of Northern Canada (fulfills the Indigenous Requirement)

### Systematic Human Geography Requirement (6 credit hours)

Minimum of 6 credit hours in Human Geography

### Geomatics Requirement (12 credit hours)

- GEOG-2304(3)** Computer Mapping
- GEOG-2306(3)** Introduction to Geographic Information Systems
- GEOG-2309(3)** Statistical Techniques in Environmental Analysis or STAT-1301(3) Statistical Analysis or the former STAT-1201(6) Introduction to Statistical Analysis
- GEOG-3330(3)** Research Methods in Geography

### Thesis Requirement (6 credit hours)

**GEOG-4901(6)** Honours Geography Thesis - 6 credit hours with a prerequisite of **GEOG-3330(3)** (Research Methods in Geography), 36 credit hours completed in Geography, and a Geography GPA of 3.0.

### Other Requirements

Students must complete 54 credit hours in Geography for the major.

Minimum 21 credit hours in upper level (3000 and 4000) Honours subject courses of which a minimum of 15 credit hours (including the thesis) must be at the 4000 level.

Average of 2.5 GPA in non-Geography courses and 3.00 GPA on all attempts in Geography courses (exit requirement).

## REQUIREMENTS FOR AN HONOURS BSc IN GEOGRAPHY

### ADMISSION REQUIREMENT

Students must have completed a minimum of 30 credit hours to qualify for entry into the Honours program.

Entry, continuing and graduation minimum GPA is 3.0 (B) in Honours Subject courses and 2.75 in Non-Honours Subject courses.

The minimum 3.0 GPA (B) will be based on all attempts (including course repeats and failures) in Honours Subject courses.

The minimum 2.75 GPA in all Non-Honours Subject courses will be calculated as for the general degree (i.e., Fs are not included, and in the case of repeated courses, only the highest grade will be used).

### GRADUATION REQUIREMENT

Minimum 120 credit hours

### RESIDENCE REQUIREMENT

Degree: Minimum 60 credit hours

### GENERAL DEGREE REQUIREMENT

Humanities: 12 credit hours in Humanities

Writing: Minimum 3 credit hours of Academic Writing.

Indigenous: 3 credit hours in designated Indigenous requirement courses

Maximum Introductory Courses: Students may use a maximum of 42 credit hours at the 1000 level. Of these, a maximum of 6 credit hours may be below the 1000 level. As a result, students must take a minimum of 78 credit hours at the 2000-level or above in order to not exceed the maximum number of introductory courses.

Distribution: Minimum three (3) credit hours from each of five (5) different subjects.

### HONOURS REQUIREMENT

Single Honours: Minimum 63 credit hours/Maximum 78 credit hours  
Minimum 30 credit hours in upper level (3000 and 4000) Honours Subject courses of which a minimum of 15 credit hours must be at the 4000 level (including Thesis).

Double Honours: Students must satisfy the requirements for both the Honours BSc in Geography and the requirements for the Honours BSc in the second Honours department, in consultation with the Geography Department Chair.

## Required Courses

### Common Geography Requirement (12 credit hours)

- GEOG-1102(3)** Introductory Human Geography: People, Culture and Environment
- GEOG-1103(3)** Introductory Human Geography: Population, Place and Development
- GEOG-1201(3)** Introductory Atmospheric Science
- GEOG-1202(3)** Introductory Earth Science

### Regional Geography Requirement (3 credit hours)

- GEOG-3509(3) Canada's Physical and Human Environments

### Physical Geography/Geomatics Requirements (45 credit hours)

- GEOG-2304(3)** Computer Mapping
- GEOG-2306(3)** Introduction to Geographic Information Systems
- GEOG-2309(3)** Statistical Techniques in Environmental Analysis or STAT-1301(3) Statistical Analysis or the former STAT-1201(6) Introduction to Statistical Analysis
- GEOG-2316(3)** Remote Sensing
- GEOG-3330(3)** Research Methods in Geography

12 credit hours from the following:

- GEOG-2207(3)** Climatology
- GEOG-2210(3)** Meteorology
- GEOG-2213(3)** Introductory Soil Science
- GEOG-2214(3)** Soil-Vegetation Systems
- GEOG-2215(3)** Mineralogy and Petrology
- GEOG-2216(3)** Physical Geology
- GEOG-2218(3)** Fluvial and Hillslope Processes
- GEOG-2219(3)** Glacial and Periglacial Processes
- GEOG-3210(3)** Hydrology

Minimum of 15 additional credit hours of upper level (3000 and 4000) Physical Geography or Geomatics courses (excluding Thesis) with a minimum of 9 credit hours at the 4000 level (excluding Thesis).

### Thesis Requirement (6 credit hours)

- GEOG-4901(6)** Honours Geography Thesis - 6 credit hours with a prerequisite of **GEOG-3330 (3)** (Research Methods in Geography), 36 credit hours completed in Geography, and a Geography GPA of 3.0

### External Science Courses (24 credit hours)

Minimum of 24 credit hours selected from at least two (2) of the Departments of Biology, Applied Computer Science, Chemistry, Mathematics, Physics, and Statistics, of which 12 credit hours must be at or above the 2000-level.

The following courses do *not* qualify:

- ACS-1453(3)** Introduction to Computers
- ACS-1803(3)** Introduction to Computer-based Systems
- BIOL-1005(6)** Concepts in Science
- BIOL-1102(6)** Biology and Human Concerns
- BIOL-1103(6)** Human Biology
- BIOL-1106(3)** Environmental Biology
- CHEM-0100(3)** Foundations of Chemistry
- CHEM-1801(3)** Headline Chemistry
- CHEM-2801(3)** Chemistry and Society
- MATH/PHIL-2305(3)** Philosophy and Mathematics
- MATH-2901(3)** History of Calculus
- MATH-2902(3)** Mathematics Prior to 1640
- MATH-2903(3)** Mathematics for Early/Middle Years Teachers I
- MULT-1005(6)** Concepts in Science
- PHYS-1005(6)** Concepts in Science
- PHYS-1501(6)** Modern Technology
- PHYS-1701(6)** Astronomy
- PHYS-2705(6)** Cosmology: Science Fact to Science Fiction
- PHYS-2812(3)** The Physics of Music

### Grade Point Requirement

GPA of 2.75 in non-Geography courses and 3.00 on all attempts in Geography courses (exit requirement).

### **Suggested Patterns:**

Year 1: **GEOG-1102(3)** Introductory Human Geography; **GEOG-1103(3)** Introductory Human Geography; **GEOG-1201(3)** Introductory Atmospheric Science; **GEOG-1202(3)** Introductory Earth Science

Year 2: 12-18 credit hours in Geography. Recommended: **GEOG-2309(3)** Statistical Techniques in Environmental Analysis and **GEOG-2304(3)** Computer Mapping  
Prerequisite course(s) for planned Honours courses.

Year 3: 3-6 credit hours at the 4000 level in Geography.

Year 4: 9-12 credit hours at the 4000 level in Geography, including the Thesis.



4000-level courses from other Departments may be credited toward the Geography Honours Major with ADVANCE WRITTEN APPROVAL from the Department Chair.

Students must consult with the Department Chair to determine whether they fulfill the general regulations for the Honours program.

Students must complete the Honours application form before EACH registration in a 4000-level course.

Students planning to complete a Double Honours degree in Geography must consult with the Department Chair for further details.

## REQUIREMENTS FOR A MINOR IN GEOGRAPHY

Degree: Students completing any undergraduate degree program are eligible to complete the Minor.  
Minor: 18 credit hours in the Minor subject, with a minimum of 12 credit hours above the 1000-level  
Residence Requirement: Minimum 12 credit hours in the Minor subject

### Required courses for Human Geography Minor:

GEOG-1102 Introductory Human Geography: People, Culture and Environment (3 credit hours)  
GEOG-1103 Introductory Human Geography: Population, Place and Development (3 credit hours)  
GEOG-2304 Computer Mapping (3 credit hours)

### Elective:

Any six (6) credit hours at the 2000 level in Human Geography, Regional, or Geomatics  
Any three (3) credit hours at the 3000 level or higher in Human Geography, Regional or Geomatics

### Required courses for Physical Geography Minor:

GEOG-1201 Introductory Atmospheric Science (3 credit hours)  
GEOG-1202 Introductory Earth Science (3 credit hours)  
GEOG-2304 Computer Mapping (3 credit hours)

### Elective

Any six (6) credit hours at the 2000 level in Physical Geography or Geomatics  
Any three (3) credit hours at the 3000 level or higher in Physical Geography or Geomatics

## GENERAL INFORMATION

### Geography Courses Which Satisfy the Science Requirement

The Science requirement for BA, BBA and BKin degrees will be satisfied by 6 credit hours from the following courses:

GEOG-1201(3)	Introductory Atmospheric Science	GEOG-2306(3)	Introduction to Geographic Information System
GEOG-1202(3)	Introductory Earth Science	GEOG-2316(3)	Introduction to Remote Sensing
GEOG-2201(6)	Geomorphology	GEOG-3215(3)	Biogeography
GEOG-2207(3)	Climatology	GEOG-3306(3)	Advanced Geographic Information System
GEOG-2210(3)	Meteorology	GEOG-3307(3)	Advanced Computer Mapping
GEOG-2213(3)	Introductory Soil Science	GEOG-3319(3)	Advanced Remote Sensing
GEOG-2214(3)	Soil-Vegetation Systems	GEOG-4203(3)	Topics in Climatology
GEOG-2215(3)	Mineralogy and Petrology	GEOG-4212(3)	Topics in Earth Sciences
GEOG-2216(3)	Physical Geology	GEOG-4231(3)	Topics in Biogeography
GEOG-2218(3)	Fluvial and Hillslope Processes	GEOG-4320(3)	Projects in Geomatics
GEOG-2219(3)	Glacial and Periglacial Processes	GEOG-4321(3)	Topics in Geomatics I
GEOG-3210(3)	Hydrology	GEOG-4322(3)	Topics in Geomatics II
GEOG-2304(3)	Computer Mapping		

### Geography Courses Which Satisfy the Social Science Requirement for 4-year BA, BBA and BKin degrees

The Social Science requirement will be satisfied by 12 credit hours from courses in Systematic Human and/or Regional Geography (i.e. courses for which the second digit of the course number is a 4 or 5).

**4000-Level Courses:** Minimum 3.0 GPA (B) in major courses (students lacking the requisite 3.0 GPA should consult the department concerned regarding eligibility to take 4000-level courses). Permission of the department is required for each 4000-level course.

## COURSE LISTINGS

Geography courses are categorized into five major groups: General, Physical, Geomatics, Human, and Regional. Courses are distinguished by the use of the second digit in the course number as follows:

General	Second digit is 1 (e.g. 1102(3) Introductory Human Geography: People, Culture and Environment)
Physical	Second digit is 2 (e.g. 1201(3) Introductory Atmospheric Science)
Geomatics	Second digit is 3 (e.g. 2309(3) Statistical Techniques in Environmental Analysis)
Human	Second digit is 4 (e.g. 2407(3) Recreation Geography)
Regional	Second digit is 5 (e.g. 2503(3) Manitoba's Physical and Human Environments)

Beyond the minimum requirements for each degree, students may choose courses which provide a coherent specialization within the discipline. Guidelines to assist in this selection are included in the Departmental brochure, which is published annually and available from the Department secretary in 5L02.

#### INTRODUCTORY AND GENERAL COURSES

GEOG-1102(3) Introductory Human Geography: People, Culture and Environment  
 GEOG-1103(3) Introductory Human Geography: Population, Place and Development  
 GEOG-1201(3) Introductory Atmospheric Science  
 GEOG-1202(3) Introductory Earth Science

GEOG-4320(3) Projects in Geomatics  
 GEOG-4321(3) Topics in Geomatics I  
 GEOG-4322(3) Topics in Geomatics II  
 GEOG-4703(3) Directed Readings in Geomatics  
 GEOG-4901(6) Honours Geography Thesis

#### PHYSICAL GEOGRAPHY COURSES

GEOG-2204(3) Human Impact on the Environment  
 GEOG-2207(3) Climatology  
 GEOG-2210(3) Meteorology  
 GEOG-2212(3) Natural Hazards  
 GEOG-2213(3) Introductory Soil Science  
 GEOG-2214(3) Soil-Vegetation Systems  
 GEOG-2215(3) Mineralogy and Petrology  
 GEOG-2216(3) Physical Geology  
 GEOG-2218(3) Fluvial and Hillslope Processes  
 GEOG-2219(3) Glacial and Periglacial Processes  
 GEOG-3204(3) Climate Change and Variability  
 GEOG-3210(3) Hydrology  
 GEOG-3211(3) Karst and Coastal Geomorphology  
 GEOG-3215(3) Biogeography  
 GEOG-3216(3) Arctic Environments  
 GEOG-3217(3) Tropical Environments  
 GEOG-3218(3) Global Biogeochemical Cycles  
 GEOG-3219(3) Quaternary Environments  
 GEOG-4203(3) Topics in Climatology  
 GEOG-4212(3) Topics in Earth Sciences  
 GEOG-4219(3) Physical Geography Seminar  
 GEOG-4231(3) Topics in Biogeography  
 GEOG-4702(3) Directed Readings in Physical Geography  
 GEOG-4801(3) Geography Field Seminar  
 GEOG-4901(6) Honours Geography Thesis

#### SYSTEMATIC HUMAN GEOGRAPHY COURSES

GEOG-2401(3) Agricultural Geography  
 GEOG-2407(3) Recreation Geography  
 GEOG-2408(3) Environmental Perception and Human Behaviour  
 GEOG-2409(6) Energy, Resources and Economic Development  
 GEOG-2410(3) Selling Places: Geography of Marketing Tourism  
 GEOG-2411(3) Geography of Globalization  
 GEOG-2412(3) A Geographical Perspective on Tourism  
 GEOG-2414(3) The Urban Environment  
 GEOG-2415(3) An Introduction to Urban Development  
 GEOG-2416(3) Sex, Gender, Space and Place  
 GEOG-2417(3) An Introduction to Economic Geography  
 GEOG-2419(3) Resource Development and the Canadian Environment  
 GEOG-2431(3) Population Geography  
 GEOG-3402(3) Urbanization in the Developing World  
 GEOG-3408(3) Water Resources  
 GEOG-3411(3) Heritage Conservation and Tourism  
 GEOG-3413(3) Urban Revitalization: Rebuilding of Decaying Cities  
 GEOG-3415(3) Contested Space: A Geography of Place  
 GEOG-3430(3) Housing and the Neighbourhood  
 GEOG-3431(3) Health Geography  
 GEOG-3432(3) Urban and Community Planning  
 GEOG-3443(3) Advanced Tourism  
 GEOG-3445(3) Power, Knowledge, Geography  
 GEOG-4403(3) Urban Land Use: Developmental Processes  
 GEOG-4404(3) Field Research in Urban Geography  
 GEOG-4409(3) Architecture and City Planning  
 GEOG-4441(3) Advanced Studies in Environmental Perception  
 GEOG-4443(3) Advanced Tourism  
 GEOG-4445(3) Power, Knowledge, Geography  
 GEOG-4450(3) Environment and Sustainability I  
 GEOG-4701(3) Directed Readings in Human Geography  
 GEOG-4801(3) Geography Field Seminar  
 GEOG-4901(6) Honours Geography Thesis

#### GEOMATICS COURSES

GEOG-2304(3) Computer Mapping  
 GEOG-2306(3) Introduction to Geographic Information Systems  
 GEOG-2309(3) Statistical Techniques in Environmental Analysis  
 GEOG-2316(3) Remote Sensing  
 GEOG-3306(3) Advanced Geographic Information Systems  
 GEOG-3307(3) Advanced Computer Mapping  
 GEOG-3319(3) Advanced Remote Sensing  
 GEOG-3330(3) Research Methods in Geography

#### REGIONAL GEOGRAPHY COURSES

Students are reminded that Geography 1102(3) and 1103(3), 1201(3), and 1202(3) provide appropriate background for all regional courses. Students lacking first year geography and wishing to take a regional course should consult the Instructor concerned.

GEOG-2503(3) Manitoba's Physical and Human Environments  
 GEOG-3508(3) Geographical Issues in the Developing World  
 GEOG-3509(3) Canada's Physical and Human Environments (Required for all Geography degrees, except the GIS Joint programs)  
 GEOG-3510(3) Prairie Landscapes  
 GEOG-3511(3) Topical Regions in Geography  
 GEOG-3512(3) The Human Geography of Northern Canada

## COURSE DESCRIPTIONS

All course descriptions for all undergraduate programs can now be found in one large PDF called "All course descriptions" in the "Academic Calendar" section of the University website:

<http://uwinnipeg.ca/academics/calendar/index.html>