

# PHYSICAL GEOGRAPHY, B.SC. MAJOR

## Degree Requirements

Course	Title	Hours
<b>Year 1</b>		
GEOG 1290	Introduction to Physical Geography	3
PHYS 1020	General Physics 1 <sup>1</sup>	3
MATH 1500	Introduction to Calculus <sup>2</sup>	3
6 credit hours from the Faculty of Arts		6
<b>Hours</b>		<b>15</b>
<b>Years 1-3</b>		
21 credit hours from the following:		21
PHYS 1030	General Physics 2 <sup>1</sup>	
MATH 1300	Vector Geometry and Linear Algebra <sup>2</sup>	
GEOL 1340	The Dynamic Earth	
COMP 1012	Computer Programming for Scientists and Engineers	
CHEM 1100	Introductory Chemistry 1: Atomic and Molecular Structure and Energetics <sup>3</sup>	
CHEM 1110	Introductory Chemistry 2: Interaction, Reactivity, and Chemical Properties <sup>3</sup>	
CHEM 1120	Introduction to Chemistry Techniques <sup>3</sup>	
STAT 1000	Basic Statistical Analysis 1 <sup>4</sup>	
STAT 2000	Basic Statistical Analysis 2	
BIOL 1020	Biology 1: Principles and Themes <sup>5</sup>	
BIOL 1030	Biology 2: Biological Diversity, Function and Interactions <sup>5</sup>	
MATH 1700	Calculus 2 <sup>2</sup>	
<b>Hours</b>		<b>21</b>
<b>Year 2</b>		
GEOG 2200	Introduction to Thematic Cartography (TS)	3
GEOG 2300	Atmospheric Thermodynamics, Clouds and Precipitation (PS)	3
GEOG 2310	Introduction to Process Hydrology (PS)	3
GEOG 2540	Weather and Climate (PS)	3
GEOG 2550	Geomorphology (PS)	3
ENVR 2810	Environmental Critical Thinking and Scientific Research <sup>6</sup>	3
<b>Hours</b>		<b>18</b>
<b>Years 3-4</b>		
GEOG 2272	Natural Hazards (PS) <sup>7</sup>	3
GEOG 3730	Geographic Information Systems (TS)	3
GEOG 3810	Quantitative Research Methods in Geography (TS) <sup>8</sup>	3
30 credit hours in an approved Stream <sup>9</sup>		30
27 credit hours of electives		27
<b>Hours</b>		<b>66</b>
<b>Total Hours</b>		<b>120</b>

<sup>1</sup> PHYS 1050 and PHYS 1070 may be used in lieu of PHYS 1020 and PHYS 1030, respectively.

- <sup>2</sup> MATH 1230, MATH 1510 or MATH 1520 may be used in lieu of MATH 1500; or MATH 1690 may be used in place of MATH 1500 (or equivalent) and MATH 1700; or MATH 1310 may be used in lieu of MATH 1300; or MATH 1232 or MATH 1710 may be used in lieu of MATH 1700.
- <sup>3</sup> The former CHEM 1300 and 1310 may be used in lieu of CHEM 1100, CHEM 1110 and CHEM 1120. CHEM 1122 and CHEM 1126 may be used in lieu of CHEM 1120.
- <sup>4</sup> STAT 1150 may be used in lieu of STAT 1000.
- <sup>5</sup> BIOL 1000 and BIOL 1010 may be used in lieu of BIOL 1020 and BIOL 1030.
- <sup>6</sup> The former GEOG 2530 may be used in lieu of ENVR 2810.
- <sup>7</sup> The former GEOG 2440 may be used in lieu of GEOG 2272.
- <sup>8</sup> The former GEOG 3680 may be used in lieu of GEOG 3810.
- <sup>9</sup> A **Stream** must be approved by a Riddell Faculty student advisor. Major Stream requirements are as follows: 30 credit hours of 2000- (or higher) level courses, of which 18 credit hours must be at the 3000- or 4000-level.

Entrance into the degree programs is summarized in the Overview (<https://catalog.umanitoba.ca/undergraduate-studies/environment-earth-resources/environment-geography/physical-geography-bsc-honours/#Advanced-Entry-Requirements-Major>).

The W course (<https://catalog.umanitoba.ca/undergraduate-studies/general-academic-regulations/#Residence-Written-English>) must be completed within the first 60 credit hours of courses.

The courses required in this program will satisfy the University Mathematics requirement. (<https://catalog.umanitoba.ca/undergraduate-studies/general-academic-regulations/#Residence-Written-English>)

Equivalent courses offered through Université de Saint-Boniface may be used in lieu of the specified courses identified in the degree program chart.

### Note:

To fulfil prerequisite requirements a grade of 'C' must be achieved, unless otherwise stated, in any course stipulated as a prerequisite to a further course.

- Students should review the course topics available for GEOG 3740, GEOG 3750, GEOG 3760, GEOG 3770 and GEOG 4670. Also, all courses are not offered every year. The course schedule for the current academic term is available from the Class Schedule in Aurora.
- Students registering in certain courses may be required to participate in field trips or field components and pay a portion of the associated expenses. For details, contact the Department of Environment and Geography (<https://umanitoba.ca/environment-earth-resources/environment-and-geography/#about-us>) general office.

**Important:** The Honours and Major programs need not be completed in the course order described in the chart above. The chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program.

## Major Cooperative Option<sup>1</sup>

Course	Title	Hours
<b>Year 1</b>		
GEOG 1290	Introduction to Physical Geography	3

PHYS 1020	General Physics 1 <sup>2</sup>	3
MATH 1500	Introduction to Calculus <sup>3</sup>	3
6 credit hours from the Faculty of Arts		6
<b>Hours</b>		<b>15</b>
<b>Years 1-3</b>		
21 credit hours from the following:		21
PHYS 1030	General Physics 2 <sup>2</sup>	
MATH 1300	Vector Geometry and Linear Algebra <sup>3</sup>	
GEOL 1340	The Dynamic Earth	
COMP 1012	Computer Programming for Scientists and Engineers	
CHEM 1100	Introductory Chemistry 1: Atomic and Molecular Structure and Energetics <sup>4</sup>	
CHEM 1110	Introductory Chemistry 2: Interaction, Reactivity, and Chemical Properties <sup>4</sup>	
CHEM 1120	Introduction to Chemistry Techniques <sup>4</sup>	
STAT 1000	Basic Statistical Analysis 1 <sup>5</sup>	
STAT 2000	Basic Statistical Analysis 2	
BIOL 1020	Biology 1: Principles and Themes <sup>6</sup>	
BIOL 1030	Biology 2: Biological Diversity, Function and Interactions <sup>6</sup>	
MATH 1700	Calculus 2 <sup>3</sup>	
<b>Hours</b>		<b>21</b>
<b>Year 2</b>		
GEOG 2200	Introduction to Thematic Cartography (TS)	3
GEOG 2300	Atmospheric Thermodynamics, Clouds and Precipitation (PS)	3
GEOG 2310	Introduction to Process Hydrology (PS)	3
GEOG 2540	Weather and Climate (PS)	3
GEOG 2550	Geomorphology (PS)	3
ENVR 2810	Environmental Critical Thinking and Scientific Research <sup>7</sup>	3
ENVR 2900	Professional Development in the Environmental Sectors 1	1.5
ENVR 3980	Coop Work Term 1	0
ENVR 3910	Coop Work Term Report 1	1.5
<b>Hours</b>		<b>21</b>
<b>Years 3-4</b>		
GEOG 2272	Natural Hazards (PS) <sup>8</sup>	3
GEOG 3730	Geographic Information Systems (TS)	3
GEOG 3810	Quantitative Research Methods in Geography (TS) <sup>9</sup>	3
ENVR 3900	Professional Development in the Environmental Sectors 2	1.5
ENVR 3990	Coop Work Term 2	0
ENVR 3920	Coop Work Term Report 2	1.5
ENVR 4980	Work Term 3 (optional) <sup>10</sup>	
ENVR 4910	Coop Work Term Report 3 (optional) <sup>10</sup>	
30 credit hours in an approved Stream <sup>11</sup>		30
21 credit hours of electives		21
<b>Hours</b>		<b>63</b>
<b>Total Hours</b>		<b>120</b>

- <sup>1</sup> Entrance into the degree programs is summarized in the Overview (<https://catalog.umanitoba.ca/undergraduate-studies/environment-earth-resources/environment-geography/physical-geography-bsc-honours/#Advanced-Entry-Requirements-Major>).
- <sup>2</sup> PHYS 1050 and PHYS 1070 may be used in lieu of PHYS 1020 and PHYS 1030, respectively.
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- <sup>4</sup> The former CHEM 1300 and 1310 may be used in lieu of CHEM 1100, CHEM 1110 and CHEM 1120. CHEM 1122 and CHEM 1126 may be used in lieu of CHEM 1120.
- <sup>5</sup> STAT 1150 may be used in lieu of STAT 1000.
- <sup>6</sup> BIOL 1000 and BIOL 1010 may be used in lieu of BIOL 1020 and BIOL 1030.
- <sup>7</sup> The former GEOG 2530 may be used in lieu of ENVR 2810.
- <sup>8</sup> The former GEOG 2440 may be used in lieu of GEOG 2272.
- <sup>9</sup> The former GEOG 3680 may be used in lieu of GEOG 3810.
- <sup>10</sup> Students in the cooperative education option who complete ENVR 4980 and ENVR 4910 will graduate with an additional 1.5 degree credits for a total of 121.5 credits hours.
- <sup>11</sup> A **Stream** must be approved by a Riddell Faculty student advisor. Major Stream requirements are as follows: 30 credit hours of 2000- (or higher) level courses, of which 18 credit hours must be at the 3000- or 4000-level.

The W course (<https://catalog.umanitoba.ca/undergraduate-studies/general-academic-regulations/#Residence-Written-English>) must be completed within the first 60 credit hours of courses.

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