



<p>1.0 Degree Title Specify the two degrees for concurrent degree programs</p> <p>Bachelor of Science</p>	<p>2.0 Administering Faculty/Unit</p> <p>Science</p>
<p>1.1 Major (Legacy= Subject) (30-char. max.)</p> <p>Geology</p>	<p>Offering Faculty/Department</p> <p>Earth and Planetary Sciences</p>
<p>1.2 Concentration (Legacy = Concentration/Option) If applicable (30 char. max.)</p> <p></p>	<p>3.0 Effective Term of revision or retirement Please give reasons in 5.0 "Rationale" in the case of retirement (Ex. Sept. 2004 = 200409)      <input type="checkbox"/> Retirement</p> <p>Term: 201509</p>
<p>1.3 Minor (with Concentration, if applicable) (30 char. max.)</p> <p></p>	<p>4.0 Existing Credit Weight      Proposed Credit Weight</p> <p>66      66</p>
<p>1.4 Category</p> <p><input type="checkbox"/> Faculty Program (FP)      <input type="checkbox"/> Honours (HON)</p> <p><input checked="" type="checkbox"/> Major      <input type="checkbox"/> Joint Honours Component (HC)</p> <p><input type="checkbox"/> Joint Major      <input type="checkbox"/> Internship/Co-op</p> <p><input type="checkbox"/> Major Concentration (CON)      <input type="checkbox"/> Thesis (T)</p> <p><input type="checkbox"/> Minor      <input type="checkbox"/> Non-Thesis (N)</p> <p><input type="checkbox"/> Minor Concentration (CON)      <input type="checkbox"/> Other</p> <p>Please specify</p> <p></p>	<p>5.0 Rationale for revised program</p> <p>The <i>name change</i> of the program, known previously as <b>B.Sc. Major in Earth and Planetary Sciences</b> to <b>B.Sc. Major in Geology</b> stresses its relevance to the academic training of professional geologists.</p> <p>The <i>course EPSC 240</i> is added in U1 (fall semester) to give students map reading skills and a first experience of describing rock textures and structures in the field. This provides context for concepts covered in EPSC 233 and better preparation for field-based exercises throughout the Major. <i>The retirement of EPSC 312</i> maintains the number of credits required in U1.</p> <p><i>The re-structured lists of required and complementary courses in U2 and U3</i> make clearer the breadth of academic knowledge required for the professional practice of geology in Canada.</p>
<p>1.5 Complete Program Title</p> <p>B.Sc. Major in Geology</p>	

6.0 Revised Program Description (Maximum 150 words)

**New Program Description**

The program curriculum provides a rigorous foundation in the fundamental earth science subjects and in the advanced subjects relevant to exploration for energy resources, industrial and ore minerals, and to environmental geosciences. The program meets the academic requirements shared by the professional orders for geologists and environmental geoscientists in most Canadian provinces. It also offers students the opportunity to take courses or acquire experience in areas of current research. It is a path to a wide range of careers in industry, teaching and research in earth sciences.

**Existing Program Description**

The program curriculum is designed to provide a rigorous foundation in physical sciences and the flexibility to create an individualized program in preparation for careers in industry, teaching, and research. The program is accepted for professional qualification in most Canadian provinces.

## 7.0 List of existing program and proposed program

Existing program (list courses as follows: Subj Code/Crse Num, Title, Credit weight, under the headings of: Required Courses, Complementary Courses, Elective Courses)

### **U1 Required Courses (21 credits)**

EPSC 203 Structural Geology (3 credits)  
EPSC 210 Introductory Mineralogy (3 credits)  
EPSC 212 Introductory Petrology (3 credits)  
EPSC 220 Principles of Geochemistry (3 credits)  
EPSC 231 Field School 1 (3 credits)  
**EPSC 312 Spectroscopy of Minerals (3 credits)**  
MATH 222 Calculus 3 (3 credits)

### **U1 Complementary Course:**

3 credits, one of  
EPSC 201 Understanding Planet Earth (3 credits)  
EPSC 233 Earth & Life History (3 credits)

### **U2 and/or U3 Required Courses (24 credits)**

EPSC 320 Elementary Earth Physics (3 credits)  
EPSC 334 Invertebrate Paleontology (3 credits)  
EPSC 340 Earth and Planetary Inference (3 credits)  
EPSC 350 Tectonics (3 credits)  
EPSC 355 Sedimentary Geology (3 credits)  
EPSC 423 Igneous Petrology (3 credits)  
EPSC 445 Metamorphic Petrology (3 credits)  
EPSC 452 Mineral Deposits (3 credits)

### **Complementary Courses (18 credits)**

3 credits (one course) of:  
EPSC 331 Field School 2 (3 credits)  
EPSC 341 Field School 3 (3 credits)

plus 15 credits (five courses) chosen from the following:

**EPSC 330 Earthquakes and Earth Structure (3 credits)**  
EPSC 425 Sediments to Sequences (3 credits)  
EPSC 435 Applied Geophysics (3 credits)  
EPSC 470D1 Undergraduate Thesis Research (3 credits)  
EPSC 470D2 Undergraduate Thesis Research (3 credits)  
EPSC 501 Crystal Chemistry (3 credits)  
EPSC 519 Isotope Geology (3 credits)  
EPSC 530 Volcanology (3 credits)  
EPSC 542 Chemical Oceanography (3 credits)  
EPSC 547 Modelling Geochemical Processes (3 credits)  
EPSC 548 Processes of Igneous Petrology (3 credits)  
EPSC 549 Hydrogeology (3 credits)  
EPSC 550 Selected Topics 1 (3 credits)  
EPSC 551 Selected Topics 2 (3 credits)  
EPSC 552 Selected Topics 3 (3 credits)  
EPSC 561 Ore-forming Processes (3 credits)  
EPSC 567 Advanced Volcanology (3 credits)  
EPSC 570 Cosmochemistry (3 credits)  
EPSC 580 Aqueous Geochemistry (3 credits)  
EPSC 590 Applied Geochemistry Seminar (3 credits)

Note: Other courses at the 300 level or higher in Earth and Planetary Sciences and in other departments in the Faculties of Science and Engineering may also be used as complementary credits with the permission of the Director of undergraduate studies.

Proposed program (list courses as follows: Subj Code/Crse Num, Title, Credit weight, under the headings of: Required Courses, Complementary Courses, Elective Courses)

### **U1 Required Courses (24 credits)**

EPSC 203 Structural Geology (3 credits)  
EPSC 210 Introductory Mineralogy (3 credits)  
EPSC 212 Introductory Petrology (3 credits)  
EPSC 220 Principles of Geochemistry (3 credits)  
EPSC 231 Field School 1 (3 credits)  
**EPSC 233 Earth & Life History (3 credits)**  
**EPSC 240 Geology In The Field (3 credits)**  
MATH 222 Calculus 3 (3 credits)

### **U2 and/or U3 Required Courses (6 credits)**

EPSC 320 Earth Physics (3 credits)  
EPSC 340 Earth and Planetary Inference (3 credits)

**U2 and/or U3 Complementary Courses (36 credits) chosen from the categories listed below:**

### **Advanced earth science: minimum 18 credits (6 courses)**

EPSC 334 Invertebrate Paleontology (3 credits)  
EPSC 355 Sedimentary Geology (3 credits)  
EPSC 423 Igneous Petrology (3 credits)  
EPSC 425 Sediments to Sequences (3 credits)  
EPSC 445 Metamorphic Geology (3 credits)  
EPSC 452 Mineral Deposits (3 credits)  
EPSC 549 Hydrogeology (3 credits)

### **Field school: minimum 3 credits (one course)**

EPSC 331 Field School 2 (3 credits)  
EPSC 341 Field School 3 (3 credits)

### **Specialization: maximum 12 credits (4 courses)**

EPSC 350 Tectonics (winter)  
EPSC 435 Applied Geophysics (winter)  
EPSC 470D1 Undergraduate Thesis Research (3 credits)  
EPSC 470D2 Undergraduate Thesis Research (3 credits)  
**EPSC 482 Research in Earth and Planetary Sciences (3 cr)**  
EPSC 501 Crystal Chemistry (3 credits)  
EPSC 530 Volcanology (3 credits)  
EPSC 547 Modelling Geochemical Processes (3 credits)  
EPSC 548 Processes of Igneous Petrology (3 credits)  
EPSC 550 Selected Topics 1 (3 credits)  
EPSC 551 Selected Topics 2 (3 credits)  
EPSC 552 Selected Topics 3 (3 credits)  
EPSC 567 Advanced Volcanology (3 credits)  
EPSC 570 Cosmochemistry (3 credits)

### **Applied geochemistry: environmental and ore deposits**

**EPSC 513 Climate and The Carbon Cycle (3 credits)**  
EPSC 519 Isotope Geology (3 credits)  
EPSC 542 Chemical Oceanography (3 credits)  
EPSC 561 Ore-Forming Processes (3 credits)  
EPSC 580 Aqueous Geochemistry (3 credits)  
EPSC 590 Applied Geochemistry Seminar (3 credits)

Other ATOC, EPSC, ESYS, GEOG, MATH and MIME courses may also be used, with the permission of the Director of undergraduate studies, if they meet the academic requirements of professional orders in most Canadian provinces.

8.0 Consultation with Related Units  Yes  No

Financial Consult  Yes  No

Attach list of consultations

9. Approvals

Routing Sequence	Name	Signature	Date
Department	Alfonso Mucci		November 14, 2014
Curric/Acad Committee			
Faculty 1			
Faculty 2			
Faculty 3			
CGPS			
SCTP			
APC			
Senate			

Submitted by

Name	Jeanne Pquette	To be completed by ARR:
Phone	514-398-4402	CIP Code
Email	jeanne.paquette@mcgill.ca	
Submission Date	November 17, 2014	

10. FQRSC (Research) Indicator (for GPS): Yes No