

Department of Geography

Memo/ proposal

**GEOG 205 addition to the Science Freshman program
List of Approved Science course**

Background

The Faculty of Science Freshman Program currently includes 6 courses covering general math and science breadth, plus a 7th Science Complementary course from a *List of Approved Freshman Science Courses*. Students can choose one course for a list of 19 approved courses offered by departments in the Faculty of Science. Currently, there is only a single course (ESYS 104: The Earth System) included in this list to reflect the combined interests and topics in the Departments of Geography, Earth and Planetary Sciences (EPS), and Atmospheric and Ocean Sciences (ATOC). There is limited growth in enrolment in ESYS 104, and there is negligible evidence that it has contributed to recruitment and ‘marketing’ of these departments and disciplines among freshman science students.

The option of ESYS 104 in the Science Freshman Program does not currently reflect the topics, theories, perspectives, and teachings available in individual departments, including Geography. The course does not currently provide freshman students with a sense of ‘*what is geography*’ and has not been an effective mechanism for recruitment into Geography BSc programs from the science freshman cohort.

Proposal

We herein propose that an introductory level physical geography course (GEOG 205) be added to the List of Approved Freshman Science courses.

GEOG 205 (Global Change: Past, Present & Future) is one of the Department of Geography’s introductory physical geography (i.e. science-based) courses, and is not currently a component of the department’s programs. The course cannot be used by geography students for program credit except by special permission of the advisor. GEOG 205 is accepted in programs of other departments/schools or is used as an elective course.

This proposed addition would aim to: 1) Educate freshman science students on the content, topics, and application of geographic concepts and perspectives, predominantly focusing on physical geography, but also including interactions with human geography and sustainability, 2) Increase enrolment in GEOG programs by BSc students, and 3) Increase enrolment in GEOG courses.

This proposal could in theory be combined with, or followed by, similar proposals from ATOC and EPS.

Dr. Lea Berrang Ford
Assistant Professor
Chair, Undergraduate Affairs Committee
McGill Department of Geography

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AR-13-96

Freshman Program (30 credits)

Offered by: Science Degree: Bachelor of Science

Program Requirements

Students who need 97-120 credits to complete their degree requirements will normally be registered in the Science Freshman Program until they complete their first year. They must consult an adviser in the Science Office for Undergraduate Student Advising (SOUSA) to obtain advice and approval of their course selection. Full details are available on the SOUSA website at <http://www.mcgill.ca/science/student/newstudents/u0> (<http://www.mcgill.ca/science/student/newstudents/u0>). Academic advising is also available by email. The address is newstudentadvising.science@mcgill.ca (<mailto:newstudentadvising.science%40mcgill.ca>).

Students normally complete 30 credits which must include at least seven courses from the list of Approved Freshman Science Courses, selected as follows:

General Math and Science Breadth

Six of the Freshman courses to satisfy one of the following:

Option 1) 2 courses from MATH and 4 courses from BIOL, CHEM or PHYS;

or

Option 2) 3 courses from MATH and 3 courses from BIOL, CHEM or PHYS.

Science Complementary

The seventh course is chosen from the list of Approved Freshman Science Courses.

Notes:

1. Students who have not studied all of Biology, Chemistry, and Physics at the grade 12 level or equivalent are strongly advised to include at least one course in the missing discipline in their Freshman Program.
2. Many students will complete more than seven courses from the Approved Freshman Science Courses list, particularly those who wish to leave several options open for their choice of major.
3. Students entering the Freshman Program should be aware of the department specific requirements when selecting their courses. Detailed advising information is available at <http://www.mcgill.ca/science/student/newstudents/u0/bscfreshman/specific> (<http://www.mcgill.ca/science/student/newstudents/u0/bscfreshman/specific>).
4. The maximum number of courses per term, required, complementary, and elective, is five.
5. Some medical and dental schools have specific freshman course requirements. Check the admission requirements of the school(s) to which you intend to apply.

List of approved Freshman Science Courses

Select the approved courses according to the instructions above.

BIOL 111 Principles: Organismal Biology (3 credits) (/study/2014-2015/courses/biol-111)

BIOL 112 Cell and Molecular Biology (3 credits) (/study/2014-2015/courses/biol-112)

CHEM 110 General Chemistry 1 (4 credits) (/study/2014-2015/courses/chem-110)

CHEM 115 Accelerated General Chemistry: Giants in Science (4 credits) * (/study/2014-2015/courses/chem-115)

CHEM 120 General Chemistry 2 (4 credits) * (/study/2014-2015/courses/chem-120)

COMP 202 Foundations of Programming (3 credits) (/study/2014-2015/courses/comp-202)

ESYS 104 The Earth System (3 credits) (/study/2014-2015/courses/esys-104)

MATH 133 Linear Algebra and Geometry (3 credits) ** (/study/2014-2015/courses/math-133)

MATH 134 Enriched Linear Algebra and Geometry (3 credits) *** (/study/2014-2015/courses/math-134)

PSYC 100 Introduction to Psychology (3 credits) (/study/2014-2015/courses/psyc-100)

* CHEM 115 (/study/2014-2015/courses/chem-115) is not open to students who are taking or have taken CHEM 110 (/study/2014-2015/courses/chem-110) or CHEM 120 (/study/2014-2015/courses/chem-120).

* CHEM 120 (/study/2014-2015/courses/chem-120) is not open to students who have taken CHEM 115 (/study/2014-2015/courses/chem-115).

** Not open to students who are taking or taken MATH 134 (/study/2014-2015/courses/math-134).

*** MATH 134 (/study/2014-2015/courses/math-134) is an enriched version of MATH 133 (/study/2014-2015/courses/math-133). MATH 134 (/study/2014-2015/courses/math-134) may be used instead of MATH 133 (/study/2014-2015/courses/math-133) to: (1) provide a course prerequisite; and (2) satisfy program requirements.

First calculus course, one of:

MATH 139 Calculus 1 with Precalculus (4 credits) (/study/2014-2015/courses/math-139)

MATH 140 Calculus 1 (3 credits) (/study/2014-2015/courses/math-140)

MATH 150 Calculus A (4 credits) (/study/2014-2015/courses/math-150)

Second calculus course, one of:

MATH 141 Calculus 2 (4 credits) (/study/2014-2015/courses/math-141)

MATH 151 Calculus B (4 credits) (/study/2014-2015/courses/math-151)

First physics course, one of:

PHYS 101 Introductory Physics - Mechanics (4 credits) (/study/2014-2015/courses/phys-101)

GEOG 205 GLOBAL CHANGE: PAST, PRESENT + FUTURE (3 credits)

PHYS 131 Mechanics and Waves (4 credits) (/study/2014-2015/courses/phys-131)

Second physics course, one of:

PHYS 102 Introductory Physics - Electromagnetism (4 credits) (/study/2014-2015/courses/phys-102)

PHYS 142 Electromagnetism and Optics (4 credits) (/study/2014-2015/courses/phys-142)

Electives

Students wishing to take elective courses may choose them from introductory courses offered by departments in the Faculties of Science or of Arts. A list of recommended courses is found at <http://www.mcgill.ca/science/student/newstudents/u0/bscfreshman/suggeste...> (<http://www.mcgill.ca/science/student/newstudents/u0/bscfreshman/suggested-elective-courses>). Certain courses offered by other faculties may also be taken, but some restrictions apply. Consult the SOUSA website at <http://www.mcgill.ca/science/student/continuingstudents/bsc/outside/> (<http://www.mcgill.ca/science/student/continuingstudents/bsc/outside/>) for more information about taking courses from other faculties.

Faculty of Science—2014-2015 (last updated Feb. 18, 2014) (disclaimer (/study/2014-2015/disclaimer))

McGill University Department of Geography
GEOG 205 Global Change: Past, Present and Future (Winter 2014)

Prof. Gail Chmura Room 628, Burnside Hall; (514)926-6854, gail.chmura@mcgill.ca Office hours by appointment.	Prof. Navin Ramankutty Room 627, Burnside Hall; 398-8428, navin.ramankutty@mcgill.ca Office hours: Wed 11am-noon; Thurs 1-2pm.
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Teaching Assistants: Contact Teaching Assistants at GEOG205TA@hotmail.com

To contact us, email the addresses above and please put GEOG205 in the subject line.

This course examines the changes that have occurred in the global environment, through the last 2 million years (Quaternary) to the present day, and the possible changes in this century associated with the greenhouse effect, climate change and land use change. The course has three components:

1. Present-day climate & climate change: how the present-day patterns of climate and vegetation are generated and distributed, basics of climate change; (Ramankutty/Chmura)
2. Changes in the Earth's climate, vegetation and landscapes during the last 2 million years (through the last "Ice Age" to the recent past); the ways in which we study these changes; can these past variations be used as evidence against global warming or human's role in it? (Chmura)
3. Future climate change: predictions of climate change, attributing to human activities, climate change impacts, solutions. We will also briefly touch on land use change. (Ramankutty)

This course has no prerequisites, but is a science course.

Lectures will be Tuesday and Thursday, 10:05 - 11:25 hr in Maass Chemistry Building 112.

Required Reading:

The following are required texts available for purchase at the bookstore and on reserve at McClennan Library (Humanities and Social Sciences).

1. Mann, M.E. and L.R. Kump, 2008. *Dire Predictions: Understanding global warming*. DK Publishing Inc., London (see reading list for required sections to read for each lecture)
2. Imbrie, J. and K.P. Imbrie, 1979. *Ice Ages: Solving the Mystery*. Harvard University Press, Cambridge, MA. (The entire, short book is required reading.)

Powerpoints (from Prof. Ramankutty) and lecture texts (from Prof. Chmura) and other additional material will be posted on the Mycourses site.

Supporting material is on reserve at the Humanities and Social Sciences Library:

- Christopherson, R. and Byrne, M.L.. 2009. *Geosystems*, Prentice Hall.
- Strahler, A and Strahler, A. 2005. *Physical Geography*. Wiley.

Marking:

The final grade for the course will be composed of the following:

Two term tests, in-class Feb 11 (25%), Mar 18 (25%)	50%
Two assignments (12.5% each)	25%
Final exam (centrally scheduled during exam period)	25%

The final exam is cumulative in the sense that the science is cumulative (later material builds on earlier material), but each test and final exam will focus on material not covered by previous exams.

McGill University Department of Geography
GEOG 205 Global Change: Past, Present and Future (Winter 2014)

Schedule Conflicts. In the past, some students have signed up for this class at the same time as another class or lab, and missed most lectures. First, this is illegal. Second, please do not use this as an excuse. We expect you attend all classes, and if you will miss a class, to make alternate arrangements to catch up on material or find out vital announcements.

Class Etiquette. Out of common courtesy, your professors request a few things of you. While students are in class, they are expected to give their full attention to the professor or the videotape, if one is being shown. Mobile computing and communications devices are permitted in class insofar as their use does not disrupt the teaching and learning process. It is impolite to read, talk, sleep, or otherwise conduct yourselves in a way that disrupts the class. If you know before class that you will have to leave early sit towards the back near the door so as not to disrupt the class. Likewise, if you arrive late, please enter from the back of the class.

Late Assignments. Unless you have received permission to miss the deadline (e.g., you have a medical excuse or other crisis) your score will be reduced by 10 percentage points for every day it is late, including weekends. If you do not submit a late assignment in person you must notify us that you have turned it in.

Missed Exam. Make-up exams will be available only to those students who have valid reasons for missing the exam. These include medical problems (a doctor's note is necessary) and family emergencies. If you have missed an exam contact a Prof or TA as soon as possible. We cannot provide a make-up for the final exam; this is arranged by the University.

McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/students/srr/honest for more information).

Although you may discuss your assignment questions, preparation of answers must be an individual effort. Your written material must be your own and unique.

Other matters

- *For information on university and department policies for student assessment, please go to <http://www.mcgill.ca/geography/studentassessment>*
- In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.
- © Instructor generated course materials (e.g., handouts, notes, summaries, exam questions, etc.) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that infringements of copyright can be subject to follow up by the University under the Code of Student Conduct and Disciplinary Procedures.
- While we endeavor to provide an inclusive learning environment, if you experience barriers to learning in this course, do not hesitate to discuss them with us and the [Office for Students with Disabilities](#), 514-398-6009.
- In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.

McGill University Department of Geography
GEOG 205 Global Change: Past, Present and Future (Winter 2014)

Tentative Lecture Schedule winter term 2014

Date	Topic	Instructor
Jan-7	Introduction to class	Chmura/Ramankutty
Jan-9	Is our planet in peril? What are the major global challenges?	Ramankutty
Jan-14	Film: The Great Global Warming Swindle	Chmura/Ramankutty
Jan-16	What are biomes? How are they distributed globally and why?	Chmura
Jan-21	What determines the Earth's climate today?	Ramankutty
Jan-23	Climate change basics	Ramankutty
Jan-28	Observations of climate change	Ramankutty
Jan-30	Intro to geologic time, dating techniques and critical climate events in Earth's history	Chmura
Feb-4	The Ice Ages: the Evidence on the Land; Film: the Recent Ice Age	Chmura
Feb-6	Ice Ages Evidence in the ocean and ice; Film: Coring the Greenland Ice Cap	Chmura
Feb-11	Exam 1 (covers material through & including Feb 4, but not after)	Chmura/Ramankutty
Feb-13	Changes in the levels of land and sea (Assignment 1 distributed)	Chmura
Feb-18	Enormous lakes and serious erosion: the story of the melting ice	Chmura
Feb-20	Rapid climate change!: The "Younger Dryas"	Chmura
Feb-25	Megafaunal Extinctions – the mammoth almost made it	Chmura
Feb-27	Film: Land of the Mammoth (Assignment 1 due)	Chmura
Mar-4	Reading Week	
Mar-6	Reading Week	
Mar-11	Slow climate change: the "Climatic Optimum or Hypsithermal",	Chmura
Mar-13	The "Medieval Warm Period" the "Little Ice Age"	Chmura
Mar-18	Exam 2 (covers material through & including Mar 11)	Chmura
Mar-20	Film: "Earth: The Operators' Manual"	Ramankutty
Mar-25	Climate models and what they say about the future (Assignment 2 distributed)	Ramankutty
Mar-27	How do we know that humans are causing climate change?	Ramankutty
Apr-1	Why should we worry? What are some impacts of climate change?	Ramankutty
Apr-3	How can we stabilize climate?	Ramankutty
Apr-8	Another inconvenient truth: Global land use change (Assignment 2 due)	Ramankutty
Apr-10	Course review	Ramankutty

Deadline for course changes is Jan 21

FINAL EXAM (date & time centrally scheduled)

Ramankutty/Chmura