

COURSE OUTLINE
GEOG 305: Soils and Environment
Fall term, 2020

INSTRUCTOR:

Prof. Christian von Sperber chris.vonsperber@mcgill.ca
Office hours: during the tutorial or by appointment

TEACHING ASSISTANT:

Janice Neumann janice.neumann@mail.mcgill.ca
Office hours: during the tutorial or by appointment

CLASS TIME:

Lectures will be recorded twice per week. On Wednesdays and Fridays from 10:05 to 11:05 pm, there will be an online tutorial on Zoom. Students can write emails with questions before the tutorial. The questions will be answered during the tutorial. Tutorials will be recorded too.

GENERAL ANNOUNCEMENT:

Due to the current crisis caused by the spread of COVID-19, this course cannot be conducted as originally planned in the classroom and on Gault Nature Reserve. As an alternative, I will design a series of lectures and exercises that will take place on Zoom. Lectures will include interactive breakout groups and remote group discussions.

COURSE DESCRIPTION:

This course aims to give students a basic understanding of the properties of soils, the distribution and characteristics of major soil groups, their limitation for different land uses and the impact of environmental change on soils. The course is designed to accommodate geographers, MSE students, geologists, ecologists and the like. There are no set prerequisites to the course, apart from Environmental Systems (GEOG 203) or an equivalent.

The learning outcome of the course is to be able to understand the properties of and processes in soils and their role in the environment and to be able to apply this knowledge and to predict the performance of soils in different settings. The objectives will be achieved through a mixture of recorded lectures and online tutorials (Wed. and Fri. 10:05 – 11:05 h, over Zoom, starting Wednesday Sept. 2), exercises, interactive group discussions and a term paper.

There is no strongly recommended text. PowerPoint lecture slides, as a pdf, and a synopsis of the lectures, will be available on *myCourses* before each class and access to journal articles will also be located on *myCourses*.

LECTURE TOPICS:

1. Concepts of soil: soils and environmental processes.
2. The physical, chemical and biological properties of soils.
3. Soils as dynamic systems: changes in soil water, air, nutrients and structure.
4. Plants and soils: concepts of nutrient availability and its measurement.
5. Soil Hydrology
6. Weathering in soils.
7. Soil formation: concepts and application.
8. Global soils - distribution, properties, genesis and utilization: the polar, boreal and temperate regions; hydromorphic soils (gleysols and peats); the temperate grasslands and deserts; the tropics.
9. Soil classification and land capability assessment. Soil quality and degradation & the 'value' of soils.
10. Global change: soils as sources and sinks of greenhouse gases, the effect of climate change, carbon sequestration and managing 'smart' soils.

COURSE EVALUATION:

Evaluation of the course will be based on a mid-term test (33.3%) which will be a 48 hour take-home test, a term paper on a topic distributed during the second week of classes (33.3%), completion of exercises (33.3%).

Please Note: Policies governing academic issues which affect students can be found in the Handbook on Student Rights and Responsibilities, Charter of Students' Rights (online at <http://www.mcgill.ca/files/secretariat/greenbookenglish.pdf>).

Academic Integrity: "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/integrity/ for more information)."

"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."

Student Support: If you have a disability, please contact the instructor to arrange a time to discuss your situation. It would be helpful if you contact the Office for Students with Disabilities at 398-6009 (online at <http://www.mcgill.ca/osd>) before you do this.

Course Communication: Communication to students will often be via email on MyCourses. Students are encouraged to check MyCourses regularly for course updates. While students can set-up forwarding of MyCourses emails to personal accounts, they are strongly encouraged to forward this mail only to their official McGill email account (not hotmail or

yahoo). The university and instructor cannot guarantee that course emails will be successfully forwarded to external email accounts.

Please read the note on the Departmental rules regarding re-grades:

https://www.mcgill.ca/geography/files/geography/geog_student_assessment_policy_0.pdf

Mutual respect is expected at all times amongst instructors, teaching assistants, support staff and students at McGill University. Students are referred to the Handbook of Student Rights and Responsibilities (the 'Green Book') for McGill's policies on Code of Conduct and to www.mcgill.ca/dp-cio/epolicies for McGill's E-policies.

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