# SOIL SCIENCE (SOIL)

**SOIL 0420 Soil Resources and Productivity 4 cr**
(Lab required) Soil formation; soil physical, chemical and biological properties; soil classification systems, maps and reports; soil fertility, crop nutrients, soil sampling and testing; agricultural productivity. A full-day field trip is required.

**SOIL 0620 Soil and Water Management 4 cr**
(Lab required) Soil, water and crop management techniques and considerations for: weather and climate risk; variability of soil properties and capability; saline, sodic and acidic soils; soil erosion risk; trace element toxicity; maintenance of soil organic matter.
**PR/CR: A minimum grade of C is required unless otherwise indicated.**
Prerequisite: SOIL 0420.

**SOIL 0630 Soil Fertility 4 cr**
(Lab required) Soil nutrients and their behaviour; evaluation of soil fertility including soil testing for precision agriculture; crop response to fertilizers; the manufacture, properties, reactions and application of fertilizer.
**PR/CR: A minimum grade of C is required unless otherwise indicated.**
Prerequisite: SOIL 0420.

**SOIL 3060 Introduction to Agrometeorology 3 cr**
Basic description and discussion of properties of the atmosphere, radiation, temperature, effect of temperature on plant growth, climate and animal response, water, evapotranspiration, insect adaptation, activity in relation to climate, climatic data.

**SOIL 3520 Pesticides: Environment, Economics and Ethics 3 cr**
A comprehensive examination of the benefits and risks of pesticide use. Topics include: Characteristics of pesticide products and formulations used in Western Canada; History, practice, successes and failures in the use of pesticides in agriculture; Pesticide use for protecting human health; Pesticide fate processes in air, soil and aquatic environments; Economical and environmental impact of pesticide application drift; Atmospheric pesticide contamination; Pesticide surface and groundwater contamination; Pesticide toxicity to organisms, including humans; Pesticide residues in food; Pesticide regulations; Pesticide risk indicators; Alternatives to pesticides.

**SOIL 3600 Soils and Landscapes in Our Environment 3 cr**
Discover why soil is an essential resource. Explore the roles of soils and landscapes within natural and agricultural ecosystems by learning the fundamental biological, chemical and physical properties and processes; soil and landscape classification and evaluation.

**SOIL 3610 Field Methods in Land Resource Science 3 cr**
This course provides students with training in field methods used in soil science and related sciences (hydrology, meteorology, ecology, geomorphology, and environmental science). Students participate in a biophysical survey of a field site and in a study of the management, assessment and monitoring of land resources.
**PR/CR: A minimum grade of C is required unless otherwise indicated.**
Prerequisite: SOIL 3600

**SOIL 4060 Physical Properties of Soils 3 cr**
(Lab required) Physical properties of soils and their relation to plant growth. Topics discussed include particle size distribution, soil water, soil structure, soil temperature, and soil aeration.
**PR/CR: A minimum grade of C is required unless otherwise indicated.**
Prerequisite: SOIL 3600 or BIOE 2790 or the former BIOE 2110 or consent of instructor.

**SOIL 4130 Soil Chemistry and Mineralogy 3 cr**
Composition of soil materials. Reactions of nutrients and contaminants with soil organic matter, silicate clays, oxides and other soil constituents which affect their mobility and bioavailability.
**PR/CR: A minimum grade of C is required unless otherwise indicated.**
Prerequisite: SOIL 3600 or consent of instructor.

**SOIL 4400 SOIL ECOLOGY 3 cr**
Explore the application of soil biology to diversity in agro ecosystems, response of soil organisms to management, mediation of important environmental issues, and promotion of human health. Appreciate the vast array of soil organisms and their functions in soil ecosystems, understand cycling of nutrients by soil organisms, and discover quantitative methodology in determining soil biochemical processes. The laboratory provides hands-on experience in observing, quantifying and isolating soil organisms and the biochemical processes they conduct.
**PR/CR: A minimum grade of C is required unless otherwise indicated.**
Prerequisite: AGEC 2370 or BIOL 2300 or SOIL 3600.

**SOIL 4500 Remediation of Contaminated Land 3 cr**
Physical, chemical and biological approaches to remediation of land including; nature of contaminants, procedures for assessing the extent of the impact, consequences to the environment, approaches to remediation and case studies of contaminant remediation.
**PR/CR: A minimum grade of C is required unless otherwise indicated.**
Prerequisite: SOIL 3600 or consent of the instructor.

**SOIL 4510 Soil and Water Management 3 cr**
Topics include: capability of land for agriculture; storage, movement and use of water; saline and alkaline soils; soil conservation including erosion; sustainability of soil organic matter; effect and fate of soil amendments.
**PR/CR: A minimum grade of C is required unless otherwise indicated.**
Prerequisite: SOIL 3600.

**SOIL 4520 Soil Fertility 3 cr**
Forms and behaviour of plants nutrients in soil; soil fertility evaluation and management, including fertilizer sources and practices.
**PR/CR: A minimum grade of C is required unless otherwise indicated.**
Prerequisite: SOIL 3600.