

The University of Manitoba  
Faculty of Agricultural and Food Sciences



**COURSE TITLE:** Introduction to Soils and Crops

**Department:** Diploma Agriculture

**Course Number:** DAGR 0420

**Academic Session:** Fall 2011

**Credit Hours:** 4

**Prerequisites and how they apply to this course:** none

**Classroom Location:** Room 172, Agriculture building

**Meeting Days and Class Hours:** Monday, Wednesday and Friday, 1:30-2:20PM Sept 19-Dec 2, 2011

**Lab Location:** B01 Tuesday 8:30-9:45 Soils labs Room 318 Ellis building/Plant labs Room 138 Agriculture

B02 Thursday 11:30-12:45 same as above

B03 Thursday 10:00-11:15 same as above except Plant labs Room 134 Agriculture

**Department Office location:** Room 160 Agriculture building

**Phone Number:** 474-9295

**Course Web Page:** Angel Learning at <https://angel.cc.umanitoba.ca/default.asp>

### Instructor Information

**Name & Title:** Dr. Tee Boon Goh

**Office Location:** Room 311 Ellis building

**Office Phone Number:** 474-6046

**Office Hours:** Monday, Wednesday and Friday 2:30-4:00PM by appointment

**Email Address:** [gohtb@ms.umanitoba.ca](mailto:gohtb@ms.umanitoba.ca)

**Name & Title:** Gary Martens

**Office Location:** Room 109 Plant Science, Agriculture building **Office Phone:** 474-6096

**Office Hours:** Monday to Friday 8:30-4:30 appointment preferred

Email address: [gary\\_martens@umanitoba.ca](mailto:gary_martens@umanitoba.ca)

### **Teaching Assistants**

Crop labs: Gwen Donohoe, Room 329 Ellis building, Gwendolyn\_11@hotmail.com

Soils labs: Amanda Taylor, Room 286 Ellis building, umtay257@cc.umanitoba.ca

### Course Philosophy

#### **Students' Learning Responsibilities**

Students are expected to attend lecture and lab classes. Printed course notes for soils lectures will be handed out in class, crop lectures are available through Angel Learning <https://angel.cc.umanitoba.ca/default.asp> Students are encouraged to participate in class and labs by asking questions or providing appropriate comments from their own experiences that will add to the learning of all students. Students are expected to complete and hand in assignments on time.

#### **Why is this course useful?**

This course will introduce students to concepts and principles of crop production that they will use in subsequent courses and during the development of their farm plan. The basics of soil quality, texture, chemistry and evaluation will be studied. These soils concepts will then be applied to the growing of crops, which is the basis of both crop and livestock production. This course should be useful to all diploma students in all majors.

#### **How this course fits into the curriculum**

This is an introductory course that will introduce students to concepts of soils and crops. It will provide the basic principles that will be built upon in subsequent courses.

## Course Description/Objectives

### **Undergraduate Calendar Description**

This course provides a broad understanding of soil forming factors, soil characteristics, climate, nutrient supply and crop production, biology of crop plants, crop establishment and protection, harvest management, farming systems and crop rotations.

### **Instructional Methods**

Lectures will be presented three days per week. The soils portion will have paper hand out notes for assisting students in note taking. The crops portion will have notes provided through Angel Learning <https://angel.cc.umanitoba.ca/default.asp>

### **Course Objectives**

Students will learn how to identify and classify soils according to their limitations and their agricultural capabilities. Students will be able to describe soil quality characteristics such as texture, pH and structure. Students will be able to list the macro and micro nutrients essential for plant growth and development and be able to recognize appropriate soil nutrient levels and calculate appropriate application rates of nutrients for given crop production objectives. Students will be able to construct a crop rotation suitable for an intended purpose in a given geographic location within Manitoba. Students will be able to explain the limitations to crop yields and discuss the factors contributing to high crop yields. Students will be able to plan the seasonal activities essential for the successful production of a crop.

### **Learning outcomes**

Learning outcomes assist: i) students to identify the knowledge, skills, attitudes and personal attributes expected of them to successfully complete their program of studies; ii) faculty to develop learning goals and objectives in their courses and programs, in prioritizing and focusing the learning experiences, and in the selection of appropriate assessment tools and; iii) potential students and outside agencies to assess the quality of our academic programs.

These learning outcomes areas include:

*Scholar, Content and technical expertise, Social accountability, Communicator, and Professional*

### **Description of Examinations**

5 lecture quizzes worth 6 marks each	30%
Final lab exam with a crops and a soils component	12%
Final lecture exam (2 hours)	40%

### **Description of Assignments**

9 lab worksheets worth 2 marks each	18%
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### **Assignment Due Dates**

Lab worksheets are due at the end of the lab unless arrangements have been made with the TA for the lab.

### **Important Dates (e.g., voluntary withdrawal date)**

NO CLASS dates: October 10 Thanksgiving, November 11 Remembrance Day

Voluntary withdrawal date: November 16, 2011

Final lab exam: November 22, 2011 at 6PM

## Texts, Readings, Materials

### **Textbook(s) – Authors, Titles, Edition**

“Required Readings for Introduction to Soils and Crops DAGR 0420” available in the U of M bookstore

## Course Policies

**Late Assignments:** Lab assignments are due at the end of each lab period unless arrangements have been made with the TA for the lab. There will be no makeup labs for missed labs.

**Missed Assignments:** There will be no makeup labs for missed labs. A mark of zero is assigned to a missing lab.

**Missed Exams:** Unexcused missed exams will be given a grade of zero. Where exams are missed and excused through written notification such as a doctor's certificate of illness, evidence of death in the family, or other circumstances that are beyond the control of the student, the student may be given the following options:

- 1) Re-schedule a date for the exam with the instructor and complete the exam at that time (the instructor has the option to set a different exam) or
- 2) The final grade will be determined by increasing the value of the course work completed by the amount that would have been allocated to the missed exam.

### **Academic Integrity**

Plagiarism or any other form of cheating in examinations, term tests or academic work is subject to serious academic penalty. Cheating in examinations or tests may take the form of copying from another student or bringing unauthorized materials into the exam room. Exam cheating can also include exam impersonation. A student found guilty of contributing to cheating in examinations or term assignments is also subject to serious academic penalty. Students should acquaint themselves with the University's policy on plagiarism; cheating, exam impersonation and duplicate submission (see the University of Manitoba Undergraduate Calendar).

### **Use of Third Party Detection and Submission Tools**

Electronic detection tools may be used to screen assignments in cases of suspected plagiarism.

**Group Work Policies:** Students are expected to work independently except in labs where groups have been formed or assigned. In the case of approved group work each student is still expected to hand in individual papers.

## **Course Content**

**Description of lectures (tentative)** G = Goh, M = Martens

DATE: Fall 2011 LECTURE TOPIC (INSTRUCTOR) QUIZZES

September 19 Introduction (G, M)

September 21 Soil Quality and Agricultural Production (G)

September 23 Soil Textural Classes (G)

September 26 Soil pH and Nutrient Availability (G)

September 28 Macro- and Micro-Nutrients (G)

September 30 Nutrient Deficiencies (G) **Quiz #1**

October 3 Nutrient Toxicities (G)

October 5 Diagnosing Nutrient Disorders (G)

October 7 Soil Structure and Recognizing Soil Structure Problems (G)

October 10 **NO CLASS: THANKSGIVING HOLIDAY**

October 12 Saline Soils (G) **Quiz #2**

October 14 Agriculture Origin and Evolution (M)

October 17 Plant Biology: Transport, Transpiration, Photosynthesis, Respiration (M)

October 19 GPS, GIS, Agri-Maps Viewer, GoogleEarth (M)

October 21 Agronomy: Crop Yield Increases (M)

October 24 Crop Yield Limitations (M) **Quiz #3**

October 26 Tillage Systems (M)

October 28 Seeding Practices (M)

October 31 Crop Rotations (M)

November 2 Crop Rotations (M) **Quiz #4**

November 4 Pedigreed Seed Production (M)

November 7 Crop Protection (M)

November 9 Crop Protection (M)

November 11 **NO CLASSES REMEMBRANCE DAY**

November 14 Harvest Management (M) **Quiz #5**

November 16 Risk Management and Case Study (M)

November 18 Sodic Soils (G)  
November 21 Calculating Fertilizer Requirements (G)  
November 23 Soil Testing (G)  
November 25 Soil Sampling and Nitrogen in Soils (G)  
November 28 Nitrogen in Soils (G)  
November 30 Soils at Risk for Disease and Erosion (G)  
December 2 Last day of classes

**Description of laboratories**

DATE: Fall 2011

Lab 1 September 27, 29 Soil Texture 318 Ellis  
Lab 2 October 4, 6 Lime Content and Other Properties 318 Ellis  
Lab 3 October 11, 13 Soil Capability 318 Ellis  
Lab 4 October 18, 20 Plant ID 138 Agriculture  
Lab 5 October 25, 27 Seed Structure and Germination 138 Agriculture  
Lab 6 November 1, 3 Soil Water 318 Ellis  
Lab 7, 8 November 8, 10 Emergence, Growth and Development 138 Agriculture  
Lab 9 November 15, 17 Flowers and Inflorescences 138 Agriculture

Final Lab exam November 22 at 6PM