The University of Manitoba  
Faculty of Agricultural and Food Sciences

COURSE TITLE  Soil Conservation and Management

Department: Soil Science  
Academic Session: Winter 2017  
Department Office location: 362 Ellis Bldg

Course Number: SOIL 0620  
Credit Hours: 4  
Phone Number: (204) 474-8153

Prerequisites and how they apply to this course
The prerequisite course for the class is SOIL 0420 (Soil Productivity and Land Use). The prerequisite course provides fundamental knowledge about soil and landscape properties and how they are described and reported. This knowledge will be utilized for applied learning by considering practical issues involved in soil and water management.

Classroom Location: Room 130, Agriculture Building  
Lab Location: Room 219, Animal Science Bldg.  
Course Web Page: UM Learn

Class Time: MWF 8:30-9:20 a.m.  
Lab Time: Mon 2:30-3:50 p.m.

Instructor Information
Course Coordinator & Instructor: Dr. Paul Bullock (Paul.Bullock@umanitoba.ca)  
362 Ellis Bldg (204) 474-8666

Office Hours: Mon-Fri 8:30-4:30; arrange meetings by appointment or send inquiries by email.

Laboratory Instructor: Dr. Don Flaten (Don.Flaten@umanitoba.ca)  
307 Ellis Bldg (204) 474-6257

Teaching Assistants: Ike Agomoh (umagomoh@myumanitoba.ca)  
Melody Caron (caronm36@myumanitoba.ca)

Class Communication
Students are expected to establish and regularly access their official University email account, which is the email address that will be used for communication about this course. For full details of the Electronic Communication with Students please visit: http://umanitoba.ca/registrar/email_policy/.

Cell Phones, Tablets and Laptops
To maintain a classroom environment that is conducive to learning and be respectful to your classmates and instructor, turn your cell phone off for the lecture period. If you are expecting an emergency call, please notify the instructor at the beginning of the lecture. If you are using a tablet or laptop computer to take notes, please stay on task (ie. don’t check emails or surf the internet).

Recording of Lectures
Students are not permitted to record lectures without the permission of the instructor.

Students’ Learning Responsibilities
The lecture slides will be provided to students (black and white hard copy) and will also be available on the UM Learn course page (full color and size) prior to start of each new section in the class. Each student is expected to have these slides for reference during class and to supplement them with their own notes from the lectures. The slides are made available to facilitate learning the course material and to provide an opportunity for interactive class sessions. Class attendance is needed if students are to gain a full understanding of the course material. Students who attempt to pass this course without attending class, do so at their own risk.

Review questions are provided at the end each section of lecture slides and are intended to assist students by testing their knowledge of course material prior to the section exams and the final exam. Students are expected to study the review questions on their own and seek clarification on any material that they do not fully understand prior to exams.
**How this course fits into the curriculum**

SOIL 0620 is a prescribed 2nd year course in the Crop Management option of the Agriculture Diploma program. This course is designed to provide applied learning exercises in the areas of agricultural production practices, agricultural sustainability, limitations to agricultural production and environmental impacts on the environment. These topics are especially current with recent increased public awareness and criticism of food production practices and agricultural impacts on the environment.

**Calendar Description**

Land capability for agriculture; storage, use of water and water use efficiency; saline and alkaline soils; soil acidity; soil erosion and conservation; tillage, cropping systems and rotations; fate of biosolids, pesticides.

**Course Objectives**

At the completion of this course, the student should be able to:

1. explain relationships among soil, water and air as they relate to environmental quality and agriculture in western Canada,
2. interpret soil, climate and landscape data for the purpose of identifying potential environmental impacts of agricultural practices, as well as the most relevant beneficial management practices to minimize those impacts
3. pass the Soil & Water Management section of the Prairie Province Certified Crop Advisor exam if they decide to write it.

**Description of Examinations**

A series of five (5) 30-minute exams will be held during class period at the completion of the five main sections in the course. The course section exams are tentatively scheduled for January 20, February 1, February 27, March 10 and 27. Each exam will cover the content of the section just completed. A final exam will be scheduled during the exam period at the end of the term and will cover all course and lab content.

**Missed Exams**

If students know beforehand that they will not be able to attend an exam, they must contact the course coordinator or lab instructor to make alternate arrangements. Students who miss an exam without notice will receive a grade of zero on the exam.

**Laboratory Assignments**

Laboratory assignments are designed to be completed during the laboratory session and handed in at the end. They will be graded and returned the following week. Lab exercises involve interpretation of environmental information and its application to a case farm. The concepts will be covered previously in the lectures and students should bring their lecture notes to the lab to refer to the material when needed. During some of the lab periods, students will perform calculations and should bring a calculator. The case farm is meant to provide context for the exercises and improve proficiency in the application of environmental information for addressing issues in soil conservation and management.

**Laboratory Schedule:** Assignments for each laboratory are due on the same date:

- January 9   Lab 01   Case Farm Intro, Temperature Risk
- January 16  Lab 02   Moisture Risk
- January 23  Lab 03   Soil Resources
- January 30  Lab 04   Agricultural Capability
- February 6  Lab 05   Water Resources
- February 13 Lab 06   Soil Salinity and Sodicity
- February 20 Lab 07   mid-term break
- February 27 Lab 08   Drainage and Irrigation
- March 6     Lab 09   Irrigation Suitability
- March 13    Lab 10   Manure Management
- March 20    Lab 10   Erosion Risk
- March 27    Lab 10   Final Exam review and practice
Late or Missed Lab Assignments
Laboratories must be submitted at the end of the laboratory period in order to accommodate timely feedback of grades and comments. If students know beforehand that they will not be able to attend a laboratory session, they should contact the lab instructor to make alternate arrangements. Students who do not submit a weekly laboratory assignment at the end of the lab period will receive a grade of zero on that exercise. Missed laboratory exercises can be made up with an excused absence provided it is completed prior to the distribution of marks to the class for that lab.

Grade Evaluation
Section exams .......................50%   Jan 20, Feb 1, Feb 27, Mar 10, Mar 27 (8:50-9:20 a.m.)
Laboratory Assignments ..........20%
Final Exam........................30%

Texts, Readings, Materials
Hard copies of the Manitoba Soil Management Guide and laboratory handouts will be provided to students. No other textbook is required. The Powerpoint slides will be handed out in class (black and white) and are available for download from the course UM Learn page (color). These slides constitute the study material for the class.

Your rights and responsibilities
For student resources, including student accessibility services, writing and learning support, library information, academic advisory services, student advocacy, and policies regarding student discipline, intellectual property and reporting sexual assaults, please see Schedule A posted on this course’s UM Learn website.

Course Content

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<th>Topic</th>
<th>Approximate Number of Lectures</th>
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<td>Agricultural Climate Resource</td>
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<tr>
<td>- Weather, Climate and Climate Probability</td>
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<tr>
<td>- Temperature, Precipitation, Soil Moisture</td>
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<td>- Evapotranspiration, Crop Water Demand, Water Balance</td>
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<td>Agricultural Land Resource</td>
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<td>- Legal location</td>
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<td>- Soil maps and reports, Prairie soil orders and zones</td>
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<tr>
<td>- Agricultural capability</td>
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<td>Water Management</td>
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<td>- Surface water</td>
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<td>- Groundwater</td>
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<td>- Salinity-Sodicity Management</td>
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<td>- Drainage</td>
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<td>- Irrigation and Irrigation Suitability</td>
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<td>Nutrient Management</td>
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<td>- Fertilizer, Nutrient cycling and balance</td>
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<td>- Ag Productivity, Target Yield</td>
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<td>- Manure management</td>
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<td>Soil Issues</td>
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<td>- Erosion</td>
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<td>- Trace elements</td>
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<td>- Soil organic matter</td>
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<td>- Soil Structure</td>
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