

The University of Manitoba
Faculty of Agricultural and Food Sciences



Course Title: Natural Resources and Primary Agricultural Production

Department: Faculty of Agricultural and Food Sciences **Course Number:** AGRI 1500

Academic Session: Fall 2011

Credit Hours: 3

Prerequisites and how they apply to this course: None

Classroom Location: Rm 172 Agriculture

Meeting Days and Class Hours: M,W,F 10:30-11:20

Lab/Seminar Location: Varies - See lab schedule

Lab/Seminar/Hours: M,T,W,Th 2:30-5:20

Department Office Location: See instructor list below

Phone Number: See instructor list below

Instructor Information

There are two instructors plus some guest lecturers for this course. They main instructors are listed in alphabetical order below. Please copy all instructors on emails to ensure that we are kept informed of any concerns you may have. When communicating with instructors please identify which class you belong to, your name and student number, and write with proper English grammar and spelling.

Name & Title Dr. Anita Brûlé-Babel, Professor, Department of Plant Science

Office Location Rm 247A Agriculture Bldg.

Office Phone Number 474-6062

Office Hours 1:30-2:30 M-F; or by appointment

Email Address anita_brulebabel@umanitoba.ca

Name & Title Dr. Tee Boon Goh, Professor, Department of Soil Science

Office Location Rm 311 Ellis Bldg.

Office Phone Number 474-6046

Office Hours 8:30-9:30 M-F

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Teaching Assistant(s)

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TA Office Hours: By appointment.

Course Philosophy

Students' Learning Responsibilities

Students are expected to attend class regularly, read assigned materials in a timely manner, participate in discussion, and complete all assignments and examinations with academic integrity and honesty. Students are encouraged to ask questions for clarification and seek assistance from instructors if they require additional explanations or resources. In addition, students are expected to conduct themselves in a manner that is respectful of the learning environment, other students, and instructors.

Why this course is useful?

This course gives students an overview of natural resources, land and soil, the interaction of ecological systems with managed agriculture and how they influence crop production. Students will gain an appreciation of the role of agriculture in human civilization, society and world trade. They will also be introduced to basic principles of food production and agricultural systems.

Who should take this course?

Students entering the Faculty of Agricultural and Food Sciences are required to take this course as part of the Faculty Core. In addition, this course is of interest to students that wish to explore the importance of agriculture in their lives and how agricultural systems and natural resources influence soil, crop production, and ecological systems. This course provides experiential learning opportunities through a field tour, and hands-on laboratories.

How this course fits into the curriculum

This course is the first of two introductory agriculture courses that serves as a foundation for more intense study in agriculture. It is part of the faculty core courses and serves as a pre-requisite for a number of courses to be taken in subsequent years.

Course Description/Objectives

Undergraduate Calendar Description

AGRI 1500 Natural Resources and Primary Agricultural Production Cr. Hrs. 3. (Formerly 065.150)

Introduces students to natural resources and climate, primary production of crops and livestock, production and resource economics and rural society. A model of the entire agri-food system will be used to show interrelationships among disciplines, processes, etc.

Instructional Methods

A combination of instructional methods will be used in this course. Traditional in-class lectures will be delivered in combination with use of video and internet resources and practical examples. A field tour will assist in demonstrating diversity of agricultural systems at the farm level and expose students to agriculture as it is conducted in Manitoba. Through laboratory exercises students will learn concepts of plant development and soil characteristics through hands on and experiential learning. Communication and research skills will be developed through instruction on use of library resources, writing a term paper, and participation in laboratory discussions.

Course Objectives

The main objective of the course is to introduce students to natural resources, as well as crop production systems in Manitoba and around the world. By the end of this course students should be able to:

1. Discuss the role of agriculture in development of human civilization and the role of agriculture in human nutrition and world trade.
2. Describe the basic process of soil formation and the important characteristics of soil that influence crop production and vegetation.
3. Discuss soil and landscape characteristics that point to special management practices for non-agricultural uses.
4. Understand the importance of ecological systems in development of sustainable agricultural production systems.
5. Identify major environmental and plant characteristics that influence plant adaptation and agricultural production in Manitoba.
6. Describe the main decision making factors that influence a crop production cycle.
7. Assess scientific literature related to agriculture and successfully write a paper with appropriate referencing.

Learning outcomes

Knowledge and technical expertise: The knowledge and technical expertise gained through this course will provide basic skills to the students to build on their professional expertise. Students will be able to identify the role of agriculture in the world and be able to describe basic agricultural systems. They will also build the technical expertise related to soil, crop production and ecological system. This will form the foundation for higher study in agriculture.

Social accountability: Through discussion of issues in agriculture and research conducted through assignments, students will be exposed to a broad range of social and economic models that may influence their thinking regarding the role of agriculture in today's society. Students will gain awareness and knowledge of factors that may influence their thoughts on environmental accountability.

Communications skills: Through assignments students will gain research skills as well as written scientific communication skills.

Description of Examinations

The mid-term exam will be held in class near the middle of the term while the final exam will be scheduled during the normal examination period. **Students must be remain available during the final examination period regardless of the scheduled examination date.** Exams will be a combination of short answer, multiple choice and true and false questions. Exams will test the students' knowledge and ability to integrate and apply the knowledge to specific scenarios or situations.

Description of Assignments

There are two major assignments for this course:

1. **Field tour assignment** - Students are required to attend the field tour held on Saturday Sept. 17, 2011. Following the tour, students are expected to answer a series of questions related to the tour and hand in the assignment in class on Fri. Sept. 30, 2011.
2. **Scientific writing assignment** – Students will receive instruction in the utilization of library resources and evaluation of scientific research materials. They will also receive detailed instructions on the process of scientific writing including development of a thesis, structure of scientific writing and acceptable methods for referencing source materials. Students will be given a list of topics to choose from and will be expected to write a scientific paper using the guidelines outlined in the laboratory. The paper is due in class on Monday, Nov. 14, 2011.

In addition to the assignments listed above, students will be expected to answer a series of questions in some laboratory sections based on the material learned in the lab.

Assignment Due Dates

Field tour assignment due: Friday Sept. 30, 2011

Scientific writing assignment due: Monday Nov. 14, 2011

Other Important Dates

First Day of Class	Sept. 9
Mid-term	Oct. 17
Voluntary Withdrawal	Nov. 16 (last day)
Last Day of Class	Dec. 7
Final Examination Period	Dec. 9-21
No Classes on	Thanksgiving Day - Oct. 10 Remembrance Day - Nov. 11

Grade Evaluation

	Percent of Final Grade	Date (if applicable)	Comments
Lecture Portion	50%		
I clicker	5%		See comment below on iclicker grading for lectures.
Mid-term Test	15%	Will be held on Oct. 17.	Will cover material up to and including Oct. 14.
Final Exam	30%	Scheduled by university.	Will cover material from before and after the mid-term test.
Lab Portion	50%		
Field Tour Assignment	15%	Due Sept. 30 at class time.	Do not receive marks if not on tour or have not made prior arrangements with Dr. Goh
Attendance at labs and answers to lab summary quizzes	17% (2 marks per lab + 1 mark for handing in written student survey assignment)		Be sure to sign in for the library sessions and bring you iclicker for other labs. See laboratory outline for information about grading.
Scientific Writing Assignment	18%	Due Nov. 14at class time.	Assignment will be given in class on Sept. 23
Total Marks	100		

Iclicker - Students are required to bring their iclicker to each class. For each question asked students will receive one point for answering the question and one point for answering correctly. The iclicker grade will be determined as the sum of all questions asked during lectures and weighted according to the points earned for each question. Students that have received at least 80% of the iclicker points will receive 5/5, those with 70-79% of the points will receive 4/5, those with 60-69% of the points will receive 3/5 points, those with 50-59% of the points will receive 2/5, and those with less than 50% of the iclicker points will get 0/5. Students must register their iclicker online at <http://www.iclicker.com/registration/>.

Evaluative feedback (i.e., results of mid-term test and field tour assignment) will be given to students prior to the voluntary withdrawal date.

Students cannot pass the course unless they submit the mid-term test, final exam and obtain a passing grade on the lab portion of the course.

Texts, Readings, Materials

Textbook(s) – Authors, Titles, Edition

None assigned.

Supplementary Reading

Supplementary reading materials and resources will be posted on the course JUMP site (jump.umanitoba.ca) and/or placed on reserve in the William R. Newman Library (Room 236 Agriculture Bldg.)

Additional Materials

Materials for some classes, labs and tutorials will be posted on 'Jump' (jump.umanitoba.ca) before the scheduled class, lab or tutorial. Students are responsible for downloading and printing these materials and notes to be used during the tutorials/lab. You will be informed in class when the postings have been made.

Course Policies

Late Assignments

Assignments must be submitted at class time on the date due. A 10% reduction in grade will be applied for every 24-hour period an assignment is late. Late assignments should be submitted to the Plant Science Office (Room 222 Agriculture Building).

Missed Assignments

Unexcused missed assignments will be given a grade of zero. Where assignments are missed and excused through written notification such as a doctor's certification 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) complete the assignment and receive the late assignment penalty as described above, 2) establish a new due date with the instructor and complete the assignment without penalty when handed in by the new due date, or 3) the final grade will be determined by increasing the value of the final exam by the amount that would have been allocated to the missed assignment. Option three is only viable under extreme circumstances.

Missed Exams

Unexcused missed exams will be given a grade of zero. Where exams other than the final exam are missed and excused through written notification such as a doctor's certification 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 final exam by the amount that would have been allocated to the missed exam. If the final exam is missed and an appropriate excuse has been provided, procedures outlined in the 2011/12 University of Manitoba Undergraduate Calendar section 3.7 for deferred exams will be followed.

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 Section 8.1, in the 2011/12 University of Manitoba Undergraduate Calendar).

Additional Comments:

Evaluative feedback (i.e., results of mid-term test and field tour assignment) will be given to students prior to the voluntary withdrawal date.

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:

For individual assignments, students may cooperate and discuss the assignment, however, each student must hand in their own assignment, written in their own words. Duplicate assignments (either whole or part) will be considered acts of academic dishonesty and will be subject to disciplinary action according to University policy.

Course Content

Lecture Outline

1. **Introductions and Review of Course Syllabus** (Brûlé-Babel and Goh, 1 lecture, Sept. 9)
2. **Introduction to Agricultural Systems** (Brûlé-Babel - 8 lectures, Sept. 12 to 28) - This section will discuss the origins of agriculture and the position of Manitoba and Canada in global agriculture. Comparisons will be made of agricultural systems around the world. Factors that influence crop adaptation will be discussed in terms of how they contribute to crop distribution and production. Processes that lead from seed to market will be considered.
3. **Introduction to the Agroecosystems** (Goh - 15 lectures, Sept. 30 to Oct.28, and Nov.28 to Dec.5) - This section will deal with the relationships among soil, atmosphere and water as they relate to primary production and agriculture. Surface features such as soils, water bodies and vegetation will be discussed including how soils are formed, their physical, chemical and biological properties. Processes to be considered are energy flows, soil and environmental health, and soil degradation by human activity and natural phenomena.
4. **Topics in Agroecology** (Guest lecturers Drs. Amiro and Entz - 3 lectures, Oct. 31 to Nov. 4) - This section will introduce topics in agroecology as they relate to life cycle analyses, ecological footprints, energy flow and agroecological principles. The implications of scale and heterogeneity of the agri-food system will be discussed from the points of view of environmental, economic and social sustainability.
5. **Primary Agricultural Production Systems** (Brûlé-Babel- 8 lectures, Nov.7 to Nov. 25) - This section deals with crop production practices and principles as they relate to major crop types. Key factors that influence decision making processes and their influence on the cropping system will be discussed. Sustainability of production systems will be discussed.
6. **Summary and Examination Review** (Brûlé-Babel and Goh,1 lecture, Dec. 7)

Laboratory Outline (Note: No labs Sept. 12 to 15, Oct. 10 to 13, Nov. 7 to 10, Nov. 28 to Dec. 1, Dec. 5 to 8)

1. Field Tour: Saturday, Sept. 17.

The purpose of the field tour is to familiarize students with the natural resources in Manitoba (as they relate to agriculture), and with production agriculture itself. This experience will help students relate lecture material to what actually happens in the field. The tour will leave the Univ. of Manitoba campus from Lot E (next to the Agriculture Bldg. by the greenhouses) at 8:00 a.m. sharp and we will return at 6:00 p.m. We will eat on the buses, so bring your own lunch. Much of the day will be spent outside so dress appropriately. The tour is worth 15% of the total grade. Tour Leaders: Dr. Goh, Dr. Brûlé-Babel, Ashley Paton.

2. Agriculture Library Workshop I: Sept. 19 to 22. Microcomputer lab - Room 137 Agriculture Bldg.

The workshop will introduce the students to the University of Manitoba Libraries and to library research. The students will learn how to use Bison, the Libraries' online catalogue, and will be expected to do an assignment during the workshop. This lab is worth 2% of the total grade. Students must sign in and hand in the assignment to get full credit. Instructor: S. Hosein (Agriculture Librarian).

3. Scientific Writing Tutorial: Sept. 26 to 29. Agric. Bldg. (M – Rm 343, T – Rm 134, W&Th – Rm 138)

A tutorial will be presented that focuses on appropriate writing techniques, rhetoric and organization of material for academic writing in general, and on the specific requirements for scientific writing, including the validity of source material, and meeting the demands of scientific proof in writing. This lab is worth 2% of the total grade. Students must sign in to get full credit. Instructors: Dr. Brûlé-Babel and A. Paton.

4. Agriculture Library Workshop II: Oct. 3 to 6. Microcomputer lab – M, T & Th -Room 137 Agriculture Bldg, Open area computer lab - W Rm 237

This workshop teaches students how to search for scientific literature. In particular, students will learn how to find references to articles published in periodicals. Students will also be taught how to find the periodicals in the library system. This lab is worth 2% of the total grade. Students must sign in and hand in the assignment to get full credit. Instructor: S. Hosein (Agriculture Librarian).

5. Soil Texture and Fertility: Oct. 17 to 20. Agric. Bldg. (M – Rm 343, T – Rm 134, W &Th – Rm 138)

This laboratory period will provide students with an overview of soil characteristics including texture and fertility. Students will have the opportunity to do so hands on texture evaluation and review important considerations for soil fertility. This lab is worth 2% of the total grade. Students must complete the post laboratory summary quiz at the end of the lab using the iclicker and will be assigned a grade based on proportion of correct answers. Teaching Assistant: M. Stoimenova.

6. Current Issues Debate/Discussion: Oct. 24 to 27. Agric. Bldg. (M – Rm 343, T – Rm 134, W&Th – Rm 138)

The lab period will be an opportunity to explore through debate and/or discussion a current issue pertaining to agriculture. This lab is worth 2% of the total grade. Students must complete the post laboratory summary quiz at the end of the lab using the iclicker and will be assigned a grade based on proportion of questions answers. Teaching Assistant: M. Stoimenova.

7. Agriculture Program and Professionalism: Oct. 31 to Nov. 4. Agric. Bldg. (M – Rm 343, T – Rm 134, W &Th – Rm 138)

This lab period will provide students with an overview of programs of study within the Faculty of Agricultural and Food Sciences and discuss the role of professionalism in agricultural practice. This lab is worth 2% of the total grade. Students will get full credit for participating in a class survey using the iclicker. Conducted by the Faculty of Agricultural and Food Sciences student services office.

8. Crop Development Lab 1: Nov. 14 to 17. Agric. Bldg. (M – Rm 343, T – Rm 134, W&Th – Rm 138)

This lab will compare seedling and crop development of a number of commercial crops grown in Western Canada. Factors that influence rate of germination, plant establishment, seedling and plant development will be discussed. This lab is worth 2% of the total grade. Students must complete the post laboratory summary quiz at the end of the lab using the iclicker and will be assigned a grade based on proportion of correct answers. Teaching Assistant: M. Stoimenova.

9. Crop Development Lab 2: Nov. 21 to 25. Agric. Bldg. (M – Rm 343, T – Rm 134, W&Th – Rm 138)

This lab will compare adult plant and reproductive characteristics of a number of commercial crops grown in Western Canada. Yield and yield components will be discussed as it related to plant productivity. Management factors that influence plant productivity will be discussed. This lab is worth 2% of the total grade. Students must complete the post laboratory summary quiz at the end of the lab using the iclicker and will be assigned a grade based on proportion of correct answers. Teaching Assistant: M. Stoimenova.