

TRAILBLAZER ADVENTURER
INNOVATOR DEFENDER CHALLENGER
ADVENTURER TRAILBLAZER DEFENDER VISIONARY
VISIONARY ADVENTURER TRAILBLAZER CHALLENGER DEFENDER VISIONARY

Syllabus

Organic Crop Production on the Prairies

PLNT 3560

Winter Term 2021 - 2022

Dr. Martin H. Entz

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COURSE DETAILS

Course Title & Number:	Crop Production PLNT 3560
Number of Credit Hours:	3
Class Times & Days of Week:	6:00 to 8:30 PM - Mondays
Location for classes/labs/tutorials:	On-line
Pre-Requisites:	Soil 3600

Instructor Contact Information

Instructor(s) Name & Preferred Form of Address:	Professor Martin H. Entz "Professor Entz"
Office Location:	Plant Science Room 309
Office Hours or Availability:	Make an appointment face-to-face or email
Office Phone No.	204 474-6077
Email:	m.entz@umanitoba.ca
Contact:	The best way to contact me is by email. Then we can arrange an in person meeting.

COURSE DESCRIPTION

U of M Course Calendar Description

This course provides a detailed overview of organic crop production on the Canadian prairies. The course focusses on organic crop production principles and practices, and information is targeted to wet and dry areas of the prairies. The course focuses on both the science and art of organic farming.

General Course Description

Through lectures, responding to student questions, and voices from different people involved in organic crop production in Canada, students will gain a comprehensive perspective of organic crop production. The course will also interest students who want to learn about holistic, systems-based approaches to agriculture. The course will also provide students with practical approaches to improving soil health and teach students about new and exciting weed management strategies. Organic Crop Production on the Prairies is an elective or restricted elective course (depending on which degree stream you are in). It is best taken later in your program when students have completed foundational courses in soils and crops.

There will be some new concepts introduced so students are encouraged to engage the instructor for clarification whenever necessary. Asking questions is encouraged, and a great way to learn.

Course Goals

The organic food market is growing rapidly and hence organic agriculture represents an important opportunity for farmers, food processors and marketers. There are approximately 300 certified organic farmers in Manitoba and close to 5000 across Canada. Some Canadian farmers have converted a portion of their farms to certified organic in an effort to capture new markets for traditional crops; learn new ways of enriching soils with nutrients; and learn new ways to manage weeds. Canadian companies are starting to hire organic crop and soil consultants, so training in organic crop production is an asset. Organic methods are increasingly seen as useful for conventional production as well. For example, herbicide resistance management requires that farmers employ alternative weed control methods – methods that have been developed on organic farms and through organic crop production research. Finally, this course is unique because it emphasizes a *systems* or *whole farm* approach to crop production.

Course Learning Objectives

Course Objectives - After completing this course, students will:

- Learn the principles and practices of organic crop production in Canada
- Become aware of the scientific basis for organic crop production practices
- Gain insight into the history and philosophy of organic agriculture
- Learn how to design organic crop production systems for Prairie farms, including management of nutrient flows
- Learn from organic farmers about design and maintenance of profitable and productive organic systems

Textbook, Readings, and Course Materials

There is no selected textbook for this course. Reference book chapters and journal articles are available through UM library links, and a reading list is provided below.

Required textbook – There is no textbook for this course.

Supplementary readings – will be posted on UM Learn.

Recommended or required materials (e.g. lab equipment, art supplies, computers, etc.) – none required.

Using Copyrighted Material

Please respect copyright. We will use copyrighted content in this course. I have ensured that the content I use is appropriately acknowledged and is copied in accordance with copyright laws and university guidelines. Copyrighted works, including those created by me, are made available for private study and research and must not be distributed in any format without permission. Do not upload copyrighted

works to a learning management system (such as UM Learn), or any website, unless an exception to the *Copyright Act* applies or written permission has been confirmed. For more information, see the University's Copyright Office website at <http://umanitoba.ca/copyright/> or contact um_copyright@umanitoba.ca.

COURSE TECHNOLOGY

The course will be offered in person, or a combination of in-person and WebEx. Students are free to use tablets, cellphones, laptops, etc. in the classroom provided these are used in a responsible, efficient, ethical and legal manner.

EXPECTATIONS AND POLICIES

I EXPECT YOU TO:

All students are expected to review powerpoint and word notes prior to each lesson. All students are expected to participate in class discussions. All students are expected to attend all classes. We will adhere to the UM's respectful work and learning policy See [Respectful Work and Learning Environment Policy](#).

The policies and services students are listed below ([Section 2.5 ROASS](#)).

Class Communication:

You are required to obtain and use your University of Manitoba email account for all communication between yourself and the university. All communication must comply with the Electronic Communication with Student Policy:

http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html.

Academic Integrity:

Each student in this course is expected to abide by the University of Manitoba [Academic Integrity](#) principles. Always remember to reference the work of others that you have used. Also be advised that you are required to complete your assignments independently unless otherwise specified. If you are encouraged to work in a team, ensure that your project complies with the academic integrity regulations. You must do your own work during exams. Inappropriate collaborative behavior and violation of other Academic Integrity principles, will lead to the serious [disciplinary action](#). Visit the [Academic Calendar](#), [Student Advocacy](#), and [Academic Integrity](#) web pages for more information and support.

Refer to specific course requirements for academic integrity for individual and group work such as:

- I. Students must complete class and lab assignments on their own – no collaboration on assignments is allowed; and
- II. All other work should be completed independently unless otherwise specified.

Recording Class Lectures:

The discussion periods will not be recorded. In case of students missing class due to medical (e.g. Covid 19) reasons, students will be able to join the class through WebEx; these sessions will be recorded.

Student Accessibility Services:

The University of Manitoba is committed to providing an accessible academic community. [Students Accessibility Services \(SAS\)](#) offers academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

Student Accessibility Services
 520 University Centre
 Phone: (204) 474-7423
 Email: Student_accessibility@umanitoba.ca

EXPECTATIONS:**YOU CAN EXPECT ME TO:**

I will be in class (on-line) 10 minutes prior to the class time to discuss any questions or comments you may have. I am available to discuss class material and answer questions outside of class time. Please email to make an appointment. I will not answer emails between 6 PM on Fridays and 7 AM on Mondays.

CLASS SCHEDULE AND COURSE EVALUATION

This schedule is subject to change at the discretion of the instructor and/or based on the learning needs of the students but such changes are subject to [Section 2.8 of ROASS](#).

This course is divided into 11 lessons. Some lessons require one lecture period to complete, while other lessons will stretch over more than one lecture period. Lecture notes for each lesson are on the UM Learn site for this course. The individual lesson notes are accompanied by the powerpoint slides for that lesson and any additional resource material (eg., websites, extra readings and statistical information regarding crop production). All lecture resources are available on UM Learn.

The course is divided into 11 separate topics, referred to as lessons.

- Lesson 1. Introduction to organic agriculture
- Lesson 2. Learning systems
- Lesson 3. Transition to organic crop production
- Lesson 4. Soil fertility – Nitrogen
- Lesson 5. Soil fertility – Phosphorous and beyond
- Lesson 6. Seeds, seeding and crop establishment
- Lesson 7. Tillage and weed control
- Lesson 8. Pest and disease management
- Lesson 9. Marketing organic products
- Lesson 10. Farm case studies
- Lesson 11. Additional depth packages of information
 - 11.1 Soil organic matter in organic production
 - 11.2 Crop-livestock integration in organic crop production

11.3 Organic agronomists of the future

11.4 Research update

Date	Class Content & Teaching Strategies	Required Readings or any Pre-class Preparation	Evaluation		
			Type of Assessment	Due Date	Value of Final Grade (%)
Lessons 1-11	Lecture/discussion format	Review powerpoint and word documents for each of the 11 lessons	Weekly response log. Students complete 350 word assignment at the end of each week (3 marks per week x 12 weeks = 36). A tutorial will be provided.	Response log completed on line (in UM Learn) and Saturday noon each week	Total = 36
January 25	Crop rotation plan	See instructions below	Students will design a 7-year rotation plan for an organic farm	Feb 22	18
February 18	Nutrient and weed management plan	See instructions below	Students will design nutrient and weed management plans for their 7-year crop rotation	March 21	25
Exam period	Lecture/discussion		Organic extension/education design assignment	At end of exam period	21
Total					100

Grading

Indicate your grading scale. A sample is given below that you can adjust to your course expectations. Note that students must receive a minimum grade of 50% in the lab in order to pass the course.

Letter Grade	Percentage out of 100	Grade Point Range	Final Grade Point
A+	95-100	4.25-4.5	4.5
A	86-94	3.75-4.24	4.0
B+	80-85	3.25-3.74	3.5
B	72-79	2.75-3.24	3.0
C+	65-71	2.25-2.74	2.5
C	60-64	2.0-2.24	2.0
D	50-59	Less than 2.0	1.0
F	Less than 50		0

Voluntary Withdrawal

Students should refer to the [Registrar's Office](#) web page for more information on voluntary withdrawal date. This date is the last day to drop the class and receive 100% refund. Students who do not drop the course by the deadline will be assigned a final grade. Withdrawal of courses will be recorded on official

transcript. The professor is willing to discuss student's progress and strategies for improvement prior the withdrawal date.

ASSIGNMENT DESCRIPTIONS

Weekly response log (36%): A 350 word response for each week (12 weeks)

After each week, students must respond in two different ways in the weekly response log. First, in a paragraph of 250 words, students must elaborate on two points which they found interesting from that week's classes. The elaboration could include an analysis on why students found this interesting, a deeper analysis of the subjects, or a linkage to other organic agriculture knowledge that students have gained in other courses or in their agricultural experience. In the second part of the response, students must raise two question from the class. In 100 words list 2 questions and explain why they are of interest to you. Only responses posted in UM Learn will be accepted – email responses will not be accepted.

Weekly question log due every Saturday at noon.

Course assignments

Crop rotation plan (18%)

Students will work with a case farm located in Manitoba. It could be your farm, or the farm of a relative or friend. If you do not have a farm, I will assign you one. Based on the climate and soil conditions, you will be asked to design an organic crop rotation for the farm. The design needs the following elements:

- Must be a 7-year rotation
- Must include at least one full-season green manure crop
- Must include at least one late season cover crop
- Must include grain crops for export off the farm
- Must include a perennial crop
- Must be profitable (have a positive net return)

This assignment includes three parts. The first involves filling in a template table which describes your crop rotation. A word document template for this report is available in UM learn under "assignments". One of the columns includes net return. For this you must use the organic cost of production data available from Manitoba Agriculture (<https://www.gov.mb.ca/agriculture/farm-management/production-economics/pubs/cop-crop-organic-production.pdf>). Crop prices for organic crops are available at: <https://organicbiz.ca/organic-price-quotes-late-november-6/>. You must also estimate the yields for your organic crops. Data for organic yields must come from studies or on-farm experiences in Manitoba.

The second part of the rotation assignment includes a 500-word narrative where you explain your rotation and cropping system.

The third part of the assignment is a 700-word literature review that describes the role of crop rotation in organic production systems in Canada. This 700-word literature review must include a minimum of 3 peer-reviewed references. Other "grey literature" resources such as Manitoba Agriculture (or other) websites may also be included.

Nutrient and weed management plan (25%)

Now that you have the rotation set, the next assignment involves creating a nutrient management plan for your organic rotation. The first resource to complete this assignment comes from your soil test results (or your case study soil). Hopefully you all had a chance to collect soils as I instructed several months ago. This soil test data will form baseline information and guide the types of remedial nutrient additions that are required – with special emphasis on nitrogen and phosphorous. The other resources for the assignment include: 1) nutrient removal information in lesson 5; 2) the yield estimates from assignment one; 3) sources of nutrients you wish to apply to the land; and 4) nutrient concentration of those nutrients (data provided in UM learn under “assignments”). Therefore, the nutrient management plan really becomes a budgeting exercise. Keep in mind that the “math has to add up”. Use the word document template available in UM learn under “assignments”.

The second part of the assignment is to write a 500-word literature review on nutrient use in organic agriculture. This 500-word literature review must include a minimum of 3 peer-reviewed references that describe nutrient use in organic cropping systems. Other “grey literature” resources such as Manitoba Agriculture (or other) websites may also be included.

You will also develop a weed management plan for this particular weed within the rotation from assignment one. The weed management plan deals with two goals: 1) weed management and 2) soil health. That is, while tillage will definitely be part of your weed management plan, you must show that you are able to maintain soil health despite the use of tillage.

You will develop a powerpoint presentation on weed control for your organic cropping system. The powerpoint should be enough for a 15 minute farm extension talk. The powerpoint presentation should be aimed at beginning organic farmers looking for weed management ideas, but also help explain processes to more experienced farmers. Be sure to indicate the practices you will use in each crop to address these weeds and soil health will be maintained while managing these weeds?

Organic extension/education design assignment (21%)

Field days are an excellent way for farmers, agronomists, and other people working in the crop value chain to learn about the details of any crop production and soil management system. In Manitoba, farm organizations have hosted a number of such events – most recently called “Crop Paloozas”. You can visit these websites to see what different themes have been presented and discussed at the events.

<https://mbdiversificationcentres.ca/2202-2/>

<https://www.topcropmanager.com/events/manitoba-canolapalooza/>

<http://manitobacorn.ca/crops-a-palooza/>

This assignment challenges students to create an “Organic Crop Palooza”. The event should be based outdoors with venues that include direct in-field demonstrations as well as booths where information, software and other information is presented in an interactive manner. The model for the assignment should follow that of the German Organic Field days, hosted every other year in Germany. Here is the link to the German event <https://oeko-feldtage.de/?lang=en>. Examples will be presented in class, and a more detailed outline for the project will be made available to students by the end of Feb, 2022.

Assignment Feedback

Marks for the weekly log will be provided before the next week's class. This way, students will have immediate feedback on their performance and can therefore adjust to improve future grades. Class assignments will be graded and returned to students within one week of receiving them. Each assignment will receive feedback in terms of content, level of insight and analysis, and grammar and overall composition. There will be both formative (i.e., comments) and summative (i.e., grade) feedback. The feedback will be delivered electronically.

Assignment Extension and Late Submission Policy

No late assignments for the weekly response log will be accepted. UM Learn will be blocked after the allotted time and no further options for submission of the daily response logs will be possible. For all other assignments, students will lose 10% for each 24 hours late. All assignments must be submitted to pass the course.

UNIVERSITY SUPPORT OFFICES & POLICIES

Information on university support offices and policies are provided in [Schedule "A"](#).

Schedule "A"

Section (a) re: A list of academic supports available to Students, such as the Academic Learning Centre, Libraries, and other supports as may be appropriate:

Writing and Learning Support

The Academic Learning Centre (ALC) offers services that may be helpful to you throughout your academic program. Through the ALC, you can meet with a learning specialist to discuss concerns such as time management, learning strategies, and test-taking strategies. The ALC also offers peer supported study groups called Supplemental Instruction (SI) for certain courses that students have typically found difficult. In these study groups, students have opportunities to ask questions, compare notes, discuss content, solve practice problems, and develop new study strategies in a group-learning format.

You can also meet one-to-one with a writing tutor who can give you feedback at any stage of the writing process, whether you are just beginning to work on a written assignment or already have a draft. If you are interested in meeting with a writing tutor, reserve your appointment two to three days in advance of the time you would like to meet. Also, plan to meet with a writing tutor a few days before your paper is due so that you have time to work with the tutor's feedback.

These Academic Learning Centre services are free for U of M students. For more information, please visit the Academic Learning Centre website at:

<http://umanitoba.ca/student/academiclearning/>

You can also contact the Academic Learning Centre by calling 204-480-1481 or by visiting 205 Tier Building.

University of Manitoba Libraries (UML)

As the primary contact for all research needs, your liaison librarian can play a vital role when completing academic papers and assignments. Liaisons can answer questions about managing citations, or locating appropriate resources, and will address any other concerns you may have, regarding the research process. Liaisons can be contacted by email or phone, and are also available to meet with you in-person. A complete list of [liaison librarians](#) can be found by subject: <http://bit.ly/WcEbA1> or name: <http://bit.ly/1tJ0bB4>. In addition, general library assistance is provided in person at 19 University Libraries, located on both the Fort Garry and Bannatyne campuses, as well as in many Winnipeg hospitals. For a listing of all libraries, please consult the following: <http://bit.ly/1sXe6RA>. When working remotely, students can also receive help online through [Ask Us!](#) chat.

Section (b): re: A statement regarding mental health that includes referral information:

For 24/7 mental health support, contact the Mobile Crisis Service at 204-940-1781.

Student Counselling Centre

Contact SCC if you are concerned about any aspect of your mental health, including anxiety, stress, or depression, or for help with relationships or other life concerns. SCC offers crisis services as well as individual, couple, and group counselling. *Student Counselling Centre:*

<http://umanitoba.ca/student/counselling/index.html>

474 University Centre or S207 Medical Services

(204) 474-8592

Student Support Case Management

Contact the Student Support Case Management team if you are concerned about yourself or another student and don't know where to turn. SSCM helps connect students with on and off campus resources, provides safety planning, and offers other supports, including consultation, educational workshops, and referral to the STATIS threat assessment team.

Student Support Intake Assistant <http://umanitoba.ca/student/case-manager/index.html>

520 University Centre

(204) 474-7423

University Health Service

Contact UHS for any medical concerns, including mental health problems. UHS offers a full range of medical services to students, including psychiatric consultation.

University Health Service <http://umanitoba.ca/student/health/>

Fort Garry Campus

(204) 474-8411

Health and Wellness

Contact our Health and Wellness Educator if you are seeking information on health topics, including physical and mental health concerns, alcohol and substance use harms, or sexual violence.

Health and Wellness Educator

<https://umanitoba.ca/student/health-wellness/welcome-about.html>

Health and Wellness Program Assistant

Email hwprogram.assistant@umanitoba.ca or phone [204-474-6740](tel:204-474-6740)

Live Well @ UofM

For comprehensive information about the full range of health and wellness resources available on campus, visit the Live Well @ UofM site:

<http://umanitoba.ca/student/livewell/index.html>

Section (c): re: A notice with respect to copyright:

All students are required to respect copyright as per Canada's *Copyright Act*. Staff and students play a key role in the University's copyright compliance as we balance user rights for educational purposes with the rights of content creators from around the world. The Copyright Office provides copyright resources and support for all members of the University of Manitoba community. Visit <http://umanitoba.ca/copyright> for more information.

Section (d): re: A statement directing the student to University and Unit policies, procedures, and supplemental information available on-line:

Your rights and responsibilities

As a student of the University of Manitoba you have rights and responsibilities. It is important for you to know what you can expect from the University as a student and to understand what the University expects from you. Become familiar with the policies and procedures of the University and the regulations that are specific to your faculty, college or school.

The [Academic Calendar](http://umanitoba.ca/student/records/academiccalendar.html) <http://umanitoba.ca/student/records/academiccalendar.html> is one important source of information. View the sections *University Policies and Procedures* and *General Academic Regulations*.

While all of the information contained in these two sections is important, the following information is highlighted.

- If you have questions about your grades, talk to your instructor. There is a process for term work and final **grade appeals**. Note that you have the right to access your final examination scripts. See the Registrar's Office website for more information including appeal deadline dates and the appeal form <http://umanitoba.ca/registrar/>
- You are expected to view the General Academic Regulation section within the Academic Calendar and specifically read the **Academic Integrity** regulation. Consult the course syllabus or ask your instructor for additional information about demonstrating academic integrity in your academic work. Visit the Academic Integrity Site for tools and support <http://umanitoba.ca/academicintegrity/> View the **Student Academic Misconduct** procedure for more information.

- The University is committed to a respectful work and learning environment. You have the right to be treated with respect and you are expected to conduct yourself in an appropriate respectful manner. Policies governing behavior include the:

Respectful Work and Learning Environment

http://umanitoba.ca/admin/governance/governing_documents/community/230.html

Student Discipline

http://umanitoba.ca/admin/governance/governing_documents/students/student_discipline.html and,

Violent or Threatening Behaviour

http://umanitoba.ca/admin/governance/governing_documents/community/669.html

- If you experience **Sexual Assault** or know a member of the University community who has, it is important to know there is a policy that provides information about the supports available to those who disclose and outlines a process for reporting. The **Sexual Assault** policy may be found at:
http://umanitoba.ca/admin/governance/governing_documents/community/230.html
More information and resources can be found by reviewing the Sexual Assault site
<http://umanitoba.ca/student/sexual-assault/>

For information about rights and responsibilities regarding **Intellectual Property** view the policy [Intellectual Property Policy - 2013 10 01 RF.pdf \(umanitoba.ca\)](#).

For information on regulations that are specific to your academic program, read the section in the Academic Calendar and on the respective faculty/college/school web site
<http://umanitoba.ca/faculties/>

Contact an **Academic Advisor** within our faculty/college or school for questions about your academic program and regulations <http://umanitoba.ca/academic-advisors/>

Student Advocacy

Contact Student Advocacy if you want to know more about your rights and responsibilities as a student, have questions about policies and procedures, and/or want support in dealing with academic or discipline concerns.

<http://umanitoba.ca/student/advocacy/>

520 University Centre

204 474 7423

stadv@umanitoba.ca