AGRI 3030: Innovations in Agriculture

Syllabus

Instructor

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Office Hours
By appointment

Course Description

A series of eight learning units to study innovations in agriculture. Each unit provides exercises for student applications of the concepts which the student will complete and submit for grading.

Learning Outcomes

Upon completion of this course students should be able to:

- Cite foundational literature regarding innovations in agriculture;
- List and describe current active areas of research regarding innovations in agriculture;
- List and describe companies active in developing innovations in agriculture;
- Develop a business model for monetizing an innovation in agriculture;
- Demonstrate a basic ability to apply Python coding for machine learning (ML), artificial intelligence (AI) and deep neural networks in agricultural innovation;
- Demonstrate a basic ability to apply ML and AI to analyze 2D images;
- Demonstrate a basic ability to program drones for agricultural applications;
- Develop and present a proof-of-concept idea for an agricultural innovation of the student’s choosing.
Required Technology

Students require a laptop computer, either a PC or Mac, and the Python coding language which is freeware so available at no cost. Cameras for digital image capture and drones will be provided by the instructor.

Course Overview

AGRI 3030 involves a series of learning units to study innovations in agriculture. Exercises for student applications of the concepts are to be completed and submitted for grading by the instructor.

Topics

- Foundational literature regarding innovations in agriculture;
- Current active areas of research regarding innovations in agriculture;
- Companies active in developing innovations in agriculture;
- Business model for monetizing an innovation in agriculture;
- Python coding for machine learning (ML), artificial intelligence (AI) and deep neural networks in agricultural innovation;
- ML and AI to analyze 2D images;
- Programming drones for agricultural applications;
- Proof-of-concept idea for an agricultural innovation of the student’s choosing.

Learning activities

To learn the materials presented in this course students will complete assignments on each of the topics and submit them for grading.

Evaluation and Grading

Grading for AGRI 3030 includes evaluation of eight submitted assignments. There is no mid-term exam and no final exam. The first seven assignments are worth 10% each and the eighth assignment and presentation is worth 30%.
### Grade Assignment

<table>
<thead>
<tr>
<th>Percentage out of 100</th>
<th>Letter Grade</th>
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<tbody>
<tr>
<td>95-100</td>
<td>A+</td>
</tr>
<tr>
<td>86-94</td>
<td>A</td>
</tr>
<tr>
<td>80-85</td>
<td>B+</td>
</tr>
<tr>
<td>72-79</td>
<td>B</td>
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<td>65-71</td>
<td>C+</td>
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<tr>
<td>60-64</td>
<td>C</td>
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<tr>
<td>50-59</td>
<td>D</td>
</tr>
<tr>
<td>Below 50</td>
<td>F</td>
</tr>
</tbody>
</table>

### Plagiarism, cheating, and examination impersonation

You should acquaint yourself with the University’s policy on plagiarism, cheating, and examination impersonation as detailed in the General Academic Regulations and Policy section of the University of Manitoba Undergraduate Calendar. Note: These policies are also located in your Distance and Online Education Student Handbook or you may refer to Student Affairs at [http://www.umanitoba.ca/student](http://www.umanitoba.ca/student).

### Academic Supports Available to Students

#### 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/](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, via the Ask-a-Librarian chat found on the Libraries’ homepage: www.umanitoba.ca/libraries.

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/]
104 University Centre, Fort Garry Campus
(204) 474-8411 (Business hours or after hours/urgent calls)

Medical Circumstances

Students who are unable to meet a course requirement due to medical circumstances are currently not required to submit medical notes. However, students are required to contact their instructor or academic advisor by email to inform of the missed work and to make arrangements for extensions, deferrals, or make-up assignments. Please follow these guidelines if you are unable to meet an academic requirement for your courses.

- Contact your instructor for term work such as a class, quiz, midterm/test, assignment, lab;
- Contact an advisor in your faculty/college/school of registration for a missed final exam (scheduled in the final examination period);
- Inform your instructor/advisor as soon as possible do not delay. Note for final exams, students must contact within 48 hours of the date of the final exam; and
- Email your instructor/advisor from a U of M email address, and include your full name, student number, course number, and academic work that was missed.

Health and Wellness

Contact our Health and Wellness Educator if you are interested in information on a broad range of health topics, including physical and mental health concerns, alcohol and substance use harms, and sexual assault.

Health and Wellness Educator [http://umanitoba.ca/student/health-wellness/welcome.html]
Katie.Kutryk@umanitoba.ca
469 University Centre
(204) 295-9032

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]
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.

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 is one important source of information. View the sections University Policies and Procedures and General Academic Regulations.

- 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 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_discipli ne.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 http://umanitoba.ca/admin/governance/media/Intellectual_Property_Policy_-_2013_10_01.pdf

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
student_advocacy@umanitoba.ca

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