



**University of Manitoba**  
**Faculty of Engineering**  
**Department of Biosystems Engineering**

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**COURSE DETAILS**

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<b>Course Title &amp; Number:</b>	Management of By-product from Animal Production Systems, BIOE4590
<b>Number of Credit Hours:</b>	4
<b>Class Times &amp; Days of Week:</b>	n/a
<b>Tutorials:</b>	Monday 2:30-4:30
<b>Pre-Requisites:</b>	CIVL2790 or MECH 2262

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**Instructor Contact Information**

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<b>Instructor Name:</b>	Ying Chen
<b>Preferred Form of Address:</b>	Dr. Chen
<b>Office Location:</b>	E1 349, EITC
<b>Office Hours or Availability:</b>	Corresponding through emails anytime
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<b>TA Name:</b>	Kenton McCorquodale-Bauer
<b>Preferred Form of Address:</b>	
<b>Office Location:</b>	
<b>Office Hours or Availability:</b>	Corresponding through emails anytime
<b>Email:</b>	mccorquk@myumanitoba.ca

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**Course Description**

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Topics covered include solid and liquid manure, manure characteristics, manure collection, storage, land application and utilization, biological treatment, design of equipment and facilities for manure handling. Environment issues, such as odour and water pollution associated with manure management will also be discussed.

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**General Course Information**

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This is a design elective course in the Biosystems Engineering program. This course is built upon on one of the two prerequisites mentioned above. Thus, it is intended that students take this course in the third year or fourth year.

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### Course Goals

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This course provides an introduction to the principles in the design of equipment and facilities for handling by-products from livestock operations. The primary objectives are:

1. to increase the student's ability to apply fluid mechanics to engineering design of liquid waste handling equipment;
2. to discuss the design of collection and storage facilities, and field applicators of by-products;
3. to provide an introduction to physical and biological treatments of liquid and solid wastes.

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### Intended Learning Outcomes

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On satisfactory completion of this course students will be able to:

- select the most suitable management system for a given livestock operation;
- evaluate the performance of equipment and facilities for handling by-products from livestock operations;
- design equipment and facilities for different applications.

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### Using Copyrighted Material

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### Recording Class Lectures

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### References, Readings, Materials

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Chapters 9 and 10. Agricultural Waste Management Field Handbook, United States Department of Agriculture, Natural Resources Conservation Service.

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### Course Technology

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~~Laptops may be used during lectures, only if you are taking notes on the laptop. Student should not participate in personal direct electronic messaging / posting activities (e-mail, texting, video or voice chat, wikis, blogs, social networking (e.g. Facebook) online and offline "gaming" during scheduled class time. If student is on call (emergency) the student should switch his/her cell phone on vibrate mode and leave the classroom before using it.~~

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### Communication

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Please note that all communication between myself and you as a student must comply with the electronic communication with student policy

([http://umanitoba.ca/admin/governance/governing\\_documents/community/electronic\\_communication\\_with\\_students\\_policy.html](http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html)). You are required to obtain and use your U of M email account for all communication between yourself and the university.

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### Expectations: I Expect You To

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To benefit the most from this class, you must be willing to watch all lecture videos and participate in tutorials. Deadlines are a reality in the world of engineering; we expect tutorial reports and assignments to be completed on time.

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### Academic Integrity

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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, let other students copy from you, 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.

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### Students Accessibility Services

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If you are a student with a disability, please contact SAS for 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* <http://umanitoba.ca/student/saa/accessibility/>

520 University Centre

204 474 7423; [Student\\_accessibility@umanitoba.ca](mailto:Student_accessibility@umanitoba.ca)

### Course contents

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Lecture and tutorial contents are as following:

Chapter	Class Content	Reading	Evaluation
1	Introduction	Yes	Assignments
2	Waste consistency	Yes	
3	Waste management functions	Yes	
4	Livestock management systems	Yes	
5	Production	Yes	
6	Collection	Yes	
7	Transfer	Yes	
8	Storage	Yes	
9	Treatment	Yes	
10	Utilisation	Yes	
11	Mortality management	Yes	
12	Safety	Yes	

### Course Evaluation Methods

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The grade for this course will be based on the following:

Due Date:	Assessment Tool	Value of Final Grade
To be announced by Univ.	Final Exam	50%
<b>March 1</b> , 2:30-4:30 during the tutorial period	Midterm	30%
Due after one week	Assignments and reports	20%

### Assignment Descriptions and Grading Times

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Midterm and Final exam are open books in a 2-hour duration. Exams will focus on major concepts, problem solving, and design. Students can expect to receive their graded assignments, reports, and midterm within a week from submission.

### Assignment Extension and Late Submission Policy

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- There will be one week given to complete an assignment or a tutorial report, unless specified otherwise.
- Assignments and tutorial reports submitted after the due date will be docked 10% per school day for the first three days, and submission after three days will receive a zero grade.
- Missed assignments will receive a zero grade.

- Each student is allowed to have one late submission of assignments or tutorial reports (no later than 3 days from the due date).
- If the midterm examination is missed AND the student has a valid medical certificate or compassionate reason, the student's final exam will be counted as 80%.