Last Updated: January 9, 2024

UM | Faculty of Agricultural and Food Sciences

Course Title: Beekeeping
Department of Entomology
Course Number: ENTM 0610

Academic Session: Winter 2024
Credit Hours: 2

Location, Meeting Days and Class Hours:
219 Animal Science/Entomology Building and Cisco Webex online through UMLearn
Wednesday Evening 7:00 – 9:30 pm

Course Description

This course includes instruction in the beekeeping management in Manitoba primarily as it relates to honey bee management with some instruction and assignments related to the alfalfa leafcutter bee industry and native pollinators.

This series of lectures and demonstrations will deal with the nature of beekeeping and its literature; the life history, anatomy, and social behaviour of commercially important bees; economics; how to manage colonies of bees; equipment and site selection; pollen and nectar producing plants, pests and nectar flows; seasonal management; pests, diseases and regulations; honey houses; extracting equipment; grading and marketing honey and beeswax.

Instructor Information

Rob Currie, 214a Animal Science/Entomology Building (Phone 204 798-9020)
Office hours: Any time except: T 10:00-13:00/ T/Th 1:00-2:15
Contact for general inquiries about the course. Please include "ENTM 0610 Beekeeping Course" in email subject.

Derek Micholson, Provincial Apiarist, Manitoba Agriculture, Food and Rural Initiatives, Room 204, 545 University Crescent, Agricultural Services Complex, University of Manitoba, Winnipeg, MB, R3T 5S6. Phone: (204) 945-4825.
Derek.Micholson@gov.mb.ca

Suggested Resource Material

Hard copies of the text, entitled "Beekeeping in Western Canada" by Gruszka et al. 1998, and published by Alberta Agriculture, can be obtained through the Manitoba Honey Producers Co-op at 625 Roseberry or other online sources or there is a free version on line https://www.biodiversitylibrary.org/item/182932#page/4/mode/1up The text book is optional but important resource material to supplement the lecture portion of the course.

The disease manual, is supplied free for registered students and is an important resource for the mid term quiz/assignment. Pernal and Clay (editors). Honey Bee Diseases and Pests. 3rd Edition. Canadian Association of Professional Apiculturists.

Examinations and Grades

Your grade in this course is determined by the following tests and assignments:

Mechanisms of Assessment:

Grading:		
Feb 19	1. Part (A) Leafcutter bee assignment	25%
	Part (B) Knowledge-research translation assignment	10%
March 13	2. Disease identification/management (open book quiz)	15%
April 3	3. Practice take home exam (reviewed in class on April 3)	0%
April 3	4. Virtual field day (view week before (29 March) and complete open book quiz by this date (6 April))	10%
Apr 7 to 19	5. Final Exam online **closed book** (Beekeeping) Exact date TBA Scheduled by University	40%
	TOTAL	100%

Mid-term quizzes are open book and will be accessible online for any time during a period of 3 days but will be of a fixed duration and must be completed once started. They can be completed at any time but will close at midnight on the deadline indicated (Hint: do not start just before midnight or you will not have sufficient time to complete it).

The final examination is **IN PERSON** and will be a **two hour exam** held in a time slot allocated by the registrar's office.

Students are required to write all exams by the dates as scheduled. If a mid-term exam is missed for a verifiable and accepted reason (eg. Medical emergency), with prior written approval from the course coordinator the exam will be rescheduled.

Letter Grade Equivalency

A+ = >90%; A=80-89%; B+ =75-79%; B=70-74%; C+=65-69%; C=60-64%; D=50-59%; F=<50%.

Important Dates

First day meeting with instructor……..	January 24, 2024
Voluntary withdrawal date…… ……	March 18, 2024
Final day of course……	April 3, 2024
Exam period……	April 8 to 17, 2024

Academic Integrity

Academic dishonesty is a serious offense. Students should consult of the University Calendar (sections 7.1 & 7.2) or Website (http://umanitoba.ca/student/resource/student_advocacy/cheating_plagiarism_fraud.html) for policies and penalties for plagiarism, cheating and impersonation at examinations. Students can visit the course website on UM Learn for additional information on available student supports and relevant policies related to undergraduate courses.

Diploma Course ENTM0610 Beekeeping Course Outline and Written Assignments

Lectures:
One per week during regularly slotted time.

Part I: Beekeeping Lectures:

There will be a **short** introductory session for students who are enrolled in the course for academic credit (Diploma course ENTM0610) on **January 24th at 7 pm** held in 219 Animal Science and streamed on CISCO WEBEX (which is accessed through the UMLearn platform) in person or online attendance are both possible for this class.

Weekly lectures in this course are held in conjunction with members of the general public and will **and will be held in a hybrid synchronous format with in-person delivery in 219 Animal Science and with simultaneous streaming through UMLearn on WebEx all lectures are recorded.**

No classes will be held on the 21 st of February (Mid Term Break). One optional class (a "hands-on" experiential learning session in the apiary may occur in late April or early May for interested students) if conditions permit. This is optional for students in the Diploma program but any students are welcome.

A course schedule, indicating the topics covered and the instructors who will be presenting them is appended to the syllabus and can be found as a separate PDF file on UMLearn for easy access.

Please note this course has multiple instructors. Rob Currie is the coordinator and should be the point of first contact for any questions or concerns about any of the course components.

Part II Assignments:

1. Assignment 1: Part A: Alfalfa Leafcutter Bee Industry† :(30 Marks)

You are asked to write a paper summarizing the alfalfa leafcutter bee industry in terms of how it works specifically as it relates to the industry Manitoba or Saskatchewan. The essay should be **a maximum of 5 pages** of typed text and cover the following areas: 1) reasons for using this bee to pollinate alfalfa; 2) the bees' life cycle; 3) equipment used in all phases of a typical operation; 4) the importance of proper bee stocking rates to bee production and crop pollination; 5) the annual cycle of management and 6) major parasite and disease problems in Manitoba and how to deal with them.

This assignment should **not** be done in collaboration with other students in the course **do not cut and paste material from web or other sources**. It must be summarized in your own words. All reference material should be properly cited with the Author(s), year, title of work, and details of the source.

Please submit one typed copy (double spaced, 1 inch margins, standard type) of your paper to R.W. Currie (218 Animal Science/Entomology Building) on or before **11:59 p.m., Friday, 5 Feb, 2022**. Papers should be typed, using a standard double spaced font, on 8.5 x 11 inch paper with 1 inch margins with references cited in the text.

One letter grade will be taken off for papers that are submitted after the deadline and for each additional class period (week) that it is late.

Copies of:
"Alfalfa Leafcutter Bee Management in Western Canada",
"Controlling Chalkbrood Disease in Alfalfa Leafcutter Bees",
"Alfalfa Seed and Leafcutting Bee Production in Saskatchewan"
and
CheckPoints, Dec. 3, 1993: "Paraformaldehyde Approved for Decontaminating Leafcutting Bee Cells" will be uploaded on UMLearn.

Use of other resource material particularly that from the refereed scientific literature is strongly encouraged and rewarded but it must be properly referenced. If you are using internet sources you should ensure that the information you are citing is **from a reliable source** and **relevant to managing leafcutter bees in Manitoba**.

Other contacts are:

Rhéal Lafrenière *, Contact information provided above.

1. Assignment 1: Part B: **Knowledge-research translation assignment (10 Marks)**

An important part of being involved as a producer or professional in the field of agriculture is staying current with recent developments that might impact how or why you may choose to manage the agroecosystem, assess potential impacts on natural ecosystems or manage your bees. Text books are often 10 to 20 years out of date and websites often have inaccurate or out of date information or information that might not always be relevant to Manitoba.

The purpose of this assignment is write an extension-style article such as might go in a "trade" magazine to provide up to date information on a new practice or process related to direct or indirect management of pollinating insects.

You should access a paper (a single paper) in the current refereed (scientific) literature that was published on or after (or including) 2019 through google scholar (or a library search engine). You should identify how the knowledge in that paper might be either immediately applicable or how it might be something to watch for in next 10 years. There is a lot of flexibility so choose a subject of interest to you that you think would be interesting to others!

For example, it could relate to managing an agroecosystem or natural ecosystem to enhance pollination by bees, or how a practice or process might impact the management of colonies of honey bees or another pollinator (any topic related to pollination or pollinator management, or honey bee management is acceptable, for example, impact of nutrition, planting of alternative forage, pesticides, diseases, parasites and their impact on bees or how to manage them could be used).

You should then take the knowledge generated from the findings stemming from the RESULTS OF THE PAPER and write an extension article explaining what the new finding is and how the findings could be used by a grower, producer or land manager to incorporate into their operational practices. In the article be sure to provide an evaluation as of whether this is something the reader could implement immediately or if it is something to forward to in the future.

The article you write should be limited to no more than 500 words (250-500 is appropriate).

[*]Assignments will be graded and returned before the voluntary withdrawal date. Assignments must be written in the student's own words. Plagiarism is a serious offence and severe penalties can be assessed for plagiarism. [†]Students should consult the section on plagiarism and cheating found in the University Calendar.

Part III Assessments

2. Quiz/Assignment: Disease identification/management (open book quiz) (15 Marks)

For this quiz/assignment you will be asked to identify honey bee pests and diseases and apply knowledge using course notes , pesticide labels and provincial treatment recommendations to come up with appropriate management actions for different beekeeping contexts. The quiz occurs after you have had two lectures on the topic and is open book so you can look up specific information required to address the scenario.

3. Take Home Test: Not graded and reviewed in class.

4. Quiz/Assignment 5: Virtual Field Day. (10 MARKS0

You are required to view the "virtual field day" videos and answer a series of questions based upon the content of those videos.

5. Final Exam: 1 hour final to be scheduled by the University. (40 Marks)

ENTM0610 Beekeeping – 2024
Online and In-person Synchronous Delivery on UM-Learn
January 24, – April 3, 2024

Date	Hour	Topic	Speakers
January 10		**No Class -Instructor available for consultation**	
January 17		**No Class -Instructor available for consultation**	
January 24		**Ag Diploma students only** course orientation lecture	
January 31	1	What is Beekeeping?: Leafcutter bees! Introduction: For all students	Derek
	2	What is Beekeeping?: Honey bees!	Rob
February 7	1	Economics Beekeeping Equipment and Its Construction Personal Equipment	Rob
	2	Life History and Anatomy (3 castes)	Rob
Feb 14	1	Spring Management I - Choosing an Apiary Site, Arranging Hives, Care and Hiving of Packages and Care of Wintered Colonies (Film)	Rob
	2	Hive and Field Behaviour of Bees (Film)	Rob
Feb 21		Mid Term Break – No classes	
Feb 28	1	Diseases and pests: Brood diseases	Derek
	2	Diseases and pests: Varroa mites	Rob
March 6	1	Diseases and pests: Adult diseases, pests and Regulations II	Derek
	2	Spring Management II - Plants, Feeding, Queen Checks, etc.	Rob
March 13	1	Queen Rearing Techniques (Film)	Rob
	2	Summer Management - Plants, Nectar Flows, Supering, etc.	Rob
March 20	1	Honey Handling - Honey House, Equipment, etc.	Derek
	2	Fall Management - Killing Bees vs. Wintering Procedures	Rob
March 27	1	Virtual Field day (review all videos on your own)	On your own
April 3		Slide Review/Discussion Q and A session for students after viewing the virtual field day.	All
May		In person apiary session (if possible) Optional for Diploma students	All