



BIOB 291 Journeyman-Level Beekeeping

Available for 3 undergraduate credits through the University Of Montana Division Of Biological Sciences as BIOB 291 Journeyman Level Beekeeping.

Instructors

Dr. Jerry Bromenshenk
Scott Debnam
Phillip Welch

Location

The course is taught online through Moodle, the University of Montana's online learning system.

Prerequisite

Registration for the Journeyman-Level course is open to those who have successfully completed UM's Apprentice-Level Beekeeping Course or received instructor consent to skip the Apprentice course.

Course Description

The Journeyman level beekeeping course is the next step in the Master Beekeeper curriculum. This course delves a bit deeper into the life and ecology of the honeybee. It will cover topics such as the honeybees' interaction and relation to other native pollinators and the plants they work with, as well as a look into pesticide uses and truths. The student will be given detailed instruction on the honey bees' internal anatomy, and structures and uses of their external anatomy. The course will also provide a detailed knowledge of honey bee diseases and pests. Students will gain instruction in the use of the tools and equipment used in the diagnoses of those diseases and pests. Alternative methods for the treatment of these ailments will also be taught at this level of the curriculum. By the end of the course students will understand the honey bees' place in the ecosystem, and how their unique anatomy contributes to their interactions with the world both inside and outside the hive. They will also be equipped with the knowledge to both diagnose and treat honeybee ailments and pests.

The course is equivalent to 45 hours of instruction. Participants should allow 5-7 hours per week for participation in the course, study time, and reading. The course will start with a more traditional approach with weekly exams, but will develop into a more interactive form of assessment as the students become part of the exercise in the Discussion Forums, much like a graduate seminar is conducted.

Required Textbooks & Equipment

Beekeeping in Western Canada (1998 edition or newer)

T.I. Szabo, D.L. Nelson. Information Services, Agriculture Canada in Ottawa, Ont.
ISBN 0773261397 (pbl.: alk.Paper).

The textbook is available through [Alberta Agriculture and Rural Development](#).

Pollinator Protection: A Bee & Pesticide Handbook

C.A. Johansen, D.F. Mayer. Wicwas Press. ISBN 978-1-878075-31-4

The textbook is available through [Wicwas Press](#).

Students need access to a 400X microscope.

Grading Method

All participants must earn 70% or higher overall to receive a certificate of completion for the course and 4.5 CEUs.

Early in the course, each week will end with an exam covering the material from the previous week. Later in the course, Forums and Writing Assignments will replace exams. Students are also graded on overall participation in forums.

<u>Activity</u>	<u>Points</u>
Overall Forum Participation	400
4 Weekly Exams (100 pts each)	400
Pollination & Honey Production Assignment	100
Honey Marketing & Labeling Assignment	100
Scientific Literature Assignment	100
<u>Pesticides Assignment</u>	<u>100</u>
	1200

Academic credit students will be assigned traditional letter grades using the following scale:

>90%	A
80-89%	B
70-79%	C
60-69%	D
<60%	F

Course Schedule

Week 1

Honey Bee Anatomy

- Anatomical structures used for pollination
- Anatomical structures used for nectar gathering
- Anatomical structures used for location of resources

Honey Bee Anatomy Exam. Due date will be announced in class.

Week 2

Nosema

- Nosema life cycle with overview of the honey bee digestive system
- Honey bee Maceration
- Microscope overview and operation
- Nosema diagnosis (scientific and field test)

Queen Production

- Overview of the honey bee reproductive system
- Queen grafting

Digestion, Nosema, and Queen Production Exam. Due date will be announced in class.

Week 3

Mites

- Varroa Mite life cycle
- Varroa Mite roll with alcohol
- Tracheal mite life cycle with an overview of the honey bee respiratory system
- Tracheal mite dissection

Making Splits

- Demonstration

Mite and Splits Exam. Due date will be announced in class.

Week 4

Anatomical Structures of Flowers

- Angiosperms
- Co-evolution
- Flower anatomy

Anatomical Structures of Flowers Exam. Due date will be announced in class.

Pollination & Honey Production

- Pollination overview
- Honey bee/plant interaction

Pollination & Honey Production Assignment. Due date will be announced in class.

Week 5

Honey Marketing & Labeling

- Federal rules regarding honey labeling and marketing
- Reading honey labels and honey grading

Honey Marketing and Labeling Assignment. Due date will be announced in class.

Week 6 and 7

Review of Scientific Literature

- Scientific paper review
- Access to Information Sources

Ranking of Scientific Literature Assignment. Due date will be announced in class.

Weeks 8 and 9

Pesticides

- Diffusing current issues
- Truths about pesticide use
- Label reading for safe pesticide use

Pesticides Assignment. Due date will be announced in class.