Honey Bee Biology and Beekeeping: ENY 3571 Spring 2019

Instructor Contact Information	Dr. Patrick Bohlen Patrick.Bohlen@ucf.edu (contact through Canvas only) 407-823-1940 (office)
Websites	*www.green.ucf.edu*, *www.arboretum.ucf.edu*
Office Hours:	By appointment only

Syllabus subject to change

Course Description:

The biology of honey bees and the craft of apiculture will be examined by exploring the life history, ecology and management of honey bees. Honey bee anatomy, physiology, social structure, pests/diseases, pollination ecology, management and current topics in beekeeping will be covered in this class. The lab portion of the class will involve field exercises and hands-on experience in the UCF Apiary, campus landscapes and natural lands.

Course Requirements:

This course will require activities both in and outside of class. The main elements of the course are lectures, chapter review quizzes, field and exercises and a final research project. Students are expected to be respectful to instructors and their fellow students, and behave in an adult and professional manner.

Course Learning Objectives:

After completing this course you will be able to:

1. Explain the similarities and differences between honey bees and other bee species.
2. Describe the different types of sociality in insects and the importance of eusociality to the success of honey bees.
3. Identify the different types of honey bee races, where they come from and what are their key characteristics.
4. Describe the basic biology, anatomy and physiology of honey bees, including the importance of chemical communication via pheromones in contributing to social cohesion.
5. Give a basic overview of the history of beekeeping and development of modern beekeeping practices, including the components that make up modern hives.
6. Perform a basic hive inspection and identify the key features that one typically looks for during an inspection.
7. Understand the threats to honey bee health, including pathogens and parasites, methods for identifying these threats and possible action to prevent or treat them.
8. Explain how apiculture can be used as a window into broader topics, such as: disease ecology, invasive species, ecotoxicology, evolution, pollinator ecology, conservation, global change, and agriculture.

Required Reading Materials:

Caron, Dewey M and Lawrence J. Conner. 2013 revision. Honey Bee Biology and Beekeeping. The text will be provided on loan. Students will be responsible for replacing lost or damaged books. **Failure to return the text, or replace a lost or damaged text before the end of the semester will result in a 20 point deduction for the semester grade**.

Semester Working Groups

The class will be divided into four groups of three students each at the beginning of the semester. Students will work with the other students in their group on lab and field exercises throughout the semester. Group members will also work together on the class research project and final presentation described below.

Evaluation Procedures

Grade Category: Class Participation
Description of Requirements: Students will be evaluated by their participation in class discussions, level of involvement and initiative in field exercisers, and punctuality and attendance in classes and class functions.
Grade Contribution: 25% (25/100 points)

Grade Category: Chapter Quizzes
Description of Requirements: Students will complete quizzes in Webcourses throughout the semester to demonstrate comprehension of material covered in the book chapters. Quizzes will be assigned at the end of each chapter and completed outside of class.
Grade Contribution: 25% (25/100 points)

Grade Category: Field and Lab Exercise Reflections and Reports
Description of Requirements: Students will submit reflections in Webcourses for all field and lab exercises throughout the semester. Reflections may require attached reports as explained for individual assignments in Webcourses.
Grade Contribution: 25% (25/100 points)

Grade Category: Research Paper
Description of Requirements: Students will prepare a group research paper due at the end of the semester. Guidelines for the paper will be provided through Webcourses. The class schedule belwo shows due dates for the paper topic, and the first and final drafts of the paper. A grading rubric will be provided to guide students in preparing their research paper.
Grade Contribution: 15% (15/100 points)

Grade Category: Final Project Presentation
Description of Requirements: Students will present a final 20 minute PowerPoint presentation on the topic covered in their research paper. A grading rubric will be provided to guide students in preparing their presentation.
Grade Contribution: 10% (10/100 points)

Grading Scale: A (100-95), A- (94-90), B+ (89-85), B (84-80), C+ (79-75), C (74-70), D (69-60), F (59-0)

Technology Requirements:

Technology	Expectations for Use
E-mail:	***ALL email communications with the instructors must be made through Webcourses.*** Grades will not be provided over email. Communication with classmates via email will be done at the student's discretion.
Webcourses:	Webcourses will be used for this class. Please check Webcourses regularly for updates, quizzes and other class information.
Computer Software	Students are expected to be able to use Microsoft Word, Excel, and Power Point.

Additional Policies

Grading and evaluation	Grades will be calculated according to the above evaluation procedures. Grades will not be distributed in class, an appointment must be made with an instructor to discuss grades. Grades will not be given over the phone, or via email.
Attendance and participation	Class attendance and participation is expected for all class session and activities. If students cannot attend class, it is their responsibility to get the notes/resources to understand what was covered in class lecture. Coming to class unprepared, arriving late and leaving early will not be tolerated.
Religious Observances	It is the practice of the University of Central Florida to reasonably accommodate the religious observances, practices, and beliefs of individuals in regard to admissions, class attendance, and the scheduling of examinations and work assignments. **A student who desires to observe a religious holy day of his or her religious faith must notify all of his/her instructors at the beginning of the term to be excused from classes to observe the religious holy day.** The student will be held responsible for any material covered during the excused absence, but will be permitted a reasonable amount of time to complete any work missed. Where practicable, major examinations, major assignments, and University ceremonies will not be scheduled on a major religious holy day. Students who are absent from academic or social activities because of religious observances will not be penalized. A student who believes that he/she has been unreasonably denied an educational benefit due to his/her religious belief or practices may seek redress in accordance with the Student Grievance Procedure, as listed in *The Golden Rule*.
Academic integrity	As stated in the UCF creed, integrity, scholarship, community, creativity, and excellence are the core values that guide our conduct, performance, and decisions as members of the UCF community. Plagiarism and cheating contradict these values, and are very serious academic offenses. Penalties can include a failing grade in an assignment or in the course, suspension, or expulsion from the university. Students are expected to familiarize themselves with and to follow the University's Rules of Conduct: http://osc.sdes.ucf.edu/process/roc . For more information about Academic Integrity, consult the International Center for Academic Integrity http://academicintegrity.org. For more information about plagiarism and misuse of sources, see "Defining and Avoiding Plagiarism: The WPA Statement on Best Practices" http://wpacouncil.org/node/9.

Course Accessibility Statement	The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. Students with disabilities who need disability-related access in this course should contact the professor as soon as possible. Students should also connect with Student Accessibility Services (SAS) http://sas.sdes.ucf.edu/ (Ferrell Commons 185, sas@ucf.edu, phone 407-823-2371). Through Student Accessibility Services, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential access and accommodations that might be reasonable. Determining reasonable access and accommodations requires consideration of the course design, course learning objectives and the individual academic and course barriers experienced by the student.
Academic Activity Reporting	As of Fall 2014, all faculty are required to document students' academic activity at the beginning of each course. In order to document that you began this course, please complete the Academic Assignment in Webcourses by the end of the first week of class. Failure to do so may result in a delay in the disbursement of, or decline of your financial aid.
Campus Safety Statement	In case of an emergency, dial 911 for assistance. Every UCF classroom contains an emergency procedure guide posted on a wall near the door. Students should make a note of the guide's physical location and review the online version at http://emergency.ucf.edu/emergency_guide.html. Students should know the evacuation routes from each of their classrooms and have a plan for finding safety in case of an emergency. If there is a medical emergency during class, students may need to access a first-aid kit or AED (Automated External Defibrillator). To learn where those are located, see http://www.ehs.ucf.edu/AEDlocations-UCF (click on link from left menu)

Course Schedule, Critical Themes & Goals (several of the lab activities may be affected by weather or seasonal variation, so the class schedule is subject to change)**:**

Class Schedule	
Week of January 7	• Introductions; Review Syllabus; Course Orientation
Thursday, January 11, Drop/Swap Deadline **Friday, January 12, Add Deadline**	
Week of January 14	• Chapters 1-2: Introduction; honey bee classification • Lab exercise: Basic protective gear and visit to apiary
Week of January 21	• Chapters 3-4: Insect sociality; honey bee castes • Lab exercise: Building hive components; (Red Maple bloom?)
Week of January 28	• Chapters 5-6: Honey bee anatomy; bee's nests and hives • Lab exercise: Examine drawn comb; (Feed colonies?)
Week of February 4	• Chapters 7-8: Dance language; pheromone communication • Lab exercise: Visit and observe feral colonies
February 7	• **Semester Project Title Due**
Week of February 11	• Chapter 9-10: Queens and swarming; foraging • Lab exercise: Prepare and put out swarm traps; weigh hives
Week of February 18	• Chapters 11-12: Getting started; basic management • Lab exercise: Bee genetics
Week of February 25	• Chapter 14: Spring management • Lab exercise: Hive inspection; swarm prevention (splits)
Week of March 4	• Chapter 18: Pollination and managing for pollination • Lab exercise: Pollination observations

Spring Break, March 11-15	• **No class**
Week of March 18	• Chapter 17 Queen mating and rearing • Lab exercise: Hive inspection, spring build up, check splits
Wednesday, March 21, Withdrawal deadline	
Week of March 25	• Chapter 19: Bee mites and IPM • Lab exercise: Bee/brood dissections
Week of April 1	• Chapter 20 Diseases and pests • Lab exercise: Hive inspection: varroa mite monitoring
Week of April 8	• Chapter 15: Honey harvest • Lab exercise Pollination observations 2
April 11	• **First Draft of Final Paper Due**
Week of April 15	• No class: final project preparation
Week of April 22	• **Final presentations and final paper due**