

**ENY 4573**  
**Beekeeping I**  
**Spring 2023**  
**3 credits**

\*This course is co-taught with ENY 6572 Apiculture I.

**Instructor:** Cameron Jack, PhD

**Office Room #:** ENY (Bldg 964), room 114

**Office Address:** Steinmetz Hall, Natural Area Drive, P.O. Box 110620, Gainesville, FL 32611

**Office Phone #:** 352-294-6926 (*Please email to set up a phone appointment.*)

**E-mail:** [cjack@ufl.edu](mailto:cjack@ufl.edu)

**TA:** Gabriela Gonzalez (For Students Last Name A-F)

**E-mail:** [ggonzalez2@ufl.edu](mailto:ggonzalez2@ufl.edu)

**TA:** Julia Hochstein (For Students Last Name G-L)

**E-mail:** [Julia.hochstein@ufl.edu](mailto:Julia.hochstein@ufl.edu)

**TA:** Ellie Littler (For Students Last Name M-R)

**E-mail:** [elittler@ufl.edu](mailto:elittler@ufl.edu)

**TA:** Laura Kalthoff (For Students Last Name S-Z)

**E-mail:** [laura.kalthoff@ufl.edu](mailto:laura.kalthoff@ufl.edu)

**Special Note on Contact via Email:** Due to UF privacy laws, you must use your GatorLink account or the Canvas mail system when emailing the Instructor or TA. Emails sent from other accounts (gmail, hotmail, etc.) will not be answered by the Instructor or TA. Emails from a GatorLink account will be responded to within 48 hours, excluding extraneous circumstances.

**Office Hours:** Please schedule by appointment.

**Course Description:** The biology of honey bees and the craft of apiculture will be examined by exploring the life cycle of honey bees, biogeography and evolution of beekeeping. Equipment, techniques, management practices, pollination ecology, economic practices and current issues within beekeeping will be discussed.

**Course Learning Objectives:**

1. Identify the different members of a honey bee colony and discuss their different roles within the honey bee nest.
2. Summarize the innovations through history that have shaped our modern beekeeping practices.
3. Recognize the essential pieces of equipment in beekeeping and explain their uses.
4. Discuss the basic management practices used throughout the year and relate how these practices achieve the goals of the beekeeper.
5. Compare honey bees to other pollinators and summarize their economic importance.
6. Identify the valuable and dangerous honey plants of Florida.

7. Discuss the impacts of common stressors to honey bee colonies and describe how to manage them.

**Suggested Readings:**

1. Textbook: Caron, D.W. 2013 (revised from 1999). Honey Bee Biology and Beekeeping. Wicwas Press. Cheshire, CT, 368 pp.
2. American Bee Journal articles written by Dr. Jamie Ellis which are appropriate for the content of this course.

**Lectures:** This is a fully online, Canvas-based course. The website for the syllabus, all lectures, reading materials, announcements, tests, etc. will be posted on eLearning:

<https://elearning.ufl.edu/>. All lectures for this course are narrated presentations and will include videos and supplemental readings. We will provide text from all the narrated presentations, but you should pay close attention, as knowing and understanding the spoken information is critical for success in this course. All lectures and tests will be delivered online in Canvas.

Please note that all video clips and photographs are copyrighted and are NOT to be used outside of this class and may be used only this semester. Please do not copy or distribute these photographs or video clips. All class notes are provided for educational use only.

**Course Notifications and Communication:** All course communications (assignments, announcements, test information, etc.) will be made via the Announcements in Canvas. Please ensure that your Canvas profile is set to receive notifications (i.e. please check the appropriate box to receive all notifications). To do this, click on your name in the upper right corner of the Canvas homepage after logging into Canvas. Next, click “notifications” on the left. This will take you to the Notification Preferences page. Then, click the check symbol for at least the following notifications: Due Date, Course Content, Announcement, and Grading.

Students are encouraged to post general questions on topics taught in the class under the General Questions thread. The instructor and/or the TAs will respond to the questions. Other students are also encouraged to respond to the questions. Private questions should be sent to the TA via e-mail.

**Course Schedule:** This course is offered via Canvas as a distance education course. To stay on track, students must adhere to the course schedule.

Module	Video Content	Required Readings	Module Assessments	Critical Thinking Exercises	Beekeeping Experience Report
Getting Started	Syllabus, course orientation, tips for success	Course syllabus; Tips for success	Syllabus quiz Jan. 13 <sup>th</sup>	Critical Thinking Exercise 1 Jan. 27 <sup>th</sup>	
Bees and Beekeeping	Why keep honey bees?	Textbook: p. 3-11; 24-38. ABJ: Members of a colony; Honey bee stings.	Bees and Beekeeping quiz Jan. 20 <sup>th</sup>		
	Educational resources for beekeepers				
	Naming the bee				
	What to do about honey bee stings?				
	Differentiating bees and wasps				
Honey Bee Biology	Common bee groups	Textbook: p. 51-66; 79-89. ABJ: Honey bee biology; Worker tasks; Swarms.	Honey Bee Biology quiz Jan. 27 <sup>th</sup>		Beekeeping Experience RSVP Jan. 28 <sup>th</sup>
	Adult members of a honey bee colony				
	Immature members of honey bee colony				
	Components of a honey bee nest				
	Life Cycle of a honey bee colony				
	Tasks of honey bee workers				
	Honey bee dance language				
Honey bee thermoregulation					
Evolution of beekeeping	Ancient honey bee/human interactions	Textbook: p. 159-172. ABJ: Langstroth Hive; Time commitment of beekeeping.	Evolution of Beekeeping quiz Feb. 3 <sup>rd</sup>	Beekeeping Field Day Feb. 4 <sup>th</sup>	
	The evolution of beekeeping				
	The golden age of beekeeping				
	Beekeeping today				
	Making money with beekeeping				
Beekeeping equipment	The parts of a Langstroth hive	Textbook: p. 175-190. ABJ: Hive tool and smoker; Protective equipment.	Equipment quiz Feb. 10 <sup>th</sup>	Critical Thinking Exercise 2 Feb. 10 <sup>th</sup>	
	Frames and foundation				
	Three essential beekeeping tools				
	Other beekeeping equipment				
	Alternative hive types and sizes				
	Assembling hive equipment				
Getting Started with Beekeeping	Hive choice and configuration	Textbook: p. 173-190. ABJ: Choosing an apiary site; Beekeeping goals.	Getting Started in Beekeeping quiz Feb. 17 <sup>th</sup>		
	Starting a new honey bee colony				
	Monetary and time requirements of beekeeping				
	Rules and regulations for keeping honey bees				
	Your bees and other people				
	Qualities of a good apiary location				
Beekeeping Basics	Characteristics of a healthy colony				
	How to light a smoker				

	Proper colony inspection techniques	Textbook: p. 103-116; 191-204. ABJ: Inspecting new colonies; Installing packages and nucs.	Beekeeping Basics quiz March 3 <sup>rd</sup>	Critical Thinking Exercise 3 March 3 <sup>rd</sup>	
	Installing packages and nucs				
	Marking and clipping queens				
	Requeening				
	Basic swarm management techniques				
	Making splits				
	Feeding bees				
	Moving bees				
Pollination	Flower anatomy, pollen, and nectar	Textbook: 273-294. ABJ: Making money with bees.	Pollination quiz Mar. 10 <sup>th</sup>		Beekeeping Report 1 <sup>st</sup> Draft Due Mar. 10 <sup>th</sup>
	Pollination Ecology				
	Who are the pollinators?				
	Bees as super pollinators				
	Pollination with honey bees				
<b>----- Spring Break -----</b>					
Honey Production	How bees make honey	Textbook: 239-258. Characteristics of Florida Honey Plants	Honey Production quiz Mar. 24 <sup>th</sup>		Peer Reviews of Beekeeping Report Mar. 24 <sup>th</sup>
	Optimum Foraging Theory				
	Managing for honey production				
	Monofloral honey and wildflower honeys				
	Toxic and invasive nectar plants				
	Harvesting honey				
Extracting and Selling Honey	Extracting honey	Textbook: 239-258. ABJ: Honey extraction and bottling equipment.	Extracting and Selling Honey quiz April 7 <sup>th</sup>	Critical Thinking Exercise 4 April 7 <sup>th</sup>	Final Beekeeping Report Due April 7 <sup>th</sup>
	Post-extraction processing				
	Bottling honey				
	Other honey products				
	Commercial honey house requirements				
	Commercial honey labeling requirements				
	Cottage food honey sales				
	Honey shows and judging				
Colony Stressors and Yearly Management	Major arthropod pests of honey bee colonies	Textbook: 205-238; 295-320. ABJ: Biotic stressors; Other stressors.	Colony Stressors and Yearly Management quiz April 21 <sup>st</sup>	Critical Thinking Exercise 5 April 21 <sup>st</sup>	
	Minor arthropod & other pests of honey bee colonies				
	Pathogen stressors of honey bee colonies				
	Other stressors of honey bee colonies				
	Principle stressors of honey bee colonies				
	Spring and summer management				

**Evaluation:** The course grade is based on total points earned out of 500 possible points.

Module assessments	20 points each × 10 assessments	200 points
Section critical thinking exercises	35 points each × 5 exercises	175 points
Beekeeping Experience RSVP	5 points	5 points
Submission of quality peer evaluations of two peers' beekeeping reports	10 points × 2 peer reviews	20 points
Final Beekeeping Experience Report	100 points	100 points
	Total Course Points	500 points

### Grades and Grade Points

For information on current UF policies for assigning grade points, see [catalog.ufl.edu/UGRD/academic-regulations/grades-gradingpolicies/](http://catalog.ufl.edu/UGRD/academic-regulations/grades-gradingpolicies/).

FINAL GRADING		
% grade	Letter grade	Points needed to achieve letter grade
100-93	A	≥ 465
90-92	A-	450 – 464
87-89	B+	435 – 449
83-86	B	415 – 434
80-82	B-	400 – 414
77-79	C+	385 – 399
73-76	C	365 – 384
70-72	C-	350 – 364
67-69	D+	335 – 349
63-66	D	315 – 334
60-62	D-	300 – 314
0-59	E	0 – 299

### Assignments:

**(1) Module Assessments:** There is a 20-point assessment associated with each of the ten modules in this course. These assessments are *open note* (i.e. you are allowed to use class lectures, books, websites, etc. while taking the assessments). The assessments will be composed of true/false and multiple choice questions. **The assessments 1) open the Saturday morning after the previous section ends, 2) are timed (60 minutes each), and 3) are due at 11:59 pm on the date listed in the course schedule.** These are individual assessments so please do your own work and do not work in groups or share your answers. There is a large bank of test questions for each assessment and the assessment questions are selected randomly for each student. You will receive a 5-point deduction for each day a module assessment is late.

The first module assessment is a graded syllabus quiz on the “Getting Started” module. You need to read the syllabus and answer quiz questions related to it by **11:59 pm ET on the date listed in**

**the course schedule.** You must complete the syllabus quiz before you are able to advance to the next module. This quiz will show you how your online assessments will be formatted as well as allow you to demonstrate that you understand how this course works and important due dates.

**(2) Critical Thinking Exercises:** The 10 modules are arranged into five sections. There is a critical thinking exercise associated with each section. The exercises are designed to encourage you to think critically about the content presented in the module lectures. The critical thinking exercises are worth 35 points each. These are individual exercises so please do your own work and do not work in groups or share your answers. All of the critical thinking exercises are open note and untimed. You can close and reopen the exercise as many times as you would like until the due date (see course schedule), but you will not be able to make any changes once you have officially submitted your final exercise. **The exercises will be available only during the section open period (see course schedule), are due at 11:59 pm on the date listed in the course schedule.** You will receive a 5 deduction for each day a module assessment is late.

**(3) Beekeeping Report:** One of the most useful skills in any profession is writing. As such, you are expected to produce a 4-5 page (maximum) written report (12 point, Times New Roman font, double spaced) by participating in one of three activities (attend the Beekeeping Field Day, attend three Honey Bee Club meetings or shadow a beekeeper). Regardless of which activity you choose, you must RSVP and take a sting quiz by the date listed on the course schedule. Students electing to shadow a beekeeper must include the beekeeper's name and phone number when registering for this option.

#### **Your three options:**

1) You can attend the Beekeeping Field Day hosted at the University of Florida Honey Bee Research Building (just east of Charles Steinmetz Hall) in Gainesville, FL. On one Saturday during the semester (see the course schedule for the date), we host a field day during which students construct beekeeping equipment, work live honey bee colonies, extract honey, etc. The field day begins at 9:00 am and concludes around 12:30 pm. Participants must wear socks and close-toed shoes. Long sleeve shirts and pants are encouraged. Please do not wear any dark colored clothes (black, navy, etc.). Following the Field Day, students must write a 4-5 page report on their experience with honey bees and beekeeping during the event. A map and driving direction to the UF Honey Bee Laboratory are available on the Canvas Course site. No family, friends, spouses, etc. are allowed to attend the field day.

2) You can choose to attend three Honey Bee Club meetings during the semester. The UF Honey Bee Club is a student-led organization which practices and discusses apiculture. Meetings are generally held every other Thursday evening at 5:00 pm at the Honey Bee Research Building (Bldg 960). If you elect to fulfill your beekeeping experience requirement in this manner, you must attend **at least three meetings**. If you only attend two meetings, it will not count towards your required beekeeping experience and you will need to fulfill your requirement by attending the Field Day or shadowing a beekeeper. It is critical that you sign your name on the attendance sheet as soon as you arrive at the meetings and participate fully. If you decide to go this route, you should start attending meetings as soon as possible to ensure you meet the requirement before the due date of the Beekeeping Report. After attending three meetings, students must

write a 4-5 page report on their experiences with honey bees and beekeeping during the meetings.

3) You can shadow a beekeeper and write report on his/her beekeeping operation. You can discuss how the operation is managed, what the purpose of the operation is (pollination, honey production, etc.), key obstacles the beekeeper must overcome in his/her operation, etc. Your visit with the beekeeper should be photo-documented (you can/should include photos as figures in the report, though they must be in addition to the 4-5 pages of text). You will receive a score of 0 on the beekeeping report/peer evaluation if you do not shadow the beekeeper in person. This option is mainly intended for students who are unable to attend the field day or attend Honey Bee Club meetings because (1) they live too far from Gainesville or (2) they have a previously-scheduled engagements elsewhere during those times. Finding a beekeeper to shadow can take time. Please make every effort to contact a beekeeper by the Beekeeping Experience RSVP (see course schedule for date) so that you can shadow the beekeeper well before the Beekeeping Report is due. Almost every country, region, state, etc. has a beekeepers' association. The best way to find a beekeeper in your area is do an internet search for "your country/state/region/etc. beekeepers association". For example: "Florida Beekeepers Association," "New Zealand Beekeepers Association," "Jacksonville Beekeepers Association," etc. From the website(s) you find, look for the given association's list of contacts, officers, members, etc. and contact one of them to explain your assignment and request a visit. At the end of the day, you have the same resources available to find beekeepers in your area that the Instructor and TAs have. Thus, the responsibility of finding a beekeeper lies with the student who elects to shadow a beekeeper. That said, please contact the Instructor or TA if you need help finding a local beekeeper in your area after exhausting other options.

**Your report must include:**

- Name
- Title
- Photos or figures (it's OK to take something from online, just make sure you cite it properly. Choose a citation style, just be consistent.)
- Introductory and concluding paragraphs
- Subheadings to differentiate between activities or meetings you experienced
- Page numbers
- 12-point, professional font
- Double spaced
- 4-5 pages long (including pictures and/or figures)

A grading rubric will be provided in Canvas to facilitate development and peer review of the beekeeping experience report. **Five points will be deducted from reports every day past the due date (see the course schedule) that the report is submitted.** Please do not wait until the last minute to produce your report.

The beekeeping report grade (up to 125 pts) is composed of three components.

1) 5 points for the Beekeeping Experience RSVP – We want to know how you plan to accomplish your beekeeping experience so we can plan accordingly. You must RSVP for either the beekeeping field day, Honey Bee Club meetings, or tell us which beekeeper you will shadow by the due date noted in the course schedule.

2) 20 points for submitting your peer evaluations of two other students' reports (10 points per report) – After submission of all students' beekeeping reports, you will be randomly assigned two other students' beekeeping reports to peer evaluate using the rubric at the end of this syllabus. You will be awarded 0, 10, and 20 points for submitting zero, one or two peer reviews respectively. Your evaluations of two of your peer's reports are due by the date listed in the course schedule. This is your chance to help your fellow students, so please offer a respectful and useful critique of their work.

3) 100 points from the Instructor and TA's reviews of your beekeeping report – The two peer reviews offered by the two students in the class based on the beekeeping report rubric will help serve as a reviewing guide. The Instructor or TA will see if you made the appropriate or necessary changes to your report suggested by your reviewers and also read your report to assign the final grades based on the rubric provided in the beekeeping experience report page.

**Grading:** Manually graded assignments, including Critical Thinking Exercise questions and the Beekeeping Report, will be graded within two weeks of the assignment due date. All other assessments will be graded automatically upon submission.

**Optional content:** In addition to the assignments above, optional resources are provided throughout the course modules, labeled as “supplemental content.” These resources are not required for course completion and are solely included for enrichment opportunities.

**Minimum technology and skills:** The only software used for this course is Canvas. All learning materials will be available to download in the course modules. Minimum technological skills required for this course include the navigation of Canvas. Additionally, students may desire to send emails and use word processing programs for assignments.

**Absences and Make-Up Work:** Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

[catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/](http://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/)

**Online Course Evaluation Process:** Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at [gatorevals.aa.ufl.edu/students/](http://gatorevals.aa.ufl.edu/students/). Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via [ufl.bluera.com/ufl/](http://ufl.bluera.com/ufl/). Summaries of course evaluation results are available to students at [gatorevals.aa.ufl.edu/public-results/](http://gatorevals.aa.ufl.edu/public-results/).



**Academic Honesty:** UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code ([sccr.dso.ufl.edu/process/student-conduct-code/](http://sccr.dso.ufl.edu/process/student-conduct-code/)) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

**Services for Students with Disabilities:** Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [dso.ufl.edu/drc](http://dso.ufl.edu/drc)) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

## **Campus Resources:**

### Health and Wellness

*U Matter, We Care:* If you or someone you know is in distress, please contact <mailto:umatter@ufl.edu>, 352-392-1575, or visit [umatter.ufl.edu](http://umatter.ufl.edu) to refer or report a concern and a team member will reach out to the student in distress.

*Counseling and Wellness Center:* Visit [counseling.ufl.edu](http://counseling.ufl.edu) or call 352-392-1575 for information on crisis services as well as non-crisis services.

*Student Health Care Center:* Call 352-392-1161 for 24/7 information to help you find the care you need, or visit [shcc.ufl.edu](http://shcc.ufl.edu).

*University Police Department:* Visit [police.ufl.edu](http://police.ufl.edu) or call 352-392-1111 (or 9-1-1 for emergencies).

*UF Health Shands Emergency Room / Trauma Center:* For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; [ufhealth.org/emergency-room-trauma-center](http://ufhealth.org/emergency-room-trauma-center).

### Academic Resources

*E-learning technical support:* Contact the [UF Computing Help Desk](http://UF Computing Help Desk) at 352-392-4357 or via e-mail at [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu).

*Career Connections Center:* Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services [career.ufl.edu/](http://career.ufl.edu/).

*Library Support:* [cms.uflib.ufl.edu/ask](http://cms.uflib.ufl.edu/ask) various ways to receive assistance with respect to using the libraries or finding resources.

*Teaching Center:* Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring. [teachingcenter.ufl.edu/](http://teachingcenter.ufl.edu/)

*Writing Studio:* 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers. [writing.ufl.edu/writing-studio/](http://writing.ufl.edu/writing-studio/)

*Student Complaints On-Campus:* [sccr.dso.ufl.edu/policies/student-honor-codestudent-conduct-code/](http://sccr.dso.ufl.edu/policies/student-honor-codestudent-conduct-code/)

*On-Line Students Complaints:* [distance.ufl.edu/student-complaint-process/](http://distance.ufl.edu/student-complaint-process/)

### **Netiquette:**

It is important to recognize that the online classroom is in fact a classroom, and certain behaviors are expected when you communicate with both your peers and your instructors. These guidelines for online behavior and interaction are known as netiquette.

### **Security:**

Remember that your password is the only thing protecting you from pranks or more serious harm.

- Do not share your password with anyone.
- Change your password if you think someone else might know it.
- Always logout when you are finished using the system.

### **General Guidelines:**

When communicating online, you should always:

- Treat your instructor and fellow students with respect, even in email or in any other online communication.
- Always use your professors' proper title: Dr. or Prof., or if you in doubt use Mr. or Ms.
- Unless specifically invited, don't refer to them by first name.
- Use clear and concise language.
- Remember that all college level communication should have correct spelling and grammar.
- Avoid slang terms such as "wassup?" and texting abbreviations such as "u" instead of "you".
- Use standard fonts such as Times New Roman and use a size 12 or 14 pt. font.
- Avoid using the caps lock feature AS IT CAN BE INTERPRETTED AS YELLING.
- Limit and possibly avoid the use of emoticons like :).
- Be cautious when using humor or sarcasm as tone is sometimes lost in an email or discussion post and your message might be taken seriously or offensive.
- Be careful with personal information (both yours and other's).

- Do not send confidential patient information via e-mail.

**Email Netiquette:**

When you send an email to your instructor, teaching assistant, or classmates, you should:

- Use a descriptive subject line.
- Be brief.
- Avoid attachments unless you are sure your recipients can open them.
- Avoid HTML in favor of plain text.
- Sign your message with your name and return e-mail address.
- Think before you send the e-mail to more than one person. Does everyone really need to see your message?
- Be sure you REALLY want everyone to receive your response when you click, “reply all.”
- Be sure that the message author intended for the information to be passed along before you click the “forward” button.