

Cover Sheet: Request 14128

ENY4XXX Beekeeping II

Info

Process	Course New Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	Cameron Jack cjack@ufl.edu
Created	8/14/2019 2:12:41 PM
Updated	11/9/2019 8:08:15 AM
Description of request	I would like to submit Beekeeping II as a new undergraduate course taught in the Entomology and Nematology Department

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Entomology and Nematology 514914000	Heather Mcauslane		8/14/2019
No document changes					
College	Approved	CALS - College of Agricultural and Life Sciences	Joel H Brendemuhl	Edits requested by the CALS CC have been addressed.	10/17/2019
Beekeeping II vs. Apiculture II.docx					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			10/2/2019 10/17/2019
No document changes					
Statewide Course Numbering System					
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
College Notified					
No document changes					

Course|New for request 14128

Info

Request: ENY4XXX Beekeeping II

Description of request: I would like to submit Beekeeping II as a new undergraduate course taught in the Entomology and Nematology Department

Submitter: Joel H Brendemuhl brendj@ufl.edu

Created: 10/17/2019 11:54:24 AM

Form version: 3

Responses

Recommended Prefix ENY

Course Level 4

Course Number XXX

Category of Instruction Joint (Ugrad/Grad)

Lab Code None

Course Title Beekeeping II

Transcript Title Beekeeping II

Degree Type Baccalaureate

Delivery Method(s) Online

Co-Listing Yes

Co-Listing Explanation The graduate version of the course will require an Extension Video Project, demonstrating a Best Management Practice to beekeepers.

Effective Term Spring

Effective Year 2020

Rotating Topic? No

Repeatable Credit? No

Amount of Credit 3

S/U Only? No

Contact Type Regularly Scheduled

Weekly Contact Hours 3

Course Description This course will provide more depth on topics introduced in Beekeeping I including beekeeping styles, colony stressors and yearly management. This course will also explore issues affecting the beekeeping industry including integrated pest management, pests/diseases, African bees, commercial pollination, queen production, bee removals and pesticides will be discussed.

Prerequisites ENY 4573 Beekeeping I

Co-requisites N/A

Rationale and Placement in Curriculum Most Land Grant Universities offer a single course in beekeeping, providing students with a basic overview of honey bee biology and management principles; however, almost no universities offer multiple courses on beekeeping. At the University of Florida, students can take multiple courses on specific agricultural topics, preparing them to enter the workforce with the knowledge and skills obtained through their instructional program. In the near future, we would like to develop enough beekeeping-centric courses so that students from around the world could come to the University of Florida to be trained in beekeeping. We believe that an Advanced Beekeeping course would complement the existing Practical Beekeeping (ENY 2041 C) and Beekeeping/Apiculture (ENY4573/5572) courses we teach and propel us toward our goal of creating a new Apiculture Certificate Program.

In the last year, we have seen a significant increase in the number of students interested in taking our beekeeping courses. This summer (2019), the Practical Beekeeping course nearly tripled in attendance from the previous summer. The online Beekeeping/Apiculture class has also had a marked increase in students over the last year and is now at 165 students during the Spring 2019 semester

and 115 students during Summer 2019. We believe a course in Advanced Beekeeping will be popular among those students who have demonstrated an interest in the subject.

Course Objectives 1. Compare abiotic and biotic stressors of honey bee colonies and describe how to mitigate these issues.

2. Create a management plan applying the principles of integrated pest management to control honeybee pests and diseases.

3. Recognize the nest conditions that make it suitable for pests and diseases and the associated symptoms from them.

4. Identify the many ways in which commercial beekeepers can make a profit and what is required to be successful for each commodity.

5. Interpret the findings from various pesticide research publications and discuss the implications they may have on honey bee colonies.

Course Textbook(s) and/or Other Assigned Reading 1. Textbook: Caron, D.W. 2013 (revised from 1999). Honey Bee Biology and Beekeeping. Wicwas Press. Cheshire, CT, 368 pp.

2. Moritz, R. and Erler, S. 2016. Lost colonies found in a data mine: Global honey trade but not pests or pesticides as a major cause of regional honeybee colony declines. Agriculture, Ecosystems & Environment, 216: 44-50.

3. Holder P.J. et al., 2018. Fipronil pesticide as a suspect in historical mass mortalities of honey bees. PNAS, 115(51): 13033-13038.

4. Boncristiani, H. et al., 2019. Honey bee health world report. Journal of Apicultural Research, In review.

5. Leclercq, G. et al., 2018. Bioassays to quantify hygienic behavior in honey bee (*Apis mellifera* L.) colonies: a review. Journal of Apicultural Research, 663-673.

Weekly Schedule of Topics Week 1: Getting Started

Week 2: Mission of Land Grant Universities

Week 3: Abiotic Colony Stressors and Colony Loss

Week 4: Integrated Pest Management

Week 5: Pest I

Week 6: Pest II

Week 7: Honey Bee Pathogens

Week 8: African Bees

Week 9: Bee Removal

Week 10: Pesticides

Week 11: Commercial Pollination

Week 12: Queen production

Week 13: Other Hive Products

Week 14: Miscellaneous Topics in Beekeeping

Grading Scheme Weekly Module Assessments: 15 points each: 42% Total Grade

Section Critical Thinking Exercise: 35 points each: 35% Total Grade

Select Research Article for Research Blog Post: 10 points: 2% total grade

Peer Review of Research Blog Post: 10 points each x 2: 4% total grade

Final draft of Research Blog Post: 85 points: 17% Total grade

Instructor(s) Cameron Jack

Jamie Ellis

Attendance & Make-up Yes

Accommodations Yes

UF Grading Policies for assigning Grade Points Yes

Course Evaluation Policy Yes

Differences Between the Beekeeping II and Apiculture II Courses

Extension Project

Students enrolled in ENY 6XXX Apiculture II are required to produce an additional extension project in the form of an instructional video. All videos should have the potential for publication through the University of Florida's extension branch (Cooperative Extension Service). Thus, it is held to a high standard of production and quality. The instructional video has several deadlines in relation to the project and requires a peer review from other graduate students.

ENY 4XXX
Beekeeping II
Spring 2020
3 credits

ENY 4573 Beekeeping I is a prerequisite for this course
***This course is co-taught with ENY 6XXX Apiculture II.**

Lead-Instructor: Cameron Jack, MSc
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

Instructor: Jamie Ellis, PhD
Office Room #: ENY (Bldg 964), room 116
Office Address: Steinmetz Hall, Natural Area Drive, P.O. Box 110620, Gainesville, FL 32611
Office Phone #: 352-273-3924 (*Please email to set up a phone appointment.*)
E-mail: jdellis@ufl.edu
Website: www.ufhoneybee.com

TA: TBA
Office Room #:
Office Address:
E-mail:

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.

Office Hours: By appointment.

Course Description: This course will provide more depth on topics introduced in Beekeeping I including beekeeping styles, colony stressors and yearly management. This course will also explore issues affecting the beekeeping industry including integrated pest management, pests/diseases, African bees, commercial pollination, queen production, bee removals and pesticides will be discussed.

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4. Boncristiani, H. et al., 2019. Honey bee health world report. *Journal of Apicultural Research*, *In review*.
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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: <http://lss.at.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.

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	Weekly Readings	Module Assessments	Critical Thinking Exercises	Research Blog Post Assignments
Getting Started	Welcome video; How to be successful in this course	Course syllabus; Tips for success	Jan. 10 th		
Mission of Land Grant Institutions	Research; Instruction; Teaching		Jan. 17 th		Select Research Article Jan. 17 th
Abiotic Colony Stressors and Colony Loss	Abiotic stressors of honey bee colonies; Other stressors; Elevated colony losses	Moritz and Erler, 2016.	Jan. 24 th	Jan. 24 th	
Integrated Pest Management	What is IPM?; Monitoring (<i>Varroa</i>); Determining thresholds; Prevention; Control pyramid; Can IPM be effective for beekeeping?	Textbook: p. 325-330.	Jan. 31 st		
Pests I	Pest overview; <i>Varroa destructor</i> ; <i>Varroa</i> control; <i>Tropilaelaps</i> ; Tracheal mites	Textbook: p. 309-324.	Feb. 7 th	Feb. 7 th	
Pests II	Small hive beetles; SHB control; Wax moths; Other arthropod pests; Vertebrate pests	Textbook: p. 345-352.	Feb. 14 th		
Honey Bee Pathogens	Pathogen overview; <i>Nosema</i> ; Chalkbrood; Viruses; Foulbrood	Boncristiani et al., 2019.	Feb. 21 st		1 st Submission Feb. 21 st
African Bees	Origin and movement to U.S.; Biology and behavior; Identification of African bees; What to do about African bees		Feb. 28 th	Feb. 28 th	
---- Spring Break ----					
Bee Removal	Types of bee removal; Bee removal safety; Removal best management practices; Practices after bee removal		Mar. 13 th		Peer Review Mar. 13 th
Pesticides	Pesticide impacts on bees, Definitions, Routes of exposure; Pesticide regulations; Understanding the label; Pesticide formulations; Risk reduction approaches for applicators; Risk reduction approaches for beekeepers; Recognizing bee exposure and reporting	Holder et al., 2018.	Mar. 20 th		

Commercial Pollination	Commercial pollination overview; Moving colonies; State regulations; Hive placement; Grower contracts	Textbook: 289 – 305.	Mar. 27 th	Mar. 27 th	
Queen Production	Choosing breeder queens; Colony preparations; Queen production timeline; Instrumental insemination; Package bee production	Leclercq et al., 2018.	Apr. 3 rd		
Other Hive Products	Beeswax; Pollen; Propolis, royal jelly and bee brood; Mead; Apitherapy	Textbook: p. 260-270.	Apr. 10 th		Final Submission April 10 th
Miscellaneous Topics in Beekeeping	Natural/Treatment-free beekeeping; Honey shows and judging; Observation hives		Apr. 17 th	Apr. 17 th	

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

Module assessments	15 points each × 14 assessments	210 points
Section critical thinking exercises	35 points each × 5 exercises	175 points
Select Research Article	10 points	10 points
Submission of your peer evaluations of two of your peers' Research Blog Post	10 points × 2 peer reviews (you get 10 points per peer review you submit)	20 points
Final draft of your Research Blog Post	85 points	85 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/.

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 15-point assessment associated with each of the fourteen 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 on the following Friday 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: These 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 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) Research Blog Post: One of the most useful skills in any profession is writing. Furthermore, one of the missions of the Land Grant Institution is extension, which means we are communicating with the general public. As such, you are required to produce a blog post which explains the findings from a recent peer-reviewed honey bee research article. This should be based on a paper that was published in the last three years and would be of interest to beekeepers, meaning it should be relevant to honey bee health, production, treatment, etc. Your blog post should be written to have the potential for publication through the University of Florida's extension branch (Cooperative Extension Service). You **must** check with the TA before beginning your blog post so that they can verify that such a blog post does not already exist on your research paper. The instructor or TA can provide ideas for selecting a research paper, but the papers will be reserved on a first come first serve basis. **A grading rubric will be provided in Canvas to facilitate the development of your blog post.**

Here is an example of a blog post written about a widely-discussed research article <http://blogs.ifas.ufl.edu/entnemdept/2018/04/18/lithium-chloride-for-varroa-control/> based on the paper by Ziegelmann et al., 2018 Scientific Reports 8:683 <https://www.nature.com/articles/s41598-017-19137-5.pdf>. You'll notice how the author created figures helpful to understanding the research as well as linking to other useful videos and information.

Your Research Blog Post should convey scientific information in a way that a high school student could understand. Figures are extremely helpful in extension documents, and students are encouraged to include as many figures as necessary to explain a topic. You must obtain use permission from the owner of any figures you include in your final report if the figure is not original to you. There will be an additional assignment to submit with the Final Extension Report called "Extension Report Figures and Permissions." For this assignment, you will upload the full-sized jpeg file for each figure and fill in the accompanying word document with the proof of permission for use.

There are four components of the Research Blog Post that compose the completed assignment. Due dates for each component are listed in the course schedule.

- 1) Select Research Article Due – The student should identify and record the research article chosen for the Research Blog Post by completing the Canvas assignment "Select Research Article".
- 2) 1st Submission – This is not a rough draft, but rather is what the student considers the completed document.
- 3) Peer Review – The 1st submission will be shared with other students in the class who will provide a peer review of the report by the due date listed in the course schedule. Each student will peer review two Research Blog Posts.
- 4) Final Submission – Students are expected to revise their Research Blog Posts per the "good" comments provided during the peer review process. The final report must be submitted by the due date shown in the course schedule.

A grading rubric will be provided in Canvas to facilitate development and peer review of the Research Blog Post. **Five points will be deducted from the final project score every day past the due dates that any of the**

information requested above is late, regardless of the excuse. Please do not wait until the last minute to produce your blog post or meet any of the other deadlines. All points lost will be deducted from the final Research Blog Post grade.

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/

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/. 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/. Summaries of course evaluation results are available to students at 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/) 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) 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/ 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/ 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/.

University Police Department: Visit 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.

Academic Resources

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

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services career.ufl.edu/.

Library Support: 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/

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers. writing.ufl.edu/writing-studio/

Student Complaints On-Campus: sccr.dso.ufl.edu/policies/student-honor-codestudent-conduct-code/

On-Line Students Complaints: distance.ufl.edu/student-complaint-process/

**ENY 6XXX
Apiculture II
Spring 2020
3 credits**

**ENY 6XXX Apiculture I is a prerequisite for this course.
*This course is co-taught with ENY 4XXX Beekeeping II.**

Lead-Instructor: Cameron Jack, MSc

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

Instructor: Jamie Ellis, PhD

Office Room #: ENY (Bldg 964), room 116

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

Office Phone #: 352-273-3924 (*Please email to set up a phone appointment.*)

E-mail: jdellis@ufl.edu

Website: www.ufhoneybee.com

TA: TBA

Office Room #:

Office Address:

E-mail:

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.

Office Hours: By appointment.

Course Description: This course will provide more depth on topics introduced in Apiculture I including beekeeping styles, colony stressors and yearly management. This course will also explore issues affecting the beekeeping industry including integrated pest management, pests/diseases, African bees, commercial pollination, queen production, bee removals and pesticides will be discussed.

Course Learning Objectives:

1. Compare abiotic and biotic stressors of honey bee colonies and describe how to mitigate these issues.
2. Create a management plan applying the principles of integrated pest management to control honeybee pests and diseases.

3. Recognize the nest conditions that make it suitable for pests and diseases and the associated symptoms from them.
4. Identify the many ways in which commercial beekeepers can make a profit and what is required to be successful for each commodity.
5. Interpret the findings from various pesticide research publications and discuss the implications they may have on honey bee colonies.
6. Produce a video that will teach correct beekeeping best management practices to non-technical audiences.

Required Readings:

1. Textbook: Caron, D.W. 2013 (revised from 1999). Honey Bee Biology and Beekeeping. Wicwas Press. Cheshire, CT, 368 pp.
2. Moritz, R. and Erler, S. 2016. Lost colonies found in a data mine: Global honey trade but not pests or pesticides as a major cause of regional honeybee colony declines. *Agriculture, Ecosystems & Environment*, 216: 44-50.
3. Steinhauer, N. et al. 2018. Drivers of Colony Loss. *Current Opinion in Insect Science* 26: 142-148.
4. Rosenkranz et al. 2010. *Varroa* Biology and Control. *Journal of Invertebrate Pathology* 103: S96-S119
5. Holder P.J. et al., 2018. Fipronil pesticide as a suspect in historical mass mortalities of honey bees. *PNAS*, 115(51): 13033-13038.
6. Boncristiani, H. et al., 2019. Honey bee health world report. *Journal of Apicultural Research*, *In review*.
7. Mortensen, A.N., and J. D. Ellis 2016. Managed European-Derived Honey Bee, *Apis mellifera* spp, Colonies Reduce African-Matriline Honey Bee, *A. m. scutellata*, Drones at Regional Mating Congregations. *PLoS ONE* 11(8): e0161331.
8. Straub, L. et al. 2019. Neonicotinoids and ectoparasitic mites synergistically impact honeybees. *Scientific Reports* 9: 8159.
9. Leclercq, G. et al., 2018. Bioassays to quantify hygienic behavior in honey bee (*Apis mellifera* L.) colonies: a review. *Journal of Apicultural Research*, 663-673.
10. Lee, K. et al. 2019. Is the Brood Pattern within a Honey Bee Colony a Reliable Indicator of Queen Quality? *Insects* 10(2): 12.

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: <http://lss.at.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.

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Getting Started	Welcome video; How to be successful in this course	Course syllabus; Tips for success	Jan. 10 th			
Mission of Land Grant Institutions	Research; Instruction; Teaching		Jan.17 th		Select Research Article Jan. 17 th	
Abiotic Colony Stressors and Colony Loss	Abiotic stressors of honey bee colonies; Other stressors; Elevated colony losses	Moritz and Erler, 2016. Steinhauer et al. 2019.	Jan. 24 th	Jan. 24 th		Video Topic Jan. 24 th
Integrated Pest Management	What is IPM?; Monitoring (<i>Varroa</i>); Determining thresholds; Prevention; Control pyramid; Can IPM be effective for beekeeping?	Textbook: p. 325-330.	Jan. 31 st			
Pests I	Pest overview; <i>Varroa destructor</i> ; <i>Varroa</i> control; <i>Tropilaelaps</i> ; Tracheal mites	Textbook: p. 309-324. Rosenkranz et al. 2010	Feb. 7 th	Feb.7 th		
Pests II	Small hive beetles; SHB control; Wax moths; Other arthropod pests; Vertebrate pests	Textbook: p. 345-352.	Feb. 14 th			Production Plan Feb. 14 th
Honey Bee Pathogens	Pathogen overview; <i>Nosema</i> ; Chalkbrood; Viruses; Foulbrood	Boncrisiani et al., 2019.	Feb. 21 st		1 st Submission Feb. 21 st	
African Bees	Origin and movement to U.S.; Biology and behavior; Identification of African bees; What to do about African bees	Mortensen and Ellis, 2016.	Feb.28 th	Feb. 28 th		Peer Review Feb. 28 th
---- Spring Break ----						
Bee Removal	Types of bee removal; Bee removal safety; Removal best		Mar. 13 th		Peer Review Mar. 13th	

	management practices; Practices after bee removal					
Pesticides	Pesticide impacts on bees, Definitions, Routes of exposure; Pesticide regulations; Understanding the label; Pesticide formulations; Risk reduction approaches for applicators; Risk reduction approaches for beekeepers; Recognizing bee exposure and reporting	Holder et al. 2018. Straub et al. 2019	Mar. 20 th			
Commercial Pollination	Commercial pollination overview; Moving colonies; State regulations; Hive placement; Grower contracts	Textbook: 289 – 305.	Mar. 27 th	Mar. 27 th		
Queen Production	Choosing breeder queens; Colony preparations; Queen production timeline; Instrumental insemination; Package bee production	Leclercq et al. 2018. Lee et al. 2019	Apr. 3 rd			
Other Hive Products	Beeswax; Pollen; Propolis, royal jelly and bee brood; Mead; Apitherapy	Textbook: p. 260-270.	Apr. 10 th		Final Submission April 10 th	
Miscellaneous Topics in Beekeeping	Natural/Treatment-free beekeeping; Honey shows and judging; Observation hives		Apr. 17 th	Apr. 17 th		Final Video Submission April 17 th

Evaluation: The course grade is based on total points earned out of 600 possible points.

Module assessments	15 points each × 14 assessments	210 points
Section critical thinking exercises	45 points each × 5 exercises	225 points
Select Research Article	10 points	10 points
Submission of your peer evaluations of two of your peers' Research Blog Post	10 points × 2 peer reviews (you get 10 points per peer review you submit)	20 points
Final draft of your Research Blog Post	85 points	85 points
Extension Video Project	100 points	100 points
	Total Course Points	650 points

Grades and Grade Points

For information on current UF policies for assigning grade points, see catalog.ufl.edu/UGRD/academic-regulations/grades-gradingpolicies/.

FINAL GRADING		
% grade	Letter grade	Points needed to achieve letter grade
100-93	A	≥ 605
90-92	A-	585 – 604
87-89	B+	566 – 584
83-86	B	540 – 565
80-82	B-	520 – 539
77-79	C+	501 – 519
73-76	C	475 – 500
70-72	C-	455 – 474
67-69	D+	436 – 454
63-66	D	410 – 435
60-62	D-	390 – 409
0-59	E	0 – 389

Assignments:

(1) Module Assessments: There is a 15-point assessment associated with each of the fourteen 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 on the following Friday 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 exercises are designed to encourage you to think critically about the content presented in the module lectures. The critical thinking exercises are worth 45 points each. There are separate exercises designed for graduate students incorporating additional questions from the scientific journal articles assigned to that section. 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 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) Research Blog Post: One of the most useful skills in any profession is writing. Furthermore, one of the missions of the Land Grant Institution is extension, which means we are communicating with the general public. As such, you are required to produce a blog post which explains the findings from a recent peer-reviewed honey bee research article. This should be based on a paper that was published in the last three years and would be of interest to beekeepers, meaning it should be relevant to honey bee health, production, treatment, etc. Your blog post should be written to have the potential for publication through the University of Florida's extension branch (Cooperative Extension Service). You **must** check with the TA before beginning your blog post so that they can verify that such a blog post does not already exist on your research paper. The instructor or TA can provide ideas for selecting a research paper, but the papers will be reserved on a first come first serve basis. **A grading rubric will be provided in Canvas to facilitate the development of your blog post.**

Here is an example of a blog post written about a widely-discussed research article <http://blogs.ifas.ufl.edu/entnemdept/2018/04/18/lithium-chloride-for-varroa-control/> based on the paper by Ziegelmann et al., 2018 Scientific Reports 8:683 <https://www.nature.com/articles/s41598-017-19137-5.pdf>. You'll notice how the author created figures helpful to understanding the research as well as linking to other useful videos and information.

Your Research Blog Post should convey scientific information in a way that a high school student could understand. Figures are extremely helpful in extension documents, and students are encouraged to include as many figures as necessary to explain a topic. You must obtain use permission from the owner of any figures you include in your final report if the figure is not original to you. There will be an additional assignment to submit with the Final Extension Report called "Extension Report Figures and Permissions." For this assignment, you will upload the full-sized jpeg file for each figure and fill in the accompanying word document with the proof of permission for use.

There are four components of the Research Blog Post that compose the completed assignment. Due dates for each component are listed in the course schedule.

- 1) Select Research Article Due – The student should identify and record the research article chosen for the Research Blog Post by completing the Canvas assignment "Select Research Article".
- 2) 1st Submission – This is not a rough draft, but rather is what the student considers the completed document.
- 3) Peer Review – The 1st submission will be shared with other graduate students in the class who will provide a peer review of the report by the due date listed in the course schedule. Each student will peer review two Research Blog Posts.

4) Final Submission – Students are expected to revise their Research Blog Posts per the “good” comments provided during the peer review process. The final report must be submitted by the due date shown in the course schedule.

A grading rubric will be provided in Canvas to facilitate development and peer review of the Research Blog Post. **Five points will be deducted from the final project score every day past the due dates that any of the information requested above is late, regardless of the excuse.** Please do not wait until the last minute to produce your blog post or meet any of the other deadlines. All points lost will be deducted from the final Research Blog Post grade.

4) Extension Project: Students enrolled in ENY 6XXX are required to produce an additional project in the form of an instructional video. All videos should have the potential for publication through the University of Florida’s extension branch (Cooperative Extension Service). You **must** check with the TA before beginning your project so that they can verify that an instructional video does not already exist on your topic. The instructor or TA can provide ideas for selecting a topic. **A grading rubric will be provided to facilitate development of your extension video.**

Your video should convey a beekeeping practice and/or scientific information in a way that a high school student could understand. If you do not have the technical expertise to perform the beekeeping tasks in the video, the Instructors or course TA’s will be available to help if planned in advance. Members of the UF Honey Bee Research and Extension Laboratory can be available to help with the beekeeping practices demonstrated in the video. You must obtain written permission from any person appearing in the video. There will be an additional assignment to submit with the Final Extension Video called “Extension Video Permissions.” For this assignment, you will upload the signed consent forms for each person in the video.

Videos should be ≤ 5 minutes in length and provide useful information to U.S. beekeepers. You will write a draft and a production plan for others to peer review that will be evaluated using a different rubric. The video needs to be of excellent quality; thus, you will have access to good equipment from the UF Honey Bee and Research Extension Laboratory. The video of course does not have to be a masterpiece, but it should be professional enough that it can be published on our lab YouTube channel. Here are two examples of videos produced by student in previous classes <https://youtu.be/urDsKwHPAV0> <https://youtu.be/U6HyBbs9454>.

There are four components of the extension video project that compose the completed assignment. Due dates for each component are listed in the course schedule.

a) Video Topic Due – The student should identify and record the topic chosen for the extension report by completing the Canvas assignment “Extension Report Topic.”

b) Production Plan – This is not a rough draft, but rather is what the student considers the well-thought out production plan. We want to know locations where the filming is to take place, the planned script of those appearing in the video, the angles and views you plan to capture and any words that might appear on the screen at any time.

c) Peer Review – The production plan will be shared with other graduate students in the class who will provide a peer review of the report by the due date listed in the course schedule. Each student will peer review two production plans. This activity is new for most students, but provide the best feedback you can.

d) Final Submission – Students are expected to revise the production plan per the comments provided during the peer review process. The final video must be submitted by the due date shown in the course schedule.

A grading rubric will be provided in Canvas to facilitate development and peer review of the Extension Video Project. **Five points will be deducted from the final project score every day past the due dates that any of the information requested above is late, regardless of the excuse.** Please do not wait until the last minute to produce your blog post or meet any of the other deadlines. All points lost will be deducted from the final Extension Video Project grade.

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/

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/. 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/. Summaries of course evaluation results are available to students at 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/) 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) 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 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 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.

University Police Department: Visit 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.

Academic Resources

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

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services career.ufl.edu/.

Library Support: 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/

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers. writing.ufl.edu/writing-studio/

Student Complaints On-Campus: sccr.dso.ufl.edu/policies/student-honor-codestudent-conduct-code/

On-Line Students Complaints: distance.ufl.edu/student-complaint-process/