



Bugs and People

ENY 1001

Spring 2024

NEB 202, T 11:45-1:40, Th 12:50-1:40



Instructor:

Dr. Rebecca Baldwin

UF Entomology and Nematology

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Canvas site: elearning.ufl.edu

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Bus 118, parking available, or Zoom

Volunteer TAs–

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- Christian Wilder – cwilder2@ufl.edu

Required Text :

Berenbaum, May R.

Bugs in the System: Insects and their impact on human affairs.

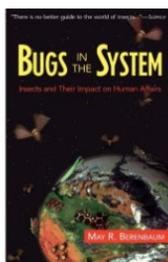
Helix Books. ISBN Number 0-201-40824-4

1995. paperback, hardback or eBook

Grading Scale:

- 93 – 100% = A
- 90 – 92.9% = A-
- 87 – 89.9% = B+
- 83 – 86.9% = B
- 80 – 82.9% = B-
- 77 – 79.9% = C+
- 73 – 76.9% = C
- 70 – 72.9% = C-
- 67 – 69.9% = D+
- 63 – 66.9% = D
- 60 – 62.9% = D-
- below 60% = E

Grades will not be rounded.



INTERNATIONAL
SCHOLARS PROGRAM
OFFICE OF GLOBAL LEARNING
UNIVERSITY OF FLORIDA

Overview

Bugs and People is a General Education course designed as an introduction to biological science for lower-division students who want to learn popular information about insects and associated organisms. During this course, we will discuss how insects have impacted human culture from ancient civilizations to modern times. We will also have the opportunity to sample insect cuisine and observe live arthropods. (B, N, ISP)

General Education Statements

Biology (B) General Education (GE) credits

Biological science courses provide instruction in the basic concepts, theories and terms of the scientific method in the context of the life sciences. Courses focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes that govern biological systems. Students will formulate empirically-testable hypotheses derived from the study of living things, apply logical reasoning skills through scientific criticism and argument, and apply techniques of discovery and critical thinking to evaluate outcomes of experiments.

Note: A grade of C or better is required to receive GE credit

International (N) General Education (GE) credits

International courses promote the development of students' global and intercultural awareness. Students examine the cultural, economic, geographic, historical, political, and/or social experiences and processes that characterize the contemporary world, and thereby comprehend the trends, challenges, and opportunities that affect communities around the world. Students analyze and reflect on the ways in which cultural, economic, political, and/or social systems and beliefs mediate their own and other people's understanding of an increasingly connected world.

International Scholars Program (ISP)- This course fulfills one of the curriculum requirements of the *International Scholars Program*. Learn more about how you can obtain a graduation medallion and diploma <https://internationalcenter.ufl.edu/student-opportunities/international-scholars-program>.

Course Objectives

1. To categorize a “bug” using taxonomy approved by the International Code of Zoological Nomenclature.
2. To recognize the components in the process of science and formulate a hypothesis.
3. To communicate the impacts both pest and beneficial insects play in human history and culture including examples from current news events, government policies, art, music, folklore, film and literature.
4. To evaluate how “bugs” impact society and global quality of life by competing with people for food, shelter, clothing, and health.
5. To identify global neglected diseases transmitted by arthropods.
6. To comprehend the beneficial nature and how, due to their biology, “bugs” are important research models.
7. To recognize biological processes, especially the unique growth and reproduction strategies of arthropods.
8. To compile global uses of humans use of insects for nutrition and evaluate how humans use insect products in everyday items.

Graded Projects and Exams

Exams and Online Quizzes:



- There will be **three exams** scheduled during class time.
 - Bring your computer or tablet to class for the online proctored exam.
- Each exam will consist of 45-50 multiple-choice or matching questions.
- All exams are closed book.
- *Exam Make-Up Policy:* If you are ill or have extenuating circumstances, you must contact Dr. Baldwin **prior to** the scheduled exam and must provide appropriate written documentation to schedule a make-up examination.
- There will be several online quizzes based on modules in Canvas. These quizzes are worth 10-20 points each.
- You may participate in optional extra credit opportunities throughout the semester. These will be announced during class.

Creative Project: Bugge Faire:

During the semester, each student will collaborate with a group to research a “bug.” (Most arthropods we study will be insects, but other arthropods are acceptable.) Each group will **design a model** of that organism, create a presentation **or** science-fair style poster of biological facts, and **give an eight-minute presentation** during the **Bugge Faire** as the final project.

The creative model must closely resemble the organism, and the presentation must contain a photo of the organism that is modeled, as well as biological facts about the organism. (Sharable food models are encouraged.) The organism information should be in bulleted lists of talking points and **should not be** written out in complete sentences to be read. Note cards may be used for reference, but should not be relied on to read from. Make your information fun and interesting. **Be creative.**

Each presentation should be ~8 minutes in length and should include the taxonomy of the “bug”, where it is found geographically and ecologically, unique characteristics, and other biological facts (pest or beneficial, predator or prey, etc.). View this as a documentary or commercial for your “bug.” You only have a few minutes, so wow the judges with your knowledge. Each member of your group must present, and groups are encouraged to be creative with their dress, background music, lighting, model (food may be shared with the class) etc.

Group members that do not participate in the preparation or presentation will receive a 0 on the project.

Peer evaluations

Each member of the collaborative team will be peer evaluated, so communication with your group is important. This is a chance for you to show your creativity, communication skills, and teamwork, as well as your entomological knowledge. Presentations will take place during class time, and the class and judges will ask you questions at the conclusion of your presentation. Remember to be creative with your presentation. Students have created Minecraft boards, Pokemon type

characters, paper mâché, Lego models and robot insects. Some have written poems, songs and trivia to set their presentations apart. Many choose to get together to cook sweet or savory dishes that resemble their insect so they can share them with the class. Some students do dress in costume and have theme music to accompany their presentation. If your group has questions or needs ideas, please ask. Oh, each group will select a team leader to ensure quality control, schedule a presentation time, and upload the final presentation or photo of the project board to Canvas. Groups can collaborate to serve enough food and bring napkins, plates, forks, juice, etc. for the class.

Bugge Faire Creative Project Grading Rubric

Criteria	Ratings			Points
Presentation length is appropriate (~8 minutes). Group worked well together and project flowed well.	Presentation was rehearsed and flowed well. Creativity was evident.	10	Too short or long Presentation disjointed and not rehearsed.	5
Slides/Video/Poster are accurate and professional in appearance. Information is accurate and complete. References are included and photos include source.	Information is complete and accurate. Presentation visuals include bulleted talking points, attributions, and information about the model.	10	Some information is inaccurate, and presentation is lacking in detail. Sources and photo attributions are not given.	5
Questions are answered accurately.	All questions are answered appropriately.	10	Some questions not answered, or misinformation is given.	5
Model is included and is biologically accurate or explanation of accuracy is given. (Food should be shared and plates provided)	Model accurately represents the organism and is explained during presentation.	10	Model is missing important features or misrepresents the organism.	5
Overall appeal and creativity of presentation.	Excellent - Good	10	Fair -Poor	5
Team Name and Individual Responsibilities Posted by Due Date	Yes	5	No	0

Extra Credit Assignments (5-10 points each): There are various optional activities to enhance your experience with “bugs” offered each semester. These experiences will give you a chance to have some hands-on and up-close interactions with bugs and the damage they cause. Extra credit will be submitted during class and will be accepted only on the date indicated.

Noteworthy Class Information:

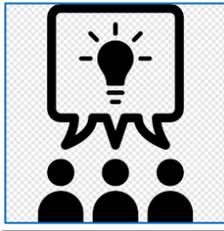
- Abbreviated notes from the lecture material will be posted to Canvas so you may use them to take notes during lecture.
- You are expected to attend all class meetings. If you choose to miss class, it is your responsibility to discover missed information from classmates. Several class periods will be set aside for group work on the Bugge Faire project or for online modules with quizzes.
- You will be responsible for assigned readings from Bugs in the System and materials presented during lecture. Your exams will be composed from all these sources; thus, you will need to read and comprehend text information as well as take notes during slides, videos and presentations.
- Announcements and tips will be given during class, so attend to receive this information.
- Students who do not communicate with their Bugge Faire team after multiple attempts, may be removed from the team and have to begin a project with a new group or, if late in the semester, forfeit the group participation points for the project.
- Just before class begins, Buggy Jokes will be shared for fun. Feel free to share one of your own.

Grading: There are a total of 400 possible points (excluding extra credit). Grades will be posted in Canvas. Please visit <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/> for the UF policy on grading. If you have a disability, please register it with the DRC <https://disability.ufl.edu> and schedule a meeting with me to discuss accommodations within the first two weeks of class. Your grade in *Bugs and People* will be computed as follows:

**ENY
1001
Class**

Graded Assignment	Points	%
Syllabus Quiz (Canvas)	5	1
Bugge Faire Team Name and Responsibilities Contract (Canvas)	10	2.5
Taxonomy/Nomenclature (ICZN) Review (Canvas)	10	2.5
Exam 1	100	25
Exam 2	100	25
Exam 3	100	25
Group Project - Bugge Faire	60	15
Insects in Music and Mythology (Canvas)	15	4
In-Class Activities – (Activities will have questions on exams, so be sure to participate in class.)		
<ul style="list-style-type: none"> Buggy Phrases Historical Global Insect Video Reviews Process of Science – jumping Bean Discussion and Live Pets Ant bait observations (Present data in class) Meet the Live Arthropods (Petting Zoo – earn sticker badges) Sampling insect cuisine Optional Activities <ul style="list-style-type: none"> TA led online exam review sessions and Kahoots 		
Extra Credit (One before each exam)	--	
<ul style="list-style-type: none"> Strange and Unusual Bug (UF Tradition) Insect Song/Short Story/Poem (Group) Museum Scavenger Hunt Tentative: Bugs and People Meme If 75% of the class participates in the GatorEval, then superlative points will be awarded for Bugge Faire presentations (Best theme, Best model, Most informative, Most creative) 		
TOTAL	400	100

Schedule
(May be adjusted as needed)

Date	Day	Lecture Topic and Activities	Reading/ Quiz
1/9	Tuesday	<p>Course Introduction: How do “bugs” fit into human culture?</p> <ul style="list-style-type: none"> TA Introductions, Syllabus and Class Overview, Buggy Phrases <p>Read Preface – influence in art, literature, war, film, technology, agriculture, and human and animal health.</p> <p>Discussion Questions</p> <ul style="list-style-type: none"> What global issues are there involving insects? Have you heard of any insects in the recent news? What would you like to learn in this class? <ul style="list-style-type: none"> Meet others in class & Discuss Bugge Faire Group Projects <p>What are Insects? (What is a Bug?)</p>	<p>Syllabus (Canvas)</p> <p><i>Complete Syllabus Quiz by Friday January 12</i></p> <p>Preface</p> 

		<ul style="list-style-type: none"> Identify five arthropod classes. Learn fundamental classification (Taxonomy /International Code) Influence of Aristotle (Greek), Pliny the Elder (Italian), Bartholomaeus Anglicus (French), and Linnaeus (Swedish) <p>What external structures make insects different from other animals?</p>	
1/11	Thursday	<p>Global Diversity of Arthropoda Determine where these arthropods can be found (global and locally)</p> <ul style="list-style-type: none"> Live Arthropods – Can you handle it? (Observation) <ul style="list-style-type: none"> View the differences between arthropods of the world Have the opportunity to view live specimens : <ul style="list-style-type: none"> Cockroaches from Madagascar Tarantulas from Central and South America Scorpions from Asia Native beetle and arachnid species 	<p>Chapter 1 Answer study guide questions.</p> <p>Live arthropod show and tell – Invite your family and friends.</p> 
1/16	Tuesday	<p>Activity – Group Formation for Bugge Faire Project (TA leader: Christian) Four individuals in a group. Share favorite insects.</p> <ul style="list-style-type: none"> Select group leader and group name <p>Please Do NOT miss this class! It is important that you are in a group *No office hours today – Dr. B is at a conference this week.</p> <p>Activity- Use Chatbot to generate ideas for Bugge Faire project.</p> <ul style="list-style-type: none"> Create AI image from image creator that represents your group and post it to Canvas Discussion. <p>Activity –Russian Stop Action Animation 1912 -Video by Vladislav Starevich – Russian videographer - The Cameraman’s Revenge – (13 min)</p> <p>Discussion Questions</p> <ul style="list-style-type: none"> How was humor portrayed in this film? What was happening in the world when these films were made? Why were these films so valued by the Russian people and people worldwide? 	<p>Chapter 2 Answer study guide questions.</p> <p>Work with your TA to add group to Canvas, and select group leader.</p>
1/18	Thursday	 <p>Activity – Mexican Jumping Bean Locomotion research article discussion</p> <ul style="list-style-type: none"> Receive pet jumping beans 	<p>Post group AI generated image to Canvas. Label the image with the group name.</p> <p>Post outline of group member responsibilities and mode of communication agreed on by the group and schedule of meeting times.</p>
1/23	Tuesday	<p>Lecture continued What is a “Bug” and How Bugs Grow</p> <ul style="list-style-type: none"> Ideas of Darwin, Wallace and Malthus <p>Insect metamorphosis and reproduction Discuss metamorphosis and Biological Processes</p>	<p>Online Taxonomy Review Quiz</p> 

1/25	Thursday	<p>Lecture continued</p> <ul style="list-style-type: none"> Hypothesis testing Identify experimental variables from paper with group. <p>Discussion Questions (not graded)</p> <ol style="list-style-type: none"> What adaptations did arthropods need to survive on land? What is an arthropod? 	<p>Read Locomotion of the Mexican Jumping Bean Article (Also, prepare for extra credit for next Tuesday)</p>
1/30	Tuesday	<p>Discussion of Insect Orders Overview of Taxonomy and Common Insect Orders Ametabola, Hemimetabola , Holometabola - Greek meaning of the names</p> <ul style="list-style-type: none"> Define common insect orders and their characteristics. Explain mouth, leg, and wing adaptations <p>Looking Good and Sounding Sweet –Bizarre Bugs (Insect Adaptations) EXTRA CREDIT – In class only and today only!</p> <p>**If you take a photo of you and your bug in a UF Tradition, you can double your extra credit and receive 10 points instead of 5. “Ketch- up” at the French Fries with your group and take a group photo if you like.</p>	<p>Extra Credit Activity: Bring a bug and explain why it is strange or unusual. Put your name and description of insect on an index card. (Catch and release)**</p> <p>Chapter 3</p> 
2/1	Thursday	<p>Complete Chapters 1-3 and Appendix Activity - What is that Bug? - Review</p>	<p>Appendix - Answer study guide questions</p>
2/6	Tuesday	<p>Insect Sociality – Discussion</p> <ul style="list-style-type: none"> Define social structure in insects <p>Discuss three characteristics of eusociality</p> <ul style="list-style-type: none"> Insects that make food: Beekeeping (honey and pollination services) Ancient use of bees as biological warfare (Persia) (mad bees), cosmetics (Italy), medicine - (Italy and Greece), and religious uses (Greece and Rome) African Bees via Brazil <p>Video – Global Insects – BBC Life – Termites in Australia, Red Bugs in Japan, Honey Bees in North America, Monarch Migration to Mexico</p>	<p>Chapter 4 (Not covered on Exam 1 – This is Exam 2 material)</p> <p>Worksheet (available in class) – Will work in groups, be sure to bring your textbook.</p>
2/8	Thursday	<p>EXAM1 - (Chapters 1,2,3 and the Appendix) – bring computer or tablet!</p>	<p>EXAM 1 (Material from 1/9 - 2/1)</p>
2/13	Tuesday	<p>HAPPY Mardi Gras!</p> <p>Entomophagy – Let’s eat some insects! (Location will be announced in class.) Entomophagy worldwide</p> <ul style="list-style-type: none"> China, Cambodia, Australia, Peru, Mexico, Africa, US Sample some insect cuisine. <p>Insects as Food and Medicine (Ancients, Asia, Americas) Assess the potential of micro-livestock as a protein source for a growing population (calculate the efficiency of conversion of ingested food (ECI)</p> <ul style="list-style-type: none"> Review of ECI and Insects as food 	<p>Chapter 5</p> <p>Let’s cook</p> 

		FDA regulation	
2/15	Thursday	<p>Lecture Continued: Buzz Pollination Demonstration</p> <p>Video and Discussion - The Language of the Bee – Hypothesis testing to discover the meaning of the waggle dance – German scientist, Karl von Frisch (Noble Prize in Medicine 1973)</p> <p>Bugs that Give you Pleasure Discussion– Apitherapy and Sericulture</p> <ul style="list-style-type: none"> • Bee products and their global uses (Orthodox religion, health) <ul style="list-style-type: none"> ○ Bee Venom LD₅₀ = (2.8 mg/kg) 1140 for Adult of 132lbs 	<p>Chapter 6 Honey tasting</p> 
2/20	Tuesday	<p>Ants – Social Insects – Activity - - Ant baiting outside (observation and data collection)</p>	
2/22	Thursday	Bugs that Give you Pleasure (Continued)	
2/27	Tuesday	<p>Meet with your Bugge Faire Group (No in-class lecture today) Work with Bugge Faire Group – Practice Presentations</p> <p>Meet with Group to Explore the Florida Museum of Natural History and NATL – Bring your UF ID for free admission to the Butterfly Rainforest.</p> <p>Online Insects in Mythology</p> <ul style="list-style-type: none"> • _____ Insects in Greek, Egyptian, Italian and Native American cultures <ul style="list-style-type: none"> Other thoughts from your readings. <ul style="list-style-type: none"> • Explore ancient worship of insects (Egypt, Greece, China, Americas) • List and discuss insects mentioned in ancient texts <p>Discuss creation story of insects (Genesis 1:2-25) and ancient Levitical laws about insects as food (Leviticus)</p>	<p>To Do: Post Title Slide and Learning Objectives to Canvas</p> <p>Optional Museum Extra Credit</p> <p>Online Mythology Quiz</p> <p>Consider working on your next extra credit song/story/poem ~3 min in length.</p>
2/29	Thursday	<p>Happy LEAP day! Bugs that Give you Pleasure (Continued) The Language of the Honey Bee- Nobel Prize Research Silk production in China – Domesticated Lepidopteran larvae</p>	
		<p>Insects and Engineering – Cockroach Flight -</p> <p>Insects in Song – Optional Extra Credit With a group and <u>using the notes from this class</u>, present a song, short story, or poem to the class (~3 min). There needs to be some interaction with sound effects or audience participation and should have some accompaniment. (Instrument use by you or your friends is encouraged.)</p> <p>Introduction to Arthropods of Medical and Veterinary Importance <i>Insects in the News – Begin class with discussion of current insect events worldwide.</i></p>	<p>Optional Extra Credit Song- </p> <p>Let's jam!</p>
3/7	Thursday	EXAM 2 - bring computer or tablet	EXAM 2 – Ch 4,5,6

		SPRING BREAK	
3/19	Tuesday	<p>Bugs that Eat Blood and Spread Disease</p> <ul style="list-style-type: none"> View historical monuments dedicated to insects (Florida) Detail the importance of insects in war (Russia and France) <p>Discuss how insects have impacted US history (Panama Canal, Philadelphia, Modern sanitation, and the Louisiana Purchase)</p> <p>Worldwide Neglected Diseases (CDC and WHO Video) <i>Caution: Graphic video and lecture on arthropod vectored diseases from around the world</i></p> <p>Insects as Medicine – Historical</p> <ul style="list-style-type: none"> Medicine of Egypt – The Ebers Papyrus Medicine of Rome and Europe – The Doctrine of Signatures (Middle Ages) <ul style="list-style-type: none"> Insects for Health in Germany - 1699 Insect France 1772 – Marquis de Sade – Cantharidin US Civil War to Modern day medical and vet practices – <ul style="list-style-type: none"> Cantharidin and maggot therapy Video – TLC – Maggot Therapy in Europe Identify Lice, Mosquitoes, Ticks, Fleas, Mites, Kissing Bugs 	<p>Worksheet</p> <p><i>Caution: Graphic video and lecture on diseases</i></p> <p>Chapters 7--9</p>
3/21	Thursday	The most dangerous animals in the world including the lesser-known arthropod vectors of disease.	
3/26	Tuesday	<p>IPM, Pesticides and Health</p> <p>A Fly in the Ointment: Global insights on Insects as medicine</p> <p>Activity – Insecticide Label comparison</p>	Chapters 10-11
3/28	Thursday	IPM Lecture Continued	
4/2	Tuesday	<p>Humans versus Insects - What can you do to make a difference in the world? Dr. Koehler</p> <p><i>Caution: Graphic video and lecture on diseases</i></p> <p>Insects and the Law (Scotland, England and America)</p> <p>Prepare for Bugge Faire</p>	
4/4	Thursday	<p>The Insect Perspective – TA</p> <p>Forensic Science and Entomology</p> <ul style="list-style-type: none"> Define forensic entomology and the types. Discuss stages of decay and the associated insects Discuss the history of the science 	
4/9	Tuesday	BUGGE FAIRE (6 groups)	Group Presentations
4/11	Thursday	BUGGE FAIRE (3 groups)	Group Presentations
4/16	Tuesday	BUGGE FAIRE (6 groups)	Group Presentations
4/18	Thursday	Exam Review in Person during Class time!	
4/23	Tuesday	<p>Exam 3 – bring computer or tablet</p> <ul style="list-style-type: none"> Complete class evaluations online. <p><i>If 75% of the class completes the evaluation before exam 3, group extra credit awards (Best of Show) will be offered at the Bugge Faire. GatorEvals are in Canvas.</i></p>	<p>Exam 3</p> <p>Class Reflection & Meme Extra Credit Due in Canvas!</p>

*Dates where for-credit assignments and exams are scheduled are highlighted in gray. If you do not sign up for, do not participate/communicate, or miss the Bugge Faire, you will receive a 0 on the project