

Bugs and People

ENY 1001

**Instructor: Dr. Rebecca Baldwin**

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ELearning site (grades): <https://lss.at.ufl.edu/>
Class Information: <http://entomology.ifas.ufl.edu/baldwin/webbugs/>

Spring 2013**3rd Period (9:35-10:25) MWF****Turlington Hall L007****Office Hours: ENY 2208 MW --2:00 -4:00**

Other times by appointment.

Please come by for a visit!

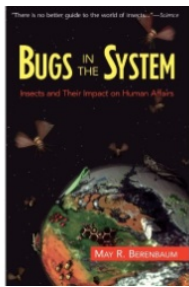
Course Description and General Education Statement

Bugs and People will credit you with three hours of Biology (B) General Education credits. General Education courses in the biological sciences introduce students to the basic concepts of science and the scientific method and enhance awareness of scientific developments and their impact on society and the environment. This area provides students with an understanding of scientific terms, concepts and theories, and the ability to formulate empirically testable hypotheses derived from the study of living things.

In this course, you will be educated to the myriad of creatures in the “bug” world and how they interact with you by eating your food, your animals, your homes, and sometimes even you. By the end of the semester, you will be able to communicate the different taxonomic classes of arthropods and how they impact both humans and the environment. During the course of the semester, you will learn to appreciate the role many bugs play in human history, culture, and disease on a global scale. This course does not have a lab component, but you will have the opportunity to explore the “bug” world and submit insects, insect damage, predation videos, and original songs using your class notes as extra credit projects. You will also be challenged to use both the critical and creative parts of your brain as you work in groups to prepare models and presentations for the “Bugge Faire” at the conclusion of the semester. You will also learn observation skills as you rear out insects then learn to recognize and formulate hypotheses about those insects by reading and reviewing a related scientific research paper.

Student Learning Outcomes and Course Objectives

1. To categorize a “bug” using taxonomic terms approved by the International Code of Zoological Nomenclature.
2. To understand the components in the process of science and be able to recognize and formulate a hypothesis.
3. To understand the impacts both pest and beneficial “bugs” play in human history and culture including examples from current news events, government policies, art, music, folklore, film and literature.
4. To appreciate how “bugs” impact society by competing with people for food, shelter, clothing, and health.
5. To comprehend the beneficial nature and how, due to their biology, “bugs” are important research models.
6. To recognize biological processes, especially the unique growth and reproduction strategies of arthropods.
7. To appreciate how humans use bugs for nutrition in various global cultures, and how insect protein is found in the US food supply.
8. To explain “bug” diversity in various ecosystems and be able to identify trophic interactions in those systems.
9. To communicate research effectively using observational, oral, and written skills.

**Required Text :**

Berenbaum, May R. 1995. Bugs in the System: insects and their impact on human affairs. Helix Books. ISBN Number 0-201-40824-4 (paperback – cost ~\$16.00, ~\$10 on Kindle)

You will have required textbook readings each week, so please be sure you have access to the text. Ungraded study guides will be provided in Sakai to guide you through the chapter readings.

Graded Projects and Exams

Research Paper Review Assignment:

Each student will receive a container of insect larvae to observe and rear throughout the semester. You will be required to read a research article relating to the organism and write a two page summary of the article. Articles will be posted to the homepage in Sakai and will be listed as a reading assignment during the semester. In your discussion of the article, you must list an alternative experiment and list a workable hypothesis for your proposed experiment. You should make observations of the insects you are rearing that you can incorporate into the discussion of your review. You will see how researchers made detailed observations in the article you read, so follow their example and make notes about the behavior of your organisms. Grammar, syntax, flow and readability will be considered in each section. The summary paper should be uploaded to Sakai under the assignments tab and should be uploaded as a .doc or .docx file. Please see the class schedule for due dates. **You may not collaborate on this project.** Please visit <http://web.uflib.ufl.edu/msl/subjects/Physics/StudentPlagiarism.html> for how to avoid plagiarism. Papers will be submitted to Turn it In for evaluation, so be sure your work is original. Non-original work will receive a zero and will be reported to the Dean of Students. The paper should be double spaced, have 1" margins, and be typed in 12 pt font. No title page is required. Sources should be cited using the MLA style.

Paper headings and grading rubric

- **Background information** (10 points) –This is a brief overview of the organism used in the research. (This section should be no more than 1/3-1/2 page in length.)
- **Research Paper Hypothesis and Design** (10 points) – Read the assigned research paper and identify the hypothesis. (The Process of Science will be covered in class.) A hypothesis is the possible answer, based on observations and knowledge, to a testable question. Once you have identified the hypothesis, you should give a brief overview of the experimental design. The design is how the experiment was conducted. This is a factual section, so should not contain your opinion on the research design.
- **Summary of Research Results** (10 points) – In an experiment, variables are measured and are reported as results. The third section of your review should summarize the research results. This section states what was found during the scientific investigation.
- **Strengths and Weaknesses of the Research Design** (10 points) – After you have summarized the results, communicate your opinion of any strengths and weaknesses you find in the research design. This is your discussion section, so this section includes your opinion of the experiment and the results.
- **Alternative Hypothesis and Experimental Design** (10 points) - Based on the personal observation of your live organisms and the knowledge you gained from the research paper, design an alternative hypothesis and form your own experimental design. You may be creative with this design. If you had the resources, what kind of experiment would you like to perform? Form your hypothesis then detail your experiment.

Exams:

- There will be **three exams** scheduled during class time.
- Each exam will consist of 50 multiple-choice questions (100 points). Scantrons will be provided by the instructor. Please bring a pencil and your ID to the exam.
- All exams are closed book and must be taken during the scheduled exam time.
- All personal items (backpacks, phones, etc.) must be deposited in the front or back of the classroom before you take your seat. You are to bring to your seat **ONLY** a pencil and your ID. Please be sure to silence your cell phone before leaving it in your backpack.
- When your exam is completed, take exam and answer sheet to front of the room, place them in the appropriate stack and exit quietly.
- **You will NOT be admitted to any exam if you arrive late.** This is a large class, so out of courtesy to your classmates and the class after ours, if you are not in your seat and prepared to take the exam when the class period begins, you will receive a grade of 0 on that exam. **Exam Make-Up Policy:** To make up a missed examination, you will be required to provide appropriate written documentation. You must contact Dr. Baldwin **prior to** the scheduled exam to receive permission to take the make-up examination. If you miss an exam without such proof or are late to the exam, your score for that exam will be computed as 0.

Bugge Faire: During the semester, you will learn about many organisms. You will work as a group to research a “bug” of your choice. Your group should select a creative name and submit a team form early in the semester and complete the sign in form at the Bugge Faire. Your group will design a model of that organism and create a poster of biological facts to present in Turlington Plaza during the Bugge Faire on the last day of the semester. The model, made of edible items, must closely resemble the organism, and your poster must contain a photo of the organism you are modeling. Presentations will be made to a group of student and faculty judges. Each presentation should be ~5 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.). You should view this as a commercial for your “bug.” You only have five minutes, so wow the judges with your knowledge. Each member of the group should participate. At the conclusion of the Bugge Faire, you will have the opportunity to dine on your model “bugs” with others in the class. This is a chance for you to show your creativity, your communication skills, your teamwork, as well as your scientific knowledge about “bugs” to the class. If you dress up like a “bug,” (either individually or as a team) you will be eligible for a competition for ten additional points for your project. Each group should bring plates and forks for themselves. All “Bugge Faire” materials must be removed by the conclusion of class. Groups leaving project materials behind will have 10 points deducted from their grade.

Extra Credit Assignments: 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. Examples of some of the extra credit opportunities include collecting a strange or unusual bug, presenting damage caused by a bug, creating a predation video involving an arthropod, interpreting a pesticide label, or performing a song from information in the class notes. Several of the extra credit opportunities may be given additional credit if you are able to incorporate a SAA UF Tradition with the activity. Please see the F Book you received at Preview, or visit the UF Student Alumni Association website for more details, <http://www.ufalumni.ufl.edu/saa/ufstk/>. This will count towards becoming a UF Tradition Keeper if you are interested. Extra credit opportunities are generally 5-10 points. Please visit Sakai for details on the extra credit opportunities for the semester and see the course outline for dates due. You may only present your extra credit on the date, time and location posted on this syllabus.

Class Information:

- Abbreviated notes from the lecture material will be posted to Sakai.
- You are expected to attend all class meetings. If you choose to miss class, it is your responsibility to discover missed information from classmates. If you miss a video, slide presentation or demonstration, you cannot borrow those resources to catch up, however, you may come during office hours to view a copy of the presentations.
- You will be responsible for assigned readings from Bugs in the System and any slide, video or 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.

Grading: There are a total of 400 possible points (excluding extra credit). Grades will be posted online using Sakai at <https://lss.at.ufl.edu>. Log in with Gatorlink. Please visit

<http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html> for the UF policy on grading.

If you have a disability, please register it with the DRC <http://www.dso.ufl.edu/drc/> and schedule a meeting with me to discuss and sign paperwork within the first two weeks of class to ensure the appropriate accommodations.

Your grade in *Bugs and People* will be computed as follows:

| Graded Assignment | Points |
|------------------------------|--------|
| Exam 1 | 100 |
| Exam 2 | 100 |
| Exam 3 | 100 |
| Research Review | 50 |
| Class Project* - Bugge Faire | 50 |

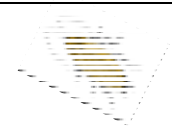
** If you do not sign up for, do not participate, or miss the Bugge Faire, you will receive a 0 on the project. If you wear a costume to the Bugge Faire, you can compete in the costume contest. Winners receive 10 points.*

| FINAL GRADING Scale: Percentage | | Points |
|------------------------------------|----|---------|
| 100-93 | A | 372-400 |
| 90-92 | A- | 360-371 |
| 87-89 | B+ | 348-359 |
| 83-86 | B | 332-347 |
| 80-82 | B- | 320-331 |
| 77-79 | C+ | 308-319 |
| 73-76 | C | 292-307 |
| 70-72 | C- | 280-291 |
| 67-69 | D+ | 268-279 |
| 63-66 | D | 252-267 |
| 60-62 | D- | 240-251 |
| 0-59 | E | <236 |

REMINDER: Check your e-mail and the course website on a regular basis for changes to the schedule and important announcements. In particular, check prior to examinations for changes to the material to be covered, and after examinations to check your recorded grades!

E-mail Protocol:

- Please check the syllabus for an answer to your question before sending an e-mail. This is much appreciated.
- **E-Mail Format:** (Gatorlink e-mail must be used.)
This is a large class, so please follow this format for e-mails to Dr. Baldwin. If this format isn't followed, your message may not receive a reply.
- **Subject line:** Must be in the format "1001 - Last name, First name: Subject." Example: 1001 - Mantid, Ima: Grade not posted
- **Body of the Message:** Must contain the message in standard plain-text. Please minimize attachments, and avoid messages in all caps. Always include your name and your UF-ID. This helps to keep the messages organized so they can be answered in a timely manner.



ENY 1001 Class Schedule

Note: You are expected to attend class each week and complete the assigned textbook readings. Extra credit opportunities are listed below. *You can make some of the 5 point bonus assignments 10 point assignments by incorporating a UF Tradition into the activity (marked with *). See your F Book for details on UF Traditions. All bonus activities are listed, so be sure you participate.

| Date | Day | Lecture Topic and Activities | Textbook Reading |
|------------|-----------|---|---------------------------------|
| January 7 | Monday | Course Introduction: How do “bugs” fit into human culture? (Syllabus Overview) | |
| January 9 | Wednesday | Bugs in human culture (continued) | |
| | | Topic 1: Arthropod Classification and Nomenclature | Chapter 1 |
| January 11 | Friday | What is a “Bug”? <ul style="list-style-type: none"> Learn fundamental classification (Taxonomy) Complete an introduction to “bugs” – Insects, Arachnids (mites, ticks, spiders, scorpions), centipedes, millipedes, nematodes, bacteria (rickettsia), and viruses Define the habitats and ecosystems of arthropods List general facts and life history Determine where these “bugs” can be found | |
| January 14 | Monday | The Cameraman’s Revenge - Early film using insects <ul style="list-style-type: none"> Class Project Planning and Team Formation Print Team Form from Sakai and bring to class. Do NOT miss this class! | |
| January 16 | Wednesday | What is a “Bug”? (continued) Receive pet insects for paper! <i>Insects in the News – Begin class with discussion of current insect events and discussion of the video.</i> | Read: Research Paper (on Sakai) |
| January 18 | Friday | <i>Insects in the News – Begin class with discussion of current insect events.</i> Overview of Taxonomy and Common Insect Orders | Appendix |
| January 21 | Monday | HOLIDAY | |
| January 23 | Wednesday | Insect Orders – <i>Guest Lecture Stephanie Hill</i> <ul style="list-style-type: none"> Define common insect orders and their characteristics Explain mouth, leg, and wing adaptations | |
| | | Topic 2: Insect Physiology and the Process of Science | Chapter 2 |
| January 25 | Friday | Bizarre Bugs <ul style="list-style-type: none"> View examples of extreme adaptations found in insects Observe unique morphologies found among the insects. Discuss biological concepts relating to insects including: Adelphoparasitism, and Haplodiploidy | |
| January 28 | Monday | (Complete lectures) Extra Credit - Submit Strange or Unusual Bug (During class 5 pts.) <i>Bring in a clearly identified, strange looking bug that you collected personally. It must be alive, and you must describe the collection technique. (*UF Tradition Accepted)</i> | |
| January 30 | Wednesday | Insect Growth and Reproduction (Highlight: Bed Bugs and You) <ul style="list-style-type: none"> Discuss the molting process, types of metamorphosis and life stages Determine how large insects and other arthropods can get Discuss biological processes including growth and development, movement, reproduction, mortality and consumption. | |
| February 1 | Friday | Insects and Research – (review Research Paper instructions) <ul style="list-style-type: none"> Explore insects as scientific models Review the process of science Define hypothesis and experimental design | |
| | | Topic 3: Insect Behavior | Chapter 3 |
| February 4 | Monday | <i>Insects in the News – Begin class with discussion of current insect events.</i> Complete previous lectures - Insect Sights, Sounds, Taste and Smell Review for Exam 1 | |

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| February 6 | Wednesday | EXAM 1 | |
| | | Topic 4: Insect Sociality | Chapter 4 |
| February 8 | Friday | Living Socially – Work in your :Bugge Faire” group to complete a worksheet in class. <u>Be sure to bring your book.</u> <ul style="list-style-type: none"> Define social structure in insects (solitary, aggregation, sub-social, social) Discuss three characteristics of eusociality | |
| February 11 | Monday | Insects and Economics <ul style="list-style-type: none"> Determine how insects impact economics - Insect Products Used by People Pollination, Honey, Silk, Beekeeping, Aesthetic Bugs, and Pleasurable Bugs | |
| February 13 | Wednesday | Video Clips in class – Pollination & Beekeeping | |
| February 15 | Friday | Insect Communication – <i>Guest Lecture Eddie Cayia</i> <ul style="list-style-type: none"> Explore pheromones, trophallaxis, and trailing behavior. | |
| | | Topic 5: Insect Habitats | Chapter 5 |
| February 18 | Monday | Bugs that eat your food <ul style="list-style-type: none"> Identify insect pests of stored food. (beetles, moths, cockroaches, ants) | |
| February 20 | Wednesday | <i>Insects in the News – Begin class with discussion of current insect events.</i> Bugs that eat your food continued | |
| February 22 | Friday | Bugs that eat your home and possessions Identify insect pests of structures, furniture and clothing. (termites, moths, flies, bed bugs, lice) | |
| | | Topic 6: Entomophagy and Public Health | Chapter 6 |
| February 25 | Monday | Insects as Food and Medicine - Entomophagy <ul style="list-style-type: none"> Calculate the efficiency of conversion of ingested food (ECI) of insects Assess the potential of micro-livestock as a protein source for a growing population Discuss historical uses of insects as pharmaceuticals and medical devices. | |
| | | Topic 7: Parasites and Hosts | Chapter 7 |
| February 27 | Wednesday | <i>Insects in the News – Begin class with discussion of current insect events.</i> Worldwide Neglected Diseases (video in class – CDC/WHO) Extra Credit - Submit bug damage and card including description of the damage. What is the damage and what caused the damage? (During class 5 pts) (*UF Tradition) | |
| March 1 | Friday | Bugs that Eat Blood and Spread Disease <ul style="list-style-type: none"> Identify Lice, Mosquitoes, Ticks, Fleas, Mites, Kissing Bugs Discuss Malaria, Trypanosomiasis, RMSF, Encephalitis, WNV, Onchocerciasis Explain malaria <ul style="list-style-type: none"> Explore the role of the willow tree family in malaria prevention Describe the malaria cycle Discuss the occurrence of malaria worldwide Explain what DDT has to do with malaria Discuss Onchocerciasis and Sleeping Sickness <ul style="list-style-type: none"> Look at the disease progression Determine the vulnerable population and how they become infected List the symptoms and the insect that transmits the disease | |
| March 4-8 | | Spring Break | |
| March 11 | Monday | The Winged Scourge – (movie in class) Bugs that Eat Blood and Spread Disease (continued) <ul style="list-style-type: none"> Discuss AIDS and West Nile Virus <ul style="list-style-type: none"> Discover if mosquitoes can transmit them both Explain the symptoms and precautions Clarify the treatments and which insects may transmit WNV. | |
| March 13 | Wednesday | Bugs that Eat Blood and Spread Disease (continued) Review for Exam 2 | |
| March 15 | Friday | EXAM 2 | |
| | | Topic 8: Ecological Roles of Insects | Chapter 8 |
| March 18 | Monday | Biblical Bugs and Bugs in Mythology, Bugs in Songs and Literature Reference: http://bible.christiansunite.com/Torreys_Topical_Textbook/ttt307.shtml | |

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| | | <ul style="list-style-type: none"> • Discuss creation of insects by God (Genesis 1:24,25) • Argue kosher or not – divided into clean and fit for food (Leviticus 11:21-22) and unclean and abominable (Leviticus 11:23-24) • List and discuss insects mentioned in scripture • Read and discuss how insects have influenced literature and music | |
| March 20 | Wednesday | <i>Insects in the News – Begin class with discussion of current insect events.</i> Mythology lecture continued Ecosystems: Soil Dwelling and Aquatic Insects (from your reading) <ul style="list-style-type: none"> • Identify habitats and insects adapted to survive the extremes. | |
| March 22 | Friday | Extra Credit - Group Songs, Story or Poem (from notes) - (During class 10 pts.) <i>Feel free to make up a song, story or poem using notes from the class. You may not perform the traditional versions of "Itsy Bitsy Spider", "Bringing Home a Baby Bumble Bee", "Ants go Marching." Or "La Cucaracha." You must be in a group and must have an instrument or accompaniment.</i> | |
| | | Topic 9: Insects and People | |
| March 25 | Monday | Bug Phobias and Delusions <ul style="list-style-type: none"> • Argue why "bugs" have a "fear factor" • Discuss symptoms of entomophobia and true insect infestations: hives, rashes, pain, and "the willies" • Compare symptoms to those of chemical sensitivities • Contrast illusion and delusion • Provide examples of dangerous arthropods: wheel bug, black widow, brown recluse, ticks, mosquitoes | Chapter 9 |
| March 27 | Wednesday | Live Arthropods – Can you handle it? Cockroaches, Tarantulas, Millipedes, Scorpions | |
| March 29 | Friday | <i>Class Dismissed for Work on Class Project – Meet with your group</i> | |
| April 1 | Monday | Fighting Back against Bugs – Pesticides and Health <ul style="list-style-type: none"> • Discuss pesticides, IPM, Biological Controls, and agriculture • Examine pesticide resistance and types of pesticides. • Visualize how we shop for food. | |
| April 3 | Wednesday | Fighting Back against Bugs – Pesticides and Health continued | |
| April 5 | Friday | Extra Credit –Interpreting Pesticide Labels (During Class 5pts.) <i>Pesticide labels will be provided from household products. Describe what the pesticide does, what is in it and how it kills.</i> | |
| | | Topic 10: Appreciating Insects | Chapter 10 |
| April 8 | Monday | Insects in History <ul style="list-style-type: none"> • View historical monuments dedicated to insects • Detail the importance of insects in war • Discuss how insects have impacted US history (Panama canal, Philadelphia, Modern sanitation, and the Louisiana Purchase) | Research Review due by 11:55 PM! |
| April 10 | Wednesday | Recording Setting Bugs (Online Lecture and Reading) <ul style="list-style-type: none"> • Read about World Record Insects Explain how insects fly | |
| April 12 | Friday | <i>Insects in the News – Begin class with discussion of current insect events.</i> Extra Credit – Predation video with commentary (During Class 5 pts) | |
| | | Topic 11: The Insect Perspective | Chapter 11 |
| April 15 | Monday | Forensic Science and Entomology <ul style="list-style-type: none"> • Define forensic entomology and the types. • Discuss the history of the science • List references and collection techniques for forensic investigators | |
| April 17 | Wednesday | Insects and the Law <ul style="list-style-type: none"> • Discuss anti-poaching laws in the US and agricultural laws designed to protect our food supply. | |

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| April 19 | Friday | Review - Complete class evaluations online. If 75% of the class completes the evaluation before exam 3, two extra credit awards will be given at the Bugge Faire. evaluations.ufl.edu . | |
| April 22 | Monday | EXAM 3 | |
| April 24 | Wednesday | BUGGE FAIRE – Turlington Plaza Poster/model/ presentation = 50 pts, Best costume +10 Most like the “Bug” model dish +10 for the group | |

Classroom Courtesy:

- Talking: Please be considerate of your classmates by not chatting during lecture. Please silence cell phones before entering the classroom.
- Coming to class late: Please enter quietly and take a seat in the back. A banging door is very distracting to the class. Please do not leave class early.
- UF prohibits food in the classroom and prohibits tobacco products on campus.

UF POLICIES - If you are having difficulties in class, please make an appointment to see me, or if appropriate, call one of the counseling services below. Please do not wait until the end of the semester!

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/
- Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/

Academic Honesty: As a result of completing registration at the University of Florida, every student has agreed to the following statement: **"I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University."** We, the members of the University of Florida community, pledge to hold our peers and ourselves to the highest standards of honesty and integrity. Plagiarism in this class will not be tolerated. For more information about plagiarism, please see the information on the class homepage. All faculty, staff and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

Software Use:

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.