

**Course Title:** Alien Empire: Bizarre Biology of Bugs

**Course Number/Level:** ENTOM2010/2011

**Academic year:** 2021-2022

**Semester:** Spring 2022

**Enrollment:** 110 students (non-major undergraduate students)

**Instructors:** Dr. Marina Caillaud and Dr. Bryan Danforth

**Graduate TAs:** Augusto Santos Rampasso, Laura Martinez, and Lidane Noronha

**Course description:** Insects are the predominant form of multicellular life on earth. There are somewhere between 10 million and 30 million species of insects, and insects account for roughly 5 out of every 6 species of land animal. If aliens from another planet landed on earth, they would conclude that insects were in charge, and probably ask to speak to a beetle rather than any human. The purpose of this course is to introduce you to the astounding diversity of insects, as well as the impacts that insects have on humans.

Insects have an enormous impact on human activities. They can be pests in our crops, homes and offices. They can transmit dangerous and sometimes deadly diseases. Diseases such as yellow fever, plague, and typhus have had a major impact on human history and diseases such as malaria, continue to impact human societies around the world. The negative impacts of insects on humans are now more and more evident as rapid global transportation allows for the spread of invasive insects from one part of the world to another. On the other hand, insects are also beneficial in that they provide important products and services. Insects are an important source of food in many societies throughout the world. Insects provide some important products, and they were the first source of certain kinds of dyes, sweeteners (e.g., honey), and waxes. Insects are also the major pollinators of our crops. Insect pollination is an enormously valuable service that we often take for granted. In order to understand the impact of insects on humans you will need a good understanding of basic insect biology.

At the beginning of the semester, we will investigate how insects are constructed and how they function. We will then trace the major events in insect evolution, from the colonization of land, the origin of flight, and the evolution of metamorphosis. Throughout these lectures you will be introduced to the insect orders. We will then trace the basic aspects of insect biology, including mating behavior, development from egg to adult, and how insects perceive the world around them (not a trivial problem when you consider that they are encased in a hard exoskeleton). Then we will turn to insect ecology and the role insects play in the natural environment, as consumers of decaying material, plants, and other insects and as pollinators. We will also examine social insects, including how they have arisen, their social organization, and their behavioral complexity. In the latter half of the course, we will investigate how insects have affected humans, both beneficially and detrimentally. We will examine insect pests, insect vectors of disease, and insect invaders. We will discuss insects as food (they are an important source of protein in many societies) as well as the important products that insects produce, such as wax, honey, and certain dyes. We will discuss the role of insects in art, literature and film as well as the important role that insects play in crime scenes (forensic entomology). Throughout the semester we will make heavy use of slides, films, and acoustic recordings. For those students taking the 3-credit option (Entom 2011) we will have a number of interactive activities during the Friday meeting. Activities will include open labs on insect diversity and behavior, in-class debates on the role that insects play in our lives, and short writing assignments associated with the term paper.

**Responsibilities:** For the course as a whole, my responsibilities were to attend each lecture and weekly teaching meetings, grade and provide feedback on weekly discussion posts, offer one weekly office hour, proctor exams, contribute to grading of two exams and one term paper, write three multiple choice questions that could be used for exams for each lecture, respond to students' messages daily, and contribute to classroom management. In addition, I was involved in two 50-minutes long discussion sections per week, and with grading their exercises. I co-led the combined sections 201 and 204 with Laura Martinez and Lidane Noronha, and we had 23 students in total. I led section 205 on my own, which counted with 18 students.

**Student evaluations – quantitative** (1 = completely disagree, 5 = completely agree). The grades are from the sections 201, 204 and 205, respectively:

Seems knowledgeable in the subject matter:	4.73 ± 0.47; 4.67 ± 0.58; 4.77 ± 0.44
Is well prepared for class:	4.73 ± 0.74; 4.67 ± 0.58; 4.69 ± 0.63
Uses class time efficiently:	4.36 ± 0.81; 5.00 ± 0.00; 4.69 ± 0.48
Stimulates deeper thinking about the subject:	4.45 ± 0.69; 5.00 ± 0.00; 4.62 ± 0.51
Makes me feel free to ask questions:	4.45 ± 0.82; 5.00 ± 0.00; 4.62 ± 0.65
Provides clear and comprehensive explanations:	4.55 ± 0.69; 4.67 ± 0.58; 4.54 ± 0.66
Communicates interest in helping students learn:	4.64 ± 0.67; 4.67 ± 0.58; 4.69 ± 0.63
Is willing to help students outside of class:	4.45 ± 0.82; 4.67 ± 0.58; 4.69 ± 0.48
Conveys enthusiasm in teaching the material:	4.45 ± 0.69; 5.00 ± 0.00; 4.62 ± 0.65
Involves everyone in class:	4.55 ± 0.82; 5.00 ± 0.00; 4.62 ± 0.65
Is organized in presenting the material:	4.09 ± 1.22; 5.00 ± 0.00; 4.62 ± 0.65
Grades equitably:	4.55 ± 0.82; 5.00 ± 0.00; 4.85 ± 0.38
Comments on my work in ways that help me learn:	4.45 ± 0.69; 4.67 ± 0.58; 4.69 ± 0.63
Realizes when students do not understand:	4.45 ± 0.82; 4.67 ± 0.58; 4.54 ± 0.66
Overall the quality of my TA's teaching is:	4.64 ± 0.67; 4.67 ± 0.58; 4.62 ± 0.65

**Student evaluations – comments sample:**

“Loved Augusto! Very friendly and understanding when I had to miss classes. He's approachable, so I was able to easily ask him questions, which he answered well as he is knowledgeable.”

“The TA team was so nice and always willing to help. They let you know the goals of the course and each section, they were very knowledgeable, and they had good teaching plans to help us learn the content. They made this class a great experience.”