BIOL 6321: Special Topics - Entomology

CRN: CR 17468 (morning lab) and 17470 (afternoon lab)
Instructor: Dr. Brett Seymoure (He, Him, His), voicemail 915 747 6894; bmseymoure@utep.edu
Dr. Seymoure's Office Hours: Biology Building 402: Tu 2:00pm–3:00pm, W 10:00am–11:00am
Fall 2022 Lectures: Tu and Th 12:00pm – 1:20pm; Location: 326 Business Administration

Lab Instructor: Mr. Miles Horne (He, Him, His); lmhorne@miners.utep.edu
Mr. Horne's Office Hours: Biology Building 309: Time: W 10:00am-12:00pm
Lab Location: Biology Building 309
Fall 2023 Lab Sections: Th 9:00am – 11:50am or Th 1:30pm – 4:20pm

Course: "Can't live with'em, definitely can't live without'em". This sentiment captures human's relationship with the most diverse and speciose class of animals: insects! Throughout this introductory course on insect biology, we will cover why we "can't" live with them and most importantly, why we can't live without them. Through this journey we will learn about unbelievable adaptations, behaviors, and the reasons for insects being world dominators. We will also cover applied entomology and conservation. We will get into insect curation and collections – resulting in each class participant having their own collection of at least 100 insects. This course is grounded in evolution and ecology – for those more experienced EEB students it will be a reinforcement of many foundational concepts and for those students new to EEB, this course will introduce key concepts in EEB. We are going to have fun, I guarantee it.

Class sessions will focus on active learning techniques and thus attendance is required. Although there will be lectures throughout each class period, you will be frequently working in pairs or larger groups, and will be actively engaged in real-time assessment. At the end of each class session, each student will be highly encouraged to submit a "muddy-point clarification" anonymously via iClicker, upon which the student will be able to express any concerns anonymously regarding to the material and/or the course. Please use this iClicker opportunity to bring any confusion or issues you may be having with the course to my attention. Also, please let me know if there is something you really like! The "muddy-point clarification" will greatly help me in personalizing your educational experience throughout this course.

Student Learning Outcomes:
In this course, students will become familiar with the following topics pertaining to General Entomology:
1) Insect classification, phylogenetics, and biodiversity.
2) Insect morphology, development, life cycles, reproduction, mimicry and general physiology and anatomy.
3) Economic importance of insects including beneficial species such as pollinators and detrimental species such as crop pests and vectors of disease agents.
4) Plant-feeding insects and coevolution of angiosperms and insects.
5) Carrion- and dung-feeding insects.
6) Blood-feeding insects, biting insects and insect-borne diseases.
7) Social insects.
8) Integrative Pest Management and Application.
9) Insect Apocalypse

10) Collecting techniques, specimen preparation, and specimen identification will also be covered, especially during the laboratory component of this course.
Some local (on or around UTEP campus) insect collecting field trips will be organized as part of the laboratory component of this course. And one *optional*, fee-based, weekend trip to Indio Mountain Research Station will be organized through this course.

Required Text: No text is required. However, I will be teaching from The Insects: An Outline of Entomology by Gullan and Cranston as well from Insects: Evolutionary Success, Unrivaled Diversity, and World Domination by Rivers. I recommend that you have a copy available to you, but you are not required to have your own book. I hope to place both on reserve at the library.

I also highly recommend purchasing a field guide (or many) of North American insects. I suggest A field guide to the insects of America North of Mexico by Borror and White or Kaughman Field Guide to Insects of North America by Eaton and Kaufman. I DO NOT recommend the Audubon guide to insects.

For those dedicated to entomology, I highly suggest purchasing Stephen Marshall's Insects: Their Natural History and Diversity: With a photographic guide to insects of Eastern North America. Although this text is specific to Eastern NA, it still is a wonderful resource for the Western US.

Accessibility: If you have or suspect you have a disability and need accommodations, please contact the Center for Accommodations and Support Services (CASS) at (915) 747-5148 or email their office at cass@utep.edu. They are located on the web at www.sa.utep.edu/cass/.

Inclusion, Diversity, and Equity within this course: The department of biological sciences at UTEP and I embrace an intellectual community enriched and enhanced by diversity along numerous dimensions, including race, ethnicity, national origins, gender identity, sexuality, class, and religion. I am especially committed to increasing the representation of populations that have been historically excluded from participation in U.S. higher education.

I welcome students from around the country and the world, and their unique perspectives, which enrich our learning community. We support students whose primary language is not English. I am available for you during my office hours and by appointment to aid in understanding the material in a more catered approach to your learning needs. Please use my office hours as a resource. If you are not able to attend my office hours, please schedule an appointment using my email address.

In an ideal world, science would be objective. However, much of science depends on human perception and thus is subjective. Furthermore, much of the human perception has historically been built upon a small subset of privileged voices. I acknowledge that the material presented in this course, has mostly been developed by white westerners and men. I realize that my own privilege and experiences have led to my own inherent biases. Please contact me (in person, electronically, anonymously) if you feel that the course is not inclusive and/or have any suggestions to improve the quality and inclusivity of the course materials.

To create a more inclusive learning environment for you that supports your diverse experiences and perspectives, and honors your identity (including race, gender, class, sexuality, religion, ability, etc.):

Please inform me of your pronouns.

If you feel that your performance in the class is being impacted by experiences outside of class, please don't hesitate to talk to me (in person, electronically). I am a resource for

you. Also, remember that you can submit anonymous feedback through "muddy point clarification" or slide a note under my office door.

I foresee that I will always be learning new techniques and approaches to create a more inclusive and effective learning environment. If something was said in class (by anyone) that made you feel uncomfortable, please talk to me about it (again anonymous feedback is always appreciated).

Policy on Academic Integrity and Academic Dishonesty: Please familiarize yourself with UTEP's policy on Academic Integrity: https://www.utep.edu/student-affairs/osccr/student-conduct/academic-integrity.html. Students caught cheating or plagiarizing will receive disciplinary action and will be reported to the Dean of Students.

Attendance Requirements:

Attend all lectures. You are permitted 4 absences – I understand that life happens, and classes may not always be able to be your highest priority. The seventh absence will reduce your participation to 0 points and then each additional absence will drop your overall class grade by 10%. You do not need to notify me of your 6 absences; these are freebies and the high number of absences allowed is to enable self-isolation in the case of COVID or other diseases/infections. If you foresee missing more than 4 classes due to research/professional development or foreseen family/medical obligations – please inform me of these before the third week of the semester. We may be able to work through your other priorities. If these foreseen absences are not brought to my attention before the third week, it is unlikely that we will be able to plan other exercises and participation that will result in fulfillment of your required attendance in this course.

iClickers – This course will rely upon iClickers immensely, not only to check attendance but more importantly to check for understanding of the material. Likely, each class will start off with a clicker question or two that covers any reading assignments and/or previous material. You are responsible for having iClicker technology in the classroom – mobile devices are welcome as iClickers. Lastly, I do not intend to always use focus mode of iCicker, but I do reserve the right to include information from the focus mode into my overall calculation of iClickers.

Grading:

Class and Group Participation	5%
Lab Exercises and Participation	20%
Guest Lecture	10%
Exam 1	10%
Exam 2	10%
Exam 3	10%
Insect Collection	25%
Grading of Undergrad Insect Collection	10%

Guest Lecture: As this is a PhD graduate level course, you will be required to deliver a guest lecture to the entire course. You will be restricted on the topic you can present, but within that topic you will have freedom as long as you cover the agreed upon learning objectives. This course will require that you present one approximately 70 to 80 minute lecture on an agreed upon theme. This lecture will happen during the last 8 weeks of the semester. I will meet with you individually to decide the date, topic, learning objectives, and provide help in developing your lecture.

Exams: Instead of traditional in-class exams, which have been shown to increase anxiety and decrease inclusion and equity – you will be assessed on your comprehension of the material through three hybrid examinations that include a 6-minute verbal exam with Dr. Seymoure and then a take home essay. For each exam, you will receive 3-6 prompts a week before the exam and will be able to prepare for each prompt using any resources you see fit. It is not recommended to memorize answers as our verbal exam will be conversational. The verbal exam will occur during your lab session. You will verbally answer two of the prompts and then after the verbal exam, you will have 48 hours to complete the written portion of the exam. For the written portion of the exam, you will use ChatGPT or other AI writing software to answer one or two prompts not covered in the verbal exam. Once you have the ChatGPT responses, you will then grade ChatGTP's answers and annotate the AI responses with explanations as to why an answer was correct or incorrect. We will provide further information and instructions before the exam.

Grading is on a straight scale: A (100-90.0); B (89.9-80.0); C (79.9-70.0); D (69.9-60.0); F (below 60.0). Note – there will be no rounding up.

Make-ups: Overall – there will be no opportunities to make-up an assignment or verbal exam that was missed.

Laboratory: The laboratory component of this course is substantial and cannot be overstated. **Forty-five percent of your total course grade will come from exercises and participation during the lab.** Twenty percent of your course grade will be directly from laboratory assignments and participation. Twenty-five percent of your course grade will be from a semester long insect collection project. Please see the laboratory syllabus for more detail.

IF YOU MISS MORE THAN 4 LABS, YOU WILL RECEIVE A FAILING GRADE FOR THE COURSE.

Personal Insect Collections: There will be more information posted about this assignment on blackboard. Briefly, you will need to personally collect 100 hexapods that comprise at least 50 different families and have specimens that represent at least 2 different life stages (e.g. adult and larvae). Each specimen must be different from all other specimens due to either/or species, sex, morphology, or life stage. Throughout the semester, there will be many opportunities to collect insects as well as retrieve insects from communal traps (lab Malaise trap for example). If you work diligently throughout the semester and focus on collecting a large amount of insects during the beginning of the semester, you will have no problem meeting these criteria. All specimens will need to be properly pinned and curated for full credit. The instructors reserve the right to retain any specimen that will strengthen the UTEP Biodiversity collections. If your specimen(s) are retained, you will be compensated for your hardwork through extra-credit points, see below.

Grading Undergraduate Insect Collections: PhD graduate students will be required to grade 20 student insect collections at the end of the term and will be assessed on your grading. You will be assigned 20 student boxes anonymously on Friday the 8th of December by noon and will have until Thursday, December 14th, at 5:00pm to finalize the grade of each collection. We will provide you with a rubric and your scores will be assessed by how much match there was with the course instructors.

Optional Field Trip to Indio Mountain Research Station: Depending on weather, logistics, and participation, we are hoping to offer an optional field trip to Indio Mountain Research Station

(IMRS). As the trip is 3.5 hours each way and more than half of that is on rough 4x4 roads, we cannot promise that the roads will be travel worthy during the monsoons. If possible, the trip will consist of two nights at IMRS: Friday-Sunday and tentatively will be September 22-24. Course fees do not cover the costs of traveling and staying at IMRS, thus, those students participating in the field trip will be charged an additional fee. This fee will depend upon the number of field trip participants and will likely range from $130 to $180. During this trip, students will be able to collect in numerous locations including the spring. Weather depending, we will also run light traps at night. More information to come.

Extra-credit opportunities: Extra-credit will be limited in this course and we advise you to focus on earning the maximum points throughout the class instead of asking for extra-credit. With that being said, there may be a few times during class or lab where extra-credit will be rewarded.

There is one extra-credit addition that will occur at the end of the semester when the insect collections are graded. If a specimen meets UTEP Biodiversity Collections criteria, we will sequester that specimen from your collection (unless you object to this, in which case we will meet to discuss this) to add to the UTEP collections. For each specimen that is added to the collections, you will receive 0.1% of the course grade with a maximum of 10% extra-credit if all specimens are added to the collection.

AI Policy: AI, including ChatGPT is a very powerful resource that will continue to become more prevalent and more powerful. As with most technological advances that strengthen one's intellectual efficiency (computers, calculators), it is very important that one does not depend upon it or require it to function at a high intellectual level. One must be able to conduct cerebral tasks without the help of AI as one cannot rely on AI always being available. Furthermore, AI is limited in its ability to understand, comprehend, and synthesize available information. During this course, we will use AI to learn about entomology as well as the limitations of AI. Thus, this course is not anti-AI and instead wants to foster responsible use of AI. With that being said, the first step of using AI is noting that you used AI. If you use AI for any task associated with this course, you are required to state that you used AI. For example, if you use AI to help write an email to me or the TA, you need to have a disclaimer at the end saying something like "this email was enhanced using the AI software ChatGPT". If you used AI to help with a laboratory assignment, you must make a disclaimer on that assignment. If you do not, this will be a breach of academic integrity and you will be held responsible.

Contesting: If you would like to contest the wording of an assessment question or the answer to a question, verbal or written, email me. I will not listen nor remember the contesting if you bring it to my attention during class. If you can appropriately present your case, can rationally explain your point of view, you likely deserve credit (not guaranteed). Thus, if you want to contest the scoring of an assignment, email me and I will review your argument for the assignment, however, this will entail an entire review of the assignment and could result in regrading, with the potential for a lower grade. Contested grades are to be filed within one week of the grade being returned.

**Tentative Lecture and Lab Schedule:*

Week	*Dates*	*Topic*	*Readings*
1	8/29 & 8/31	Introduction to ZOOL 3468, Insects are unbelievable! And What is an Insect? Lab: Collecting Techniques on Campus	Syllabus Ch. 1 Buzz, Sting, Bite Ch. 18

2	9/5 & 9/7	Systematics, Phylogeny, Classification Lab: Insect Tree – getting to know the orders	Ch. 7
3	9/12 & 9/14	External Anatomy Lab: Curation across the orders	Ch. 2
4	9/19 & 9/21	Internal Anatomy Lab: Key anatomical differences across orders and Insect dissections	Ch. 3
4/5	9/22-9/24	Optional Field Trip to Indio Mountains Research Station – Fee Required	
5	9/26 & 9/28	Sensory Systems & Behavior Lab: Open Lab for Pinning and Identification	Ch. 4
5	9/28	**Exam 1**	
6	10/3 & 10/5	Reproduction Lab: Cockroach Antennae	Ch. 5
7	10/10 & 10/12	Development and Life History Lab: Field Trip to Rio Basque?	Ch. 6
8	10/17 & 10/19	Evolution and Biogeography Lab: Plasticine Models	Ch. 8
9	10/24 & 10/26	Insects and Plants – Coevolution with Angiosperms, Insect Societies Lab: Pollination	Ch. 11
10	10/31 & 11/2	Ground-Dwelling Insects Open Lab for Pinning and Identification	Ch. 9
10	11/2	**Exam 2**	
11	11/7 & 11/9	Aquatic Insects (Dr. BS and MH Gone on 7th) Open Lab for Pinning and Identification	Ch. 10
12	11/14 & 11/16	Aerial Insects and Flight, Flight to Light Lab: Flight to Light Assignment and Open Lab	
13	11/21	Predation, Parasitism, and Defense	Ch. 13, 14
14	11/28 & 11/30	Medical & Veterinary Entomology, and IPM Open Lab for Pinning and Identification	Ch. 15, 16
15	12/5 & 12/7	Insect Apocalypse!! Pesticides and Habitat Destruction; Climate change and Light Pollution Open Lab for Pinning and Identification	Ch. 17
15	12/7	**Exam 3**	

*I reserve the right to change the topics for each week depending on external factors. I will update the schedule every time it is changed and post it to blackboard, so you will be alerted. And it doesn't really matter – come to every class and enjoy learning this material regardless of the timing it is delivered!