

## ZOOL 3468: Entomology

CRN: 15038 (morning lab) and 15039 (afternoon lab)

*Instructor:* Dr. Brett Seymoure (He, Him, His), voicemail 915 747 6894; [bmseymoure@utep.edu](mailto:bmseymoure@utep.edu)

*Dr. Seymoure's Office Hours:* Biology Building 402: Tu 3:30pm–4:30pm, W 4:00pm–5:00pm

*Fall 2022 Lectures:* Tu and Th 12:00pm – 1:20pm; Location: 302 Geology

*Lab Instructor:* Master TA Miles Horne (He, Him, His); [lmhorne@miners.utep.edu](mailto:lmhorne@miners.utep.edu)

*Master TA Miles Horne's Office Hours:* Biology Building 309: Time:

*Lab Location:* Biology Building 309

*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 50 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. There will be a quiz at the beginning of each class...don’t worry, see below. 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 seven themes of General Entomology:

- 1) Insect classification, phylogenetics, biodiversity,
- 2) Insect anatomy, morphology, and physiology
- 3) Insect wings and flight
- 4) Insect development, life cycles, metamorphosis
- 5) Insect natural history
- 6) Insect importance to humans
- 7) Insect conservation

Local (on or around UTEP campus) insect collecting field trips will be organized as part of the laboratory component of this course. And one “required”, fee-based, weekend trip to Indio Mountain Research Station will be organized through this course.

*Prerequisites:* Undergraduates in good standing who have completed introductory biology.

*Required Text:* The Complete Insect, Princeton. You are required to read this text before each lecture and come prepared to apply the concepts from the assigned reading. Obviously, I will not be checking that you have your own copy, but you are required to read the book!

We also **require** you to have a field guide (or many) of North American insects. We suggest the newly published Insects of North America by John Abbott and Kendra Abbott and will be teaching from this guide. However, other field guides will work such as 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. WE DO NOT recommend the Audubon guide to insects. We also do not recommend sharing a field guide.

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. Also, How to know the insects by Bland and Jacque is an incredibly helpful text.

*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](mailto:cass@utep.edu). They are located on the web at [www.sa.utep.edu/cass/](http://www.sa.utep.edu/cass/).

*You belong in this course!*

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.

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 fifth 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 4 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 extracurricular activities (e.g. Varsity Athletics, or Independent Research) 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. Each class will start off with two clicker quiz questions that cover the reading assignments and 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	50
In Class Quizzes	50
Workbook 1	100
Workbook 2	100
Workbook 3	100
Workbook 4	100
Verbal Exam 1	100
Verbal Exam 2	100
Insect Collection	100
Lab Assignments and Quizzes	200
<b>Total</b>	<b>1000 pts</b>

*In Class Quizzes:* Due to the format of this class, which will involve discussion and in-class participation, I am not able to cover an immense amount of material during class. Instead, to receive the full benefit of this class, you are required to read assigned materials before class and you will be assessed on the material with short 2.5 point “daily” quizzes that ask basic questions covering the reading. Every class will begin with a 2-question clicker quiz during the first 5 minutes of class. Each question is worth 1.25 points and you get .75 points for answering each question regardless of answer. I will take your top 20 quiz scores and drop the others.

*Workbooks:* 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 four workbooks. Workbooks will be available on Blackboard on the Friday (by noon at the latest) before the Tuesday due date. All workbooks are due at 11:59pm on their respective Tuesday. Also, there will be no class on the Tuesdays that workbooks are due.

*Verbal Exams:* Your ability to remember key concepts in entomology will be assessed through two 3-minute verbal exams with Dr. Seymoure or Mr Horne. 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, quiz, or verbal exam that was missed.

*Laboratory:* The laboratory component of this course is substantial and cannot be overstated. **Thirty 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. Ten 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 50 hexapods each from a different family. The collection is due October 3<sup>rd</sup> and thus during the fifth week of the course. Therefore, **it is very important that you begin collecting insects immediately!** 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 hard work through extra-credit points, see below.

*“Required” Field Trip to Indio Mountain Research Station (IMRS):* As so much of entomology depends on field work and sampling of insects, we will require that you attend one of two field trips to IMRS. **We also understand that spending a night away may not be possible, please contact Dr. Seymore by August 30<sup>th</sup> if you are unable to attend due to other commitments or financial constraints.** We will offer two trips on back-to-back weekends: September 7-8 and September 13-14. Depending on weather and logistics, we are hoping to offer field trips to Indio Mountain Research Station (IMRS). As the drive 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. Course fees do not cover the costs of traveling and staying at IMRS, thus, there will be an additional fee that will range between \$80 and \$100 per person. This fee will cover accommodations, food, and travel during the entirety of the trip. 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.

*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 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% (i.e. 1 point) of the course grade with a maximum of 5% 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. 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: (note CI = Complete Insect Text; INA= Insects of North America Field Guide)*

<i>Week</i>	<i>Dates</i>	<i>Topic</i>	<i>Readings</i>
1	<i>Aug 27, 29</i>	Introduction to ZOOL 3468, What is an Insect? Why so many? Overview of hexapods, collecting and curating <i>Lab: Curating and Collecting Techniques</i>	CI: Ch. 1 INA: 1-52
2	<i>Sep 3, 5</i>	Hexapod Orders: Entognatha; Apterygota; Exopterygota <i>Lab: Tour of collections, Advanced curation techniques, spreading and point mounting</i>	CI: Ch. 1 INA: 53-173**
2/3	<i>Sep 6 – Sep 8</i>	IMRS Trip #1	
3	<i>Sep 10, 12</i>	Insect Orders: Paraneoptera; Endopterygota <i>Lab: Getting to know the orders 1</i>	CI: Ch. 1 INA: 174-491**
3/4	<i>Sep 13 – Sep 15</i>	IMRS Trip #2	
4	<i>Sep 17, 19</i>	Insect Orders: Endopterygota <i>Lab: Collecting Field Trip to Keystone</i>	CI: Ch. 1 INA: 237-491**
5	<i>Sep 24, 26</i>	<b>Sept 24: Workbook 1 due 11:59pm, No Class</b> <b>Sept 26: Recorded Lecture</b> Body Plan/Integument/Muscles/Nerves/Senses Respiratory, Circulatory, Digestion, Excretion, <i>Lab: Getting to know the orders 2</i>	CI: Ch. 2
6	<i>Oct 1, 3</i>	<b>Oct 1 &amp; 3: Recorded Lectures</b> Endocrine & Reproductive Systems, Physiological & Anatomical Limitations Wings: Evolution, Losses & Gains, Flight, <i>Lab: Open lab for final collections; collections DUE!</i>	CI: Ch. 2,3
7	<i>Oct 8, 10</i>	Wings: Energetics, Migration, Coloration, and Nervous System Development: Life cycles, Reproduction & Mating	CI: Ch. 3 CI: Ch. 4

		<i>Lab: Insect Anatomy</i>	
8	Oct 15, 17	Development: Spermatogenesis & Oogenesis, Eggs, Metamorphosis, Growth, Diapause <i>Lab: Insect Physiology and Development</i>	CI: Ch. 4
9	Oct 22, 24	<b>Oct 22: Workbook 2 due 11:59pm, No Class</b> Aquatic Insects <b>Verbal Exam 1 (In Lab)</b>	CI: Ch. 5
10	Oct 29, 31	Plant-Insect Interactions and Evolution Predation <i>Lab: Plasticine Models</i>	CI: Ch. 5
11	Nov 5, 7	Parasites & Parasitoids, Sociality & Eusociality <i>Lab: Sociality and Aggression</i>	CI: Ch. 5
12	Nov 12, 14	Sociality & Eusociality Ground Dwelling Insects <i>Lab: Pollination</i>	CI: Ch. 5
13	Nov 19, 21	<b>Nov 19: Workbook 3 due 11:59pm, No Class</b> Human Insect Conflict: Crops, Parasites, Vectors, Diseases Insect Benefits: Ecosystem Services, Medicine, Biomimicry <i>Lab: Mosquito Lab</i>	CI: Ch. 6
14	Nov 26	Insect Benefits: Food, Model Systems, Foundations in EvoDevo <b>NO LAB – THANKSGIVING BREAK</b>	CI: Ch. 6
15	Dec 3, 5	Insect Declines, Invasive Species, and Conservation <b>Final Verbal Exam (In Lab)</b>	CI: Ch. 6
16	Dec 9	<b>Workbook 4 due 11:59pm (Comprehensive)</b>	CI: Ch. 1 - 6

\*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!

\*\*For the readings assigned to Insects of North America, you only need to read the sections that are the introduction to each order. For example, Hymenoptera include pages 237-271, but you just need to read the two pages of introduction (237-238) for that order.