



Lab Time: Thursday 2pm-4:15pm, Funchess 358. Whenever in the building, face masks must be worn at all times.

Prerequisites: General (ENTM 4020) or Economic Entomology (ENTM 3040). These can be waived with permission.

## Course Description

This is a survey of the diversity of insects, stressing taxon diagnostics and other kinds of practical analysis.

## Course Format and Instructional Methods:

This is a blended course, with significant portions both in a traditional face-to-face classroom and also online via Canvas, Auburn's learning management system. Within the course Canvas site you will find the syllabus and learning materials, submit assignments, take quizzes, and coordinate group activities. Refer to the course calendar/schedule and assignment instructions for information on where and when to submit your work.

## Student Learning Outcomes (SLO)

Upon successful completion of this course, students will be able to:

- **SLO 1** Describe insect diversity, what it's worth, where it comes from, and how we keep track of it.
- **SLO 2** Solve insect classification problems by analyzing and evaluating morphological data.
- **SLO 3** Connect diagnostic morphological variation to evolved functional diversity.
- **SLO 4** Apply biodiversity science approaches to address real-world problems.

## Required Texts/Readings

### Textbook

Johnson NF, Triplehorn CA. 2004. *Borror and DeLong's Introduction the Study of Insects*. ISBN-13: 978-0030968358. Students can rent it for \$23 from [Amazon](https://www.amazon.com/Borror-DeLongs-Introduction-Study-Insects/dp/0030968356) <https://www.amazon.com/Borror-DeLongs-Introduction-Study-Insects/dp/0030968356>, for \$23.

### Other Readings

Lecture lessons are in Canvas.

## Other Equipment/Material Requirements/Software (Optional/suggested)

Students will need to provide their own basic supplies for insect sampling and preservation: an aerial net, kill jar, forceps, #3 insect pins, and specimen container. The Entomology Club sells kits. For nets and kill jars, have a look at [BioQuip https://www.bioquip.com/](https://www.bioquip.com/). For some in-class activities access to a laptop and smart phone will be helpful.

## Classroom Protocol

Students are expected to attend lectures and labs and participate in learning activities. Exceptions will be considered if sufficient prior notice is given. Some learning activities will give students a chance to earn course currency – called Bug Bucks, that can be used to purchase the right to miss

a lecture or lab, among other things. To see what else Bug Bucks can buy, check out the Course Shop (<https://aub.ie/BugCourseShop>).

In-class cell phone use is permitted only for specified learning activities. Whenever more than one of us is in the same room at the same time, face masks are required.

### ENTM 5300/6300, Fall 2019, Course Schedule

Abbreviations: W, week; L, lecture; B, lab; CQ, Collaborative Quiz; RAT, Readiness Assurance Test.

In the calendar below, dates are given in the format month.day, where the month is given in lower case Roman numerals, and the day is given in Arabic numerals. For example, the date viii.20 refers to the the 20<sup>th</sup> day of August.

All Canvas readings should be completed prior to a scheduled meeting time for a topic. Most Canvas readings will be chased by an active learning exercise. The most common form of active learning that we'll use is a collaborative quiz. Collaborative quizzes will be administered via Canvas. Each student will first take the quiz on their own prior to a lecture. Then in class, they will meet with their learning teammates, and discuss their answers. After meeting, each student will take the quiz a second time. Each student's score will be an average of their first and second attempts. As a reminder, these exercises do not count directly towards a student's grade. The prizes are in Bug Bucks.

The final exam will be held at 11am on the December 7. Students will take it online.

The course schedule below is subject to change with fair notice. Such changes would be announced, and implemented on Canvas. I have listed specific activities for each lecture and lab sessions. These are also subject to change. I include them here to give you a overall sense for how we will go about learning Insect Biodiversity.

Note that in-class activities are classified as starters, mains, and desserts. Starters are designed to grab attention and direct focus. Mains are designed to provide rich learning experiences. Desserts are designed to enhance meta-cognition, that is, help students learn about learning.

Date	Topic	Canvas Readings	Activities
<b>Part 1. Diagnostic and functional insect morphology</b>			
W1 viii.17	L. Welcome + Scope and value of insect diversity + Course overview	Welcome to Insect Systematics, How we'll learn, Insect Diversity – How	Starter: <ul style="list-style-type: none"> <li>Form teams, pick and explain team names.</li> </ul> Main: <ul style="list-style-type: none"> <li>Discussion: Reflect on the boons and banes of insects in their study systems.</li> </ul>

		much and what it's worth.	<ul style="list-style-type: none"> <li>• CQ: Value of insect diversity.</li> </ul> Dessert: <ul style="list-style-type: none"> <li>• State learning goals and justify approach.</li> <li>• Present syllabus.</li> </ul>
W1 viii.19	L. Insect morphology basics + Abdomen + Mechanics of living small	Living Small, Morphology Basics, Insect Abdomen.	Starter: <ul style="list-style-type: none"> <li>• Video prompt. Small worlds are strange.</li> </ul> Main: <ul style="list-style-type: none"> <li>• Kahoot quiz. Anatomical directions, tagmata, sclerites, sutures, and sulci, abdomen parts.</li> <li>• CQ: Why are insects so strong? Why don't insects box?</li> </ul> Dessert: <ul style="list-style-type: none"> <li>• One-minute paper.</li> </ul>
W1 viii.19	B. Insect collection overview / Insect sampling	Insect Sampling	Starter: <ul style="list-style-type: none"> <li>• Picture prompt. Distribution of insect prey sizes for Pearson's horseshoe bat (<i>Rhinolophus pearsoni</i>). What does it reveal about collecting insects?</li> </ul> Main: <ul style="list-style-type: none"> <li>• Review General Collection specs.</li> <li>• Affinity matching. Classify methods.</li> <li>• Practice insect sampling at Davis Arboretum.</li> <li>• Store specimens in cool dry place until next lab. And keep collecting.</li> </ul>
W2 viii.24	L. Insect head + Chewing mechanics	Insect Heads, Chewing Mechanics	Starter: <ul style="list-style-type: none"> <li>• Picture prompt. Male and female stag beetles. Who has the more painful bite?</li> </ul> Main: <ul style="list-style-type: none"> <li>• Kahoot quiz. Head anatomy.</li> <li>• CQ. Biological levers.</li> </ul> Dessert: <ul style="list-style-type: none"> <li>• One-minute paper.</li> </ul>
W2 viii.26	L. Insect legs + Leg mechanics	Insect Appendages, Leg Mechanics	Starter: <ul style="list-style-type: none"> <li>• Picture prompt. Mantis leg, mole cricket leg.</li> </ul> Main: <ul style="list-style-type: none"> <li>• Kahoot Quiz.</li> <li>• CQ. Drag paddling and water walking</li> </ul>

			Dessert: <ul style="list-style-type: none"> <li>• One minute paper.</li> </ul>
W2 viii.26	B. Insect preservation + Data management	Insect preservation, Organizing insect collections	Starter: <ul style="list-style-type: none"> <li>• Picture prompt. Insect specimens over time.</li> </ul> Main: <ul style="list-style-type: none"> <li>• TA lead review of methods.</li> <li>• Practice preservation.</li> <li>• Lesson on simple relational specimen database.</li> </ul>
W3 viii.31	L. Insect thorax; Jumping mechanics	Insect Thorax, Jumping Mechanics	Starter: <ul style="list-style-type: none"> <li>• Video prompt. Click beetle click.</li> </ul> Main: <ul style="list-style-type: none"> <li>• Kahoot Quiz. Thorax anatomy.</li> <li>• Review transmissions, batteries and jumping machines.</li> <li>• Video of grasshopper jumping.</li> <li>• CQ. Jumping mechanics</li> </ul> Dessert: <ul style="list-style-type: none"> <li>• One minute paper.</li> </ul>
W3 ix.2	L. Wingless hexapods + Dichotomous keys	Wingless Hexapods, Dichotomous Keys	Starter: <ul style="list-style-type: none"> <li>• Dichotomous key RAT.</li> </ul> Main: <ul style="list-style-type: none"> <li>• Kahoot Quiz. ID / diagnostic morphology of wingless hexapods.</li> <li>• Peer lesson. Each team writes a key to its own group of snot pockets. Next teams must use another team's key to identify specimens from outside of their group. Teams then develop rubric and rate each other's keys.</li> </ul> Dessert: <ul style="list-style-type: none"> <li>• STEM to Steam. Write Haiku about keys. Vote on champion. Winner gets free miss on first practical.</li> </ul>
W3 ix.2	B. Wingless hexapods	None.	<ul style="list-style-type: none"> <li>• Collecting trip</li> </ul>
W4 ix.7	L. Insect wings + Flight mechanics	Insect Wings, Flight Mechanics	Starter: <ul style="list-style-type: none"> <li>• Video prompt. Tiny flying insect robot.</li> </ul> Main: <ul style="list-style-type: none"> <li>• Kahoot Quiz. Wing anatomy.</li> </ul>

			<ul style="list-style-type: none"> <li>Paper airplane challenge.</li> </ul> Dessert: <ul style="list-style-type: none"> <li>One minute paper.</li> </ul>
W4 ix.9	L. Palaeoptera + Orthoptera	Palaeoptera, Orthoptera	Starter: <ul style="list-style-type: none"> <li>Video prompt. Swarming locusts.</li> </ul> Main: <ul style="list-style-type: none"> <li>Defining features matrix.</li> <li>Kahoot Quiz.</li> <li>Quarantine Cup. Teams race to ID specimens. Start with a shipment value. Every minute subtracts from that value. But there is a large value penalty for incorrect IDs.</li> </ul> Dessert: <ul style="list-style-type: none"> <li>Meta-cognition. Introduce Bloom's taxonomy.</li> <li>Flipped exam. Students write questions for the exam that tap into higher-level thinking.</li> </ul>
W4 ix.9	B. Palaeoptera + Orthoptera	None.	<ul style="list-style-type: none"> <li>Practice using keys.</li> <li>Work on collections.</li> </ul>
W5 ix.14	L. <b>midterm exam 1</b> . Follow with midterm SWOT.		
<b>Part 2. Insect taxonomy and the mechanics of diversification</b>			
W5 ix.16	L. Other Orthopteroids + Classification and nomenclature	The Other Orthopteroids, Dictyoptera, Classification and Nomenclature	Starter: <ul style="list-style-type: none"> <li>TPS. Is a genus a real thing?</li> </ul> Main: <ul style="list-style-type: none"> <li>Kahoot Quiz. Orthopteroids.</li> <li>Divide and Conquer. Team members master different principles in the code. Teams share expertise to solve nomenclatural disputes.</li> <li>Affinity matching. Teams classify groups of insects, then explain their classification.</li> </ul> Dessert: <ul style="list-style-type: none"> <li>Group discussion. How can we make classification more useful?</li> <li>Group discussion. Midterm SWOTS.</li> </ul>
W5	B. <b>Lab</b>	None.	<ul style="list-style-type: none"> <li>ID wingless hexapods to order, and</li> </ul>

ix.16	<b>practical 1</b> + Other Orthopteroids.		families of Palaeoptera and Orthoptera. <ul style="list-style-type: none"> <li>• Lab practical SWOT.</li> <li>• Study material and keys for other orthopteroids.</li> </ul>
W6 ix.21	L. Hemipteroids 1 + pumping mechanics	Insect Pumping Mechanics, Psocodea, Thysanoptera, Hemiptera: Sternorrhyncha, Hemiptera: Auchenorrhyncha	Starter: <ul style="list-style-type: none"> <li>• Picture prompt. Cicada face.</li> <li>• TPS. Pump mechanics.</li> </ul> Main: <ul style="list-style-type: none"> <li>• Video prompt. Cicada emergence.</li> <li>• Review notes on hemiptera diversity.</li> <li>• <b>Flipped Kahoot</b> (team designs test).</li> </ul> Dessert: <ul style="list-style-type: none"> <li>• Categorization Grid.</li> <li>• One-minute paper.</li> </ul>
W6 ix.23	L. Other diagnostic tools	Other Diagnostic Tools	Starter: <ul style="list-style-type: none"> <li>• Readiness Assurance Test (RAT).</li> </ul> Main: <ul style="list-style-type: none"> <li>• Divide and conquer. Each team makes an ID with a separate method.</li> </ul> Dessert: <ul style="list-style-type: none"> <li>• Each team describes their method and their experience with it to the rest of the class.</li> </ul>
W6 ix.23	B. Hemipteroids 1	None.	<ul style="list-style-type: none"> <li>• Study teaching collection and practice using key.</li> <li>• Work on collections.</li> </ul>
W7 ix.28	L. Hemipteroids 2 + population genetics	Hemiptera: Heteroptera, Population Genetics	Starter: <ul style="list-style-type: none"> <li>• Video prompt. Mass-grave assassin bug.</li> </ul> Main: <ul style="list-style-type: none"> <li>• Flipped Reading Quiz. Each student contributes a question based on the Canvas notes. The students work independently to answer all of the questions.</li> <li>• Lecture on pop gen processes that generate diversity.</li> <li>• CQ. Use pop-gen simulator to gain insights.</li> <li>• Quarantine Cup. Teams race to make scale insect IDs, using a multi-access key.</li> </ul>

			Dessert: <ul style="list-style-type: none"> <li>• One-minute paper</li> </ul>
W7 ix.30	L. Speciation and species concepts.	Speciation, Species concepts	Starter: <ul style="list-style-type: none"> <li>• Picture prompts. Levels of Organization, IM model.</li> </ul> Main: <ul style="list-style-type: none"> <li>• Slow-motion Debate. Assign each team a species concept. Teams argue for the primacy of their concept. Each team contributes a judge. One team provides scribe / concept mapper for the discussion.</li> </ul> Dessert: <ul style="list-style-type: none"> <li>• Group discussion and edit of concept map</li> </ul>
W7 ix.30	B. Hemipteroids 2	None.	<ul style="list-style-type: none"> <li>• Study teaching collection and practice using key.</li> </ul>
W8	<b>Buffer; Fall Break</b>		
W9 x.12	L. Phylogeny	Phylogeny.	Starter: <ul style="list-style-type: none"> <li>• Phylogenetic branching model simulations.</li> </ul> Main: <ul style="list-style-type: none"> <li>• CQ. Tree thinking.</li> </ul> Dessert: <ul style="list-style-type: none"> <li>• One-minute paper.</li> </ul>
W9 x.14	L. Neuropterida + Adephaga	Neuropterida, Coleoptera 1.	Starter: <ul style="list-style-type: none"> <li>• Video prompt. Antlion larva in action.</li> </ul> Main: <ul style="list-style-type: none"> <li>• CQ. Use mechanics of slope stability to predict location of antlion traps.</li> <li>• Kahoot quiz on neuropteras + adephagan diagnostics.</li> </ul> Dessert: <ul style="list-style-type: none"> <li>• STEM to Steam. Write Haiku about antlions. Vote. Winner gets free miss on next practical.</li> </ul>
W9 x.14	<b>B. Lab practical 2</b> + Neuropterida + Adephaga	None.	<ul style="list-style-type: none"> <li>• Cumulative test IDs of everything up through Hemipteroids</li> <li>• Study neurops and adephagans.</li> </ul>



W9	Part 1 of insect collection due		
W10 x.19	L. Extinction - how, now and why?	Extinction.	<p>Starter:</p> <ul style="list-style-type: none"> <li>• Picture prompt. Insect phylogeny + fossil diversity.</li> </ul> <p>Main:</p> <ul style="list-style-type: none"> <li>• Lecture. Review recent studies of insect apocalypse.</li> <li>• Meta-cognition. How to read a scientific paper.</li> <li>• Group discussion of Thogmartin et al. 2017.</li> </ul> <p>Dessert:</p> <ul style="list-style-type: none"> <li>• One minute paper.</li> </ul>
W10 x.21	L. Polyphaga + Adaptive Radiation + Coevolution	Coleoptera 2, Adaptive Radiation, Co- evolution.	<p>Starter:</p> <ul style="list-style-type: none"> <li>• Video prompt. Fireflies.</li> </ul> <p>Main:</p> <ul style="list-style-type: none"> <li>• Review of Polyphaga diversity.</li> <li>• <b>Flipped Kahoot 2.</b></li> <li>• Categorization grid. Diagnostic beetle morphology.</li> <li>• CQ. Red Queen dynamics.</li> </ul> <p>Dessert:</p> <ul style="list-style-type: none"> <li>• One-minute paper.</li> </ul>
W10 x.21	B. Polyphaga	None.	<ul style="list-style-type: none"> <li>• Study collection, practice IDs, work on collection.</li> </ul>
W11	First Draft of <b>Warbler articles</b> due		
W11 x.26	L. Buffer. Study for second midterm	None.	<p>Dessert:</p> <ul style="list-style-type: none"> <li>• Concept map. Connecting population genetics to phylogenetic patterns of diversity.</li> </ul>
W11 x.28	L. Mecoptera + Trichoptera + Review for exam	Mecoptera, Trichoptera	<p>Starter:</p> <ul style="list-style-type: none"> <li>• Video prompt. Caddisfly building case.</li> </ul> <p>Main:</p> <ul style="list-style-type: none"> <li>• <b>Flipped Kahoot 3.</b> Cumulative.</li> <li>• Open Q&amp;A for midterm.</li> </ul> <p>Dessert:</p> <ul style="list-style-type: none"> <li>• Three-minute paper. Reflect on major concepts in this second part of the course.</li> <li>• Flipped exam. Students write questions</li> </ul>

			that tap into higher-level thinking. Good questions may be included in midterm.
W10 x.28	B. Mecoptera + Trichoptera	None.	<ul style="list-style-type: none"> <li>• Study collection, practice ID, work on collection.</li> </ul>
W12 xi.1-3	L. <b>midterm exam 2.</b> Follow with midterm SWOT.		
<b>Part 3. Insect biodiversity patterns and analysis</b>			
W12 xi.4	L. Lepidoptera and Macroecology	Lepidoptera, Macroecology	<p>Starter:</p> <ul style="list-style-type: none"> <li>• Video prompt. Carnivorous caterpillars.</li> <li>• Picture prompt. Heat map of insect species richness.</li> </ul> <p>Main:</p> <ul style="list-style-type: none"> <li>• Mini-lecture. Lepidopteran diversity.</li> <li>• <b>Flipped Kahoot 4.</b> Lepidopteran morphology and diagnostics.</li> <li>• Defining features matrix.</li> <li>• Review explanations of the latitudinal diversity gradient, species-area curves, and the broad ranges of locally abundant species</li> <li>• CQ. Interpret population genetic and phylogenetic data to identify high probability biocontrol agents.</li> </ul> <p>Dessert:</p> <ul style="list-style-type: none"> <li>• Group discussion of midterm SWOTs.</li> </ul>
W12 xi.4	B. Lepidoptera	None.	<ul style="list-style-type: none"> <li>• Study collection, practice ID, work on collection.</li> </ul>
W13 xi.9	Community Ecology	Insect Community Ecology	<p>Starter:</p> <ul style="list-style-type: none"> <li>• Picture prompt. Bee decline.</li> <li>• Picture prompt. A food web.</li> </ul> <p>Main:</p> <ul style="list-style-type: none"> <li>• Readiness Assurance Test (RAT). Community ecology basics.</li> <li>• Divide and Conquer. Study three simple herbivore-enemy webs that vary in terms of pest suppression. Teams calculate network connectedness, richness, diversity, and evenness. Combine calculations to try and explain biocontrol efficiency.</li> </ul>

			<ul style="list-style-type: none"> <li>• Mini-lecture. Network richness, diversity, connectedness, nestedness and modularity.</li> <li>• Teamwork problem set. Analyze pollination network to identify best plants for pollinator garden.</li> </ul> <p>Dessert:</p> <ul style="list-style-type: none"> <li>• Concept map. Connect community ecology and phylogenetic history to macroecological patterns in species richness.</li> </ul>
W13 xi.11	L. Hymenoptera	Hymenoptera	<p>Starter:</p> <ul style="list-style-type: none"> <li>• Video prompt. Parasitoids brainwashing caterpillar.</li> </ul> <p>Main:</p> <ul style="list-style-type: none"> <li>• Short review of Hymenoptera morphology and diversity.</li> <li>• Kahoot Quiz.</li> <li>• Defining features matrix.</li> </ul> <p>Dessert:</p> <ul style="list-style-type: none"> <li>• STEM to Steam. Write haiku about parasitoids. Vote. Champ gets free miss on next practical.</li> </ul>
W13 xi.11	<b>B. Lab practical 3.</b> Hymenoptera 1	None	<ul style="list-style-type: none"> <li>• Covers Neuropterida through Lepidoptera</li> <li>• Do post test SWOT</li> <li>• Study collection, practice ID, work on collection.</li> </ul>
W14 xi.16	L. Phylogenetic diversity patterns	Adaptive Radiation, Co-evolution.	<p>Starter:</p> <ul style="list-style-type: none"> <li>• Picture prompt. Insect phylogeny.</li> </ul> <p>Main:</p> <ul style="list-style-type: none"> <li>• Flipped-reading quiz.</li> <li>• Mini-lecture on causes of diversification rate variation, and how we can test them.</li> </ul> <p>Dessert:</p> <ul style="list-style-type: none"> <li>• One-minute paper.</li> </ul>
W14	Final Draft of <b>Warbler</b> articles due		
W14 xi.18	L. Diptera	Diptera	<p>Starter:</p> <ul style="list-style-type: none"> <li>• Engagement trigger. Cryptic species complexes in dipteran vectors of malaria and Onchocerciasis. When cryptic</li> </ul>

			<p>species differ in ecology and vector capacity, biodiversity science could help us save millions of lives.</p> <p>Main:</p> <ul style="list-style-type: none"> <li>• Kahoot quiz. Diptera morphology and diagnostics.</li> <li>• Last round of Quarantine Cup. Champion is crowned - is gifted a family on their collections.</li> </ul> <p>Dessert:</p> <ul style="list-style-type: none"> <li>• Flipped exam. Students write questions for the exam that tap into higher-level thinking. Good questions may be included.</li> </ul>
W14 xi.18	B. Diptera	Diptera	<ul style="list-style-type: none"> <li>• Study collection, practice ID, work on collection</li> </ul>
xi.22-26	<b>Thanksgiving Break</b>		
W15 xi.30	L. Phylogenetic comparative analysis in a nutshell	Comparative Analysis	<p>Starter:</p> <ul style="list-style-type: none"> <li>• Engagement trigger. Can we predict the evolution of insecticide resistance?</li> </ul> <p>Main:</p> <ul style="list-style-type: none"> <li>• TPS. Phylogenetic trace of a trait which has evolved many times independently. How can we use parallel evolution to gain insights into insect biology?</li> <li>• Mini-lecture. Linear regression. Phylogenetic covariance. Phylogenetic regression.</li> <li>• Case study. Using phylogenetic regression to predict the evolution of insecticide resistance.</li> </ul> <p>Dessert:</p> <ul style="list-style-type: none"> <li>• TPS. How could comparative analysis be useful in your own research area?</li> <li>• One-minute paper. What are the pros of cons of the comparative method over a more reductive study of a single model organism?</li> </ul>
W15 xi.24	L. Buffer.	None.	<p>Dessert:</p> <ul style="list-style-type: none"> <li>• Course wrapper</li> </ul>

			• Bumper sticker
W15 xii.2	<b>B. Final lab practical.</b>		
W15 xii.2	<b>Final insect collections due.</b>		
xii.7	<b>Final exam.</b>		

## Course Assessments

Please note the distinction between formative and summative assessment. Formative assessments provide low-stakes feedback during the learning process about progress towards a learning goal. Summative assessments measure, at the end of a line of instruction, the extent to which a student has achieved a learning objective.

- General Insect Collection (300 points in two installments). Summative assessment of SLOs 1 and 2. Students will work in teams to build an insect collection, gaining skills with specimen sampling, preservation, curation, and identification. Within each team, each student must contribute – that is, collect preserve and identify – a minimum of 100 specimens. Half of each students’s collection grade will be based on the quality and accuracy of their individual contribution. The other other half will come from the total quality and accuracy of the team’s collection. See attached rubric for more detail. The collection will be assessed in two installments. The first chunk will be worth 100 points, and will consist of at least 25 specimens from each student. The second chunk will be worth 200 points and consist of at least 75 specimens from each student.
- Lab Practicals (200 points) Summative assessment SLOs 1 and 2. Students’ ability to identify insects that occur in the southeastern US will be assessed with 3 midterm practical exams and one cumulative final practical exam. The first practical is worth 25 points. The second and third are each worth 50. The final is worth 75. Tests will involve a combination of sight identification and dichotomous keying.
  - NOTE: Due to the difficulty of administering make-up practical exams, and the need for students to quarantine after possible COVID-19 exposure or illness, we will have a special policy for lab practicals this year. It’s simple. Each student can skip one practical other than the final.
- Exams (150 points). Summative assessment of SLOs 1, 3, and 4. There will be two midterm examinations, each of which will count for 50 points of the final grade. There will also be a final, non-cumulative exam, worth 50 points. The first midterm will cover diagnostic and functional insect morphology. The second cover insect taxonomy and the mechanics of diversification. The final will cover both topics relating to patterns and analysis of insect biodiversity. As previously noted, student diagnostics skills will be assessed with lab practicals.
- Service Learning (*Grad students only*; 25 points). The Alabama Prison Arts and Education Project produces *The Warbler*, a weekly newsletter that reaches more people incarcerated in 28 states, including more than 800 people in Alabama. Students will work

in teams to write a article for an insect-diversity themed issue. Teams will earn 5 points for turning in a first draft, which they will have a chance to revise before their final draft is evaluated and given a score out of 20 points.

- Class Participation (25 points and Bug Bucks). Formative assessment of all SLOs. Lecture sessions will include a variety of learning activities. These will provide students with frequent low-stakes formative assessment of their progress towards the course learning goals. By doing these activities students can earn Bug Bucks, which they can use to buy items from the Course Shop, such as an unexcused absence, or bonus points on an exam. On top of that students can earn an additional 25 for overall positive engagement in our learning environment.

## Grading Policy

The sum of evaluation scores is 675 points. Your final grade will be determined by the percentage of these points you were able to earn.

90%-100% = A

80%-89% = B

70%-79% = C

60%-69% = D

<60% = F

Students will receive no points for missing work. Late insect collections will be penalized one letter grade per day past the due date.

## University Policies

There are important university policies that you should be aware of, such as the add/drop policy; cheating and plagiarism policy, grade appeal procedures, accommodations for students with disabilities and degree requirements. See [Academic Policies](http://bulletin.auburn.edu/undergraduate/generalintroduction/academicpolicies/).

## Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drops, course loads/overloads, etc. The [Academic Policies page](http://www.auburn.edu/cosam/departments/student-services/academic-policies.htm) <http://www.auburn.edu/cosam/departments/student-services/academic-policies.htm> has information regarding these.

## Campus Policy on Disability Access for Students

If you are a student with a disability, and think you may need academic accommodations, please contact the Office of Accessibility, located in Haley Center, Room 1228, Phone: (344) 844-2096, as early as possible in order to avoid a delay in receiving accommodation services. Use of OA services, including testing accommodations, requires prior authorization by the Office of Accessibility. Note that this year, the University policy is that any Covid-19 related learning challenges need to go through the Office of Accessibility. For more help see [Steps to Receive Accommodations](https://cws.auburn.edu/Accessibility/cm/prospective) <https://cws.auburn.edu/Accessibility/cm/prospective>.

## **Emergency Evacuation**

If you are a student with a disability and you think you may require assistance evacuating a building in the event of a disaster, you should inform your instructor about the type of assistance you may require. You and your instructor should discuss your specific needs and the type of precautions that should be made in advance of such an event (i.e. assigning a buddy to guide you down the stairway). We encourage you to take advantage of these preventative measures as soon as possible and contact the Office of Accessibility if other classroom accommodations are needed.

## **Academic Integrity**

Students should be familiar with the university's [Academic Honesty Code](https://sites.auburn.edu/admin/universypolicies/Policies/AcademicHonestyCode.pdf) <https://sites.auburn.edu/admin/universypolicies/Policies/AcademicHonestyCode.pdf>. Your own commitment to learning, as evidenced by your enrollment at Auburn University and the university's policy, require you to be honest in all your academic course work. Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade and sanctions by the university. For this class, all assignments are to be completed by the individual student unless otherwise specified.

## **Additional Resources**

### **Library Research Guides and Subject Librarians**

You should be able to complete this course without making a trip to the library. That being said, be advised that the Auburn University Library can help you find information and conduct research. If you would like help pursuing a topic that we touched on, you can make an appointment with a librarian, or get help online. The specialist for Biology is Patricia Hartman ([pjh0011@auburn.edu](mailto:pjh0011@auburn.edu)).

### **Miller Writing Center**

In this course, students are not expected to do much writing. But be aware that The Miller Writing Center helps Auburn University students become better writers and produce better written documents. The MWC has multiple locations: RBD Library, SADC, Multicultural Center, Forestry & Wildlife Building, and Auburn Global. The knowledgeable and friendly tutors can help you with a wide array of concerns, from generating good ideas and organizing papers more clearly to learning citation formats and using semi-colons correctly. Visit the [Writing Center website](http://wp.auburn.edu/writing/writing-center/) <http://wp.auburn.edu/writing/writing-center/> for more information on how to schedule time with a tutor.

### **General Student Computing**

Review the information posted at [OIT Computing Lab Locations](http://www.auburn.edu/oit/labs/) <http://www.auburn.edu/oit/labs/>. There you will find computer use guidelines and a list of available computer labs.

## Canvas

Canvas is Auburn University's official Learning Management System (LMS). Canvas is the place where you will find the course syllabus, read posted announcements, submit your assignments online and view the materials for this course. To access Canvas use your AU user ID and password to log into Auburn's [Canvas homepage](https://auburn.instructure.com/login/ldap) <https://auburn.instructure.com/login/ldap>. When you log in, you will be directed to your dashboard. Click on the link for this course (classes are listed by course name and number). Note that the Login link is also conveniently located in [AU Access www.auaccess.auburn.edu](http://www.auaccess.auburn.edu) and many other university pages.

## Canvas Help

Contact the [OIT Help desk https://oit.auburn.edu/helpdesk](https://oit.auburn.edu/helpdesk) if you need assistance with Canvas or other information about computing and information technology at Auburn. Three ways to contact the OIT Help Desk are:

- Call: 334-844-4944
- Email: [helpdesk@auburn.edu](mailto:helpdesk@auburn.edu)
- Visit Location: RBD Library, 2<sup>nd</sup> and 3<sup>rd</sup> floors

## Student Counseling Services (SCS)

SCS is a unit of the Auburn University Medical Clinic. SCS offers confidential counseling to students experiencing personal problems that interfere with their academic progress, career or well being. The [SCS website http://wp.auburn.edu/scs/](http://wp.auburn.edu/scs/) provides information only. If you would like to talk with someone or make an appointment, please call (344) 844-5123 during business hours, or (344) 501-3100 after hours or on weekends.

## COVID-19 Policies

### *Physical Distancing*

As of August 6 2021, the University is not imposing any physical distancing mandates.

### *Face coverings*

As per University policy, face covers are required at all times while indoors on campus. This includes our classroom. It also includes any University vehicles. A face covering must fully cover a person's nose and mouth. If a student has a medical exception to the face covering requirement, please contact the Office of Accessibility to obtain appropriate documentation.

### *Possibility of fully remote instruction*

If the university moves to fully online instruction, be assured that the learning goals and outcomes of the course will not change; however, some aspects of the course will change in terms of the mode of delivery, participation, and testing methods. Those details will be shared via a Canvas within 24 hours of the announcement that we are going remote.

### *Possibility of schedule changes*



If because of COVID-19 the academic calendar changes, we will try to keep the course schedule as consistent as possible. But such changes may cause shifts in due dates for assignments and assessments. When changes are made, they will be communicated via Canvas.

#### *A student tests positive for COVID-19*

Students testing positive for COVID-19, exhibiting COVID-19 symptoms or who have been in direct contact with someone testing positive for COVID-19 should not participate in in-person instructional activities. Students should contact the [Student Health Center](#) or their health care provider to receive care and who can provide the latest direction on quarantine and self-isolation. Contact your instructor immediately to make instructional and learning arrangements.

#### *An instructor tests positive for COVID-19*

If the instructor or TA tests positive, we will suspend face-to-face meetings and transition to fully online instruction until they are allowed to return. If the instructor becomes ill or is unable to lead the class, a backup instructor will be identified and they will communicate any changes or updates to the course schedule or mode of instruction as soon as possible.

#### *Attendance*

To repeat, our health and safety are the top priorities. If you are experiencing symptoms of COVID-19, or if you discover that you have been in close contact with others who have symptoms or who have tested positive, you should not attend face-to-face meetings. You'll need to work with the Office of Accessibility, but you will not be penalized for such an absence.

### **General Collection Rubric**

**Note: The following values apply to a collection team with three members. For teams with fewer or more members all values are pro-rated. For example, for a team of two, each valued would be multiplied by 1.5.**

**Note: The following positive values are all multiplied by 1.5 for every contribution by an undergraduate team member. The penalties for incorrect information are the same for both graduate and undergraduate students.**

#### **Add**

- 3 points for each new order
- A bonus of 20 points for 15 orders
- 2 points for each additional family
- A bonus of 20 points for 100 families
- 1 point for each additional morphological kind within a family
- 1 point for each series ( $\geq 5$  specimens of the same species)
- 2 points for each slide-mounted specimen
- 1 point for each pointed specimen
- 1 point for each ecological association (host plant, mutualist, natural enemy)
- 5 points for each specimen needed for the teaching collection

18 | Version 2.1 | 17 August 2020

- A bonus of up to 10 points for tidy curation

**Subtract**

- 5 points for each misidentified family
- 10 points for each misidentified order
- 5 points for each improperly preserved specimen
- 50 points for false information

**Note**

- Up to 25% of a student's collection can consist of traded material.
- Trades are only permitted between students currently taking this course. That is, no recycling of material from previous years is permitted.
- At least 85% of a student's collection must be collected this term.