

Syllabus

ENTMLGY 6320

Experimental Insect Physiology and Molecular Biology

Autumn Semester 2023

Course Information

- **Course times:** Thursdays 12:30 – 2:45 pm
- **Course Locations:** Columbus: Room 451 Kottman Hall
Wooster: Room 300, New Science Building
- **Credit hours:** 1 credit hour
- **Mode of delivery:** In-person/hybrid

Instructors

Professor:

- **Name:** Megan Meuti
- **Email:** meuti.1@osu.edu
- **Office location:** 233C Howlett Hall
- **Office hours:** Mondays 1:00 – 3:00 pm; Wednesday 3:00 – 5:00 pm

Graduate Teaching Assistant:

- **Name:** Matthew Wolkoff
- **Email:** wolkoff.13@osu.edu
- **Office location:** 272 Howlett Hall
- **Office hours:** TBA
- **Preferred means of communication:**
 - Our preferred method of communication for questions is **email**.
 - Our class-wide communications will be sent through the Announcements tool in CarmenCanvas. Please check your [notification preferences](#) (go.osu.edu/canvas-notifications) to be sure you receive these messages.

Course Prerequisites and/or co-requisite:

- **Requirements:** Must have taken or currently be taking ENTMLGY 6310.
- **Recommended courses:** Previous courses in molecular biology, biochemistry and/or genetics are recommended.

Course Description

Insects are not only one of the most diverse groups of organisms on Earth, but they are also highly amenable to scientific experimentation and manipulation. In this laboratory course we use both classical and modern experimental techniques to study various aspects of insect physiology and molecular biology.

Specifically, we will conduct a series of experiments to familiarize ourselves with several of the major insect physiological systems (e.g., endocrine, digestive, respiratory, nervous and musculoskeletal) in a variety of different insect models. We are doing this to illuminate the various physiological and molecular mechanisms that insects use to survive and thrive in different environmental conditions. We will discuss and interpret our findings, compare differences in physiological traits between insects with different life histories, consider how understanding insect physiology can be used for control, and evaluate how physiological systems respond and adapt to changes in the environment.

Throughout the semester we will be working collaboratively, as a unified team of researchers to collect and pool data, and to test our hypotheses. Additionally, through weekly assignment write-ups, we will have the opportunity to *gain experience clearly and concisely describing the methods and results of our research*. Ultimately, we hope that you'll walk away with not only a better understanding of physiological systems in insects, but also with experience and practical skills with the techniques insect physiologists use to answer important biological questions and the ability to determine how you might employ these or similar techniques in your own research.

Course Learning Goals

- I. Practice classical and modern experimental procedures to study various aspects of insect physiology and molecular biology.
- II. Appreciate that physiological systems function as a response of the environment and the conditions that insects inhabit.
- III. See yourselves as scientists as you continue to develop your scientific communication skills.

Course Learning Outcomes

By the end of this course, students should successfully be able to:

1. Determine when and why various experimental techniques are appropriate.
2. Gain experience with the use of laboratory equipment and reagents to implement experiments.
3. Predict how physiological systems in insects will respond to various environmental stresses.
4. Analyze and interpret data.
5. Synthesize experimental findings for scientific audiences.
6. Design novel experiments.

How this course works

Mode of delivery: This is a synchronous, in-person, laboratory course that is offered once a week. To fully participate in the course, we expect you arrive on time, having read all assigned materials and being ready to participate in class discussions and execute the experiment. Whenever possible, we will provide in-lab tutorials on how to analyze data that Wooster-based students can attend remotely. These dates are clearly listed on the laboratory schedule at the end of this document.

In addition to the weekly 3-hour lab sessions, some work will be required outside of class. This primarily will include conducting readings to prepare for future laboratory periods and completing short experimental write-ups of what we have done in previous labs. All assignments will be turned in online, in their associated assignment portal on Carmen. All reading materials and clear guidelines/rubrics will also be provided on the Carmen course website. We also encourage you to ask Matt and/or Dr. Meuti whenever you have any questions or suggestions about the material or techniques in the course. We are here to help you succeed and want this course to be enriching, exciting, rewarding and relevant to your graduate studies!

Pace of course activities: This course is divided into **weekly modules** that will be released by Sunday morning. Each module will clearly explain what you are to do before lab (generally read assigned papers), during lab (generally participate in an experimental protocol or analyze experimental data) and after lab (generally complete an exercise or follow-up writing assignment regarding that week's experiment).

Credit hours and work expectations: This is a 1 credit-hour lab course. According to [Ohio State bylaws on instruction](http://go.osu.edu/credithours) (go.osu.edu/credithours), students should expect around 2.75 hours per week of time spent on direct instruction and participation (e.g., attending lab) in addition to 1-2 hours of homework (reading, and working on lab assignments) to receive a grade of C average. Students who spend 4-6 hrs/week on this course typically earn an "A" or an "A-".

Attendance and participation requirements: Research shows regular participation is one of the highest predictors of success. With that in mind, we have the following expectations for everyone's participation:

Participating in course activities: at least once per week

100% attendance is expected, and absences will detract from your grade. Please see Matt or Dr. Meuti immediately about conflicts due to research conferences, religious holidays, etc. Also, please email if you are ill or have a family or medical emergency that will keep you from class.

In order to successfully complete our experiments and obtain high quality data, you **MUST** participate fully in each lab session. We expect you to have ***thoughtfully read the assigned material before each meeting***. You should expect us to call on you; better yet, volunteer or raise your hand! Please feel free to ask questions, add insights and ask questions. Additionally, some optional videos are linked for many of the lab experiments. These are provided to give you enough information to feel comfortable with the concepts and techniques for that week's lab. Please watch these materials where they will prove useful for your participation.

Zoom meetings and office hours: optional

Events outside of our normal course meeting times, including our office hours or group study sessions, are optional.

Course Materials, Fees & Technologies

Required Materials

Journal articles, videos and other materials will be posted to the course website on CarmenCanvas and/or provided in class

Note that all reading assignments should be completed prior to class

Required Equipment

Computer: current Mac (MacOS) or PC (Windows 10) with high-speed internet connection

Webcam: built-in or external webcam, fully installed and tested

Microphone: built-in laptop or tablet mic or external microphone

Other: a mobile device (smartphone or tablet) to use for BuckeyePass authentication

If you do not have access to the technology you need to succeed in this class, review options for technology and internet access at go.osu.edu/student-tech-access.

Required Software

Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365. Visit the [installing Office 365](https://go.osu.edu/office365help) (go.osu.edu/office365help) help article for full instructions.

Zoom: to connect with instructors and peers outside of class; and to participate in remote labs.

R-Studio Desktop with the most up-to-date version of R ([available for free here](#))

BYB Spike Recorder App ([available for free here or on iOS app store](#))

Adobe Acrobat or equivalent programs: to open and save assignments as PDFs.

CarmenCanvas Access

You will need to use [BuckeyePass](https://buckeyepass.osu.edu) (buckeyepass.osu.edu) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you do each of the following:

Register multiple devices in case something happens to your primary device. Visit the [BuckeyePass - Adding a Device](https://go.osu.edu/add-device) (go.osu.edu/add-device) help article for step-by-step instructions.

Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click the **Text me new codes** button that appears. This will text you ten passcodes good for 365 days that can each be used once.

[Install the Duo Mobile application](https://go.osu.edu/install-duo) (go.osu.edu/install-duo) on all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at [614-688-4357 \(HELP\)](tel:614-688-4357) and IT support staff will work out a solution with you.

Technology Skills Needed for This Course

Basic computer and web-browsing skills

[Navigating CarmenCanvas](https://go.osu.edu/canvasstudent) (go.osu.edu/canvasstudent)

[CarmenZoom virtual meetings](https://go.osu.edu/zoom-meetings) (go.osu.edu/zoom-meetings)

[Recording a slide presentation with audio narration and recording, editing and uploading video](https://go.osu.edu/video-assignment-guide) (go.osu.edu/video-assignment-guide)

Technology Support

For help with your password, university email, CarmenCanvas, or any other technology issues, questions or requests, contact the IT Service Desk, which offers 24-hour support, seven days a week.

- **Self Service and Chat:** go.osu.edu/it
- **Phone:** [614-688-4357 \(HELP\)](tel:614-688-4357)
- **Email:** servicedesk@osu.edu

Grading and Faculty Response

How Your Grade is Calculated

See Course Schedule for due dates.

Assignment Category	Points	Percentage of final grade
Participation and data curation	250	25%
Lab assignments	600	60%
Integrative approaches in experimental biology	150	15%

Descriptions of Major Course Assignments

Participation and data curation

Description: In order to be successful in this course, it is essential that you come to every lab/class session prepared, *having read and annotated all posted readings*, and are ready to jump into the experimental protocols. We expect you to fully participate in the course, to ask questions whenever anything is unclear, and to be a team player. Some labs will require reading primary literature. For these, you will answer some short questions before lab to help you think about the work and contribute to discussion. These will be checked at the beginning of lab for completeness and serve as a significant portion of your participation grade.

Additionally, collecting and recording our data accurately is absolutely essential to the success of this course. Therefore, *we strongly encourage you to keep a detailed laboratory notebook where you record every experimental procedure, observation, and piece of data that you collect.* In addition to recording your data immediately in your laboratory notebook, you are also required to upload your data to class data sheets in a timely manner. Failure to do so will prevent you from earning full credit in this category (250 points).

Academic integrity and collaboration: You are welcome and encouraged to talk with peers during and after lab experiments to share ideas and clarify information. For laboratories where you are working as a group, you will work collaboratively to upload your data. Otherwise, instances when you need to upload your individual data or respond to specific discussion questions will be clearly indicated.

Lab assignments

Description: After laboratory experiment, you will be asked to complete a short (1-3 pages maximum) “Results and Analysis” write up, which you will turn in to the appropriate assignment portal in Carmen. These are designed to allow you to practice clearly conveying the results of an experiment, preparing figures and legends, and reflecting on “discussion” questions about the broader relevance and implications of our findings. You will be provided with short prompts to help you analyze and interpret what you found in the experiments and time will be provided during lab to work on your writeups and ask the instructor questions (600 points).

Academic integrity and collaboration: You are welcome and encouraged to talk with peers during and after lab experiments to share ideas and clarify information. Except when indicated, all post-lab assignments should be completed individually.

Integrative approaches in experimental biology

Description: These assignments are designed to help students apply the principles and techniques of insect molecular physiology to their particular research interests. These will generally take the form of prompts that direct you to think about your ongoing research projects and broader research field, and consider how insect molecular physiology might impact, inform, and underly those areas of interest. These will comprise a total of three separate assignments, which will culminate in designing a proposed experiment and associated short presentation at the end of the semester (150 points).

Academic integrity and collaboration: Except when indicated, all integrative approaches assignments should be completed individually.

Late Assignments

- Please refer to Carmen for due dates. Due dates are set to help you stay on pace and to allow timely feedback that will help you complete subsequent assignments. Meeting deadlines is an important aspect of *professionalism in ALL future careers*. Please plan carefully. Deadlines for submitting assigned work are firm, and extensions will NOT be granted for conflicts with the work or other courses, or technological difficulties with Carmen.
 - *Accommodations due to illness or other personal situations are granted only with appropriate documentation (doctor's note, obituary, etc.).* If you need an extension for a family emergency or medical reason, please contact Matt before 5:00 pm on the day the assignment/unit assessment is due, or within 24-hours of an emergency or illness. Whenever possible, please provide the documentation.
 - *Advanced accommodations:* If you need to have an adjusted schedule (e.g., a scientific conference or military duty prevents you from opening or submitting assignments during posted window, etc.), please email Matt at least 2 weeks prior to requested schedule changes.
 - *Late work:* To ensure that we all stay on track and that your work does not pile up, assignments that are submitted late will receive a 10% penalty for every day they are late, up to 3 days late. After that time, your assignment will not be graded for credit.

Instructor Feedback and Response Time

We are providing the following list to give you an idea of my intended availability throughout the course. Remember that you can call [614-688-4357 \(HELP\)](tel:614-688-4357) at any time if you have a technical problem.

Preferred contact method: If you have a question, please contact Matt or Dr. Meuti first through our Ohio State email address. We will reply to emails within **24 hours on days when class is in session at the university**, or **36 hours on the weekend/university holiday**. *If you have not heard back within this timeframe, you can and should send an additional email.* Please do NOT send multiple emails within a 24-hr period or use Canvas to contact us.

Class announcements: We will send all important class-wide messages through the Announcements tool in CarmenCanvas. Please check [your notification preferences](#) (go.osu.edu/canvas-notifications) to ensure you receive these messages.

Discussion board: We will check and reply to messages in the discussion boards once mid-week, by 5:00 PM on Wednesday.

Instructor Feedback and Response Time (cont.)

Grading and feedback: For assignments submitted before the due date, we will try to provide feedback and grades within **ten days**. Assignments submitted after the due date may have reduced feedback, and grades may take longer to be posted.

Grading philosophy: Please note we do NOT give you points, nor do we take away points away from you. *You either earn or do not earn points on assignments.* We truly want you to earn the highest grade possible on every assignment and exam! We are here to help you by clarifying any instructions and answering questions that you have. However, ultimately your grade is up to you.

Grade Disputes: Graded material will be made available to you on Carmen. We encourage you to carefully look over the feedback on your assignments. Please be sure to see Matt during office hours (preferred) or email him if you do not understand why any of your answers were incorrect/did not earn full credit. If you feel that a mistake was made on an assignment, you have the right to dispute the grade with Matt and Dr. Meuti. You must discuss your dispute with us no later than **two weeks after the graded assignment has been made available to you**. After that time, the grade will be final.

Grading Scale

93–100: A
90–92.9: A-
87–89.9: B+
83–86.9: B
80–82.9: B-
77–79.9: C+
73–76.9: C
70–72.9: C-
67–69.9: D+
60–66.9: D
Below 60: E

Other Course Policies

General Policies and Expectations

Class participation: We expect you to complete the assigned readings *before* you attend each course session so that you can thoughtfully complete laboratory assignments. We expect you to be respectful of your peers, and us.

Notetaking: As we want you to earn the highest grade possible, and because full participation in class activities is crucial for success, we expect you to treat this class with the same respect, attention and planning as you treat your other courses. Therefore, you *should take notes both when reading the course articles and when attending the labs*. You should complete your readings and watch any assigned videos/lectures in a quiet place, free from other distractions. Research shows that students learn best and retain the most information when they take notes by hand ([*Bonner and Holliday, 2006 J. Research in Science Teaching*](#)). 😊

Staying informed: We will closely follow the schedule on the syllabus and will provide updates and reminders to ensure that you are staying on track. If we have to make modifications or adjustments to the course, provide further details or clarification, and/or schedule review sessions, we will post **a course announcement**. Students are responsible for all information communicated via email and course announcements. Therefore, we expect you to *check the course website and your OSU email at least once per week*.

Managing class data: Consider composing your academic posts in a word processor or using a program like Excel/Google sheets to save your work, ideally to a cloud-based system. This will allow you to then copy responses into Carmen discussions, and more easily submit your assignments to their associated portals within Carmen. Additionally, this will protect against data loss if your computer malfunctions or gets lost or stolen.

Scheduling: We will post the module for each week by Sunday at 12:00 am Eastern Time. The module page will contain the overview describing the week's tasks, readings, and post-lab assignments.

General Policies and Expectations (cont.)

Specific expectations for written assignments

- **Writing style:** While there is no need to complete your laboratory reports as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics, and especially in discussions. We do expect more formal writing for the final proposed experiment.
- **Citing your sources:** Be sure to always cite your sources to back up what you say. For the lecture textbook or other course materials, list at least the page numbers of the textbook or the authors and publication year for articles. For online sources, include a link.

Specific expectations for in-class discussions:

- **Tone and civility:** Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Let's avoid sarcastic comments and try to keep things positive. We will provide specific guidance for discussions on controversial or personal topics.

Statement of Intent: By remaining in this course, you are agreeing to abide by the guidelines outlined in this syllabus. As instructors, we reserve the right to update and/or correct this syllabus, and if we need to do so we will notify you.

Academic Integrity Policy

See [Descriptions of Major Course Assignments](#) for specific guidelines about collaboration and academic integrity in the context of this online class.

Ohio State's Academic Integrity Policy

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the university's [Code of Student Conduct](#) (studentconduct.osu.edu), and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the university's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the university or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the university's *Code of Student Conduct* is never considered an excuse for academic misconduct, so I recommend that you review

the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If we suspect that a student has committed academic misconduct in this course, we are obligated by university rules to report our suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the university's Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact us.

Other sources of information on academic misconduct (integrity) to which you can refer include:

[Committee on Academic Misconduct](http://go.osu.edu/coam) (go.osu.edu/coam)

[Ten Suggestions for Preserving Academic Integrity](http://go.osu.edu/ten-suggestions) (go.osu.edu/ten-suggestions)

[Eight Cardinal Rules of Academic Integrity](http://go.osu.edu/cardinal-rules) (go.osu.edu/cardinal-rules)

Creating an Environment Free from Harassment, Discrimination, and Sexual Misconduct

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

Online reporting form at equity.osu.edu,

Call 614-247-5838 or TTY 614-688-8605,

Or email equity@osu.edu

Creating an Environment Free from Harassment, Discrimination, and Sexual Misconduct (cont.)

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.

The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

Copyright for Instructional Materials

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. All PowerPoints and other instructional materials in this course are the intellectual property of the presenter and/or instructor. They are not to be shared beyond the course without the expressed written consent of the instructor(s). Recognizing that your work is also your intellectual property, we will not share or distribute your work without your permission.

Safe and Healthy Buckeyes

Health and safety requirements: All students, faculty and staff are required to comply with and stay up to date on all university safety and health guidance (<https://safeandhealthy.osu.edu>). Non-compliance will result in a warning first, and disciplinary actions will be taken for repeated offenses.

For guidance regarding excused absences, see:

https://ugeducation.osu.edu/sites/default/files/links_files/Excused%20Absences%20Covid_08-28.pdf

Your Mental Health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. No matter where you are engaged in distance learning, The Ohio State University's Student Life Counseling and Consultation Service (CCS) is here to support you. If you find yourself feeling isolated, anxious or overwhelmed, [on-demand mental health resources](https://go.osu.edu/ccsondemand) (go.osu.edu/ccsondemand) are available. You can reach an on-call counselor when CCS is closed at [614- 292-5766](tel:614-292-5766). **24-hour emergency help** is available through the [National Suicide Prevention Lifeline website](https://suicidepreventionlifeline.org) (suicidepreventionlifeline.org) or by calling [1-800-273-8255\(TALK\)](tel:1-800-273-8255). [The Ohio State Wellness app](https://go.osu.edu/wellnessapp) (go.osu.edu/wellnessapp) is also a great resource.

For CFAES students, David Wirt, wirt.9@osu.edu, is the CFAES embedded mental health counselor. He is available for new consultations and to establish routine care. To schedule with David, please call 614-292-5766. Students should mention their affiliation with CFAES when setting up a phone screening.

Diversity Statement

The Ohio State University affirms the importance and value of diversity of people and ideas. We believe in creating equitable research opportunities for all students and to providing programs and curricula that allow our students to understand critical societal challenges from diverse perspectives and aspire to use research to promote sustainable solutions for all. We are committed to maintaining an inclusive community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among all members; and encourages each individual to strive to reach their own potential. The Ohio State University does not discriminate on the basis of age, ancestry, color, disability, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, race, religion, sex, gender, sexual orientation, pregnancy, protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment.

To learn more about diversity, equity, and inclusion and/or to get involved, please visit:

- <https://odi.osu.edu/>
- <https://odi.osu.edu/racial-justice-resources>
- <https://odi.osu.edu/focus-on-racial-justice>
- <http://mcc.osu.edu/>

Accessing the Writing Center

Many students struggle to clearly express their ideas in writing. Fortunately, the Writing Center offers free help with writing at any stage of the writing process for all students. During their sessions, consultants can work with you on anything from research papers to lab reports, from dissertations to résumés. Appointments are available in-person at 4120 Smith Lab, as well as for online. You may schedule an in-person or online appointment by visiting WC Online or by calling 614-688-4291. Please note that the Writing Center also offers daily walk-in hours—no appointment necessary—in Thompson Library. You do not have to bring in a piece of writing in order to schedule a writing center appointment. Many students report that some of their most productive sessions entail simply talking through ideas.

Religious Accommodations

Our inclusive environment allows for religious expression. Students requesting accommodations based on faith, religious or a spiritual belief system in regard to examinations, other academic requirements or absences, are required to provide the instructor with written notice of specific dates for which the student requests alternative accommodations at the earliest possible date. For more information about religious accommodations at Ohio State, visit odi.osu.edu/religious-accommodations.

Land Acknowledgement Statement

We would like to acknowledge the land that The Ohio State University occupies is the ancestral and contemporary territory of the Shawnee, Potawatomi, Delaware, Miami, Peoria, Seneca, Wyandotte, Ojibwe and many other Indigenous peoples. Specifically, the university resides on land ceded in the 1795 Treaty of Greenville and the forced removal of tribes through the Indian Removal Act of 1830. As a land grant institution, we want to honor the resiliency of these tribal nations and recognize the historical contexts that have and continue to affect the Indigenous peoples of this land.

Weather or other short-term closing

Should in-person classes be canceled, we will notify you as to which alternative methods of teaching will be offered to ensure continuity of instruction for this class. Communication will be via CarmenCanvas and/or email.

Principles of Community Statement

In addition, this course adheres to The Principles of Community adopted by the College of Food, Agricultural, and Environmental Sciences. These principles are located on the Carmen site for this course; and can also be found at <https://go.osu.edu/principlesofcommunity>. For additional information on Diversity, Equity, and Inclusion in CFAES, contact the CFAES Office for Diversity, Equity, and Inclusion (<https://equityandinclusion.cfaes.ohio-state.edu/>). If you have been a victim of or a witness to a bias incident, you can report it online and anonymously (if you choose) at <https://equity.osu.edu/>.

Accessibility Accommodations for Students with Disabilities

Requesting Accommodations

The university strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability including mental health, chronic or temporary medical conditions, please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with [Student Life Disability Services \(SLDS\)](#). After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services.

Disability Services Contact Information

- Phone: [614-292-3307](tel:614-292-3307)
- Website: slds.osu.edu
- Email: slds@osu.edu
- In person: [Baker Hall 098, 113 W. 12th Avenue](#)

Accessibility of Course Technology

This online course requires use of CarmenCanvas (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations as early as possible.

[CarmenCanvas accessibility](https://go.osu.edu/canvas-accessibility) (go.osu.edu/canvas-accessibility)

Streaming audio and video

[CarmenZoom accessibility](https://go.osu.edu/zoom-accessibility) (go.osu.edu/zoom-accessibility)

Tips for Success in Insect Phys & Beyond

- Take advantage of all the resources available to you.
 - Your Instructors-feel free to ask us questions before, during, or after class. Stop by our office hours or schedule an appointment to see us. 😊
 - Your peers- form study groups with your classmates. Discussing information and/or teaching your peers is a fantastic way to better learn.
 - Your textbook, and other resources: The textbook, while quite dense, has all of the information that you will need. If something is unclear and/or you need additional background on an area, please look up terms online or in one of your other biology textbooks or books at the library. Also, there LOTS of helpful YouTube videos on all sorts of biological concepts/principles that can help you.
 - The Dennis Learning Center offers several free tutoring options, including individual appointments with learning specialists that can help you develop better motivational and study practices. [Click here for more information](#).
 - The Writing Center. [Link here](#) and see information above.
 - Caring and Consultation Services. [Link here](#) and see information above.
- Develop good study habits.
 - Complete the assigned readings before class and take reading notes. A good technique for getting through dense textbooks is **SQ3R**. It stands for Survey, Question, Read, Rephrase and Review.
 - **Survey** the text for major headings and figures to get a sense of what you'll read.
 - **Question**: Write a few questions about the headings, emboldened terms.
 - **Read** the text one paragraph at a time.
 - **Rephrase**: In your own words, the major idea of the paragraph, figure/diagram that you have just read. WRITE THIS DOWN in your reading notes.
 - **Review**: Return to the questions that you initially developed and ensure that you can answer them. Review the major headings and figures again to ensure that you understand them.

Tips for Success in Insect Phys & Beyond (cont.)

- Take notes and ask questions during lab!!!!
- Make sure to complete and review your post-lab assignments. These assignments put the concepts we learn in lab into practice, and help us learn to analyze and interpret data critically and meaningfully.
- Look over my feedback on your assignments to understand where and why you did not earn full credit.
- Come to office hours, and/or email us any questions you may have! Ask questions that you have about the reading material, lab experiments, and assignments. Hint: Matt may also be able to provide some clarification of lecture material.
- Review the material regularly. Try to do a little something for this course every day of the week. Rushing to complete readings or assignments at the last minute is not a good strategy!
- “Teach” the material to your peers, or act like you’re teaching it to your parents, friends or imaginary students. It sounds crazy, but as many of you know, by teaching/explaining the material to others, we actually learn it better ourselves.
- Develop good time management skills. Time management is difficult in all stages of your career. By developing good habits now, you will set yourself up for success in the future.
- Get enough sleep!

Week	Date	Before Lab	During Lab	After Lab
1	8/24/2023 Wooster friends: no need to travel	N/A	<ul style="list-style-type: none"> • Course Overview • Lab safety • Expectations 	
2	8/31/2023	1. Watch juvenile hormone video	<p>Experiment 1.1: Effects of methoprene application on insect development and ecdysis.</p> <p>a. Execute experiment</p> <ul style="list-style-type: none"> • Create methoprene dilutions in acetone. • Apply methoprene to samples of mosquito larvae <p>b. Discuss Integrative Approaches assignments</p>	<p>Integrative Approaches Exercise 1 (10 points)</p> <p>Due Sep. 6, 11:59 PM</p>
3	9/7/2023 Wooster friends stay put!	<ol style="list-style-type: none"> 1. Read Weissgerber et al., 2015 2. Download and review R Cheat Sheet 	<p>Experiment 1.2: Effects of methoprene application on insect development and ecdysis.</p> <p>c. Data collection</p> <ul style="list-style-type: none"> • Score mosquito pupal morphology • Collect class data into Google sheet for analysis <p>d. Data analysis</p> <ul style="list-style-type: none"> • Tutorial on R in general • Discuss how to run a dose response curve in R 	<p>Experiment 1: Results and Analysis (90 points)</p> <p>Due Sep. 13, 11:59 PM</p>
4	9/14/2023	<ol style="list-style-type: none"> 1. Read TRIzol protocol 2. Watch Primer design video 3. Read SOPs/safety info for Phenol, Chloroform, and Microcentrifuges 4. Watch video on proper micropipettor use 	<p>Experiment 2.1: Molecular endocrinology</p> <p>a. RNA isolation and Primer Design</p> <ul style="list-style-type: none"> • Isolate RNA • Design primers for allatotropin 	<p>Design and submit 2 sets of qRT-PCR primers (4 total) for <i>allatotropin</i> (30 points)</p> <p>Due Sep. 20, 11:59 PM</p>

Week	Date	Before Lab	During Lab	After Lab
5	9/21/2023	1. Read DreamTaq Green DNA polymerase protocol 2. Watch video on gel electrophoresis 3. Optional: Cheesy BioRad PCR YouTube video	Experiment 2.2: Molecular endocrinology b. Standard PCR <ul style="list-style-type: none"> • Set up and run a standard PCR reaction to test primers • Discuss how PCR works • Make and run a gel to distinguish product sizes • Discuss gel electrophoresis interpretation. 	Experiment 2.2: Results & Analysis of standard PCR (80 points) Due Sep. 27, 11:59 PM
6	9/29/2023	1. Read Antiabong et al. 2016 2. Watch BioRad video on quantitative real-time PCR	Experiment 2.3: Molecular endocrinology c. Standard curves <ul style="list-style-type: none"> • Review standard curve purpose and protocol d. Quantitative Real-Time PCR <ul style="list-style-type: none"> • Set up and run qRT-PCR reaction with samples of interest • Discuss qRT-PCR, and how to interpret results 	Integrative Approaches Exercise 2 (15 points) Due Oct. 4, 11:59 PM
7	10/5/2023 Wooster friends stay put!	1. Watch tutorial on qRT-PCR data analysis	Experiment 2.4: Molecular endocrinology e. Data Analysis <ul style="list-style-type: none"> • Tutorial on analyzing relative gene expression • Analyze data using Excel; create figure in R. 	Experiment 2.4: Methods, Results & Analysis (90 points) Due Oct. 11, 11:59 PM
8	10/12/2023	No Lab: Fall Break		
9	10/19/2023	1. Read Swingle, 1925 2. Watch Larry Keeley video on Insect digestive and excretory systems	Experiment 3: Enzymes in the Digestive Tract <ul style="list-style-type: none"> • Dissect the guts of cockroaches • Determine which digestive enzymes are present 	Experiment 3: Results and Analysis (40 pts) Due Oct. 25, 11:59 PM
10	10/26/2023	1. Read Lee 1995	Experiment 4.1: Insect Respiration a. Data collection <p>Determine how temperature affects insect respiration rate</p> <ul style="list-style-type: none"> • Collect data and upload to shared sheet (Upload by Oct. 27, 11:59 PM)	Integrative Approaches Exercise 3 (20 points) Submit research idea for feedback (5 points) Due Nov. 1, 11:59 PM

Week	Date	Before Lab	During Lab	After Lab
11	11/2/2023 Wooster friends stay put!	1. Read Van Voorhies et al. 2008	Experiment 4.2: Insect Respiration b. Data analysis <ul style="list-style-type: none"> Analyze data and prepare graphs Run statistical tests 	Experiment 4: Methods, Results & Analysis (90 points) Due Nov. 8, 11:59 PM
12	11/9/2023	1. Read Gibert et al. 2001	Experiment 5: Environmental Physiology a. Experiment <ul style="list-style-type: none"> Measure differences in CCRT in two cockroach species Compare CCRT data using a Wilcoxon rank sum test 	Watch data analysis explanation video Experiment 5: Methods, Results & Analysis (90 points) Due Nov. 15, 11:59 PM
13	11/16/2023	1. Review Backyard Brains website on activity 2. Price & Berry, 2006	Experiment 6: Nervous System <ul style="list-style-type: none"> Set up and execute experiments Discuss Spiker box data analysis 	Watch data analysis explanation video Experiment 6: Methods, Results & Analysis (90 points) Due Nov. 29, 11:59 PM
14	11/23/2023	<u>No Lab: Thanksgiving Break</u>		
15	11/30/2023 Wooster friends stay put!		Integrative proposal presentation <ul style="list-style-type: none"> Pitch proposed experiment to the class (25 points) 	Integrative Approaches Assignment: Finalize your proposed experiment (75 points) Due Dec. 8, 11:59 PM

Final Integrative Approaches Assignment: Proposed Experiment Due Dec. 8, 2023 by 11:59 PM