



Special topics: Insect α -Taxonomy

[IB 496]

Syllabus Fall 2026

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Things you will do in this course

Learn how species get their names

Appreciate the value of taxonomic names

Co-author scientific papers

Gain experience with imaging and photo editing

Describe new or existing species

Course description

Overall Course Goals

1. Apply knowledge gained about professional taxonomy to generate drafts of high-quality taxonomic work
2. Make publication-quality figures using open-source image editing software and stereoscopic photographs
3. Describe new species and document biodiversity

Background reading

All course background readings are found in [this OneDrive folder](#).

Taxonomic/organismal sources

Each student will have to utilize primary taxonomic resources as a reference when building species descriptions. Students will be given these resources along with their specimens to describe. If students bring their own specimens to describe they are responsible for obtaining the relevant taxonomic literature.

Scheduling

This UIUC course is 16 weeks long.

Time: TBD

Room: 4072 Natural History Building and 465 Morrill Hall

Professor

Dominic Evangelista

Email: dominice@illinois.edu

Lab Website: www.roachbrain.com

Office: 465 Morrill Hall

Office hours: [Schedule office hours \(online\)](#)

Teaching Assistance

While there is no TA, students may work with a more senior student who has experience with taxonomy.

Course interaction/Software

We will utilize the following software in this course. Please have each of them downloaded and working on your computer.

Software	Usage	Link
GIMP	Editing raw images	https://www.gimp.org/
DarkTable	Editing raw images	https://www.darktable.org/
Inkscape (optional)	Line vector graphics for making figures	https://inkscape.org/release/inkscape-1.4.2/windows/64-bit/msi/dl/
ZereneStacker	Focus stacking images	https://zerenesystems.com/cms/stacker
FIJI/Imagej	Measuring features	https://imagej.net/software/fiji/downloads
PowerPoint/ GoogleSlides	Making figures	
OneDrive	File sharing	

Course Policies

Attendance/Participation

Attendance will not be taken officially. You are expected to (a) be present for synchronous in-person activities (lectures, paper discussions), (b) work at the high standard set during in-person activities, and (c) effectively collaborate with others by communicating clearly about your availability and scheduling. Absences can be excused for religious observances if notification is provided a week ahead of time. Absences are also excused for other reasons (e.g., physical health, mental health, family emergencies) with doctor's notes or other proof provided. Even if you are absent, you will still need to complete all activities, and to contact your classmates for information on material you missed.

Timing of assignments and deadlines

Assignments in this course will not be graded, but all are essential to complete the overall course goal (drafting a species description and related publication information). The early steps in the process (learning background information, setting expectations, obtaining photographs) must be completed early. The later stages (writing, figure making) can be done on a more flexible timeline. As such, your instructor will keep a rigorous schedule for the first part of the semester, and later work will be self-guided.

Accessibility

All students are entitled to having fair access and opportunity to all course materials, assignments and assessments within reasonable accommodation. If an accessibility issue prevents you from participating in lab or on the field trips (which are optional) you should discuss this with Dr. Evangelista and/or your TA. We will make special accommodations for those in need. You can contact DRES at 1207 S. Oak Street, Champaign, IL 61820, (217) 333-1970, or via email at disability@illinois.edu.

Academic Integrity Policy

University of Illinois

The Student Code (http://studentcode.illinois.edu/article1_part4_1-401.html) outlines cases that constitute violations of academic integrity as well as the process for dealing with accusations, and potential consequences. The violations include: cheating, plagiarism, fabrication, academic interference, facilitating violations from others (e.g., letting someone copy your work), and bribes. Please read the code for specifics of each, the process for dealing with violations, and consequences. Keep in mind that academic integrity violations are reported to the campus-wide system.

This course

Academic integrity issues will arise if:

1. Your writing, or other work, is not your own. Plagiarism is more nuanced than you may think, so if you are not fully confident about what constitutes plagiarism please utilize the resources here: <https://publish.illinois.edu/ischoolwritingresources/plagiarism/>. Also, take [this quiz](#), view your score, and read the explanation of the correct answers
2. You are not meaningfully contributing to your assigned work. Here's an example: Student A and B are assigned to write a species description of *Shmatta shmephalotes*. Dr. Evangelista provides photographs of the types and writes the differential diagnosis. Student A makes the figures and writes the description. Student B writes the material section. Student B has not made a meaningful contribution to this species

description because the parts that they wrote were trivial (they basically just transcribed information). If Student B takes equal credit as Student A, then Student B is committing academic fraud (even if Student A agrees).

Grading

Project rubric

This single assignment will determine your grade in this course.

Goal: Produce a high-quality draft of a species description as follows.

Element		Description	Points
Methods		Briefly note any deviations from your standard methodology.	5
Background section		Summarize the historical work done on the higher taxon you are working in to set the appropriate context for your current work. Give additional context about the geography, ecology, and systematics of your subject matter (new taxa).	10
Taxon description	Elements	Ensure all elements of a species description (as given in your template) are included and accurate	10
	Diagnosis	Provided an initial draft of the diagnosis by your instructor, ensure the diagnosis is accurate, precise, thorough, and clear.	10
	Naming and etymology	Ensure your new taxon's name is grammatically coherent, culturally appropriate given the species' biogeography, follows the standards in Winston 1999, and is otherwise ethical. Etymology section should succinctly and accurately explain the names derivation and meaning.	5
	Description	Provide a textual and visual description of the new taxon (holotype and paratypes). The textual (written) and visual (illustrations/figures) descriptions should conform very precisely to the template, conventions in similar works (provided), and the journal specifications.	50
	Remarks & other info	Additional observations, opinions, or data should be recorded accurately and clearly in the "Remarks" section.	10
References		Reference section should strictly formatted to conform to journal guidelines. All in-text citations should be formatted correctly too. All in-text citations should be listed in the references section and all references listed should be cited in-text.	10
Formatting text		Follow the suggested formatting, ensure all necessary elements are included, accurate, and formatted appropriately for the journal.	20
Figures	Depictions	All standard morphological features (and additional features important for your new taxon) should be depicted EXTREMELY clearly. This cannot be over-emphasized. Everything in the differential diagnosis should be easily seen in the images, and the images should give a more detailed description of the specimen than the textual description.	50
	Photo quality	The images in the figure should be high quality (publication quality). They should be focus-stacked, color-corrected (true to specimen in white light, or slightly more vivid than the dead specimen), and high resolution. Either the background should be removed (preferred) or the background color should be consistent across all images.	50
	Figure composition	The figure should adhere as closely as possible to the example figures, matching the relative size, orientation, and ordering of all standard images. Figure part labels (A, B, C etc), feature labels (e.g., "ocelli", "L3") and arrows, and scale bars should be neat, legible, and matching the example format and style (Arial font).	20
	Figure formatting	Figure file should be saved in vector format (SVG, PDF, or PPTX), and as a high quality TIFF (largest dimensions: 167 mm × 222 mm; at least 300dpi resolution; LZW compression) for uploading to the journal website (<20MB per file).	10
Taxon record	Text	Including the above textual elements (when relevant) for an already described species that is a noteworthy record in some way (e.g., new to a geographic area, not well-documented previously)	7 / record (Extra credit)
	Figures	Include the above visual elements (i.e., a figure) for an already described species that is noteworthy	7 / record (Extra credit)

Total: 260 points

Course grade

Undergraduates will be graded on a letter grade scale and PhD students will be graded on an S/U (satisfactory/unsatisfactory) scale. Students pursuing a masters can use the S/U grading scheme if they plan to transition to a PhD, otherwise they will use the letter grading scheme (unless otherwise negotiated with the instructor). Grades can be earned as follows.

Points	%	Letter grade	S/U grade
>242	>93%	A+	S
234-242	90-93%	A	S
231-234	89-90%	A-	S
216-231	83-89%	B+	S
208-216	80-83%	B	S
205-216	79-80%	B-	U*
<205	<79%	F*	U*

*A grade of I (incomplete) will be granted liberally to give students additional time to complete the assigned work.

Project flexibility

The scope of the project will be flexible based on several factors. At a minimum we want to ensure that everyone does the following steps at least once.

- Curates 50-100 insect specimens
- Photographs a specimen under a stereoscope or with a DSLR camera
- Focus stacks images
- Uses photo editing software to generate high-quality images
- Composes a figure (may be done collaboratively)
- Writes a background section
- Drafts a whole species description

We aim for everyone to write **two species descriptions**. However, this number can increase or decreased based on the following.

Decreased if...

- You have already dedicated significant time to alpha-taxonomy in the past
- You are describing a species that takes significantly more effort for some reason
- You have a high workload outside of the course that prevents you from doing more descriptions
- There are no more species for you to work on

Increased if...

- You are motivated to name more species
- You are describing a species that takes significantly less effort (e.g., much of the work has already been done)
- You want to continue working on this for >1 semester, or you want a first-author taxonomic publication.

Extra credit for taxon records: Extra credit will be given for every new record of existing taxa that are prepared for a publication. Taxon records have the same elements as new species descriptions but usually require much less detail (since the species has been described before).

List of topics

#	Topic/Activity	Type	Description
1	Intro to course	Lecture/discussion	Go over the syllabus and talk about what the class is
2	Intro to taxonomy and systematics	Lecture	
3	5 D's of Taxonomy	Paper discussion	What are the 5 D's, how are they different from each other, and how are they related to each other?
4	Anatomy of a taxonomic paper	Paper discussion	What is the structure and function of each section of a scientific paper?
5	Pinning party	Lab activity	Pin some insects to familiarize ourselves with the basics of entomology
6	Exemplar taxonomic paper	Paper discussion	We will look in detail at an example of a taxonomic paper, focusing on the description of <i>Sinatablatta magdalenensis</i> Vélez & Daza and the specific morphological description. We will try to meet, and exceed, the quality of that paper in our own work.
7	Assign 1 st taxon to everyone	Discussion	
8	Make draft figure	Group activity	We will give you images for you to start putting them together into a figure. You will use vector graphics editing software and your computer. This will allow everyone to identify which photos are missing from their set and familiarize us with the quality that photos need to be at in order to make a professional figure.
9	Insect morphology overview	Group activity	Label your figures based on a morphological guide.
10	Measure specimens	Group activity	Use ImageJ/Fiji with our images to make a table of morphological measurements. This will allow us to identify which pieces of information are missing and that we still need to collect.
11	Focus stack images	Group activity	We will use Zerene Stacker to focus stack images. By doing this, we will better understand how to adjust the focus on new photos.
12	Color-correct stacked images	Group activity	We will use DarkTable or GIMP to color-correct and white-balance our stacked images.
13	Take new specimen photos	Homework (schedule lab-time with Archie or Dominic)	Either individually or in pairs, you will schedule time to visit the Roach Brain Lab (MH 465) to take additional photos necessary for your description.

14	Write morphological description	Group activity	Together, we will walk through the whole-body morphology of a single specimen to write a description of its morphology
15	Finish figures	Self-guided activity	Combine all your skills and knowledge to make complete drafts of your figures (with scale bars and part labels).
16	Compile draft of complete first descriptions	Group activity	Put all the elements of your description (name, diagnosis, description, figures, tables etc) into a single document and make it perfect! (Background section may be omitted).
17	Describe a second (and third?) species	Self-guided activity	Integrate your knowledge and experience to make a second species description with all the elements above.
18			
19			
20			

Community Standards

Professor's expectations of the student

- You are fully informed about what plagiarism is (i.e., you have watched Professor Evangelista's lecture on plagiarism; you have taken [this quiz](#), viewed your score, and read the explanation of correct answers)
- You have read any assigned readings **before** attending class. You cannot effectively participate in class if you have not done the readings.
- You will ask questions during class (or in the course group chat) to clarify issues you are unclear about.
- You are aware of where to find course materials, how to contact the, and the information in this document (the syllabus).
- You will maintain a professional demeanor with the professor, classmates, and your group members.
- You will not dominate the classroom discussions by being aware of other people's right to speak, inviting others to speak, and being patient.
- You will not violate the University of Illinois [code of academic honesty](#)

Group Work Expectations

All points made below are expected from the group, individual and professor. If person or group is not meeting these expectations this will result in: grade reduction (in the case of the student or group), group restructuring (in the case of the group), or verbal reprimand and/or grade increase (in the case of the professor).

Course/Group Ethic

1. I will be a positive influence in my group. I will address personal problems that occur between members of my group.
2. I will be present for group activities because my absence hurts my group members
3. I will take effective notes and share them with my group members, especially ones who are not present

4. I will help any group members who need assistance, as long as it doesn't negatively impact my own ability to complete coursework
5. I will act with a professional demeanor in my interactions with my group members

Class Work

7. I will take personal responsibility for my contributions, or lack of contributions to group work.
9. I will always make sure that I have am working on an activity that furthers the goals of the group. If not, I will ask group members how I can help.
10. I will leave room for other group members to participate in some productive capacity.

Learning and Personal Achievement

10. I understand that my learning is ultimately my own responsibility
11. I should not expect things from my group that I cannot expect from myself
12. I understand that the explicit help given by my professor is only one part of the learning process.

Professor's Responsibility

It is my professor's responsibility to...

1. To assess my knowledge thoroughly and fairly
2. Promptly inform me of what is expected of me for every class
3. Clarify misconceptions and bad thinking that cannot be resolved by group discussion
4. Resolve group conflicts that permanently threaten the well-being of the group
5. Give me opportunities to be informed of my grades and progress in the course
6. To ensure that my class is an effective learning environment

Inclusivity

An effective learning environment is one where students can focus on learning, feel supported by their peers and teacher, and are empowered to take charge of their own learning. If a student cannot focus on learning because they feel judged, belittled, or excluded this is ineffective for learning. As such, exclusionary, derogatory, or other harmful speech (such as racism, sexism, homophobia, transphobia, etc.) will not be tolerated and in some cases subject to University harassment procedures. Since this is a biology course, there are also cases where such speech would demonstrate gross misunderstanding of biological principles and may be grounds for a grade deduction. Every person in the course is responsible for upholding the rights of other students, giving respect to others' opinions, and utilize a humility as a buffer towards ignorance. We each take responsibility for our own learning, behavior, and human decency.

Support Resources

As members of the Illinois community, we each have a responsibility to express care and concern for one another. If you come across a classmate whose behavior concerns you, whether in regards to their well-being or yours, we encourage you to refer this behavior to the Student Assistance Center (1-217-333-0050) or online at odos.illinois.edu/community-of-care/referral/

As a Community of Care, we want to support you in your overall wellness. We know that students sometimes face challenges that can impact academic performance (examples include mental health concerns, food insecurity, homelessness, personal emergencies). Should you find that you are managing such a challenge and that it is interfering with your coursework, you are encouraged to contact the Student Assistance Center (SAC) in the Office of the Dean of Students for support and referrals to campus and/or community resources. The SAC has a Dean on Duty available to see students who walk in, call, or email the office during business hours. For mental

health emergencies, you can call 911 or contact the Counseling Center.

Family Educational Rights and Privacy Act (FERPA)

Any student who has suppressed their directory information pursuant to Family Educational Rights and Privacy Act (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See <https://registrar.illinois.edu/academicrecords/ferpa/> for more information on FERPA.

Sexual Misconduct Policy and Reporting

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX and Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options.

A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here: <https://wecare.illinois.edu/resources/students/#confidential>

Other information about resources and reporting is available here: wecare.illinois.edu