

Aquatic Entomology Syllabus
ENT/BIOL 4354 (4 credit hours)
Spring 2021

Instructor: Sally Entrekin

Office: Price Hall 319

Email: sallye@vt.edu

Virtual Office hours: Monday 2:15-4:30pm and by appointment via email, text or zoom

Personal Zoom Account: <https://virginiatech.zoom.us/j/8164163756>

Cell phone number: 501-269-2108

Teaching Assistants: Kelly McIntyre and Ellie Lane

Office: Price Hall 301C

Email: mcintyre@vt.edu; elliell@vt.edu

Lecture Meeting: all lectures will be pre-recorded and posted on Canvas as a Zoom Video

Laboratory Meeting: T, W or F 2:30-5:15 PM, Price Hall 221

Textbook: R.W. Merritt, K.W. Cummins, and M.B. Berg, 2008, An Introduction to the Aquatic Insects of North America, 4th edition, Kendall Hunt Publishing Company (MCB)

Course Description: This course emphasizes the biology (morphology, physiology, anatomy, behavior, origin, and distribution), life history, ecology, taxonomy, nomenclature and evolutionary relationships among the aquatic insect orders. The lab will emphasize collecting techniques, identification, and curation of aquatic insects. A collection is required.

Revised Course Objectives and expectations: Upon successful completion of this course students will be able to:

1. Describe aspects of the *biology* of individual aquatic insects:
 - a) habitat preferences (*where they live*)
 - b) trophic relations (*what and how they eat*)
 - c) habits/modes of existence (*how they stay put and disperse*)
 - d) life history (*big life events and their timing like hatching, reproducing, emerging*)
2. Demonstrate knowledge of the *taxonomy* of aquatic insects:
 - a) identify all organisms to a very fundamental taxonomic level (order) on sight
 - b) identify common organisms to an intermediate taxonomic level (family) on sight
 - c) identify all organisms to an intermediate taxonomic level (family), and some to an advanced level (genus)
3. Demonstrate methods that are currently used for:
 - a) collecting
 - b) preserving
 - c) curating
4. Describe some of the basic ecological interactions involving aquatic insects and their environment and among other freshwater macroinvertebrates and why that information is important for solving problems in environmental degradation and for natural resource management.

Expectations for the course

- Students are expected to watch each lecture and complete the questions provided in each

lecture and upload assignments as indicated to Canvas on-time.

- Laboratory attendance is in person and mandatory. You will not be able to make-up labs. Lab will begin with a brief review of the lectures, an introduction to the aquatic insect of the week and practice identification along with scheduled and pop quizzes.
- The lab final project will be the completion of an aquatic insect and their relatives collection.

Your instructor, Sally Entekin, will be required to provide a pre-recorded lecture that will be available for you to view at any time during the time leading up to each lecture or laboratory. The students will be expected to review the pre-recorded lecture and answer the questions within each lecture prior to the next lecture posting that will follow the course schedule. For example, Monday's lecture will be posted before Monday, Wednesday's lecture will be posted on Tuesday, and Friday's lecture will be posted on Thursday. Laboratory will meet at the scheduled time in Price Hall.

Expectations for the Learners

1. Students will view lecture videos on their own time and be responsible for answering the questions posed in each lecture and laboratory video.
2. Students will go out and collect aquatic insects with the class and on their own. Please contact your instructor via the [zoom personal link](#) or personal cell phone 501-269-2108 for help in the field.
3. Students will be responsible for turning in an aquatic insect collection as described in the handout on Canvas and below.

Grading: Course grades will be earned based on the following points:

Letter grade	Percentage	Points	Letter grade	Percentage	Points
A	92	510	C	72	399
A-	90	500	C-	70	388
B+	88	488	D+	68	377
B	82	455	D	62	344
B-	80	444	D-	60	333
C+	78	433	F	≤59	≤327

Evaluation:

Lecture		
	Test 1	35
	Test 2	85
	Test 3	90
	Test 4	100
	Lecture assignments-12 @ 10pts you can miss 2 without point deduction)	100
		410
Lab	Collection	165
	Quizzes(6@5pt)	30 Quizzes will be administered and handed in at the end of the laboratory viewing.
	Unknowns (10@1pt)	10 Will be given and graded for the correct order, family, and sometimes genus!
	Final lab practical	100
		305
Total		715

Students can earn up to 735 points, but the final grade is based on 715 points, so 20 extra credit points are possible.

Aquatic Insect Collection: Specific requirements for student collections are as follows:

Minimum number of taxa required for each insect order:

Order	Number of taxa Undergraduate	Number of taxa Graduate
Ephemeroptera	8	11
Odonata	6	9
Plecoptera	7	11
Hemiptera	3	5
Megaloptera	2	3
Coleoptera	5	8
Trichoptera	7	11
Diptera	6	10
Other macroinvertebrates	6	7
Total taxa	50	75
Points each	3	2
Subtotal points	150	150
Technique points	15	15
Total points	165	165

Adults and immatures of the same taxon (except Hemiptera) are counted as 2 separate taxa (with some exceptions). Pupae may not be included in collections. Only one vial of a taxon, with all specimens collected from the same place on the same date, may be turned in (*i.e.*, only 50/75 vials may be turned in). No points will be awarded if a taxon is replicated or misspelled on labels or the collection index. The remaining 40 points are awarded for curatorial and laboratory technique. Specific criteria for curatorial points include: **(1)** neat, legible, and appropriately sized labels with all required information (genus names italicized), **(2)** appropriately sized vials with an adequate amount of preservative – small specimens in oversized vials will not be awarded points, **(3)** organization – taxa must be easy to locate and the collection index must have taxa spelled and italicized correctly and listed in phylogenetic order, and **(4)** multiple specimens of the same taxon.

Students are encouraged to collect specimens together, but taxonomic work on collections must be performed independently — all specimens must have been identified by the student turning in the collection. There will be no exchanges of taxa or taking specimens from previous collections (*i.e.*, collections from other courses, consulting agencies, research projects, etc.). If several students collect in a particular habitat at the same time, the catch may be divided up. Specimens belonging to the Department of Entomology must be kept distinctly separated from the required collections of students. Collections are due by 6:00 PM on dates specified on the course schedule — 20% of your final earned points will be deducted for each day your collection is late. Given the substantial amount of time required to grade collections, late collections will not be accepted four days beyond the due date.

Collecting equipment and materials for curation (vials, alcohol, and collection containers) will be loaned to each student. Students will be issued enough vials and trays for the required collection, which will become the property of the Department of Entomology. Preservative and labels will be provided to students. Students who wish to keep their collection must obtain their own collection containers. All

loaned equipment is due back to the Department by the date specified on the course syllabus. If equipment is lost, then students will be charged for the replacement of new equipment.

Helpful links for macroinvertebrate descriptions and identification:

USGS macroinvertebrate digital reference collection of North America:

<https://sciencebase.usgs.gov/naamdr>

General macroinvertebrate information: <https://bugguide.net/node/view/15740>

Digital reference for common macroinvertebrates of East North America:

<https://macroinvertebrates.org>

University Policies

Services for Students with Disabilities

Virginia Tech welcomes students with disabilities into the University's educational programs. The University promotes efforts to provide equal access and a culture of inclusion without altering the essential elements of coursework. If you anticipate or experience academic barriers that may be due to disability, including but not limited to ADHD, chronic or temporary medical conditions, deaf or hard of hearing, learning disability, mental health, or vision impairment, please contact the Services for Students with Disabilities (SSD) office (540-231-3788, ssd@vt.edu, or visit www.ssd.vt.edu). If you have an SSD accommodation letter, please meet with me privately during office hours as early in the semester as possible to deliver your letter and discuss your accommodations. You must give me reasonable notice to implement your accommodations, which is generally 5 business days and 10 business days for final exams.

Classroom and laboratory health and safety (<https://ready.vt.edu/well.html>)

Virginia Tech is committed to protecting the health and safety of all members of its community. By participating in this class, all students agree to abide by the Virginia Tech Wellness principles:

- Wear a face covering during class, including as you enter and exit the classroom.
- Maintain the designated distancing guidelines of the classroom.
- Enter and exit the classroom according to posted signage.
- Participate in COVID-19 testing as requested and required by the University. If you answer yes to any questions in the Hokie Health survey (again, post those questions in the syllabus), you must not attend an in-person class. Notify me by email and follow the instructions posted at <https://vt.edu/ready/health.html#tips>.

Expectations for Attendance for Laboratories. This is a hands-on laboratory course with the expectation that you will be living in the Blacksburg area and attending class in-person every session unless you need to self-isolate or quarantine. If you are not planning or able to attend in-person, then you should not take this lab this semester and should work with your advisor on an alternative plan. Given the need to minimize the spread of COVID-19, it is understood and required that students should not attend lab if they need to self-isolate or quarantine. If you must miss a lab, then please inform your instructor by email prior to the beginning of the lab session. You will be able to earn credit for the missed lab by either attending an alternative lab or meeting with your instructor to find an alternative time. Acquiring and demonstrating proficiency in insect identification is an essential learning outcome for this course. If a student is not able to complete 30% or more of labs in-person, they will not have reached the minimal proficiency to earn credit for the course and may need to withdraw and take the course at a later time. Please contact me as soon as possible if you feel you are in danger of not completing these labs.

Diversity and Inclusivity

Diversity statement: Respect: Students in this class are encouraged to speak up and participate during class meetings. Because the class will represent a diversity of individual beliefs, backgrounds, and

experiences, every member of this class must show respect for every other member of this class.
(Adopted from California State University)

Inclusivity Statement: I support an inclusive learning environment where diversity and individual differences are understood, respected, appreciated, and recognized as a source of strength. We expect that students, faculty, administrators and staff at will respect differences and demonstrate diligence in understanding how other peoples' perspectives, behaviors, and worldviews may be different from their own. (Adopted from University of Northern Colorado)

Additional campus resources

There are so many resources for students. Please use them and if you're struggling with a particular issue, let me know and I can help you get you resources for support. Don't be afraid to ask.