

ENTOMOLOGY, M.S.

The department is a diverse unit of researchers whose work spans the areas of suborganismal, organismal, and applied entomology. Research programs of the faculty are broadly interdisciplinary employing cutting-edge technology in all areas. Individual faculty web pages provide in-depth descriptions of the diversity of research in entomology.

Suborganismal research in the department focuses on insect physiology and population genetics. Areas of specialization include the molecular action of insect hormones and the insect/microbiome interface. Studies of gene flow utilize various molecular methods. Genomic data are used to understand adaptation, gene flow on landscapes, the genetic basis of phenotypes, and the phylogenetic relationships of insect species.

Organismal: Entomology faculty members are leaders in the areas of basic ecology of insects in a variety of natural and managed systems, such as forests, lakes and agroecosystems. Studies in taxonomy, chemical ecology, spatial analysis, vector biology, behavioral ecology, and landscape ecology have strong representation in the department. Research examines how they affect crops and forests, influence ecosystem processes such as nutrient and carbon cycling and the "services" they provide in natural and managed ecosystems such as pollination and pest suppression.

Applied/Extension: Faculty in the department extend a long tradition of research on insects as they impact humans. Excellence in agricultural research continues in vegetable crops, field and forage crops and the turf and ornamental "green industry" where work has continued to advance the application of integrated pest management in agricultural systems. Basic research conducted by faculty in cropping systems also has implications for pest management, conservation, bioenergy, and resource management. This research extends to global health issues focusing on arthropod borne diseases and insects as a novel food source.

Research in the department explores the interconnections across scales of biological organization, from molecular and cellular interactions to ecosystem-level studies, in both managed and natural systems, and from basic to applied research. Faculty members collaborate with colleagues in other departments in the College of Agricultural and Life Sciences, and beyond the college and university.

Graduate education in the Department of Entomology provides many opportunities for collaborative research. Faculty members participate in joint instructional programs with other departments on campus and with scientists at other universities, in federal and state agencies, and in industry. Because several entomology faculty members are also adjunct professors in zoology, forest and wildlife ecology, molecular and environmental toxicology, and other departments, they may serve as primary advisers to graduate students majoring in those fields. Opportunities exist to conduct research in a variety of distant tropical and temperate regions, to gain experience in classroom instruction and individual mentoring, and to participate in outreach activities such as addressing K-12 classes, naturalist groups, and commodity producers.

ADMISSIONS

Please consult the table below for key information about this degree program's admissions requirements. The program may have more detailed admissions requirements, which can be found below the table or on the program's website.

Graduate admissions is a two-step process between academic programs and the Graduate School. **Applicants must meet** the minimum requirements (<https://grad.wisc.edu/apply/requirements/>) **of the Graduate School as well as the program(s)**. Once you have researched the graduate program(s) you are interested in, apply online (<https://grad.wisc.edu/apply/>).

Requirements	Detail
Fall Deadline	December 1
Spring Deadline	October 1
Summer Deadline	December 1
GRE (Graduate Record Examinations)	Not required.
English Proficiency Test	Every applicant whose native language is not English or whose undergraduate instruction was not in English must provide an English proficiency test score and meet the Graduate School minimum requirements (https://grad.wisc.edu/apply/requirements/#english-proficiency).
Other Test(s) (e.g., GMAT, MCAT)	n/a
Letters of Recommendation Required	3

All Entomology applicants (M.S. and Ph.D.) must contact faculty members in the department before and during the admissions process. All students are admitted directly into a faculty member's lab. Additionally, we do not accept new graduate students into the program unless financial support for the student is currently in the hands of a faculty member, or is assured by the time a student begins, or a student brings independent funding and has contacted a faculty member who agrees to advise.

Prior to admission, students are expected to have completed 15 credits in the Natural Sciences, covering subjects such as physics, chemistry, biochemistry, genetics, physiology, molecular biology, ecology, and/or evolution. Must include one course in statistics or advanced mathematics. Students who do not meet these requirements will be advised to complete the prerequisite coursework in residence.

The Graduate School sets minimum requirements for admissions (<https://grad.wisc.edu/admissions/requirements/>). Academic program admission requirements are often more rigorous than those set by the Graduate School. Please check the program's website (<https://entomology.wisc.edu/graduate-study/application-process/>) for details.

FUNDING

GRADUATE SCHOOL RESOURCES

Resources to help you afford graduate study might include assistantships, fellowships, traineeships, and financial aid. Further funding information (<https://grad.wisc.edu/funding/>) is available from the Graduate School. Be sure to check with your program for individual policies and restrictions related to funding.

PROGRAM RESOURCES

Additional information regarding funding for Entomology graduate students is available on the departmental website (<http://labs.russell.wisc.edu/ento/graduate-study/funding-information/>).

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (<http://guide.wisc.edu/graduate/#policiesandrequirements>), in addition to the program requirements listed below.

MAJOR REQUIREMENTS MODE OF INSTRUCTION

Face to Face	Evening/ Weekend	Online	Hybrid	Accelerated
Yes	No	No	No	No

Mode of Instruction Definitions

Accelerated: Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

Evening/Weekend: Courses meet on the UW–Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

Face-to-Face: Courses typically meet during weekdays on the UW–Madison Campus.

Hybrid: These programs combine face-to-face and online learning formats. Contact the program for more specific information.

Online: These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

CURRICULAR REQUIREMENTS

Requirement Detail

Minimum Credit Requirement	30 credits
Minimum Residence Credit Requirement	16 credits
Minimum Graduate Coursework Requirement	15 credits must be graduate-level coursework. Details can be found in the Graduate School's Minimum Graduate Coursework (50%) policy (https://policy.wisc.edu/library/UW-1244).
Overall Graduate GPA Requirement	3.00 GPA required. This program follows the Graduate School's policy: https://policy.wisc.edu/library/UW-1203 (https://policy.wisc.edu/library/UW-1203/).

Other Grade Requirements n/a

Assessments and Examinations Students are required to hold a coursework certification meeting, submit certification paperwork, and hold a final defense exam.

Language Requirements None.

REQUIRED COURSES

Code	Title	Credits
Core Courses		
ENTOM/ ZOOLOGY 302	Introduction to Entomology	4
<i>Must take at least 2 courses from 2 of the categories below.</i>		
Organismal		
ENTOM 331	Taxonomy of Mature Insects	
ENTOM 432	Taxonomy and Bionomics of Immature Insects	
ENTOM 450	Basic and Applied Insect Ecology ¹	
ENTOM 451	Basic and Applied Insect Ecology Laboratory	
ENTOM/ BOTANY/ ZOOLOGY 473	Plant-Insect Interactions	
ENTOM/ AGRONOMY/ F&W ECOL/ M&ENVTOX 632	Ecotoxicology: The Chemical Players	
ENTOM/ AGRONOMY/ F&W ECOL/ M&ENVTOX 633	Ecotoxicology: Impacts on Individuals	
ENTOM/ AGRONOMY/ F&W ECOL/ M&ENVTOX 634	Ecotoxicology: Impacts on Populations, Communities and Ecosystems	
ENTOM 701	Advanced Taxonomy	
Sub-organismal		
ENTOM 321	Physiology of Insects	
ENTOM/ BOTANY/ PL PATH 505	Plant-Microbe Interactions: Molecular and Ecological Aspects	
ENTOM/ GENETICS/ ZOOLOGY 624	Molecular Ecology	
Applied		
ENTOM/M M & I/ PATH-BIO/ ZOOLOGY 350	Parasitology	
ENTOM/ ZOOLOGY 371	Medical Entomology	
ENTOM 450	Basic and Applied Insect Ecology	
ENTOM 451	Basic and Applied Insect Ecology Laboratory	

Seminars

2

Students should select seminars in consultation with their advisor, which may include seminars from outside departments.

ENTOM 601	Seminar in Methods of Scientific Oral Presentations
ENTOM 801	Colloquium
ENTOM 901	Seminar in Organismal Entomology
or ENTOM 875	Special Topics

Additional Credits

Students must take additional credits, in consultation with their advisor, to reach a total of 30 credits. This may include ENTOM 990.

POLICIES

GRADUATE SCHOOL POLICIES

The Graduate School's Academic Policies and Procedures (<https://grad.wisc.edu/acadpolicy/>) provide essential information regarding general university policies. Program authority to set degree policies beyond the minimum required by the Graduate School lies with the degree program faculty. Policies set by the academic degree program can be found below.

MAJOR-SPECIFIC POLICIES

PRIOR COURSEWORK

Graduate Work from Other Institutions

With Advisory Committee and Academic Affairs Committee approval, students are allowed to count no more than 14 credits of graduate course work from other institutions. Coursework earned five or more years prior to admission to a master's degree is not allowed to satisfy requirements.

UW–Madison Undergraduate

With Advisory Committee and Academic Affairs Committee approval, the student may apply up to 7 credits numbered 300 or above completed at UW–Madison toward fulfillment of minimum degree requirements. This work would not be allowed to count toward the Minimum Graduate Coursework (50%) Requirement unless taken at the 700 level or above. Coursework earned five or more years prior to admission to a master's degree is not allowed to satisfy requirements.

UW–Madison University Special

With Advisory Committee and Academic Affairs Committee approval, the student may apply up to 15 University Special student credits as fulfillment of the minimum graduate residence or graduate degree credit requirements on occasion as an exception (on a case-by-case basis). UW–Madison coursework taken as a University Special student would not be allowed to count toward the Minimum Graduate Coursework (50%) Requirement unless taken at the 700 level or above. Coursework earned five or more years prior to admission to a master's degree is not allowed to satisfy requirements.

PROBATION

This program follows the Graduate School's Probation policy (<https://policy.wisc.edu/library/UW-1217/>).

ADVISOR / COMMITTEE

This program follows the Graduate School's Advisor policy (<https://policy.wisc.edu/library/UW-1232/>) and Committees policy (<https://policy.wisc.edu/library/UW-1201/>).

CREDITS PER TERM ALLOWED

15 credits

TIME LIMITS

This program follows the Graduate School's Time Limits policy (<https://policy.wisc.edu/library/UW-1221/>).

GRIEVANCES AND APPEALS

These resources may be helpful in addressing your concerns:

- Bias or Hate Reporting (<https://doso.students.wisc.edu/bias-or-hate-reporting/>)
- Graduate Assistantship Policies and Procedures (<https://hr.wisc.edu/policies/gapp/#grievance-procedure>)
- Hostile and Intimidating Behavior Policies and Procedures (<https://hr.wisc.edu/hib/>)
 - Office of the Provost for Faculty and Staff Affairs (<https://facstaff.provost.wisc.edu/>)
- Dean of Students Office (<https://doso.students.wisc.edu/>) (for all students to seek grievance assistance and support)
- Employee Assistance (<http://www.eao.wisc.edu/>) (for personal counseling and workplace consultation around communication and conflict involving graduate assistants and other employees, post-doctoral students, faculty and staff)
- Employee Disability Resource Office (<https://employee disabilities.wisc.edu/>) (for qualified employees or applicants with disabilities to have equal employment opportunities)
- Graduate School (<https://grad.wisc.edu/>) (for informal advice at any level of review and for official appeals of program/departmental or school/college grievance decisions)
- Office of Compliance (<https://compliance.wisc.edu/>) (for class harassment and discrimination, including sexual harassment and sexual violence)
- Office of Student Conduct and Community Standards (<https://conduct.students.wisc.edu/>) (for conflicts involving students)
- Ombuds Office for Faculty and Staff (<http://www.ombuds.wisc.edu/>) (for employed graduate students and post-docs, as well as faculty and staff)
- Title IX (<https://compliance.wisc.edu/titleix/>) (for concerns about discrimination)

College of Agricultural and Life Sciences: Grievance Policy

In the College of Agricultural and Life Sciences (CALs), any student who feels unfairly treated by a member of the CALs faculty or staff has the right to complain about the treatment and to receive a prompt hearing. Some complaints may arise from misunderstandings or communication breakdowns and be easily resolved; others may require formal action. Complaints may concern any matter of perceived unfairness.

To ensure a prompt and fair hearing of any complaint, and to protect the rights of both the person complaining and the person at whom the complaint is directed, the following procedures are used in the College of Agricultural and Life Sciences. Any student, undergraduate or graduate,

may use these procedures, except employees whose complaints are covered under other campus policies.

1. The student should first talk with the person at whom the complaint is directed. Most issues can be settled at this level. Others may be resolved by established departmental procedures.
2. If the student is unsatisfied, and the complaint involves any unit outside CALS, the student should seek the advice of the dean or director of that unit to determine how to proceed.
 - a. If the complaint involves an academic department in CALS the student should proceed in accordance with item 3 below.
 - b. If the grievance involves a unit in CALS that is not an academic department, the student should proceed in accordance with item 4 below.
3. The student should contact the department's grievance advisor within 120 calendar days of the alleged unfair treatment. The departmental administrator can provide this person's name. The grievance advisor will attempt to resolve the problem informally within 10 working days of receiving the complaint, in discussions with the student and the person at whom the complaint is directed.
 - a. If informal mediation fails, the student can submit the grievance in writing to the grievance advisor within 10 working days of the date the student is informed of the failure of the mediation attempt by the grievance advisor. The grievance advisor will provide a copy to the person at whom the grievance is directed.
 - b. The grievance advisor will refer the complaint to a department committee that will obtain a written response from the person at whom the complaint is directed, providing a copy to the student. Either party may request a hearing before the committee. The grievance advisor will provide both parties a written decision within 20 working days from the date of receipt of the written complaint.
 - c. If the grievance involves the department chairperson, the grievance advisor or a member of the grievance committee, these persons may not participate in the review.
 - d. If not satisfied with departmental action, either party has 10 working days from the date of notification of the departmental committee action to file a written appeal to the CALS Equity and Diversity Committee. A subcommittee of this committee will make a preliminary judgement as to whether the case merits further investigation and review. If the subcommittee unanimously determines that the case does not merit further investigation and review, its decision is final. If one or more members of the subcommittee determine that the case does merit further investigation and review, the subcommittee will investigate and seek to resolve the dispute through mediation. If this mediation attempt fails, the subcommittee will bring the case to the full committee. The committee may seek additional information from the parties or hold a hearing. The committee will present a written recommendation to the dean who will provide a final decision within 20 working days of receipt of the committee recommendation.
4. If the alleged unfair treatment occurs in a CALS unit that is not an academic department, the student should, within 120 calendar days of the alleged incident, take his/her grievance directly to the Associate Dean of Academic Affairs. The dean will attempt to resolve the problem informally within 10 working days of receiving the complaint. If this mediation attempt does not succeed the student may file a written complaint with the dean who will refer it to the CALS Equity and Diversity Committee. The committee will seek a written response

from the person at whom the complaint is directed, subsequently following other steps delineated in item 3d above.

OTHER

n/a

PROFESSIONAL DEVELOPMENT

GRADUATE SCHOOL RESOURCES

Take advantage of the Graduate School's professional development resources (<https://grad.wisc.edu/pd/>) to build skills, thrive academically, and launch your career.

PROGRAM RESOURCES

Students in the Department of Entomology are strongly encourage to participate in student organization activities (<http://labs.russell.wisc.edu/ento/graduate-study/student-organizations/>).

LEARNING OUTCOMES

1. Develop a broad knowledge base of entomology, inclusive of suborganismal, organismal, and applied entomology.
2. Knowledge of laboratory and/or field methodology.
3. Recognize relationships between structure and function at appropriate levels- molecular, cellular, organismal or ecological.
4. Explain and apply scientific methods including designing and conducting experiments and testing hypotheses.

PEOPLE

FACULTY

Crall, James
 Gratton, Claudio
 Groves, Russell (chair)
 Guedot, Christelle
 Oberhauser, Karen
 Paskewitz, Susan
 Schoville, Sean
 Steffan, Shawn
 Trowbridge, Amy
 Young, Daniel

ADJUNCT & AFFILIATED FACULTY

Bartholomay, Lyric (Pathobiological Sciences)
 Currie, Cameron (Bacteriology)
 Coon, Kerri (Bacteriology)

Zhu, Jun (Statistics)
 Ives, Anthony (Integrated Biology)
 Mattson, William (adjunct)
 Peckarsky, Bobbi (adjunct)

INSTRUCTIONAL STAFF

Brabant, Craig, Curator Wisconsin Insect Research Collection
 Liesch, Patrick (PJ), Assistant Faculty Associate Insect Diagnostic Lab