

Virginia Tech Department of Entomology

2023-24 Graduate Student Handbook

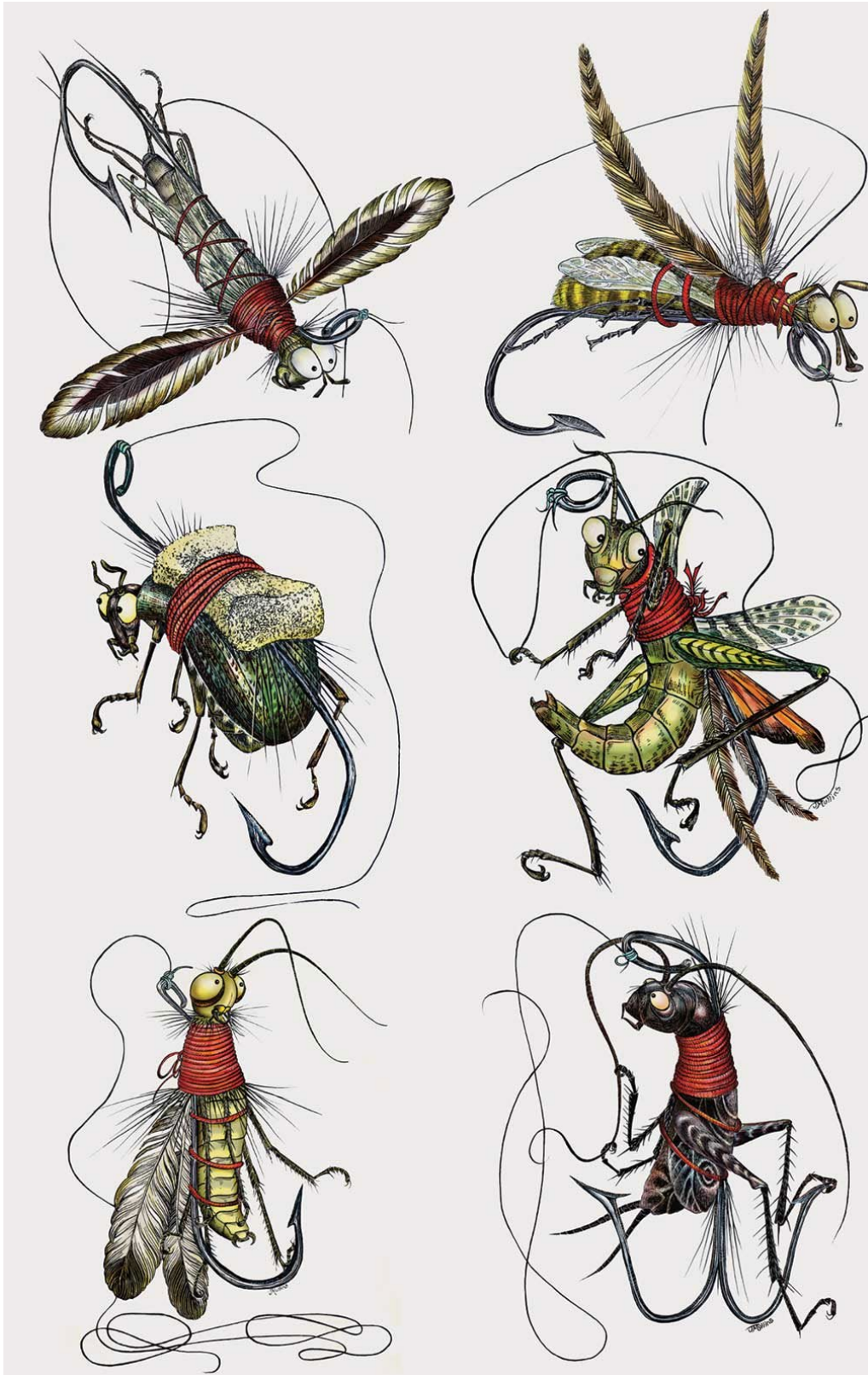


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Entomology

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Dear New Graduate Student:

Welcome to the Virginia Tech Department of Entomology! Your acceptance into our program is an indication of your excellence and dedication. We are delighted that you have decided to join us. To make the most of your time here, you should recognize that graduate school will be significantly different from your experience as an undergraduate. A graduate degree in entomology is primarily a research experience, and grades should not be your primary motivation. Although you must maintain average grades of B or above, most of your thought, effort and time will be devoted to your thesis or dissertation research project. Upon graduation, your published research will mean much more to potential employers than will any single grade.

You should expect to spend most of your time on research, keeping current with your subdiscipline field. You will also be expected to participate in the day-to-day workings of the department, such as serving on departmental standing and *ad hoc* committees, as well as participating in the various outreach efforts conducted by the department. Please view this participation as an opportunity to improve your communication skills, develop professional networks, and to understand the workings of the department. Ask questions of me or the staff at any time, and live the VT motto, *Ut Prosim (That I May Serve)* in your daily interactions with each other, the Virginia Tech family and the public that we serve.

Before leaving Virginia Tech, *at least* one manuscript should be submitted for publication by MSLFS students and PhD students should submit two manuscripts. You should also plan to attend at least one professional meeting per year where you will present your research to your peers in person. This will be considered the *minimum* level of productivity at these levels and are established to position yourself for greater employment opportunities. Your Major Professor has acquired funds to support you and your research and is will help you prepare your future. Publishing your research is not “extra” work. Rather, publishing is the last and most important step of a successful research project. Publication is tangible evidence of your contributions to science!

Finally, please realize that you are responsible for meeting all the administrative deadlines and requirements for graduation, not your advisor or your committee. The various requirements are listed and explained in the graduate student handbook and the Graduate School catalog. You and your Major Professor should discuss all of the expextations of the assistantship and various requirements, meeting these is your responsibility. Guidelines and policies change annually, so advice from former students may be dated (and incorrect), so always go to the primary sources of information (Graduate Catalogue, this Entomology Graduate Student Handbook)

You have the potential to obtain your goals, and our aim is to help you reach them. I am confident that your time with us will be stimulating, challenging, and quite rewarding!

Tim Kring, Head

Virginia Tech does not discriminate against employees, students, or applicants on the basis of age, color, disability, gender, gender identity, gender expression, national origin, political affiliation, race, religion, sexual orientation, genetic information, or veteran status; or otherwise discriminate against employees or applicants who inquire about, discuss, or disclose their compensation or the compensation of other employees, or applicants; or any other basis protected by law.

Note that the Graduate Catalog policies must be adhered to, but that some departmental requirements exceed Graduate School policy, in which case you must adhere to departmental policy in this handbook. https://secure.graduateschool.vt.edu/graduate_catalog/policies.htm

GRADUATE STUDENT STIPENDS, TUITION AND FEES

The Graduate School maintains an excellent website with the current information on graduate stipends, tuition, fees, health insurance and much more. The costs and benefits provided are constantly changing, therefore, we do not repeat monetary information in our Handbook as it would become “dated” quickly! Here is the Graduate School website describing types of funding: <https://graduateschool.vt.edu/funding.html>

Residency. We urge students (esp. PhD) follow guidelines to establish Virginia residency early in their program: <https://graduateschool.vt.edu/admissions/tuition-and-costs/in-state-tuition-and-residency.html>. In-state-residency is recommended for students on assistantship in particular, as your fees will be reduced. Further, if you are ever to drop off of assistantship you will not have to pay out-of-state tuition rates. Please also take special note of the below Virginia state law.

Virginia Driver’s License. <https://www.dmv.virginia.gov/drivers/#eligibility.asp>

“Within 60 days of moving to Virginia, you must obtain a Virginia driver's license...

If you are a full-time student and employed, you are considered a resident of Virginia for the purposes of motor vehicle laws only. This does not necessarily qualify you for in-state tuition rates, so you must apply for a Virginia driver's license and register your vehicle in Virginia. You must register the vehicle in Virginia even if it is owned by someone else.”

Stipends (monthly pay). In general, all Entomology graduate students accepted into the program are placed on graduate assistantships (stipends paid every 2 weeks) that are considered half-time positions working 20-hr/week. Recently (summer 2022), the faculty decided to set a minimum level for all students that were to be placed on assistantship (beginning Step 12 for MSLFS and Step 13 for PhD). These monetary value of these step levels are typically increased each year (see “Compensation: stipends” in the link above to see the annual stipend table).

- Where do stipends come from, and does pay vary among different programs?
 - Your graduate research assistantship (GRA) is a financial stipend that results from funds awarded to faculty who write research grants. The department provides a limited number of graduate teaching assistantships (GTA) that are offered each semester to faculty and/or their students.
 - Stipend amounts can (and do) vary among faculty programs. While all faculty provide student stipends that reach our departmental minimum, some faculty provide higher level stipends. Also, the University offers a number of other competitive graduate stipends/fellowships that may pay a higher level than the departmental minimum (Cunningham Fellowship, ICTAS Doctoral Fellowship).

Tuition. Tuition is paid by the advisor, typically out of the same grant used to pay the stipend.

Comprehensive Student Fees. You are responsible for comprehensive student fees, which are about \$1,500 per semester, but refer to the table linked below for exact amounts you will see billed to your student account. Fees may be paid in full at the start of each semester, or you may set up a monthly payment plan (<https://www.bursar.vt.edu/payments/pay-graduate-comprehensive-fees.html>). Note that the College of Agriculture and Life Sciences (CALs) has a separate additional fee listed as a footnote. This CALs fee replaced lab fees that were previously charged in most courses.

Like stipends, the cost of tuition and fees changes annually. The current tuition and fees appear on the Graduate School website: <https://www.bursar.vt.edu/tuition-fee-rates/tuition-fees.html> Click on the term of interest, and then scroll down for “Graduate Blacksburg Campus” which shows the tuition and fees per credit hour.

Health Insurance. In addition, all graduate students are responsible for obtaining health insurance, the details of which you can learn about by going to the Health and Medical Requirements section of the New Student Guide: <https://graduateschool.vt.edu/admissions/getting-started-as-a-student.html>. Students that are paid on graduate assistantships between August 10 and May 9 are eligible for a significant subsidy (currently 88%) on the premium of the university-sponsored plan. If you will be paid on a graduate assistantship between these dates and choose to purchase health insurance through the university, be sure to select the “subsidy-eligible” option when choosing a plan. Details of the health insurance benefits for students on stipend can be found here: <https://graduateschool.vt.edu/funding/assistantships/benefits.html>

Questions? We encourage all faculty and students to have a one-on-one conversation regarding your stipend, and expected costs, and duties of your assistantship very early in their program (within the first month). This is important for both you and your advisor so there are no misunderstandings as you proceed in the work toward obtaining your graduate degree in entomology!

GRADUATE DEGREE PROGRAM TIMELINE AND CHECKLISTS

MSLFS Checklist

1st Semester

- Attend the departmental *Scholarly Ethics and Integrity training* held early each year (typically in the 2nd seminar session for the Fall semester) REQUIRED
- Select a Graduate Advisory Committee (hereafter Advisory Committee) in consultation with the Major Professor and Advisory Committee and develop a preliminary Plan of Study
- Select a research project and begin preparation of the research proposal
- After completion of the first semester, students accepted under provisional status must be transferred to regular status or dropped from the University
- Satisfy the Graduate School *Inclusion and Diversity* requirement by registering for *Building Multicultural Competence in Agriculture and Life Sciences ALS 5024* in your first year

2nd Semester

- Submit the Plan of Study to the Graduate Program Coordinator as approved by the Advisory Committee if not completed in first semester.
- Submit research proposal to the Advisory Committee for review
- Meet with the Advisory Committee for approval of your research proposal
- Present departmental seminar on your research proposal
- Submit research proposal to the Graduate Program Coordinator
- Prepare progress report for submission prior to your annual evaluation meeting with your Advisory Committee
- Submit the annual progress report and the Advisory Committee evaluation form to the Graduate Program Coordinator

2nd Year

- Check your Plan of Study and satisfy all course requirements and any deficiencies
- Meet with Advisory Committee to develop timeline for completing required research and expectations of the thesis composition
- Apply for graduation by deadline on Graduate School website (necessary whether or not you intend to participate in the Commencement ceremonies)
- Prepare progress report for submission prior to your annual evaluation meeting with your Advisory Committee
- Submit the annual progress report and the Advisory Committee evaluation form to the Graduate Program Coordinator
- Submit the Major Professor-reviewed draft of thesis to Advisory Committee at least two weeks before scheduling Final Examination (Defense of Thesis)

- Perform *iThenticate* check for originality as required by the Graduate School (plagiarism accidental prevention)
- Schedule Final Examination with Graduate School at least two weeks before the date of the exam
- Submit thesis (ETD-Electronic Thesis-Dissertation) to Graduate School no more than two weeks after the Final Examination

PhD Checklist

1st Semester

- Attend the departmental *Scholarly Ethics and Integrity training* held early each year (typically in the 2nd seminar session for the Fall semester) REQUIRED
- Select a Graduate Advisory Committee (hereafter Advisory Committee) in consultation with the Major Professor and Advisory Committee and develop a preliminary Plan of Study
- Develop a research project and begin preparation of the research proposal
- Satisfy the Graduate School *Inclusion and Diversity* requirement by registering for *Building Multicultural Competence in Agriculture and Life Sciences ALS 5024* in your first year

2nd Semester

- Meet with your Advisory Committee to approve the Plan of Study and submit to the Graduate Program Coordinator
- Submit research proposal to the Major Professor for review in advance of presentation to the Advisory Committee
- Satisfy all course deficiencies
- Prepare progress report for submission prior to your annual evaluation meeting with your Advisory Committee
- Submit the annual progress report and the Advisory Committee evaluation form to the Graduate Program Coordinator

2nd Year

- Meet with the Advisory Committee for final approval of your research proposal and establish timeline for Preliminary Examination
- Present departmental seminar on your research proposal
- Submit research proposal to the Graduate Program Coordinator
- Prepare progress report for submission prior to your annual evaluation meeting with your Advisory Committee
- Submit the annual progress report and the Advisory Committee evaluation form to the Graduate Program Coordinator

3rd Year

- Schedule Preliminary Examination with Graduate School at least two weeks prior to the Exam date
- Meet with Advisory Committee to develop timeline for completing required research and expectations of the dissertation composition
- Check your Plan of Study and satisfy all course requirements and any deficiencies
- Prepare progress report for submission prior to your annual evaluation meeting with your Advisory Committee
- Submit the annual progress report and the Advisory Committee evaluation form to the Graduate Program Coordinator

4th Year

- Meet with Advisory Committee to confirm timeline for completing required research and expectations of the dissertation composition
- Apply for graduation by deadline on Graduate School website (necessary whether or not you intend to participate in the Commencement ceremonies)
- Prepare progress report for submission prior to your annual evaluation meeting with your Advisory Committee
- Submit the annual progress report and the Advisory Committee evaluation form to the Graduate Program Coordinator
- Submit the Major Professor-reviewed draft of dissertation to Advisory Committee at least two weeks before scheduling Final Examination (Defense of Dissertation)
- Perform *iThenticate* check for originality as required by the Graduate School (plagiarism accidental prevention)
- Schedule Final Examination with Graduate School at least two weeks before the date of the exam
- Submit dissertation (ETD-Electronic Thesis-Dissertation) to Graduate School no more than two weeks after the Final Examination

General recommendations (MSLFS and PhD)

- Maintain an up-to-date personal resume at all times
- Meet with Advisory Committee at least once per year to maintain contact and for annual review and submit results of the annual review and annual progress report to the Graduate Coordinator. We recommend 2 committee meetings/year as minimum
- Submit properly labeled voucher specimens from your research for the Departmental collection to Dr. Marek
- Return all borrowed books, research insects borrowed for study from other collections, and equipment
- Make arrangements with main office to return all keys
- Complete exit interview with the department head before departing

GRADUATE PROGRAM REQUIREMENTS

Master's in Life Sciences (MSLFS) With successful completion of both course work and research (thesis) requirements, students will receive an MS in Life Sciences with a Concentration in Entomology.

Minimum total credits: 30 credit hours

Minimum graded credits: 20 credit hours

- May include a maximum of 6 credits of Virginia Tech 4000 level undergraduate course work
- The 6 credits of Virginia Tech 4000 level course work may include Special Study (4984) courses but may not include Undergraduate Independent Study (4974) or Undergraduate Research (4994) courses. Students may include ENT 4264, 4354, and 4524 but may not include ENT 4254.
- All other graded course work must be 5000 level or higher (i.e., graduate course work)
- The graded course work may include:
 - a maximum of 9 credits total in 5974, 5984, and 6984 courses.
 - A single credit of seminar (5004) is required but only 1 credit of seminar may be listed on the Plan of Study.
- Students are expected to attend all departmental seminars
- All graduate students (MSLFS and PhD) are required to demonstrate competency in basic insect biology and statistics. Competency in insect biology may be demonstrated by having had or taking courses like Insect Biology, Medical/Veterinary Entomology, Aquatic Entomology or another course beyond introductory or general entomology.

Specific MSLFS requirements:

- All students must attend the departmental *Scholarly Ethics and Integrity* training held early each year (typically in the 2nd seminar session for the Fall semester)
- All students enrolled in or after Spring 2022 must satisfy the Graduate School Inclusion and Diversity requirement (<https://graduateschool.vt.edu/academics/programs/inclusion-diversity-req.html>). This requirement is met by including the below approved 1-credit hour course on their Plan of Study and is now included in our graduate core. Enrollment in the course is recommended early in the degree program.
- At least one course in **each** of four core areas:
 1. *Biochemistry/Molecular and Cell Biology* (Biochemistry for Life Sciences BCHM 5124, Insect Physiology (6154) or Insecticide Toxicology (6164));
 2. *Statistics* (Biometry STAT 5606, Statistics in Research STAT 5615, Design and Analysis of Agricultural Experiments (ENT 6004) or approved substitute);
 3. *Information Management* (Research and Information Systems in the Life Sciences ALS 5204 or approved substitute).
 4. *Inclusion and Diversity* (Building Multicultural Competence in Agriculture and Life Sciences ALS 5024) (currently no approved substitutes)

Minimum research credits: 10 credit hours of Master's Research and Thesis (5994) taken at Virginia Tech.

Minimum credits for GRA/GTA (assistantship): 12 credit hours/academic semester

Non-thesis MSLFS Students in the Non-Thesis MSLFS Program are required to complete an internship and a project in addition to course work. The Advisory Committee will supervise the selection and progress of the internship and project, and will conduct a Final Oral Examination. *Note that a Non-Thesis Masters Degree is intended to be a terminal degree and is not a satisfactory prerequisite for continuing on toward a PhD*

Minimum total credits: 30 credit hours

Minimum graded credits: 24 credit hours

- May include a maximum of 6 credits of Virginia Tech 4000 level undergraduate course work
- The 6 credits of Virginia Tech 4000 level course work may include Special Study (4984) courses but may not include Undergraduate Independent Study (4974) or Undergraduate Research (4994) courses. Students may include ENT 4264, 4354, and 4524 but may not include ENT 4254.
- All other graded course work must be 5000 level or higher (i.e., graduate course work)
- The graded course work may include:
 - a maximum of 9 credits total in 5974, 5984, and 6984 courses.
 - 1 credit of seminar (5004) is required, but they may only use 1 credit of seminar on the Plan of Study.
- Students are expected to attend all departmental seminars
- All graduate students (MSLFS and PhD) are required to demonstrate competency in basic insect biology and statistics. Competency in insect biology may be demonstrated by having had or taking courses like Insect Biology, Medical/Veterinary Entomology, Aquatic Entomology or another course beyond introductory or general entomology.
- All students must attend the departmental *Scholarly Ethics and Integrity* training held early each year (typically in the 2nd seminar session for the Fall semester)
- All students enrolled in or after Spring 2022 must satisfy the Graduate School Inclusion and Diversity requirement (<https://graduateschool.vt.edu/academics/programs/inclusion-diversity-req.html>). This requirement is met by including the below approved 1-credit hour course on their Plan of Study and is now included in our graduate core. Enrollment in the course is recommended early in the degree program.

Maximum project and report or research credits:

May include a maximum of 6 credits of Project and Report (5904) or Master's Research (5994) credits taken at Virginia Tech.

Doctor of Philosophy (PhD) With successful completion of both course work and research (dissertation) requirements, students will receive a Doctor of Philosophy degree from the Department of Entomology.

Minimum total credits: 90 credit hours

Minimum graded credits: 30 credit hours

- The Plan of Study may include a maximum of 6 credits of Virginia Tech graded 4000 level undergraduate course work only as supporting courses.
 - The 6 credits of Virginia Tech 4000 level course work may include Special Study (4984) courses but may not include Undergraduate Independent Study (4974) or Undergraduate Research (4994) courses. Students may include ENT 4264, 4354, and 4524 but may not include ENT 4254.
- At least 24 graded credits must be 5000 level or higher (i.e., graduate level work).
- The graded course work may include:
 - The 5000-level course work may include a maximum 18 credits total in 5974, 5984, and 6984 courses.
 - A single credit of seminar (5004) is required but only 1 credit of seminar may be listed on the Plan of Study.
- No more than 50% of graded credit hours may be transferred from an approved accredited university. All such credits must have earned grades of “B” or better and must have been graduate courses (5000 level or higher). For transfer course work more than five years old, a Justification of 'Old' Course Work form must be filed with the Plan of Study
- Students are expected to attend all departmental seminars
- All graduate students (MSLFS and PhD) are required to demonstrate competency in basic insect biology and statistics. Competency in insect biology may be demonstrated by having had or taking courses like Insect Biology, Medical/Veterinary Entomology, Aquatic Entomology or another course beyond introductory or general entomology.

Specific PhD requirements: At least one course in each of three core areas:

- All students must attend the departmental *Scholarly Ethics and Integrity* training held early each year (typically in the 2nd seminar session for the Fall semester)
- All students enrolled in or after Spring 2022 must satisfy the Graduate School Inclusion and Diversity requirement (<https://graduateschool.vt.edu/academics/programs/inclusion-diversity-req.html>). This requirement is met by including the below approved 1-credit hour course on their Plan of Study and is now included in our graduate core. Enrollment in the course is recommended early in the degree program.
- All PhD students must serve as a teaching assistant for at least one course (p. 16).
- At least one course in **each** of four core areas:
 1. *Biochemistry/Molecular and Cell Biology* (Biochemistry for Life Sciences BCHM 5124, Insect Physiology (6154) or Insecticide Toxicology (6164));
 2. *Statistics* (Biometry STAT 5606, Statistics in Research STAT 5615, Design and Analysis of Agricultural Experiments (ENT 6004) or approved substitute);
 3. *Information Management* (Research and Information Systems in the Life Sciences ALS 5204 or approved substitute).
 4. *Inclusion and Diversity* (Building Multicultural Competence in Agriculture and Life Sciences ALS 5024) (currently no approved substitutes)

Minimum research credits: 30 credit hours of Doctoral Research / Dissertation (7994).

Minimum credits for GRA/GTA (assistantship): 12 credit hours/academic semester

FORMING YOUR COMMITTEE

The Graduate Advisory Committee is selected by the student with their Major Professor and should be selected within the first two months of starting their program. The role of the advisory committee is to provide support, feedback, and expertise to the graduate student. Students should select committee members that have significant experience related to their project or that can provide insight that the Major Professor may not have. Once a suggested professor is approved by the Major Professor, the student should personally meet with and request that the professor serve on their committee. There must be a minimum of 3 members of MSLFS committees and 5 members of the PhD committee (including the Major Professor). The PhD Advisory Committee must include at least one professor from outside the Department. The department head may attend and participate in any graduate committee meeting or examination and will provide advance notification to the committee and student. Students with a Major Professor located off-campus should select an on-campus faculty member to act as a co-chairperson or co-advisor of the Committee to administer routine, on-campus procedures. While any faculty member may offer advice in their area of expertise, it is the prime responsibility of the Committee to provide guidance to the student, to approve the Plan of Study and the Thesis/Dissertation, and to administer Preliminary PhD and Final Examinations.

Inclusion of committee members from outside Virginia Tech or non-tenure track faculty is requested by the student's Advisory Committee Chair using the "Graduate Committee Service Approval" form found on the Graduate School's web site. These members may make up no more than one third of the committee membership.

PLANNING YOUR COURSES

Enrollment Deficiencies

Entering Entomology students are expected to have completed a course in organic chemistry upon admission to the Graduate School. If this course is lacking, the student will be required to correct the course deficiency prior to admission or early in their graduate program. Other course deficiencies may also include those the student's Advisory Committee considers necessary to provide missing background for the student's degree program. Courses numbered lower than 4000 may only be used on the Plan of Study as Supporting Courses if they are offered by another department. All courses listed on the Plan of Study, including Supporting Courses, are considered requirements for the degree and must be completed with a grade of "C" or better. Note that supporting courses do not count toward the minimum number of credit hours required for the degree.

General Competency Requirements

All courses must be completed with a grade of "C" or better, but graduate students on assistantship must maintain a cumulative grade point average of 3.0. All graduate students (MSLFS and PhD) are required to demonstrate competency in basic insect biology and statistics prior to graduation. Competency in insect biology may be demonstrated by taking courses like insect biology, medical/veterinary entomology, or another course beyond introductory or general entomology. All graduate students must also complete at least one course in each of three core areas:

1. *Biochemistry/Molecular and Cell Biology* (Biochemistry for Life Sciences BCHM 5124, Insect Physiology (6154) or Insecticide Toxicology (6164));
2. *Statistics* (Biometry STAT 5606, Statistics in Research STAT 5615, Design and Analysis of Agricultural Experiments (ENT 6004) or approved substitute);
3. *Information Management* (Research and Information Systems in the Life Sciences ALS 5204 or approved substitute).

Students are expected to demonstrate proficiency in written and spoken English, the language of instruction at Virginia Tech. English proficiency is evaluated by the academic unit, and students deemed unsatisfactory in this area may be required to complete remedial instruction.

Course Requirements and Options

Students must include 1 credit of the Seminar course (ENT 5004) in their Plan of Study. Students are required to prepare written assignments as directed by the course instructor during the semester in which they enroll in the Seminar course.

All students must attend the departmental *Scholarly Ethics and Integrity training* held early each year (typically held in place of the 2nd seminar session for the Fall semester).

All students enrolled in or after Spring 2022 must satisfy the Graduate School Inclusion and Diversity requirement (<https://graduateschool.vt.edu/academics/programs/inclusion-diversity-req.html>). This requirement is met by including the approved 1-credit hour course on their Plan of Study and is now included in our graduate core (*Building Multicultural Competence in Agriculture and Life Sciences* ALS 5024). Enrollment in the course is recommended early in the degree program.

A listing of course offerings of the Department of Entomology appears at the end of this document. For students without a previous course in statistics, Biometry (STAT 5605 & 5606) or Design/Analysis of Agricultural Experiments (ENT 6004) is recommended. Students with some background in statistics should consider Statistics in Research (STAT 5615 & 5616). Additional statistical coursework may help with analysis of the student's research. Other recommended courses are Experimental Design (STAT 4204), Contingency Table Analysis (STAT 4514), Sample Survey Methods (STAT 4524), and Nonparametric Statistics (STAT 5404).

In addition to formal courses, students may take advantage of experiential learning opportunities such as museum insect collection curatorship, extension apprenticeship, or development of multimedia teaching materials. Working together, students and faculty may develop a specific focused topic for instruction, and credit can be obtained by enrolling in Independent Study (ENT 5974). Experiential learning credits will count toward credits required for graduation, but cannot be used to replace core courses. Experiential learning credits must be approved as part of the student's Plan of Study.

Students with appropriate interests may have been accepted as a participant in the Molecular Cell Biology (MCB) Program while pursuing their studies in Entomology. The MCB Program is designed to emphasize the interdisciplinary nature of modern biology and provide students with the background necessary to apply molecular approaches to their research. An integrated core curriculum, to be taken by all students in their first Fall semester, consists of 4 courses: (1) Molecular Biology of the Cell, (2) Current Techniques in Biomedical Science, (3) Graduate Studies and (4) Seminars Across the Sciences, and a rotation in 3 laboratories that the student is

considering joining for their degree. This core curriculum for students in the MCB Program is in addition to all departmental course requirements. Details can be found here: <https://mcb.vt.edu/>

Making and Submitting a Plan of Study

All graduate students must prepare and submit a Plan of Study that is specific to the student's background and area of desired specialization. University requirements concerning the preparation of a Plan of Study are contained in the *Graduate Catalog* and in this document above (see specific requirements for the degree being sought). *Note that any departmental requirements may exceed, but can not be less than Graduate School policy.* Refer to this document for specific policies about the transfer of graduate credits for use on the Plan of Study. The Plan of Study must be approved by the student's Major Professor, Advisory Committee, and the Department Head. After approval by the student's Advisory Committee and Department Head, the Plan of Study should be submitted to the Graduate Program Coordinator to be entered and sent electronically to the Graduate School for approval. The Plan of Study form is included in this document and can be found on the department's website. For all students, the Plan of Study must be approved by the end of the second academic semester. For a graduate student, the university degree requirements are those identified in the *Graduate Catalog* available from the Graduate School effective for the academic year in which the student files the Plan of Study. The Department of Entomology allows for both doctoral and master's (thesis and non-thesis) degrees. For each degree type, the student's Plan of Study must meet the credit hours requirements shown above. Graded course work on the Plan of Study must be taken for an A/F grade unless the course is only offered Pass/Fail. The MSLFS thesis degree requires completion of a research-based thesis. Doctoral degrees must include a dissertation that involves original research/scholarship. Advisory committees may add specific requirements needed for an individual student's academic development. The Plan of Study may be amended, but requires approval of the Committee and the department head, and the revised Plan is to be submitted to the Graduate Program Coordinator and the Graduate School.

PROPOSING YOUR RESEARCH

Thesis/ Dissertation Research Proposal

The student should prepare and provide a draft of the Thesis/Dissertation Research Proposal and provide a brief presentation to the committee and the department within the first academic year. The actual presentation may take any form and be as formal or informal as the student and Major Professor wish. The final written research proposal for the Thesis/Dissertation must be formally presented to the Committee, the Graduate Program Coordinator, and the Department Head, in the form of a Thesis/Dissertation Research Proposal. The Thesis/Dissertation Research Proposal should be prepared by the student, with appropriate help from their Major Professor. The format for the proposal appears below and should be followed as closely as possible. The preparation of the Thesis/Dissertation Research Proposal and the associated committee meeting are important steps in a student's career; they should be handled accordingly. As listed in the general timeline, MSLFS Thesis proposals should be submitted to the department by the end of the second semester. PhD Dissertation proposals should be submitted to the department prior to the end of the 3rd semester, but no later than the end of the 4th semester of study. The student provides a brief review of their proposal in a departmental seminar (≤ 30 min) in the same semester as submission

Thesis / dissertation research proposal format

Title Page

- Tentative title of the thesis/dissertation
- Name of graduate student
- Date
- List of Graduate Advisory Committee Members, and their academic departments or affiliation if they are outside of Virginia Tech

Abstract

- General audience abstract
- Scientific abstract

Introduction and Literature Review

- Briefly present the appropriate background information that will acquaint the Committee Members with your project and its place with respect to the "known information" on the subject. A rationale for the proposed research should be included near the end of this section.

Objectives of Proposed Research

- Briefly list the objectives of the proposed research (projects)
- Follow the list with a more thorough coverage of each objective (be concise)

Experimental Methods

- Briefly outline the methods and experimental design (e.g. a randomized complete block design) which you plan to use to obtain data relative to each objective
- Show the kind of data you expect to collect and how it will be presented in the thesis
- Include statistical tests and what will be inferred from the data

Literature Cited

Appendicies

I. Teaching Experience (for PhD)

- Explain how you will fulfill the Department's requirements for teaching experience

II. Timetable

- On a semester/year basis, present a tentative outline of your research schedule
- Include the projected semester for taking Preliminary and Final Exams; presenting papers at professional meetings, etc.

STUDENT PRESENTATIONS/SEMINARS

Associated with the research proposal development, each student is required to present a departmental seminar covering the research proposal (usually 20-25 minutes) in the same semester that their proposal has been approved by their Advisory Committee. In addition to proposal seminars, students will present a seminar defending their thesis/dissertation as part of their final examination. Graduate student seminars are open to the university community.

Other opportunities to make presentations (such as to classes, agricultural producers, industry, professional meetings, etc.) are excellent occasions for students to obtain speaking experience and learn how to develop and organize oral presentations. They are of great value in preparing the student for a career as a professional entomologist. Students are encouraged to volunteer for and make as many presentations as possible.

EVALUATING YOUR PROGRESS

Committee meetings

A graduate student working toward the MSLFS or PhD Degree should form their Advisory Committee and hold a meeting of the committee early in the first academic semester in which the student is enrolled at Virginia Tech.

The planning and organization of the first Advisory Committee meeting is primarily the responsibility of the student, with the help of their Major Professor. The Committee Members should be given adequate notice of the time and place of the meeting, transcripts of previous degrees, as well as proposed courses to be taken by the student. While the role of the Committee is to help guide and evaluate the work and progress of the student, the function of the first meeting is to approve the Plan of Study and more importantly have an interactive discussion of the student's general research plans.

Annual Evaluations

Each student's committee shall meet at least once a year to review the student's overall progress in their degree program and advise the student accordingly. Prior to the meeting, the student must present the committee with a report on their academic and research accomplishments. After the meeting, the Major Professor must prepare a written summary of the committee recommendations and submit this evaluation to the Graduate Program Coordinator by the last day of classes of the Spring semester. Copies of the evaluation will be given to the student and placed in the student's file. The graduate student annual progress report and graduate student evaluation forms are included in this document and can be found on the department's website.

The purpose of the annual progress report is to ensure that potential problems a student may encounter are identified early and are addressed. The Graduate Advisory Committee will work with the student to develop a plan to rectify any deficiencies and facilitate their progress toward finishing their degree program. The annual meeting is a required minimum; students are encouraged to interact with their committee members more frequently. A student receiving an unsatisfactory evaluation must meet with the Department Head. The Graduate Advisory Committee will make recommendations to the student for improvement and another committee meeting will be held in 6 months to address all issues. This will allow the student sufficient time to implement the suggestions provided by the committee and demonstrate good progress.

It is the student's responsibility to initiate the scheduling of the annual meeting and to prepare the annual report. Failure to demonstrate satisfactory progress may result in the loss of financial support and/or dismissal from the program.

Departmental Seminar Attendance

It is a departmental policy that students and faculty attend weekly Entomology seminars on a regular basis, unless there are course conflicts or seasonal research obligations. Attendance at seminars provides the student with a broader perspective of the field of entomology and of research in the Department and the University. Opportunities will be made available for students to meet informally with the speaker before or after the seminar, allowing a deeper exploration of the topic as well as expansion of the student's professional network.

Scientific Writing Skills

Students are expected to demonstrate proficiency in scientific writing. Submission of an adequate thesis/dissertation proposal is the first step in acquiring such skills, and will be evaluated by the Graduate Advisory Committee. Students deemed unsatisfactory in this area may be required to undergo remedial instruction early in their degree program

Academic Eligibility

Students must maintain a 3.00 GPA overall. All courses on the approved plan of study, including prerequisites, should be completed with a grade of "B" or better, and all courses on the Plan must be completed with a "C" or better. Students holding a graduate assistantship must maintain a minimum 3.00 GPA on all work attempted to continue to be eligible for financial assistance. The Graduate Program Coordinator receives a report on the student's grades at the completion of each semester.

The Graduate School will place students whose cumulative GPA falls below 3.00 on academic probation. Enrollment for one semester of probation is normally permitted to remedy an unsatisfactory GPA. If, in the judgement of the faculty and the Dean of the Graduate School, the student is incapable of making satisfactory progress, permission to continue in the graduate program will be denied and the student will be dismissed from the University.

Change of degree status (transition from MSLFS to PhD)

Upon the recommendation of the Major Professor, and with the approval of the full Graduate Advisory Committee, the Admissions and Standards Committee and the Department Head, an exceptional student may transfer to the PhD program without completing a Master's degree. This request for change of status should be initiated prior to the end of the first year of study, and must be submitted for approval within the first month of the 3rd semester. The following steps are required for a change of degree status:

1. Student should meet with full Graduate Advisory Committee regarding the change in degree status.
2. The committee chair should write a letter explaining and justifying the transition. This letter should be signed off by each committee member (electronic signature or email confirmation is acceptable).
3. Student needs to provide a cover letter/goals statement, which includes rationale for transitioning from MSLFS to PhD and what the student would hope to accomplish. Also needs to provide evidence of writing, in the form of either published or unpublished papers, reports or even a prior MSFLS proposal.

All of the above items are to be submitted to the Graduate Program Coordinator, who will then send to the Admissions and Standards Committee for review, then the Department Head for review. If everyone agrees, the student will need to submit a "Change of Degree Status" form to the Graduate School. Within two months of approval, a new Plan of Study must be submitted through the committee to the department.

GRADUATE STUDENT FUNDING

Financial support is offered to students on a competitive basis. Such assistance is in the form of a Graduate Research Assistantship (GRA) or a Graduate Teaching Assistantship (GTA).

Graduate Research Assistantships (GRA)

Stipends vary according to the availability of funds. Students on GRAs are primarily supported by faculty grant or project funds and are expected to conduct a research problem which contributes to the grant or project.

Teaching Experience and graduate teaching assistantships (GTA)

Whether or not students are awarded a GTA, all PhD students must obtain teaching experience by serving as a teaching assistant in at least one course in the Department. All Entomology students teaching and/or serving as GTAs for the first time are required to attend a *GTA Training Workshop* offered by the Graduate School.

Student teaching assistants are expected to take on a major responsibility in teaching. This experience will be appreciated when seeking a professional position. Well before the beginning of course, the assistant should begin meeting with the professor they will be assisting and if possible with a previous student assistant for that course. These discussions should include teaching techniques, the course structure, the syllabus, responsibilities and expectations, and the available teaching materials. These discussions between the assistant and professor should

continue throughout the semester. College-funded GTAs are available for some students in the Department of Entomology for the semesters that they teach.

Students who have interest in teaching positions in the future are encouraged to further develop their pedagogical credentials by obtaining a *Future Professoriate Certificate* offered through the Graduate School.

Grant and Fellowship Opportunities

Graduate students are strongly encouraged to seek and apply for internal or external grant funding to support their own stipends or research in coordination with their Major Professor. Grant opportunities are abundant at all levels (national, state, regional commodity, corporate, and professional society), and students should work closely with their Major Professor on such opportunities. Students are encouraged to take advantage of grant writing courses and workshops offered in the department and beyond. Demonstrated ability to obtain funding is regarded as one of the most significant of achievements on a professional CV.

PRELIMINARY EXAMINATIONS (PhD ONLY)

A student is admitted to candidacy for a Doctor of Philosophy by passing a comprehensive preliminary examination. The Entomology Department requires both written and oral examinations. These examinations are most commonly referred to as preliminary exams or “prelims”. It is the student’s responsibility to schedule all exams through the Graduate School’s Electronic Scheduling System at least two weeks prior to the proposed exam date. The student must be registered as a student (e.g., in Research and Dissertation 7994) during the semester in which any examination is taken.

To pass the examination, a graduate student is allowed at most one unsatisfactory vote. The Major Professor must assure that the results are reported to the Graduate School within 1-2 days of the examination. If a student fails an examination, one full semester (a minimum of 15 weeks) must elapse before a second examination is scheduled. Failure to pass the second examination will result in the student being dismissed from the University by the Graduate School.

The preliminary examination is a rigorous test of the candidate’s entire program of study consisting of both a written and oral portion (Entomology Department requirement). The exam is administered by the student’s Graduate Advisory Committee with the Major Professor serving as the Committee Chair. The preliminary exam must be administered no later than the end of the third year, but students are encouraged to complete the exam at the end of the second year or early in the third year. In general, students are encouraged to take their exams when enrolled in their final semester of courses on their Plan of Study. Scheduling the date of the oral preliminary exam must be handled electronically with the Graduate School and approved by each committee member.

The preliminary examinations are not exclusively for testing factual information, but rather emphasize critical thinking, analytical problem solving, and the ability to formulate and test hypotheses. Long before the exam is scheduled, the student’s Graduate Advisory Committee should meet without the student present and discuss the overall format and process of the exam, the areas of focus for the exam, and performance expectations. The department does not

prescribe a particular written exam format, as it is the purview of the advisory committee as a whole.

Example formats for the written examination include written answers to questions from each committee member, a writing assignment such as a grant proposal, or other relevant critical-thinking assignment agreed upon by the committee. In the written portion of the exam, the student must work independently to prepare the final answers and associated documentation. The entire written portion of the exam should be completed two weeks (but not more than one month) before the oral portion of the exam is administered. The oral portion of the preliminary exam may include material from the written exam that was not answered completely by the student or questions related to other areas in the student's program of study. Questions should be formed to allow the student to demonstrate their ability to think critically at the Ph.D. level.

The format of the preliminary examinations, the areas of focus and performance expectations are all to be communicated to the student well in advance of the examinations and are used as the basis for a pass or fail decision. The student should also seek guidance from each member of the Graduate Advisory Committee several weeks before the exam to discuss expectations.

Immediately following the oral portion of the exam, members of the Graduate Advisory Committee will meet to render a performance decision (P/F) submitted electronically to the Graduate School.

BUILDING PROFESSIONAL NETWORKS

The W. B. Alwood Entomological Society

While the Alwood Society is open to membership by any member of the University community, it has evolved into the Department's graduate student organization. In this capacity, the society functions as a forum for discussion and participation by graduate students in appropriate affairs at the Department, University, and professional society levels. The graduate students are given considerable autonomy in these and other endeavors in which they are involved. Currently, the President of the Alwood Society serves as the graduate student representative at entomology faculty meetings.

The society places great importance on outreach programs. Members organize and handle a variety of entomological education events for local elementary schools, scout groups, and clubs, as well as participating in Hokie BugFest annually. The Alwood Society has always had a high level of participation, which has earned the Department a reputation for constructive involvement in University and Entomological Society of America business.

Professional Societies

The Entomological Society of America (ESA) is the primary professional organization for entomologists in the United States. Students are strongly encouraged to become members of the Society, and membership is offered at reduced rates for students. Benefits include receipt of the following publications: *The American Entomologist* (published quarterly), reduced page charges and online access to all society journals. Further benefits include: presentation of papers at meetings and representation of entomologists' interests before the public. Virginia Tech is in the Eastern Branch of ESA and students often participate in Branch and or National meetings.

Entomology is a discipline with a rich history of research in a wide variety of subdisciplines. Most of these subdisciplines have their own professional societies and students are encouraged to participate in these organizations as well. The major professor will identify these organizations and make recommendations for their students.

Scientific Meetings

Faculty are expected to provide sufficient opportunities for student professional development, and as such, students are encouraged to attend and present papers at scientific meetings. These meetings are of considerable value to their graduate training. Insofar as funds are available, students presenting papers at meetings may be provided with financial aid to help defray the expense of attending the meetings. Various competitive travel award opportunities are available in the Department, College and the University. Students should take every opportunity to present papers at meetings.

Graduate student professional enrichment

In addition to coursework and research, the graduate student experience also should include enrichment areas where the student can grow professionally. Talk to your advisor, committee or other faculty member if you are interested but unsure of how to initiate an opportunity. We strongly encourage our graduate students to engage in as many of the following activities as possible during their tenure as a student, and those with a * are considered essential to gain future employment:

- * Write and submit a peer-reviewed scientific paper
- * Present a poster at a scientific meeting
- * Present a talk at a meeting symposium
- * Serve as a teaching assistant (GTA) or give a guest lecture in a class
- Compete in a student paper competition
- Write and submit a grant proposal (no matter what scale)
- Write an article for a trade journal, press release, or an Extension article
- Present your research to the public or any non-scientific audience
- Present a short “elevator” or 5-minute talk to professionals and the public
- Mentor an undergraduate student on a research project
- Spend a day assisting another graduate student or professor from another lab in the field or laboratory to learn a new skill
- Enroll in a class outside of your specialty
- Predoctoral students should serve on one departmental committee
- Apply for at least one regional, national or international travel award

FINISHING YOUR DEGREE PROGRAM

Thesis and Dissertation Preparation

A clear timetable to complete research, data analysis, and writing assignments should be developed by the student in consultation with their Major Professor at least one semester before the intended semester for graduation. Graduate Advisory Committee members should be informed as soon as the estimated completion date is known.

Because situations may arise due to deficient grades or total credits may require retaking courses or adding credits, the Plan of Study should be examined at the beginning of the semester in which a student plans to take the Final Examination (i.e., thesis/dissertation defense).

Every student should be aware that writing and editing a Thesis/Dissertation is a time consuming procedure that invariably takes much more time than anticipated. The thesis/dissertation should be reviewed by the Major Professor and corrections made before it is given to the Graduate Advisory Committee members.

Theses/Dissertations may be prepared in the traditional multi-chapter format or in manuscript format (minimum of two journal articles, plus front and back matter) as indicated in the Graduate School guidelines <http://etd.lib.vt.edu/etdformats.html>. Students should read and rely on these Graduate School guidelines rather than on existing Thesis/Dissertations. Entomology Theses/Dissertations are expected to include an overall Introduction and Conclusion that ties the individual chapters together.

MSLFS and PhD candidates are expected to publish their work in refereed scientific journals. Each student should prepare and submit at least one manuscript on the subject of their research for publication in a refereed journal before their defense. Prior to submitting a chapter intended for inclusion in a Thesis/Dissertation to a referred journal, students must provide the Graduate Advisory Committee the journal manuscript for their review.

The PhD advisory committee may require a favorable decision to publish at least one of the candidate's manuscripts in a refereed journal as an additional condition of graduation. In general, multiple publications should result from research that leads to the awarding of a PhD.

The Graduate School requires that Final Examination (defense) be scheduled at least two weeks prior to the date of examination, but no earlier than six months after successful completion of the preliminary examination for PhD candidates. Furthermore, the Graduate School requires that "*Master's and Ph.D. students must have the thesis/dissertation ready for defense (as judged by Advisory Committee members having read the document and signed the examination scheduling request)*" before the Final Oral Exam and Thesis/Dissertation Defense can be formally scheduled. Therefore, the completed thesis/dissertation is to be provided in complete form (all figures, graphs, front and back matter, etc.) and submitted in total to the Committee not less than four weeks prior to the tentative Final Exam. This provides the committee a minimum of two weeks to review the thesis/dissertation. Committee members may request that revisions be made and resubmitted to them prior to approving the final examination schedule. Theses and Dissertations are to be evaluated through the iThenticate system to help prevent plagiarism. Refer

to the Graduate School [iThenticate website](#) for current specifics on this process and to access the *iThenticate* portal.

In addition to the required Electronic Thesis/Dissertation submission to the Graduate School, students may wish to have hard, bound copies for themselves, Major Professor and/or committee, but this is not required.

Final Examination: Defense of thesis or dissertation

As mentioned above, the Graduate School requires the Final Examination (defense) be scheduled at least two weeks prior to the date of examination, but no earlier than six months after successful completion of the preliminary examination. The date is to be set in consultation with the Graduate Advisory Committee after they are fully satisfied with the Thesis/Dissertation. The first hour of the final examination is to consist of a final thesis/dissertation seminar open to the university community. The remainder of the final examination will consist of a conversation with the Graduate Advisory Committee and oral questioning covering primarily the thesis or dissertation. Additional subject matter from the student's program of study may also be covered at the committee's discretion.

A Non-Thesis MSLFS student should provide a final seminar to the Entomology Department to describe their project, but this seminar is not a part of their Final Oral Examination.

Length of Degree Program

Students and their Major Professors should pursue a goal of completing a MSLFS degree within two years and a PhD within four years. If the student has not completed the graduate program, including thesis and defense, after five semesters for a masters and eight semesters for a doctoral program, the student must meet in person with the Graduate Program Director and Department Head to justify continued support. If insufficient progress has been demonstrated or prospect for imminent completion are poor, financial support will be terminated. Graduate students may apply for a Leave of Absence to suspend their degree program for personal reasons through the Graduate School.

Final Semester Checklist

The final semester of a MSLFS or PhD Program is hectic. To be successful, students should work with their Major Professor to develop a schedule of activities to ensure completion. The checklist presented below is not all-inclusive but is merely intended to help begin this planning.

- Register for the semester in which the MSLFS or PhD final exam is to be taken. You must register for 12 credit hours if on a paid assistantship or a minimum of 3 credit hours if unpaid or in another paid position (e.g., hourly wage).
- Review your Plan of Study to ensure all courses and credit hours are satisfied
- Submit the Application for Degree online through Hokie Spa.
- While preparing your thesis or dissertation, make sure to regularly backup your work.
- Prior to submitting any manuscript that will be part of the thesis/dissertation for publication in a journal, students must provide an opportunity for the full Graduate Advisory Committee to review and approve the manuscript.
- Review and obtain approval of the rough draft of the manuscript with your Major Professor before passing it to other Graduate Advisory Committee Members. You may be required to prepare several drafts.
- Graduate students and their advisors must verify that the ETDs (Electronic Theses and Dissertations) are appropriately written and cited, using the [*iThenticate*](#) system.
- Submit your thesis/dissertation to your Advisory Committee Member at least two (2) weeks prior to scheduling your final examination (defense)
- After receiving approval of your thesis/dissertation from each Committee Member, schedule your final exam through the Graduate School's Electronic Scheduling System. The request must be made at least two (2) weeks before the proposed defense date.
- After the exam, a student has 14 days to make changes as recommended by the committee, and submit their final Electronic Theses/Dissertation to the Graduate School. The University Bookstore offers a binding service for theses and dissertations if a physical copy is desired (not required). Inquire about this service at the Main Desk of the Newman Library.
- To be eligible for hooding at commencement, the Final Examination must be completed and the Electronic Thesis/Dissertation (ETD) must be approved by the Graduate School by the posted deadline for that semester.
- The University states that information about commencement is emailed to each student who has applied for degree.

GRADUATE STUDENT SUPPORT SERVICES

The Graduate School has a wealth of current information for graduate students that is kept up-to-date and is the best source for supporting information for graduate students (<https://graduateschool.vt.edu/>). This information is not repeated in this Handbook. Virginia Tech has an outstanding Graduate Dean in Dr. Karen DePauw, who is a tremendous advocate for all graduate students. Creation of a Work-Life Grant Program for graduate students during pregnancy and childbirth is but one example of the progressive programs and support offered through the Graduate School.

As referenced on their site and through weekly announcements to graduate students, the Graduate School offers an array of Work-Life balance services, student support and a Graduate Life Center that is a wonderful resource for all graduate students. The information on this page includes details on student services (e.g., day care, health services, immigration advising, etc.). This site also provides relevant information on how to contact the Graduate School Ombudsperson, who provides a safe, neutral and confidential space to discuss any concerns or conflicts that may arise with students or Virginia Tech employees.

The department office staff and department head are available to help with specific questions students may have regarding your employment as a graduate assistant. Your Major Professor serves as the student's primary point of contact regarding their course schedule, research responsibilities, and day-to-day expectations in the work place.

DEPARTMENT FACILITIES FOR GRADUATE STUDENT USE

Photocopier/Printer

The photocopier/printer/scanner is located in the mailroom. It is for official business and not for personal use.

Mail

Each student is provided with a mailbox in the mailroom (Price Hall Room 217). Mailboxes should be checked frequently for notices and messages. Official business US mail and campus mail may be addressed to individual students in care of Entomology (0319), Price Hall, Rm 216, Virginia Tech, 170 Drillfield Dr., Blacksburg, VA 24061. University personnel pick up and deliver mail each weekday. This address may not be used for personal mail or personal packages through US mail or commercial carriers.

Study desks

First year graduate students are provided a study desk in one several rooms in Price Hall (Room 202, 301B or 501). Check with the main office to be assigned a desk. After the first year your Major Professor will provide you a study area.

Genetic cockroach stock center

The Genetic Stock Center houses mutant stocks of the German cockroach and approximately 30 other cockroach species. It also contains equipment necessary to perform routine procedures such as sexing and phenotyping. Students desiring to use these facilities or to obtain cockroach stocks should contact Dr. Mullins.

Insectaries and greenhouses

The Department's on-campus insectary and greenhouse facilities are located at the junction of Washington Street and West Campus Drive (next McComas Hall and Schiffert Health Center). Students in need of greenhouse space or equipment should discuss needs with their Major Professor who will then contact Ryan Mays (rymays@vt.edu). Additional insectary facilities at Prices Fork Research Center are available for Medical and Veterinary, Apiculture and Forest

Entomology research. These labs are under the supervision of Drs. Paulson, Wilson/Couvillon, and Salom, respectively.

Physiology laboratories

Various research laboratories in the department may provide the opportunity for research using spectrophotometry, spectrofluorometry, respirometry, chromatography (HPTLC, HPLC, and GLC), centrifugation, radioisotopes, microscopy, and many other techniques. Environmental chambers are available for use through your Major Advisor. Facilities allow for the study of histology, fine structure and neurophysiology. These facilities include equipment for tissue sectioning, photomicroscopy and electrophysiology. Both scanning and transmission electron microscopes are also accessible on campus. Students desiring access to these facilities in faculty research laboratories should contact their Major Professor.

Computer facilities

A computer classroom is located in Room 301A Price Hall. The room is run by the Computing Center and is open for university-wide use. Wireless internet access is across campus and wired access is available through each computer in this lab, as are standard university-licensed programs. Check with the Entomology main office staff on room availability. Note that regular classes, special workshops, or meetings override open-access use. If there are any problems noticed in the operation of the equipment, please notify the main office.

Dodson urban pest management laboratory

Located on Glade Road, this laboratory is dedicated to research on the biology and management of bed bugs and household cockroaches. The lab explores insecticide application technology, structural-wood protection, and large scale urban pest management programs. Equipment includes gas chromatography, drop-on-demand applicators, teaching collections of insects and their damage, and computers. Contact Dr. Dini Miller for further information.

Beneficial Insects Containment Facility

A Beneficial Insects Containment Facility (BICF) with an adjacent greenhouse is located at the Prices Fork Research Center. It is used to screen insects with potential as biological control agents. This is a federally approved facility consisting of a single-story building with unique features which meet the specifications of USDA and APHIS (Animal and Plant Health Inspection Services). This building is *restricted* to personnel directly involved in the on-going research and to authorized personnel. Visits to the Quarantine Laboratory may be arranged through Dr. Scott Salom.

Agricultural Research and Experiment Center (AREC) Facilities

Access to heavy machinery and test plots of various crops is possible at Kentland Farm in Blacksburg and at ARECs throughout the state. Field studies are also done on private land with University cooperators. In all cases, arrangements for use of these facilities are made through the students Major Professor. Entomologists housed at ARECs: Drs. Chris Bergh (Alson Smith AREC, Winchester), Alejandro Del Pozo (Hampton Roads AREC) and Sally Taylor (Tidewater AREC).

Department shop

Mr. Barry Keith is a highly skilled technician who builds and maintains many pieces of equipment needed for teaching and research. He is also available to fabricate various items (traps, cages, etc.) for research needs. Barry's services are accessible through the students Major Professor and by contacting Dr. Kring.

Virginia Tech insect collection

The departmental insect collections include slide-mounted, dry and alcohol-preserved specimens and an herbarium of insect- and mite-damaged plant specimens all available for teaching and research purposes. Students should contact Dr. Paul Marek to arrange access to these collections.

Teaching preparation room

This room is located behind Room 221 and houses a large portion of the Department's teaching collection and is used a work area for lab and specimen preparation. As this is a shared space, it must be kept neat and organized at all times.

USE OF STATE-OWNED VEHICLES

Several vehicles are assigned to faculty members of the department and other vehicles may be rented from the Fleet Services by the faculty. The following are some of the guidelines for vehicle use. Fleet Service rental agreements list all policies by which you are bound when driving.

1. You must have a valid driver's license with at least two years driving experience and be an employee of Virginia Tech to drive a state-owned vehicle. **All users must sign and file a FS-2 vehicle use statement** (available online with Fleet Services) and turn into the department office to be placed in your personnel file.
2. State vehicles are to be used for official university business only.
3. Using a state vehicle for transportation for personal business or pleasure is prohibited.
4. Individuals driving state vehicles are authorized to use such vehicles to obtain meals and other necessities for travel when traveling on official university business outside the Blacksburg area.
5. Only individuals on official university business are allowed to ride in state vehicles. Individuals not employed by the state may accompany state employees operating state vehicles when they are needed to support the purpose of the trip (i.e., official university business). Non-state employees on university business could include students, volunteers, vendors, spouses, or official university visitors. State employees need to use a non-state vehicle when joined by a non-state employee who is not involved with university business.
6. The reimbursement rate for mileage may differ based upon the availability of a state vehicle. Mileage reimbursement and other automobile related travel procedures are at controller.vt.edu.
7. Operators must observe all applicable traffic laws
8. Taking state vehicles home is prohibited. However, if an individual is using a Fleet Services daily rental vehicle and is leaving on a trip before Fleet Services opens or returning after normal business hours then taking state vehicles home is allowed.

9. Toll road expenses paid directly by the traveler are submitted with other requests made to your department at the time of your travel reimbursement. Electronic tolls are sent to Fleet Services and are billed either to the Faster Management Billing Report or applied to the reservation in the Fleet Commander Billing Process.
10. Traffic citations sent to Fleet Services are the sole responsibility of the traveler. Fines are handled on a case-by-case basis once you are notified by Fleet Services. The driver is also responsible for damage to vehicles resulting from negligence, misuse or abuse.
11. Smoking in a state vehicle is strictly prohibited.
12. It is the responsibility of any drivers associated with a reservation to ensure no alcohol is consumed within the vehicle.
13. Drivers should never consume alcohol and operate a vehicle. Alcohol is strictly prohibited in state vehicles.
14. In the event of an accident involving state vehicles immediately contact the Virginia Tech Police Department if on-campus, or the State Police if off-campus. The operator must also report the incident to Virginia Tech Fleet Services at 540-231-6141 and Risk Management at 540-231-7439. Also, you must report the accident to the Main Office.
15. Electronic devices, including but not limited to, cell phones, smart-phones, or other similar devices must be operated via a hands-free device. **Any other use such as text messaging or emailing is prohibited while the vehicle is in drive and/or in motion.**
16. Park vehicles in designated "Service Vehicles" spaces when possible, especially for extended periods. When not possible, please park state vehicles away from entry doors to allow students, staff and faculty closer, safer spaces for use after dark. Please keep vehicles clean and lock them after use.
17. Report mechanical malfunctions to the person in charge of the vehicle.

OWNERSHIP OF DATA

As you progress through your degree program, you will collect a large amount of research data. These data will likely serve as the core of your Thesis/Dissertation. Employment at Virginia Tech binds each student to the same standards of conduct as a faculty or staff member regarding ownership of data. That is:

*"The university asserts its rights to the results of research, funded wholly or in part with university resources. In addition, university ownership of intellectual properties is covered in Policy 13,000, 'Policy on Intellectual Properties.' These ownership rights extend to all permanent and visiting faculty, research faculty, classified staff, wage employees, **and students.**"*

The intellectual property rights for any data collected by a graduate student using university supplies or equipment, receiving a stipend, or funded by a grant or contract, shall reside with Virginia Tech. That means that you are obligated to provide a copy of all of your original data before you leave, with enough descriptive information so that the Major Professor can interpret the raw data.

MISCELLANEOUS POLICIES AND RECOMMENDATIONS

Administrative Staff Assistance

The administrative staff are not authorized to work directly for students. If a student needs to purchase or mail something that requires a fund number, it should be handled through the Major Professor. The departmental offices should not be an area used for socializing; faculty, staff and students should conduct their business and leave. The telephones in the main office are not for general use.

Security

Graduate students will be provided a "General Access" key which provides access to the mailroom and Grayson Library (305 Price Hall), and a key to access Price Hall. It may also be necessary to have access to certain labs, offices, and outbuildings. All keys may be obtained from the main office. When a student no longer needs a key, it must be returned. **The mailroom, classrooms, labs, offices, and outbuildings should be locked by the last person to leave, especially after 5:00 p.m. weekdays and on weekends.**

Both the University and the Department, through the Graduate Honor Code, expect complete honesty. Review the constitution of the Graduate Honor System (see the *Graduate Catalog*). Common courtesy practices and recommendations include:

- Prior to using any space or equipment, supplies or books assigned to any professor, ask their permission first.
- Due to legal issues, students do not make pesticide recommendations. Questions from growers, homeowners, etc. should be referred to Extension specialists or the students Major Professor if appropriate. If it is not clear who an appropriate specialist would be, refer questions to the Insect Identification Laboratory.
- All faculty members are available to confer with any student at any reasonable time concerning a problem in their area of expertise.
- Maintain a photographic or electronic record of all research. This will be useful for seminars, papers, talks, and in the Thesis/Dissertation.
- Statistical consulting is available from the Statistical Applications and Innovation Group (SAIG) in the Statistics Department. Take advantage of this in both the planning and evaluation stages of your research. However, do not expect these consultants to conduct your analyses, as you are responsible for all aspects of your research. Discuss your proposed visit to consultants with your Major Professor prior to making an appointment with SAIG.
- While casual clothes are acceptable for attending classes and for doing research, there are occasions where more formal attire is appropriate. These occasions include teaching, seminar presentations, preliminary exams and thesis/dissertation defenses. Your Major Professor may require specific clothing requirements for the laboratory (e.g., no open-toe shoes) for safety reasons.

ENTOMOLOGY COURSE OFFERINGS

Taught Every Fall

ENT 2004 Insects & Human Society
 ENT 2804 Bees: Biology, Diversity, and Sustainability
 ENT 3014 Insect Biology
 ENT 3024 Insect Biology Lab
 ENT 4264 Pesticide Usage
 ENT 5004 Graduate Seminar
 ENT 6004 Graduate Insect Biology
 ENT 6004 Entomology Orientation & Tour
 ALS 5204 Research & Info Sys Life Sciences*
 AT 0434 Pest Management*
 BIO 4664/5664 Virology*
 FOR 4514 Forest & Tree Pest*

Instructor

Wilson, James
 Couvillon, Margaret
 Marek, Paul
 Marek, Paul
 Miller, Kathleen
 Varies by year
 Marek, Paul
 Varies by year
 Schürch, Roger
 Kuhar, Tom
 Paulson, Sally
 Salom, Scott

Taught Every Spring

ENT 2004 Insects & Human Society (Online)
 ENT 2254 Bees & Beekeeping
 ENT 2264 Bees & Beekeeping Lab
 ENT 3254 Med & Vet Entomology
 ENT 3264 Med & Vet Entomology Lab
 ENT 4254 Insect Pest Management and Lab
 ENT 4354 Aquatic Entomology and Lab
 ENT 5004 Graduate Seminar
 ENT 4624/5624 Animal/Plant Biosafety/Security (Online)
 ENT 6004 Writing/Prof Dev in Ent Sc
 ENT 6004 Des/Analysis of Ag Exper (online)
 ENT 6004 Advanced Medical Entomology
 ALS 5214 Info/Sys/Research in Life Sci (Online)*
 AT 0554 Chemical Application*

Instructor

Wilson, James
 Wilson, James
 Wilson, James
 Paulson, Sally
 Eastwood, Gillian
 Pfeiffer, Douglas
 Entrekin, Sally
 Varies by year
 Paulson, Sally
 Auguste, Jonathan
 Schürch, Roger
 Eastwood, Gillian
 Schürch, Roger
 Miller, Kathleen

Fall Odd Years Only

ENT 5114 Insect Structure Function and Lab

Instructor

Pfeiffer, Douglas

Spring Even Years Only

ENT 5234 Managing Arthropod Pests (Online)
 ENT 5324 Genomics of Disease Vectors
 ENT 6154 Insect Physiology
 ENT 6354 Insect Behavior & Ecology

Instructor

Pfeiffer, Douglas
 Sharakhov, Igor & Sharakhova, Maria
 Gross, Aaron
 Schürch, Roger

***Courses taught by department faculty that are not listed in Entomology section**

Fall Even Years Only

ENT 4484 Freshwater Biomonitoring
 ENT 5214 Arthropod Pest Management

Instructor

Entrekin, Sally
 Pfeiffer, Douglas

Spring Odd Years Only

ENT 5264 Biological Control of Pests
 ENT 5624 Animal/Plant Biosafety/Security (Online)
 ENT 6164 Insecticide Toxicology

Instructor

Salom, Scott
 Paulson, Sally
 Gross, Aaron

Summer Odd Years Only

ENT 5234 Managing Arthropod Pests (Online)
 Not available to Entomology Students

Pfeiffer, Douglas

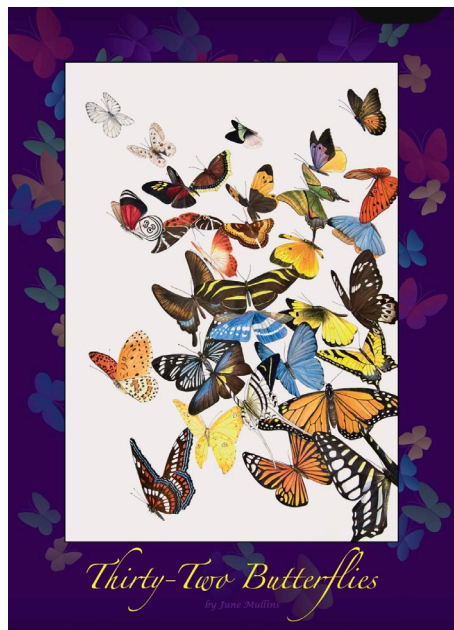
*** Courses taught by department faculty that are not listed in Entomology section**

Every Fall, Spring and Summer

ENT 5994 MSLFS Research & Dissertation
 ENT 7994 PhD Research & Dissertation

N/A.
 N/A.

About the Cover and Artist



June Mullins' artistic life embraced three themes, scientific and natural science illustration, humorous entomological caricature work, and in more recent years realism with a spiritual touch. She produced numerous scientific illustrations which appeared in published works and several textbooks. Her art work was exhibited in local venues through several regional art associations. Two notable exhibitions were "Cows, Inside and Out" and "32 Butterflies." She labored over 32 Butterflies for a year as therapy following the April 16th 2007 tragic shooting at Virginia Tech, and the ambitious piece has been utilized in many commemorations of the community heartbreak. The painting utilizes watercolor, acrylic dyes and gouache.

"I believe butterflies are a gift of nature in their extraordinary beauty as well as their symbolism for transformation," Mullins said.

Mullins distinctly chose 32 different species of butterflies to show "diversity and unique beauty."

Mullins agreed to sell prints of her butterfly paintings to benefit the Center for Peace Studies and Violence Prevention, an organization supported by the VTV Family Outreach Foundation.

The funds help support the Norris garden, located outside of Norris Hall, which is the next proposed garden on the Hokie Spirit Garden Trail.



In addition to the art that anchored her life, her vocation was science. She earned a master's degree in Dairy Science at Virginia Tech where she served as a laboratory specialist for over 20 years, specializing in microscopic and tissue culture techniques. She contributed in similar capacities at the Veterinary School, PPL Therapeutics, and the Virginia Bioinformatics Institute. She was a Master Naturalist, a member of Sigma XI and an early member of the Guild for Natural Science Illustrators.

June and Don Mullins, Professor Emeritus, Virginia Tech Entomology, were high school sweethearts and were married for almost 55 years. We dedicate this handbook to June Mullins.