



THE GRADUATE PROGRAM IN ENVIRONMENTAL CONSERVATION

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INTRODUCTION TO THE GRADUATE PROGRAM IN ENVIRONMENTAL CONSERVATION

Welcome to the graduate program in the Department of Environmental Conservation (ECo) within the College of Natural Sciences at the University of Massachusetts. We trust your courses, the experience you gain, and the interactions that you have with your professors and colleagues serve you well throughout your professional career. This document provides a detailed description of all policies, procedures, and requirements specific to a graduate degree in ECo, inclusive of the Master of Science (MS) *Thesis Degree*, the MS *Professional Degree*, and the Doctor of Philosophy (Ph.D.). You are personally responsible for adhering to all policies and requirements of the program as detailed in this document; do not rely on your major advisor to prompt you to meet these requirements.

This document is organized into several sections. This first section provides an overview of the graduate program and its administration. The second section details a variety of practical needs that will help you in navigating the program. The third section describes the academic program in detail, including general policies, procedures, and administrative requirements and the specific requirements for each degree concentration. For specific information regarding official Graduate School policies and regulations, you should obtain copies of the "Graduate School Bulletin" and the "Graduate School Handbook" (<https://www.umass.edu/graduate/policies/handbook>). Together, these documents contain nearly all of the technical information you will need to know to complete the program.

1.1 The Program Niche

Unrelenting increase in demand for commodities and services from ecosystems raises questions of limits and sustainability. The rapid human modification of Earth's ecosystems is signaled by the unprecedented decline of thousands of plant and animal species, many of which have become extinct. This ecosystem crisis, coupled with growing concerns about the consequences of global climate change, has stimulated a great deal of interest in environmental conservation. The result has been increasing public involvement in the conservation planning and management process, increasing scrutiny of management decisions affecting natural resources and the environment on both private and public lands, and aggressive court challenges in the interpretation of existing legislative regulations affecting natural resources. At the same time, recent advances in technology have created an explosion in new approaches to the study, management, and utilization of natural resources and the environment. Altogether, the study, management, and use of natural resources and the environment have entered a period of unprecedented change. The Graduate Program in Environmental Conservation (hereafter referred to as the "Program") intends to play a significant role in this transformation.

Recognizing the growing complexity of environmental conservation, the Program has evolved into a broad, multi-faceted degree program, with diverse opportunities in a variety of concentrations. These include: 1) wildlife, fish, and conservation biology; 2) forest resources and arboriculture; 3) water, wetlands, and watersheds; 4) environmental policy and human dimensions; or 5) building systems, with options for a research (thesis) or professional (non-thesis) degree in any of these concentrations. In support of our degree programs, there are currently more than 50 courses offered within the Program taught by ECo faculty.

The Program is uniquely distinctive in many ways. First, faculty affiliated with our federal and industry cooperators form an integral and essential part of the Program. Specifically, faculty associated with the USGS Cooperative Fisheries and Wildlife Research Unit at UMass-Amherst teach regular courses and support many graduate students; they are a vital component of the Program adding both depth and breadth to the Program. Faculty affiliated with USGS Conte Anadromous Fish Laboratory in Turner's Falls, the USDA Forest Service Northern Research Station (Fish and Wildlife Habitat Research Unit) in Amherst, and national building organizations such as the National Association of Home Builders also play a vital role as they support graduate students, serve on student advisory committees, and occasionally participate in teaching.

Second, the Program maintains strong ties to UMass Extension and the Natural Resources and Environmental Conservation (NREC) Program. Specifically, the NREC Program works collaboratively with faculty to secure research and outreach grants that provide support to graduate students and research associates affiliated with the Program. They also facilitate the outreach aspects of many projects, helping to accomplish the outreach mission of the Department and Program.

Third, due in part to the research interests of individual faculty, the Program is recognized as a leader in the field of international wildlife conservation. As a result, the graduate student body is comprised of a substantial number of international students. Their presence and involvement in the program helps to foster student diversity and promote global perspectives on natural resource conservation issues, and the diverse worldviews and experiences they bring to the Program, both inside and outside of the classroom, adds substantial breadth to the Program.

Lastly, the Program attracts a significant number of students interested solely in training for a professional career in environmental conservation; that is, they have no interest in pursuing a Ph.D. or a career in science. Many of these students are working professionals seeking graduate-level training in a field of study. Often, however, these are simply students with a recently

acquired undergraduate degree who recognize that an MS degree opens the door to excellent employment opportunities as a professional in environmental conservation or sustainable building systems. The Program offers several opportunities for students seeking a professional degree.

1.2 The Program Vision

The following is our vision for the Program:

“The Program is recognized nationally and internationally among scientists and professionals as a high-quality program and as a result attracts the highest caliber students. The Program has a strong sense of community, both socially and scholarly, such that students cherish their participation in the program and become strong advocates of the program after finishing their degree. The Program offers a comprehensive quality curriculum in the core topic areas of 1) environmental science (biology, ecology, conservation, and environmental building design), 2) quantitative science (statistics, GIS, and modeling), and 3) human dimensions (environmental policies, economics, politics, administration, management, and values), and effectively engages adjunct faculty in the process. The Program offers extramurally-funded research assistantships on a broad range of environmental conservation topics and provides effective training for students seeking either a thesis (research) degree or a professional (non-thesis) degree. MS thesis degree students completing the Program are highly competitive for conservation science positions in government or the private sector, and some are well prepared to meet the challenges of any Ph.D. program. Similarly, doctoral degree students completing the Program are highly competitive for conservation science positions in academia, government or the private sector. Faculty and students jointly publish their research findings in leading scientific journals.”

1.3 Organization of the Program

The Program offers training in five areas of concentration: 1) wildlife, fish and conservation biology, 2) forest resources and arboriculture, 3) water, wetlands, and watersheds, 4) environmental policy and human dimensions, or 5) building systems, with options for a research (thesis/dissertation) degree or professional (non-thesis) degree in any of these concentrations. The *thesis/dissertation degree* leads to the MS or Ph.D. degree and centers around the completion of a major independent research project in addition to a modest coursework requirement. The *professional degree* leads to the MS degree and centers around an elective professional paper based on an internship/practicum in addition to a more substantial coursework requirement. Both degree options provide students a strong foundation in three core topic areas: 1) *environmental science* (biology, ecology, conservation, and sustainable building systems), 2) *quantitative science* (statistics, GIS, experimental design, and modeling), and 3) *human dimensions* (environmental policies, economics, politics, administration, management, and

values). The MS thesis degree is intended to prepare students for the option of pursuing a Ph.D. and an eventual career in science. The MS professional degree is meant to be a terminal degree for students seeking graduate-level training in a field of study and a career as a professional conservation scientist.

1.4 Administration of the Program

1.4.1 Major Advisor/Professor

You should know upon entry into your degree program who your major advisor will be since students are not admitted into the graduate program without a faculty member having first agreed to serve as their advisor (also called major professor). This person will play a major role in the many academic decisions you will face while enrolled. Your major professor will chair your examination/advisory committee (see “Examination/Advisory Committee”) and be responsible for supervising your graduate work. Schedule regular (weekly or monthly) meetings with your major professor to discuss your research and your courses, and other professional interests and concerns, too.

Each major professor will have a slightly different way of keeping track of project or other expenses, so it is necessary to check with her/him, even for small amounts, before purchasing or ordering items. Be sure you are aware of the specific requirements from our bookkeepers regarding purchases, too.

Also, it is better to ask early about expectations regarding work hours, methods of data collection and handling, etc. before a problem arises. Note: there is no assumed vacation time for graduate students, except as negotiated by the Graduate Employee Organization (GEO), which amounts to 4 hrs. per month for a 20 hour/week appointment. If you are receiving a 52-week stipend, you are expected to be working full-time on the project that is paying you. Again, each major professor will have his/her concept of what constitutes reasonable "flex" time. It is prudent to ask questions before rather than after a problem arises, so clear any proposed time-off with your advisor well ahead of time.

At times, emergencies arise, and it may be essential to contact you quickly. Please make it easy for your major professor, your Graduate Concentration Coordinator, the Graduate Program Director, or office staff to find you by filing your departmental and home phone numbers with each of them. If you move, be sure to update the listing. Also, check your mailbox and email daily if possible.

1.4.2 Graduate Program Director (GPD) and Graduate Concentration Coordinators (GCC)

In the eyes of the University, the Program is a single graduate program with a single Graduate Program Director (GPD); thus, all official correspondence between the Program and the graduate school must be via the GPD. Internally, however, the Program is organized into several concentrations along the lines of major sub-disciplines, as described above. Each concentration has a Graduate Concentration Coordinator (GCC). Much of the paperwork associated with your program, such as thesis committee appointments and the forwarding of thesis defense results will involve your major professor. The GCC is your program link to the GPD and can guide you in concentration-specific requirements and Graduate School procedures in general. Most of the paperwork for the Graduate School will require the GPD signature, but your major advisor will prepare the paperwork for the GPD signature using templates available on the department website.

Sometimes, the GDP (and/or GCC) will serve as a sounding board if you have a problem you are reluctant to raise with your major professor, and the GDP (and/or GCC) can help you resolve any serious conflicts you are having with your major professor or any aspect of the graduate program. Remember, the GDP (and/or GCC) is the graduate student advocate and is there to help you succeed in the program. Problems regarding money ultimately should be resolved through discussions with the Department Head, the GPD, your major professor, and you.

PRACTICAL CONCERNS

2.1 Student ID Card: you need this to do just about anything!

What is a UCard?

- Official UMass Student identification card

How do I obtain a UCard?

- Go to the UCard office located in the Franklin Dining Commons, Room 104
- There is no additional charge for your UCard (it is included in your student fees)
- If you lose it, you will have to pay a replacement fee

What is the use of a UCard?

- Library card for the 5-College Library System (library barcode is located on the front)
- You can set up a debit UCard account that can be used to make purchases on campus (copy machines, food, etc.)
- Serves as a PVTA bus pass (follow the link to find more information about bus schedule and routes: <https://www.umass.edu/transportation/pvta-buses>)
- Used to access recreational facilities (see below for information on Rec facilities)
- Student discounts at many local businesses

2.2 Contacts you need to know

Who: **EMILY WEST**

Where: Main Office, Front Desk - 224 Holdsworth

What: Emily is the person to contact if you need:

- A guest parking permit. Guest passes for visiting lecturers as part of a class or department meeting (e.g., committee meetings). Please give at least one day's notice for a pass. Parking passes for all other guests may be requested but will cost \$5 per day.
- To reserve and sign out audio-visual equipment
- Reserve one of the department conference/meeting rooms (Holdsworth 312A or 306). Forms are on the file cabinet next to the front desk.

- To report a maintenance problem. Emily will then contact the physical plant to have the problem fixed
- Teaching Assistant related class materials, such as large copy jobs (handouts, papers), course bluebooks, bubble sheets, etc.
- Student forms

Who: **LINDA FORTIN**

Where: Main office (225 Holdsworth)

New Graduate students **MUST** register in the main office along with their Advisor to obtain the following:

What: Linda is the person to contact if you need:

- To have your name added to the ECo Graduate Student email list. Give Linda your name and UMass email address with the date of your request. The email list will tell you about department happenings and important administrative updates
- A mailbox in the Holdsworth mailroom
- Keys to campus buildings, e.g., Holdsworth front door and computer room, Draper (or where ever your new office is located). All students should receive multiple keys: one key to Holdsworth; if your office is in another building beside Holdsworth (e.g., Draper), you will need a key to the exterior door and the third key to your office. Make sure that all 2-3 keys are ordered when you place your request. The main office may have spare copies of some keys on hand.
- To hire an undergraduate assistant. This hire may be as a summer assistantship or for work-study. Linda will help you fill out forms to get you started. Your assistant's hours should also be submitted to Linda.

Who: **LORI MINER**

Where: Main office (226 Holdsworth)

What: Lori is the person to contact if you need:

- To submit forms and receipts for travel reimbursement. Lori can also answer questions about what is covered, what the current mileage rate is, etc.
- To submit a receipt for a (grant-related) purchase over \$500
- To process Teaching Assistant appointment paperwork

Who: **ROXANN CORMIER**

Where: Main office (227A Holdsworth)

What: Roxann is the person to contact if you need:

- Purchasing procedures for grant-related spending
- Send out and receive packages (e.g., UPS)
- To suggest (minor) web-page maintenance and updates. Major website issues should be directed to Alex Schreyer (mail@alexschreyer.net)

Who: **CAROLYN SAFARIK**

Where: Main office, back office (227 Holdsworth)

What: Carolyn is the person to contact if you need:

- To process Research Assistant appointment paperwork. Carolyn will process your appointment or contracts forms after your advisor has done the initial filing and you will find paperwork in your Holdsworth mailbox to sign and return (to Carolyn)
- Help with Research grant accounting
- Questions about Grant and contract procedures and calculations

Who: **ELLEN MCGRATH**

Where: Main office (224 Holdsworth)

What: Ellen is the person to contact if you need:

- Procard applications or procedures
- Purchasing procedures for grant-related spending
- Post-Doctoral Insurance

Who: **DEB WRIGHT**

Where: Main office (224 Holdsworth)

What: Deb is the person to contact if you need:

- Coop-related purchasing

- Coop-related Accounting and Bookkeeping

Who: **PETE CHRZANOWSKI**

Where: 103 Holdsworth

What: Pete works can help when available if you need:

- To fix minor repairs around Holdsworth
- To make or build project related materials
- Move your office or equipment in your laboratory. Pete has a variety of dollies and tools that may be borrowed at his discretion for use in the building

2.3 Office (desk) space

Regardless of whether you are supported on a research project or not, a teaching assistantship, or on your own, your advisor is responsible for finding desk space for you on campus in consultation with the Main Office. Some students have desks in the lab space governed by their major advisor and are scattered throughout Holdsworth Hall and the Conte Lab in Turners Falls, MA. However, most students occupy desks in the common spaces governed by the Program, which are: 1) Agricultural Engineering (Rooms 109, 111, and 303), 2) Agricultural Engineering Annex A, and 3) Hatch (Rm 2, 8 and 11). Allocation of common desk space is governed by the GPD and administered by Linda Fortin in the front office (Room 225). If you are new to the program, you will be asked to register with Linda Fortin. A copy of the registration form should be given to your major advisor for records. All students must see Linda to obtain a desk in the common space. Priority for desk space in these locations is dependent on a combination of how long you have been here, if you are a Teaching Assistant, and if you are currently taking classes. To find where a student's desk or office is located it is best to contact them directly by email or their advisor. Alternatively, Linda Fortin has a list of students and building maps if you run into trouble.

2.4 Keys

After you have been assigned a desk by the Graduate Program Director (via Linda Fortin), see Linda Fortin or Emily West in the front office (Room 225) for instructions on how to get the keys you need. Keys often take several days to obtain, so don't be dismayed if you don't have immediate access to places you need to go. Note that the outside door key for Holdsworth ECo also opens the mail room door (Room 204) and the graduate computer room (Room 331).

2.5 Copy and Coffee Machines

If you need to copy something for your project, you might borrow your major professor's copying code/card for the copy machine located in the mailroom (Room 204). Please don't use this machine for more than 50 pages of copying at any one time. If you need personal copies, you may use the Main Office code and pay 10 cents per page. See Emily or Linda for this transaction. Also, you may purchase (possibly with grant funds) a copy card at the Library which may be used on the copy machines in the Biological Sciences and Tower Libraries (but NOT in the Department's machine). Professional copiers in Amherst such as Staples, Collective Copies or Copy Cat can be used for bigger jobs.

Coffee/tea is available for 50 cents per cup in the mailroom (Room 204). The refrigerator in the Mail Room is not for long-term storage, and all items that are not marked as to ownership will be discarded. It is also definitely not for project/research specimens.

2.6 Phones and mail

Campus calls can be made on office telephones by dialing just the last five digits of the number. Locals calls can be made on office telephones by first dialing 9, area code, and 7 digit phone number. Ask your major professor for an Authorization Code to make long distance calls as part of your project. To use it, dial *6*, Auth. Code, #, 9, 1, Area Code, Number. Do not make it easy for anyone else to use your Authorization Code! Note also that the project will be billed for long-distance information (555-1212 numbers).

Upon the first arrival on campus, you and your major advisor need to visit Linda Fortin in the front office (Room 225). Linda will assign you a mailbox in the mailroom (Room 204) with your name on it, and both professional and personal mail can be delivered there. For outgoing mail, regularly stamped mail will be picked up in the lower-most, lefthand-most mailbox. If postage is to be charged to a research account, get the account number from your major professor, stamp the envelope with that number under the return address location and place it in either of the two boxes immediately to the right of the outgoing regular mailbox. Campus mail will be delivered if put into the box immediately right of those boxes. Packages that won't fit in these pickup boxes can be left on the floor directly below the boxes.

2.7 Information Technologies

Information technology services on campus, including computer and telephone services, are provided by the UMass Amherst Information Technology (IT)(<http://www.umass.edu/it/>)

How do you obtain an IT account?

- You should receive a NetID and password when you are officially accepted into the Graduate school. Use the NetID to activate your IT account at the following link: <https://spire.umass.edu>. You can change your password after the initial setup.
- When you establish your IT account you will receive a UMass e-mail account (will look something like JDoe@umass.edu)

What if you did not receive a NetID and password?

- Contact the IT office in LGRC A113, (413) 545-9400. You will need to go down the office to set up an account.
- Your NetID and password are used to access several of the services provided by IT

What services are provided by IT?

- Wireless web access on campus
- APPS at UMass Amherst
 - Apps at UMass Amherst is a customized version of Google's popular online productivity and collaboration tools designed primarily for educational institutions. This set of applications (or 'apps') provides you with:
 - Unlimited Storage.
 - Google Calendar to schedule meetings, create events, and share calendars with others.
 - Google Drive to store, share, and edit documents, spreadsheets, and presentations online, in real time.
 - Google Sites to quickly create Web sites and share them with small groups or the world.
- UMail--UMass e-mail interface
 - Send, receive, and manage your UMass e-mail account
 - Storage limit 30 MB
 - UMail attachment size limit is 5 MB
 - You can forward your e-mail to any e-mail account

- Access UMail using supported e-mail servers such as Mozilla Thunderbird, Netscape, Outlook, Apple, and Entourage
- You can search for e-mail addresses of UMass students and faculty using the address book UMass directory search, https://mail-www.oit.umass.edu/horde/imp/nss_login.php?reason=login
- BOX
 - Online storage accessible from a computer, tablet, or mobile device
 - Unlimited storage but the maximum file size is 15GB
 - Allows to edit Office files directly in the cloud
 - <http://www.it.umass.edu/box>
- SPIRE--Personal student center
 - Search and register for classes
 - Course schedule
 - Access your academic record
 - Check your finances (Bursar account, Financial Aid, etc.)
 - Change/edit your personal contact information
 - <https://spire.umass.edu>
- MOODLE
 - Web-based Learning Management System
 - Several professors use this website to post course information such as the syllabus, lecture material, grades, etc.
 - <https://moodle.umass.edu/>
- Statistical software and training
 - IT offers students discounts on many software licenses for Macs and PCs. You can download OS system software, email programs, web browsers, Adobe products, and anti-virus software directly from <http://www.umass.edu/it/software>
 - Information on discounts on statistical software and licenses are available at <https://www.umass.edu/it/software#science>. However, note that many courses in the ECo Program use the open-source software R.
 - IT offers several beginner and intermediate level workshops on a variety of topics and are announced at <https://www.umass.edu/it/support/workshops>.

- Additional information about the services provided by IT:
 - <https://www.umass.edu/it/services>

2.8 Graduate Computer Resources

Computer room for use by ECo graduate students is located in Holdsworth Room 331. The key to the exterior doors of Holdsworth opens the door to the computer room. Keys can be obtained from Linda Fortin in the main office. There are 12 workstations, a printer, and Ethernet hookups for laptops. All computers have internet access and hard drive space available for students to save their work. The room also has dry erase and bulletin boards for group meetings and for posting information.

All computers have the following software:

- Microsoft Office, Open Office, Canoco, Visual Basic

There is a variety of GIS software available, including:

- ArcGIS, Quantum GIS, Ramas GIS

Statistical software includes:

- R, SAS

Simulation software includes:

- RUSLE, NetLogo, BASINS, and Stella.

2.9 Library information

What libraries are in the 5-College library system, and how are they coded in the catalog?

- Amherst College
 - Keefe Science Library (AC Science)
 - Robert Frost Library (AC Frost)
- Hampshire College
 - Harold F. Johnson Library (HC Library Center)

- Mount Holyoke
 - Williston & Miles-Smith Library (MH Main Library)
- Smith College
 - Neilson Library (SC Neilson)
 - Young Science Library (SC Young)
- UMass Amherst
 - Integrated Sciences and Engineering Library (UM Science)
 - The primary location for Natural Sciences, Biology, etc. on campus
 - Closed at 11:00 p.m. during the week
 - W.E.B. Du Bois Library (UM W.E.B. Du Bois)
 - UMass main campus library
 - Open 24hrs.
 - Secondary location for Natural Sciences resources

What services are offered with your library account?

- General library account
 - Use your library barcode to access the account online
 - Check on books that you have loaned
 - Renew items online
 - Check on the status of requests from the four other college libraries in the system; you can specify which library on campus you would like your requests sent
 - Link: <https://www.library.umass.edu/Security/login?BackURL=%2Fmyaccount>
- Interlibrary Loan and Document Delivery (ILLiad)
 - *When do you use ILL?*
 - If you are unable to find an item in the 5-College library catalog use ILL to request the item
 - Depending on the format of the material it will be sent to you electronically or delivered to your specified library location

- You can also use ILL to order a copy of journal articles from the other four college libraries
- *When not to use ILL*
 - Do not use ILL to request items located in the other four college libraries. Instead, you will click on “request item” in the library catalog. It will be delivered to your specified UMass library location
- *When can you use Document Delivery (library express) service?*
 - When you are requesting items from UMass library locations
 - You can request items to be sent to you electronically or delivered for a \$5.00 fee
- Link: <https://illiad.library.umass.edu/illiad/AMH/>
- RefWorks citation manager
 - Citation manager software that can be used on and off-campus
 - RefWorks can be used to collect, store, and organize citations from books, articles from databases, websites, and other sources
 - You will need to set up an account to use RefWorks
 - Link: <https://refworks.proquest.com/>

How long can you loan books and bound periodicals?

- The loan period for books is 28 days for Graduate students and 180 days for Doctoral (Check Library website for up-to-date information)
- Bound periodical can be loaned for 24 hrs.

2.10 Textbooks

Where can you purchase textbooks or other materials for courses?

- Your course professor may have requested textbooks through the following sites:
 - ECampus Course Materials
 - <https://fast.ecampus.com/>
 - Amherst Bookstore
 - <http://www.amherstbooks.com/Textbooks/index.html>

- UMass Extension Bookstore
 - <https://umassextensionbookstore.com/>

2.11 Graduate Employee Organization (GEO)

If you are a Teaching Assistant (TA), Teaching Associate (TO), Research Assistant (RA), Project Assistant (PA), Assistant Resident Director (ARD), Intern, Trainee, or Working Fellow you can become a member of the Graduate Employee Organization (GEO) and be covered by GEO stipends and benefits. GEO is a unit of the [United Auto Workers \(UAW\) Local 2322](#), which is based in Holyoke. We are not the only graduate students affiliated with the UAW – UMass Boston, UMass Lowell, the University of Washington and the entire University of California system are too. UMass Amherst graduate students have been unionized since 1990. UMass GEO website can be accessed at <https://www.geouaw.org/>

What does GEO do?

The main task of GEO is to negotiate a contract with the University Administration that determines wages and benefits for graduate student employees. This contract is usually a major undertaking and requires many meetings, negotiations, and usually several rallies.

What benefits and assistance does GEO provide?

- Tuition and curriculum fee waivers
- Dental and vision plans
- Discounted Health Insurance
- Help to resolve workplace conflicts

How do you become a member?

To be a voting member of GEO, you must check off the box for membership on your Payroll Deduction Form. This form is sometimes attached to your assistantship contract, or you can sign it at the new employee orientation hosted by the Graduate School, or you can pick one up in the GEO office in Room 201 of the Student Union. Updated membership dues are listed in the Dues Deduction form accessible on <https://www.geouaw.org/>. Graduate employees who choose not to join the union must pay an "Agency Fee," as established under state law. This amount is recalculated each year.

How many hours a week do you need to work to receive a tuition waiver?

In general, if you work 20 hours per week in either semester you will receive a full year's tuition waiver. If you work one 10-hour appointment in the fall and one 10-hour in the spring, you receive a full year's tuition waiver. If you work one 10-hour appointment per year, then you will get a waiver for one semester.

How many hours a week do you need to work to receive health insurance?

Health insurance is provided by the University. Anyone eligible for a tuition waiver also gets Basic health care coverage. In general, working one 20-hour appointment per year will give you Basic and SHIP coverage at a reduced rate for the entire calendar year. Working one 10-hour appointment per year will give you 95% waivers for Basic and SHIP fees for one 6-month coverage period. Working one 10-hour appointment in the fall and one 10-hour in the spring will earn you waivers for Basic and SHIP fees for the whole year. Check the website for information about Family and Domestic Partner Coverage.

How do you sign up for the Dental and Vision Plans?

The GEO Union administers these plans. You must sign up for these plans every year. Check out the website (<https://www.uawumasstrustfund.org/>) for details.

What if your funding comes from a non-University source?

If your paycheck comes from the University of Massachusetts, you are eligible to be a member of GEO.

If you elect to pay the Continuation Fee (formerly known as the Program Fee) are you still eligible for benefits?

Again, if your paycheck comes from the University of Massachusetts, you are eligible to be a member of GEO. You are still eligible for benefits, but you must go to University Health Services to sign up for health insurance in person before the add/drop period of each semester.

Do you have access to any discounts as a GEO member?

Yes. Check the Union Discounts page of the website for more details. You also get discounted parking. Remember to bring a copy of your contract with you when you purchase your parking permit. Check the parking services website for current fees.

<http://parking.umass.edu/index.php/home/>

What should you do if you have a problem in your workplace or with your insurance provider?

If you feel that any portion of the contract is being violated, you can contact the ECo steward or the GEO office and speak with a staff member about your options.

How can you get involved in GEO?

- Read over the current contract available online (<https://www.geouaw.org/geo-contract/>), so you know your entitled benefits.
- Check out the website <http://www.geouaw.org/>
- Know your GEO Steward at <https://www.geouaw.org/stewards/>
- Go and find the GEO office in Room 201 in the Student Union. There are always friendly people there to answer your questions.
- You will get GEO emails. Read them to stay on top of what's going on.
- Attend the membership meetings and social gatherings. They are a great way to meet people from other departments.
- Support the hard work that the GEO officers do by going to a rally, even if you don't feel particularly educated about the issue. People will fill you in once you get there.

2.12 Graduate student fees

You are GEO eligible for one semester if you earn the equivalent of a 10-hr TA or RA in that semester. For two semesters, if you earn twice that in a year (can be earned all in one semester or split between the two) you are GEO eligible. You need 10 hrs. per week of teaching or research assistantship. Many fees are waived for GEO eligible students but not all. Paying spring fees also covers summer enrollment in health coverage.

Different options for GEO eligible students and the associated fees, all subject to change with each academic year (see <https://www.umass.edu/bursar/tuition/graduate-tuition-rates> for the latest fee schedule):

Continuation fee (formerly known as Program Fee) - If you are taking no classes you can enroll in just the continuation fee. You can do this through spire by enrolling in GRADSCH 999 every semester until the degree is awarded.

Important considerations:

- If you register for Continuation fee or are taking less than nine credits and wish to be considered a full-time student you must ask your major advisor to email this request to Linda Fortin (lsfortin@umass.edu) to upgrade your status to 'full-time' in SPIRE. There is no longer a need for a memo from the GPD; an email from your major advisor is all that is necessary. Note, you will need full-time status to be eligible to receive most student loans, scholarships, and fellowships.

- You must register full-time (9 credits) for two consecutive semesters (residency requirements) to be eligible for graduation. When considering registering for the Continuation fee as opposed to credits, make sure you meet this requirement.
- GEO eligible students pay 5% of the health plan costs. If you are taking less than five credits or on program fees, you must re-enroll in person at the health center at the beginning of each semester. If you are taking more than five credits, you should be automatically enrolled in the health plan, but you might still want to check with the health center. You must go and pay your health fee and sign a form at the beginning of the semester to get your insurance for that semester if you are on continuation fee.
- In addition to the above fees, there is an entering student fee that you must pay during your first semester.

Fee Minimization Strategies:

- After you've decided what classes you're taking, it costs you nothing more to add thesis/dissertation credits up until just below the next fee threshold (make your total credits for the semester 4 or 8). Just make sure to get a memo saying you're a full-time student and don't forget to enroll in the health plan.
- Similarly, if you have over nine credits in classes, you don't pay anything more for adding additional thesis/dissertation credits. There's a maximum of 16 per semester (or 18 with GPD approval).
- If you're not taking any classes in a semester, realize that the cost of enrolling in 4 thesis/dissertation credits is pretty much the same as the continuation fee. Similarly, the cost of taking a single class (3 or 4 credits) is pretty much the same as the cost of taking no classes.
- Master's students can count a maximum of 10 thesis credits towards their degree (Graduate School requires 1-10 thesis credits, but the ECo Program requires 6 to 10 thesis credits for thesis degree students) and need 30 credits total. Similarly, Ph.D. students need at least 10 dissertation credits.
- It's possible to get your fees deducted from your paycheck over the course of the semester. This payroll deduction must be set up far in advance (previous semester). To do this, you have to print the payroll deduction form available on the Bursar's website (<https://www.umass.edu/bursar/geo-payroll-deduction>), fill it out, and hand it in at the bursar's office.
- You can pay your bill using the university's online payment system (QuikPay) accessible through Spire. Other payment methods are listed at <https://www.umass.edu/bursar/payment-methods>

Additional Resources:

- The Graduate School (<https://www.umass.edu/graduate/>)
- Graduate Student Service Center, 534 Goodell Building Phone: (413-545-0722; 8:30 AM - 5:00 PM M-F)
- GEO (<https://www.geouaw.org/>)

2.13 Seminar series offered in ECo and other related departments

The Department of ECo offers a weekly seminar series (<https://eco.umass.edu/about-us/seminar-series/>). You are required to enroll in this course (ECo 691A) as needed for your credits but is highly recommended to attend every semester you are on campus.

A comprehensive list of all seminars in CNS is at <https://www.cns.umass.edu/research/seminars>. There are a variety of other seminars that may be of interest to you.

- Architecture (<http://www.umass.edu/architecture/events>)
- Astronomy (<https://www.astro.umass.edu/events>)
- Chemistry (<https://www.umass.edu/chemistry/events-seminars>)
- Chemistry-Biology Interface Program (<https://www.umass.edu/cbi/chalkTalk.html>)
- Food Science (<https://www.umass.edu/foodsci/news>)
- Life sciences seminar (<https://www.bio.umass.edu/biology/research/life-sciences-seminars>)
- Geosciences (<https://www.geo.umass.edu/events>)
- Mathematics & Statistics (<https://www.math.umass.edu/seminars>)
- Microbiology (<https://www.micro.umass.edu/seminars>)
- Molecular & Cellular Biology Graduate Program (<https://gpls.cns.umass.edu/mcb/seminars>)
- Neuroscience & Behavior Graduate Program (<https://gpls.cns.umass.edu/nsb/colloquia>)
- Organismic & Evolutionary Biology Graduate Program (<https://gpls.cns.umass.edu/oeb/seminars>)
- Physics (<https://www.physics.umass.edu/seminars>)
- Plant Biology Graduate Program (<https://gpls.cns.umass.edu/pb/seminars>)
- Psychology and Brain Sciences (<https://www.umass.edu/pbs/>)

- Psychology of Peace and Violence Program (<https://www.umass.edu/peacepsychology/seminars>)
- Polymer Science and Engineering (<https://www.pse.umass.edu/events/>)
- Stockbridge School of Agriculture (<https://stockbridge.cns.umass.edu/>)
- STEM Education Institute Seminars (<http://k12s.phast.umass.edu/calendar/>)
- Veterinary and Animal Sciences (<http://www.vasci.umass.edu/graduate/departamental-seminars>)
- Resource Economics (<https://www.umass.edu/resec/node/727>)
- Civil and Environmental Engineering (<https://cee.umass.edu/cee-program-area-seminar-schedule>)
- LARP (<https://www.umass.edu/larp/zube-lecture-series>)
- ISSR Seminars (<https://www.umass.edu/issr/events>)
- College of Engineering events (<https://engineering.umass.edu/calendar>)
- College of Social and Behavioral Sciences (<https://www.umass.edu/sbs/news>)
- Five College Consortium faculty seminar (https://www.fivecolleges.edu/faculty/faculty_seminars/seminar_list)

2.14 Graduate Program Meetings

The Program holds meetings for all ECo graduate students once a month during the academic year on the first Monday of the month at 5:00 pm in Holdsworth (either 312A or 308). The purpose of these meetings is several folds: 1) to build and promote a sense of community among students in the Program; 2) to provide an opportunity for students to learn about the research and professional projects of other students, and 3) to provide a regular opportunity for socializing. Each month a theme that is of interest to graduate students will be used. The subject can be federal jobs, knowing new faculty, international opportunities, publishing, career paths of selected faculty, etc. These themes will be identified through student input at the start of the academic year. There will free food and drinks during these meetings.

While it is not required to attend these meetings, you are strongly encouraged to do so. These meetings, after all, are for your benefit and provide you an excellent opportunity to get fully engaged in the Program and make the very best of your UMass experience.

2.15. Eco Graduate Student Symposium

ECo Graduate Student Symposium, ECoGSS, is a platform that will enable you to represent your diverse and interdisciplinary research community. Information on the symposium is available at <https://blogs.umass.edu/ecogss/>. This symposium is a time for you to practice presentation and public speaking skills while coming together as part of a unique team of scientists furthering your world's knowledge of environmental science. By providing feedback throughout all stages of your graduate career and research development, this symposium will help to ensure the success of our department's advancement and communication of science.

2.16 Quantitative Sciences Group and Consultations

The Quantitative Sciences Group (QSG) is an ad hoc committee of the ECo Graduate Program whose goal is to improve quantitative literacy in ecology and conservation among graduate students and faculty of ECo. Quantitative literacy is the ability to understand and effectively apply quantitative methods, which is becoming increasingly important in ecology and conservation science.

What is the Scope of QSG?

The realm of quantitative sciences in ecology and conservation includes an extensive range of topics and methods. However, based on the experience, expertise, and anticipated needs of graduate students and faculty in ECo, QSG focuses on the following areas as they apply to ecology and conservation:

- Study design
- Ecological statistics
- Spatial data analysis
- Systems modeling

What are the Objectives of QSG?

With the overall goal of improving quantitative literacy in ecology and conservation among ECo graduate students and faculty, QSG has two principal objectives:

1. Design and teach quantitative sciences courses to ECo graduate students – to this end, QSG offers a four-semester sequence of courses on the design and analysis of environmental data (see course listings), in addition to the regular periodic offerings of courses on specialized topics in spatial data analysis and systems modeling.

2. Provide quantitative sciences consultation to ECo graduate students and faculty - to this end, QSG is available every Monday 2:00-4:00 p.m. in 304 Holdsworth Hall for scheduled consultations to offer advice in the areas of study design, analytical methodology and interpretation of results. Details on this consultation service are provided elsewhere (e.g., posted outside Rm 304).

What are QSG Consultations?

The Quantitative Sciences Group (QSG) offers free consultations to ECo graduate students and faculty in the areas of study design, analytical methodology, and interpretation of results. The purpose of these consultations is to improve quantitative literacy in ecology and conservation science among graduate students and faculty in ECo. Consultations are for advice only – take it or leave it. For graduate students, QSG advice does not override the guidance and requirements of the thesis/dissertation advisory committee. Ultimately, the student consultee is fully accountable for all decisions made and thus must be able to explain and defend all quantitative aspects of the research fully.

Who is Eligible for QSG Consultation?

All graduate students and faculty in ECo are eligible for consultations. However, the experience, expertise, and focus of QSG are in ecology and conservation science. Those who are seeking advice in other realms of Environmental Conservation, for example dealing with the social sciences, resource economics, business management, etc., are probably better served elsewhere.

How to Schedule a QSG Consultation?

QSG consultations are available every Monday at 2:00-4:00 p.m. in 304 Holdsworth Hall during the academic session. Consultations must be scheduled in advance; walk-ins between the hours of 2:00-4:00 are not allowed. To schedule a consultation, sign up on the consultations sign-up sheet outside of 304 Holdsworth before 2:00 p.m. on Monday and complete the QSG consultation form (available outside of rm 304).

2.17 Animal and Human Use Protocol / Research Permits

If you are conducting research on vertebrate animals, you must have an approved Animal Use Protocol on file in the Animal Care Office on Campus

(<https://www.umass.edu/research/compliance/animal-subjects-iacuc/e-protocol-system-iacuc>)

- Your major professor may already have prepared a protocol and had it approved, but you need to make sure you have a copy.

- If one has not been prepared, you will need to collaborate with your major professor to prepare one and have it approved before any affiliated research.
- The IACUC requires that all personnel listed in an animal use protocol who have contact with living vertebrate animals receive appropriate training for animal users, including graduate and undergraduate students.
- Potential field technicians must go through the training as before starting work on a project.
- The Compliance Coordinator conducts monthly one-hour classroom training sessions for new animal users that meet federal requirements. All animal users must take the animal users' update training each year on or before the anniversary of their first training.
- All State or Federal permits must be approved and in hand before official IACUC approval.
- If you are conducting research on human subjects, you must have an approved Human Subjects Research Protocol on file with the Institutional Review Board (IRB) in the Human Research Protection Office on Campus (humansubjects@ora.umass.edu; <https://www.umass.edu/research/kuali-era-system>).
- Your major professor may already have prepared a protocol and had it approved, but you need to make sure you have a copy.
- If one has not been prepared, you will need to collaborate with your major professor to prepare one and have it approved before any related research.

When should I pursue this?

The best time to submit your IACUC and IRB forms would be as soon as you have completed your research proposal. The reason for this recommendation is because the IACUC and IRB committee only meets on specific times a semester, and if you miss a review date, you will be delayed until the next date of the review.

- If your proposal gets rejected for some reason, you may have to wait longer.
- Forms are available on the web and are very specific. Any further questions should be brought to your advisor and the IACUC or IRB offices.

2.18 Travel Grants

The department gets a limited travel budget from the College of Natural Sciences and Graduate School every year to support graduate student's travel to professional conferences. The call for travel grant applications is usually made in September after the budget is finalized. If you travel to a conference and present either a poster or oral paper, you are eligible to apply for this Travel Grant. Grant funds may be applied to the registration, transportation, and lodging expenses documented by receipts for up to \$200 for regional, \$300 for domestic, and \$400 for international travel. Meals, copying, and other incidentals are not reimbursable. The number of awards can vary with the budget, number, and value of individual awards. The applications will be received and awarded on a continuous, rolling basis until the allocated funds are exhausted. Applications for travel to Fall/Spring conferences should coincide with that specific Fall/Spring semester. Applications will be selected based on the type of conference, type of presentation, and justification for funds.

The travel grant application is available on the ECo website along with other forms (<https://eco.umass.edu/wp-content/uploads/2012/09/TravelGrantApplicationform.pdf>).

Please complete all sections of the form including specifics on the conference and justification for the funds. If you are awarded a travel grant, please submit all travel receipts to the program administrative assistant (Lori Miner) within **three weeks** of your travel.

2.19 Student societies and professional groups in ECo

If you cannot locate a meeting time or contact for the student chapter, it is best to contact the "faculty advisor" or another member of the faculty who is studying in that general area of research. In some cases, the club may be inactive. You could always revive it!

- Eco Graduate Students Council (ECoGSC) - The purpose of the ECoGSC is to facilitate and support activities that meet the academic, social, cultural, and professional needs of ECoGSC' students at the University of Massachusetts Amherst. Advisor: [Timothy O. Randhir](#)
- The Wildlife Society – The Wildlife Society (TWS), founded in 1937, is an international non-profit scientific and educational association dedicated to excellence in wildlife stewardship through science and education. Our mission is to enhance the ability of wildlife professionals to conserve diversity, sustain productivity, and ensure responsible use of wildlife resources for the benefit of society. Advisor: [Curtice R. Griffin](#)
- American Fisheries Society —The American Fisheries Society (AFS) is the world's oldest and largest organization dedicated to strengthening the fisheries profession, advancing fisheries science, and conserving fisheries resources. Advisor: [Adrian Jordaan](#)

- Society of American Foresters – Since 1900, the Society of American Foresters has provided access to information and networking opportunities to prepare members for the challenges and the changes that face natural resource professionals. Advisor: [Paul Catanzaro](#)
- Forest Products Society – The Forest Products Society is an international not-for-profit technical association founded in 1947 to provide an information network for all segments of the forest products industry — from standing tree to finished product. Advisor: [Alex Schreyer](#)
- National Association of Home Builders – NAHB is a Washington, D.C.-based trade association whose mission is to enhance the climate for housing and the building industry. Chief among NAHB’s goals is providing and expanding opportunities for all consumers to have safe, decent and affordable housing. As “the voice of America’s housing industry,” NAHB helps promote policies that will keep housing a national priority. Advisor: [Ho-Sung Kim](#)
- US Green Buildings Council – UGBC is a Washington, D.C.-based diverse group of builders and environmentalists, corporations, and nonprofits, teachers and students, lawmakers and citizens that share the same vision of a sustainable built environment for all within the next generation. Advisor: [Ludmilla Pavlova](#).
- Associated General Contractors of America – AGC is a leading association for the construction industry. AGC represents more than 26,000 firms, including over 6,500 of America’s leading general contractors, and over 9,000 specialty-contracting firms. More than 10,500 service providers and suppliers are also associated with AGC, all through a nationwide network of chapters. – Advisor: [John Collura](#), Civil & Environmental Engineering
- American Water Resources Association – AWRA’s mission is to advance multidisciplinary water resources education, management, and research. It is the professional home of a wide variety of water resources experts including engineers, educators, foresters, biologists, ecologists, geographers, managers, regulators, hydrologists and attorneys (www.awra.org). Advisor: [Timothy O. Randhir](#)
- Soil and Water Conservation Society – UMass Chapter of the SWCS fosters the science and art of natural resource conservation of soil, water, and related natural resources on working land—the land used to produce food, fiber, and other services that improve the quality of life people experience in rural and urban communities (www.swcs.org). Advisor: [Timothy O. Randhir](#)

2.20 Campus Recreational Facilities

Do you need a membership to use the recreational facilities?

- YES. Graduate students need a membership to access the sports and recreation facilities, participate in Fitness and Wellness programs, and intramurals. More information on the recreational facilities, including class offerings, hours of operation, etc. can be found at their website: <https://www.umass.edu/campusrec/>
- Your UCard is used as a membership ID
- There is a fee for Graduate Students on per semester or on per year basis. There are additional fees to participate in the Fitness and Wellness Programs (Yoga, Cardio blast, Kickboxing, etc.)

Where do you purchase a membership?

- Member Services @ the Recreation Center (413) 545-0022

What fitness facilities are available?

- Fitness centers (Recreational Center, Boyden, and Totman)
- Pools (Boyden, Totman, and Hicks)
- Gymnasiums (Recreational Center, Boyden, and Totman)
- Squash and handball courts (Recreational Center, Boyden, Mullins Ice Rink)
- Tennis courts (Behind Mullin Center)

The Totman facility is close to Holdsworth. The recreation gym is small, but there is a second facility run by the Kinesiology Department called the Body Shop. It costs a little more but maybe worth it to avoid crowding. It also has newer equipment. The Recreation Center a state-of-the-art facility with almost everything you might need, including weights, stationary devices, and aerobics classrooms.

THE PROGRAM

3.1 General Policies and Administrative Requirements

3.1.1 Academic Honesty

Read and understand sections VIII Academic Honesty Policy and IX Graduate Student Honor Code found in the Graduate Student Handbook. Also, all graduate students should try and obtain a copy of Sigma Xi. 1986. Honor in Science. The Scientific Research Society, Research Triangle Park, NC, 41pp. Academic Honesty Policy for the University of Massachusetts is outlined at <http://www.umass.edu/honesty/>.

3.1.2 Title IX

Title IX is a U.S. law that prohibits discrimination in education on the basis of gender. A focus of Title IX is the prevention of sexual misconduct on college campuses. Umass Title IX information is at <http://www.umass.edu/titleix/>. “Sexual misconduct” includes sexual assault, sexual harassment, domestic or dating violence, and stalking.

To create a caring and compassionate university culture, it is important for all of us to understand the resources that are available and our Title IX reporting responsibilities. Sexual misconduct harms its victims and the entire campus community; it is in the interest of all of us to prevent such offenses.

As a student, you or a peer may be a potential target of Title IX-related violations. If you are also a graduate student employee, you have Title IX reporting obligations as well. Under federal law, graduate student employees who are made aware of a possible incident of sexual harassment, sexual assault, or any other kind of sexual misconduct are required to report it.

If you or someone you know needs to report a possible Title IX offense, contact the Title IX Coordination team at (413) 545-3464 or equalopportunity@admin.umass.edu. The following response is extracted from Title IX resources document at https://www.umass.edu/titleix/sites/default/files/title_ix_comprehensive_resources.pdf:

- **If the accused is a Student:** Any employee who becomes aware of a potential incident of sexual assault, sexual harassment, relationship violence, stalking or other assault or harassment involving a student at the University of Massachusetts Amherst – either as victim or perpetrator – on or off campus, must promptly report the incident(s). This is subject to exceptions that can apply to law enforcement personnel, licensed clinicians, certified rape crisis or domestic violence counselors, or clergy. Employees should immediately report the matter to:
 - Your supervisor (who should promptly report to the Dean of Students Office) or report directly to the Dean of Students Office

- The Dean of Students Office will undertake all such investigations, as appropriate under the circumstances and take every precaution to ensure privacy. Cases involving students as alleged perpetrators will be handled by the Dean of Students Office.
- Encourage the victim/survivor to get support. The Center for Women & Community provides crisis intervention; advocacy and assistance in getting medical attention for victims/survivors of all genders. The Center for Counseling and Psychological Health provides mental health crisis counseling. Both services are available 24 hours a day, seven days a week and are confidential resources. Victim/Survivors can also contact the University of Massachusetts Police Department (UMPD) which is also confidential and/or the Dean of Students Office. You can let the victim/survivor know that Dean of Students Office will reach out to them.
- Do not attempt to investigate the matter.
- **If the accused is an employee or contractor:** Any employee who becomes aware of a potential incident of sexual assault, sexual harassment, relationship violence, stalking or other assault or harassment involving faculty or staff at the University of Massachusetts Amherst – either as victim or perpetrator – on or off campus must promptly report the incident(s). This is subject to exceptions that can apply to law enforcement personnel, licensed clinicians, certified rape crisis or domestic violence counselors, or clergy.
 - Employees should immediately report to: Your supervisor (who should promptly report to the Equal Opportunity Office (EO)) or report directly to EO.
 - The Equal Opportunity Office will undertake all such investigations, as appropriate under the circumstances and take every precaution to ensure privacy. Cases involving non-students as alleged perpetrators will be handled by the Equal Opportunity Office.
 - Encourage the victim/survivor to get support. The Center for Women & Community provides crisis intervention; advocacy and assistance in getting medical attention for victims/survivors of all genders. The Center for Counseling and Psychological Health provides mental health crisis counseling. Both services are available 24 hours a day, seven days a week and are confidential resources. Victim/Survivors can also contact the University of Massachusetts Police Department (UMPD) which is also confidential and/or the Equal Opportunity Office. You can let the victim/survivor know that the Equal Opportunity Office will reach out to them.
 - Do not attempt to investigate the matter.

Graduate student employees are not confidential reporters and cannot guarantee confidentiality to anyone reporting a Title IX issue. If a student or employee asks to discuss such a matter in confidence, graduate student employees must state that they may not be able to maintain confidentiality. If you are approached regarding a possible Title IX violation, you might respond

in this manner: “While I’m not a confidential source, I respect your privacy rights and will work with the campus Title IX coordinator and other resource areas to provide support.”

If the individual reporting the incident to you chooses not to continue the conversation, you should encourage them to contact the Dean of Students Office, the Office of Equal Opportunity and Diversity, the UMass Police Department (UMPD), the Center for Women and Community (CWC), or the Center for Counseling and Psychological Health (CCPH). UMPD, CWC, and CCPH are permitted to maintain confidentiality.

Failing to report a possible Title IX offense deprives the campus community of valuable information and will not help victims/survivors to get the resources they need.

You can find extensive additional information about Title IX and the University’s resources and policies by navigating to the UMass Title IX webpage, <https://www.umass.edu/titleix> .

3.1.3 Publishing

It is expected that your research or special project work will lead to publication in refereed journals. Even though Master's Theses and Doctoral Dissertations may be copyrighted, you and your major professor have a responsibility to make sure your work is indeed published and made accessible to the broader scientific community.

Typically, you should write the articles stemming from your work. It is expected that your major professor will be included in the author list even if you have done most of the writing. If a year passes after your final defense and the appropriate rough draft(s) is still not written, your major professor is entitled to write the article and assume the first authorship even though you have the copyright to the dissertation or thesis. Determining who should be included and in what order in the author list is sometimes a problem. R. H. Schmidt (Bull. Ecol. Soc. 68:8-10, 1987) gives a worksheet approach to help determine the relative contributions to the five areas of "conception, design, data collection, data analysis, and manuscript preparation." R. A. Day (see reading list) asks "And what do these colleagues do when everything suddenly falls into place as a result of a searching question by the traditional 'guy in the next lab' who had nothing whatever to do with the research?" J. G. Dickson et al. (Wildl. Soc. Bull. 6:260-261, 1978) suggest "if the professor conceives and designs a project and is instrumental in other areas, he should be the first author." In short, it is a tricky business, one that should be discussed at length with your major professor. The best time to discuss authorship is before the start of a project to avoid any misunderstanding and conflicts down the road. Also, Weltzin et al. (Front Ecol. Environ 4(8): 435–441, 2006) recommend communication between coauthors throughout the research process. It is highly recommended to follow the guidelines on publication and research ethics listed by ESA: <https://www.esa.org/about/code-of-ethics/>

All oral and poster presentations and publications should acknowledge sources of funding and other support for the research.

For thesis/dissertation degree students, the department expects a digital copy of your thesis/dissertation in pdf format for the departmental archives and website. Your paperwork may be held up by the GPD or Department Head if you don't provide one. Also, you should provide your major advisor a copy of your thesis/dissertation and all research data on a computer disk before graduation.

3.1.4 Statute of Limitations

The Graduate School expects you to finish your program promptly which means within four years for the MS and within six years for a Ph.D. (assuming the candidate already has the MS). The first extension is granted automatically, but your major advisor must inform the GPD of this request through Linda Fortin so that we can approve the extension. A second extension requires a special petition to the Graduate School. To do this, you must write a memo to your major professor that summarizes your progress and the difficulties causing the need for an extension. Your major professor will send a cover memo to the GPD supporting the request, and the GPD will normally forward a copy of this memo as an attachment to his/her notification or request for the SOL extension.

3.1.5 Stipends and Tuition Waiver

Most research students in the program will receive monetary support in the form of a teaching assistantship (TA) or research assistantship (RA). The amount of this varies somewhat among students but is usually sufficient (i.e., ten-hr./week TA) to merit a tuition and partial fee waiver. Note, you must be appointed on a TA or RA amounting to at least ten hr./week to qualify for a tuition waiver. It is your major professor's responsibility to expedite your appointment as an RA or TA with the office. If you and your major professor do not arrange for an assistantship, you will be responsible for paying tuition, with one exception. If you are receiving a stipend from another source equivalent to a 10-hr TA/RA for work directly related to your academic program, you can apply for a tuition waiver. UMass refers to this as an "externship"(see https://www.umass.edu/graduate/sites/default/files/files/Externship%20Policy%20All%20pages%20vf%2087-9-16%29_1.pdf). For this option, you must complete a special form (obtained from the front office) documenting your employment and verifying that the work and stipend are directly related to your academic progress. Your employer must sign the form, which is accompanied by a letter from your sponsor on letterhead describing the work to be completed, the amount you will be paid and the period (start and end date) over which the work will be completed. Also, this form and accompanying letter from the sponsor must be submitted each semester separately.

If you don't receive a payroll or expense check when you expect it, don't delay in asking your major professor to help you. Please do not contact the Main Office about your stipend in unless your major professor has specifically instructed you to do so.

3.1.6 Full-time Status

Any semester that you are not enrolled full-time (at least 9 credits) for coursework, including thesis or dissertation credits (e.g., during semesters you are in the field conducting research), you may need to request full-time status to be eligible to receive fellowships, scholarships, and student loans. Your major advisor must recommend to the GPD by emailing Linda Fortin with a justification. **Your major advisor must recommend a full-time status to the GPD**, who will upgrade your status on SPIRE. A memo is no longer needed to request an enrollment status change. **Note, this must be done before the last day of add/drop for the semester** and does not have to be done during the summer months.

3.1.7 Continuation (Program) Fees

If you are not enrolled for any credits, including thesis or dissertation credits (e.g., during semesters you are in the field/lab conducting research), you must still register for the Continuation (Program) Fee only; otherwise, the Graduate School will automatically drop you from the program. Specifically, to register for Continuation Fee-only, you must enroll (via SPIRE) in the following: GRADSCH 999 (note, the specific schedule # changes each semester, so check on SPIRE), and you will need to enroll before the last day of add/drop.

Importantly, if you are paying continuation fee-only (i.e., not enrolled for course credits, including thesis or dissertation credits) OR you are signed up for less than 5 credits (including thesis or dissertation credits), then you must physically go to the Health Center and sign up for Health Insurance at the beginning of each semester, otherwise it will be dropped automatically. Health Insurance is only automatically carried forward if you are signed up for 5 or more credits.

3.2 Core Area Requirements

The Program expects all students to obtain a breadth of knowledge in environmental conservation; all students are expected to demonstrate this during the Comprehensive Exam (see “Comprehensive Exam”). To accomplish this, MS students are expected to complete coursework in each of the core topic areas listed below. Specifically, students are expected to take at least one 500-level or above course in each of the core topic areas, although 600-level courses are strongly encouraged if they are available (see Appendix A for a list of ECo courses offered in each of the core topic areas). Ph.D. students are expected to obtain the necessary core knowledge, but there are no specific requirements for completing courses in each of the core topic areas. Your advisor and advisory committee will recommend coursework that prepares you for comprehensive exams. Note, it is important to realize that you are not expected to know everything there is to know in each of the core topic areas – no one, including your committee members, has this breadth and depth of knowledge. However, you are expected to obtain a

certain minimum mastery of the material in each core topic area. The expectations for Ph.D. students are going to be much greater than for MS students.

Core Area 1: Environmental science (biology, ecology, hydrology, environmental sciences, building systems)

It is mandatory that environmental researchers and practitioners have a sound understanding of the biological, ecological and environmental building systems with which they are dealing and the conservation of those systems. Thus, you are expected to have an understanding of one or more of the following topic areas:

- A. Principles of evolution and the way natural selection functions; systematic principles, and the systematics of the taxa in your field of study.
- B. Organismal biology.
- C. Ecological interactions and relationships of individuals, populations, and communities.
- D. Systems and landscape ecology and its function in the analysis of ecological systems.
- E. Soils science, wetlands, watershed systems, and hydrology
- F. Conservation of populations, communities and ecological systems.
- G. Sustainable building systems

Core Area 2: Quantitative science (statistics, GIS, and modeling)

It is mandatory that environmental researchers and practitioners be well versed in the quantitative methods used to study and manage ecosystems and sustainable building systems. They must be broadly versed in the knowledge of specific techniques of assessment and of the management of habitat (natural or human), species, communities, and landscapes likely to be encountered during their work. Only then can they properly address the problems of environmental conservation. Thus, you are expected to understand one or more of the following topic areas thoroughly:

- A. Experimental design and the use of the scientific method.
- B. Modeling.
- C. Individual, population, community and landscape assessment.
- D. Survey methods and qualitative analysis
- E. Statistical analyses.
- F. Remote sensing.

- G. Geographic information systems.
- H. Green building analysis and design
- I. Energy efficiency and Lifecycle assessments.

Core Area 3: Human dimensions (environmental policies, economics, politics, administration, management, and values)

Conservation is an expression of social values assigned to specific resources and the systems that support them. These values are manifested primarily through various forms of social action in public policies, laws, and organizations. It is necessary that environmental conservationists, designers, and builders have a critical understanding of the historical and contemporary social, economic, and political conditions that have and do foster conservation efforts for resources and the environment. Thus, you are expected to understand one or more of the following topic areas thoroughly:

- A. The social and scientific history of environmental conservation and building.
- B. Current major policies and laws that direct federal, state, and local government conservation and development activities.
- C. Commonly used methods for measuring and evaluating social values (i.e., economic, psychological, anthropological, political).
- D. The structure and function of social organizations (public + private) engaged in environmental conservation and development.
- E. Efforts to create interdisciplinary or interagency actions in environmental conservation and development (i.e., integrated design, land use planning, river basin organization, and environmental impact assessment).
- F. Management and marketing of sustainable building practices

3.3 Academic requirements

The ECo Program requirements are in addition to but do not supersede Graduate School guidelines outlined in the Graduate School Bulletin, the Graduate School Grievance Procedures for Graduate Students, and the Graduate School Handbook. A summary of the ECo Program requirements is provided in the table below.

Requirements	MS professional	MS thesis	PhD
<i>General</i>	Minimum of 30 credits	Minimum of 30 credits	Minimum of 10 credits
	Minimum of 29 credits in major	Minimum of 21 credits in major	-----
	Minimum of 12 credits at the 600 level or above	Minimum of 6 credits at the 600 level or above	-----
	Maximum of 6 credits of independent study	Maximum of 6 credits of independent study	-----
	Maximum of 6 transfer credits	Maximum of 6 transfer credits	-----
	At least half of the credits must have letter grades	At least half of the credits must have letter grades	-----
	Successful completion of the comprehensive assessment	Successful completion of the comprehensive assessment	Successful completion of a comprehensive exam
	Successful General exam	The successful final defense of the thesis	The successful final defense of the dissertation
		Minimum of <u>one</u> publishable quality scientific paper resulting from thesis research	Minimum of <u>three</u> publishable quality scientific papers resulting from research
	-----	-----	<u>Two</u> continuous, full-time semesters in residence (Graduate School residency requirement)
<i>Teaching</i>	-----	-----	Recommended to teach or assist in teaching at least <u>one</u> semester. Outside experience at

the college level may apply

Thesis/Practicum/dissertation

At least 6 thesis credits specific to concentration and approved by student's committee (note: graduate school will only count 6 credits) (ECo 699)

At least 10 dissertation credits specific to concentration and approved by student's committee (note: graduate school will only count 10 credits) (ECo 899)

Core courses

Departmental seminar (ECo 691A, 1 cr)

Research concepts (ECo 601, 3cr)

Analysis of environmental data (ECo 602, 3cr)

Departmental seminar (ECo 691A, 1 cr)

Specific course requirements are determined by the student's committee as necessary to complete the comprehensive examination in the core topic areas successfully

Core topic areas

Minimum of 29 credits, including a minimum of one 500-level or above 3-4 credit course in each core topic area plus a minimum of three additional courses specific to concentration and approved by student's committee (see a list of acceptable courses in Appendix C)

Minimum of 21 credits, including a minimum of one 500-level or above 3-4 credit course in each core topic area specific to concentration and approved by student's committee (see a list of acceptable courses in Appendix C)

Same as above

3.4 Examination/Advisory Committee

3.4.1 MS Degree (thesis and professional degree concentrations)

You need at least two (but more is OK) Eco Graduate Faculty (as approved so by the Graduate School) on your committee. The Chair (almost always your major professor will serve as a chair) must be a member or adjunct member of the ECo Graduate Faculty. A second member must also be a member or adjunct member of the ECo Graduate Faculty, who could bring diverse viewpoints to the committee. Additional members can be from outside ECo (e.g., faculty from other departments and universities, agencies, and private industry who are approved by the Graduate School to serve one-time as a Graduate Faculty). At least one member of the committee must be a regular University employee (i.e., not an adjunct faculty member). UMass Research Associates (holding an MS degree at a minimum) are eligible to serve as members of MS committees, but not on Ph.D. committees. People not listed as UMass Five College Graduate Faculty (e.g., faculty from other institutions or individuals from agencies or industry that hold PhD's) can be included as "Consulting members" (i.e., non-voting) or "Members" (i.e., voting), but cannot replace either of the two ECo faculty members (i.e., they can be the third or fourth member). If such people are included as "Consultants" or full "Members," the GPD has to forward a memo to the Graduate School (along with the curriculum vitae, and date of birth) to convince them to allow it. The Graduate School prefers such people to be named as Consultant. With your assistance, your major professor must forward a committee request memo (see sec. 4.5) to the GPD (for professional degrees) and the Graduate School by the GPD (for thesis degrees). Your graduate committee is not officially formed until this memo has been sent to the GPD and Graduate School. You must have an approved committee before you can submit your thesis proposal.

3.4.2 Ph.D. Degree

The Ph.D. committee needs to have at least three committee members with Ph.D. and Graduate Faculty Status. Additional members could be appointed depending on the research needs. At least one member must be an "outside of department member," defined by the graduate school as a UMass Five College Graduate Faculty member, not in your department. Members outside the Five College System could be appointed after approval by the Graduate School as Graduate Faculty. With your assistance, your major professor must forward a committee request memo (see sec. 4.5) to the GPD for submission to the Graduate School. Your graduate committee is not officially formed until this memo has been sent to the Graduate School and a letter from the Graduate Dean is received by the student. You must have an approved committee before you can submit your dissertation proposal.

3.4.3 Changing advisers and committee members

There might be situations when you feel a need to change major adviser or committee members. This could be stemming from many reasons, including a change in topic, major disagreements, work environment, etc. Changing a committee member can be done by discussing with your major adviser and informing GPD of any changes to the committee member through a memo to graduate school. In cases of changing your major adviser, you are encouraged to discuss it with the GPD or GCC or Chair of the department on such changes. Discussing such issues with other faculty is encouraged. GPD will try to mediate any issues that can be resolved without changing your major adviser. When mediation does not work, you, in discussions with the GPD can suggest another adviser in the department to work with. If this option does not work, the GPD will take the administrative role in the advising process by consulting with your original adviser or another faculty for expertise and content approval. When a decision is made by you and a new adviser is identified, GPD will make a recommendation for such changes through a memo to the graduate school. Changes to the graduate committee need to be recommended by the GPD to the graduate school in a new memo.

3.5 Comprehensive Examination

The Program requires all students to have Comprehensive knowledge in core areas of the program. This requirement is assessed through the “Comprehensive assessment” and a final “General Exam” for MS degrees and the “Preliminary Exam,” or just “Prelims,” for Ph.D. degrees.

3.5.1 MS Degree (thesis and professional degree concentrations)

The Program requires all MS students to pass a Comprehensive Assessment. The Comprehensive Assessment is an ECo graduate faculty assessment procedure to determine whether you have met the academic standards of the program. You and your major professor, in consultation with the advisory committee, are responsible for deciding when and how you should complete this Assessment. Usually, the exam will be given after completing any required or recommended coursework needed to fulfill the core area requirements (see “Core Area Requirements”).

The Comprehensive Assessment will be administered by the advisory committee under the oversight of GCC and GPDs. The Comprehensive Exam will follow the guidelines listed below:

- The Graduate Program will provide general guidelines for the achievement of comprehensive knowledge for all MS students. This assessment will include concentration-based topics to be covered in each Core area (Science, Quantitative, and Management) (<http://eco.umass.edu/wp-content/uploads/2008/01/Exam.topics.2013.pdf>). The student’s

advisory committee has the responsibility for conducting the assessment and reporting the results to the GPD. It is expected that the assessment will be made well in advance of the thesis defense.

- The Comprehensive Knowledge Assessment will be administered by your advisory committee. The committee will determine the assessment format (listed under Forms as Comprehensive_Exam.doc) that will be customized to fit your concentration, employer demands, and focus area of the student's career. The committee will provide specific guidelines to the students on exam preparation and on any other specific assessment method that is selected for the student. The assessment needs to be conducted far enough in advance of a student's graduation (1-2 semesters) to provide sufficient time to accomplish remedial action if required. This assessment plan must be reviewed by GCC/GPD for standards and be shared with the student during or after the development of a curriculum plan within the first year. GCC/GPD will make efforts to check the quality of these assessments randomly.
- The Advisory Committee will send a report to GPD immediately after the assessment using the checklist form. The advisory committee will detail any remedial actions required with a reasonable schedule before graduation. This checklist will be part of a student's record and provide a means to monitor the completion of remedial actions if needed.
- The Advisory Committee can also make additional course recommendations if the student fails to achieve comprehensive knowledge in concentration-specific (Science, Quantitative, Management cores) knowledge requirements.
- General knowledge of research concepts and basic statistical theory will not be assessed other than having a passing grade in the two required courses (Eco 601 and ECO 602) or equivalent courses for MS Thesis students. However, applied knowledge of the concepts from these courses in concentration-specific areas is required by the student through application in their thesis or professional paper, as evaluated by the Advisory Committee. The Advisory Committee is expected to recommend remedial actions for students if a student fails to demonstrate sufficient knowledge required in the application of these concepts.

3.5.2 Ph.D. Degree

The number of courses required before a student taking his/her Preliminary Comprehensive Examination is determined by the student's advisor/guidance committee in consultation with the GCC and GPD. While the Graduate School requires no minimum number of credits for a doctoral program, all doctoral students need to take needed classes to prepare for the comprehensive exams and to achieve mastery of the subject. On average, doctoral students take a minimum of two years of coursework to build their knowledge and mastery of the three core areas. Dissertation credits are required for completion of the Doctoral Degree.

The Graduate School and the ECo program both require all Ph.D. students to pass a Comprehensive Exam. The comprehensive exam is a graduate faculty assessment procedure to determine whether a Ph.D. student shall proceed as a candidate with a dissertation study. A graduate student shall not be considered a candidate for a Ph.D. degree until they have passed the comprehensive exam. A doctoral candidate must spend the equivalent of at least one continuous academic year of full-time graduate work (nine credits per semester) in residence at the University. The residency year must be either in a Fall/Spring or Spring/Fall sequence. During this year, the student must spend some part of each week physically on campus. Doctoral students enrolled in recognized off-campus programs may satisfy this regulation at their off-campus site.

All comprehensive examinations consist of both a written exam and a separate oral exam and shall be conducted according to the following procedures:

Written Exam

- The written exam shall be given by your approved examination/advisory committee. Note, the written exam cannot be given until you have an approved examination/advisory committee. Your major professor will forward a memo to the GPD recommending members of the Examination/Advisory Committee (see “Examination/Advisory Committee”).
- Your major professor is responsible for initiating the process by coordinating with the GCC and GPD when you and s/he feels you should take the exam. Typically, the exam will be given at the end of your **second full year** after completing any required or recommended coursework needed to fulfill the core area requirements (see “Core Area Requirements” below). The Committee and you will agree on appropriate dates for the exams (oral and written) at least one week ahead of the written exam. The announcement of the written exam goes only to the Examining Committee and you.
- Your major professor shall solicit questions from all the members of the Examining Committee. The exam may be conducted over 2 to 5 days and examining committee members may ask closed-book (no reference materials available) or open-book questions. Typically, each committee is assigned one of the Core Topic Areas and gives you a single day (i.e., 4-8 hours) to answer a set of questions on that topic area. Your major professor is responsible for assuring the exam gives reasonable weight to each of the subject areas and that the exam is given under conditions conducive to good work.
- Importantly, you are not expected to pass a single general exam given to all candidates. Instead, a unique exam will be prepared for you considering your dissertation area and your specific academic coursework and background. However, the exam will be “general” in the sense that all students will be examined on the same core topic areas (see “Core Area Requirements”). More specific detailing and identification of the background and knowledge expected of each candidate will be the responsibility of the examining committee. Committee members will work with you to mutually agree on the specific subject areas to be examined

within the general Core Topic Areas. They will also give you some indication of the level of competence they expect.

- Each subject area of the written exam will be graded pass/fail by the examiner who wrote the questions. Questions not graded within 10 days after the exam will be assumed passed. All areas must be passed to pass the exam.
- *Consequences of failure:* If you fail any one of the Core Topic Areas, then you have failed the exam; the consequences will depend on the nature and extent of the failure. If all three Core Topic Areas are failed, you will lose your status as a Ph.D. student in the ECo program at the end of the current semester. If you fail one or two of the Core Topic Areas, a second, final exam is permissible by mutual consent of you and your committee. The second exam will be only in the areas failed and must take place within six months of the date of the first exam. If you fail any of the topic areas during the second exam, then you have failed the exam, and you will lose your status as a Ph.D. student in the ECo program at the end of the current semester.

Oral Exam

- The main purpose of the oral exam is two-fold. First, and most importantly, the oral exam serves as a follow-up to the written exam (i.e., it provides committee members an opportunity to probe areas revealed as weaknesses, but not failures, in the written exam). Secondly, it provides an opportunity for committee members to examine you on additional topic areas not covered in the written exam.
- Your oral exam will be scheduled within four weeks after passing the written exam. At least *one week* before the oral exam, have your major professor announce the exam to the Graduate Faculty [PHD_comps_notice.doc].
- The oral exam is to be a closed exam. Faculty not on the examining/advisory committee may request, at least *two days* before the exam, permission from your major professor to attend. You have a right to know, however, who is expected at your exam. A moderator may be selected by the Department Head, GCC or GPD from among the Department's Graduate Faculty at your or your major professor's request. The Department Head, GCC, and GPD can attend without notice.
- Your major professor (or the Moderator) will chair the exam. The exam will normally take three to (no more than) four hours. The Chair will first outline the procedures and introduce all people present, if necessary. There will then be two or more rounds of questions with each voting examiner given up to 20 minutes per round, or more if agreed upon by the committee. One examiner may yield the floor to another. At your request, a break may be taken between the rounds of questioning.

- When the questioning is completed, you will be asked to leave. Nonvoting faculty may address comments to the examining committee. Then all nonvoting faculty except for the Moderator (if present) will be asked to leave.
- The voting will proceed by secret, written ballot: PASS or FAIL. Only officially-appointed examiners will vote, the Moderator (if present) will not. After a brief discussion, a trial vote will be taken. If the votes are unanimously PASS, no further discussion is needed, and you will be immediately notified of the results. If there are FAIL votes, there will be further discussion regarding the extent and seriousness of the weakness. There will then be a final ballot. If there are still FAIL votes, you will have failed the exam, and you will be immediately notified of the results. If you fail the exam, the committee has the responsibility to tell you, either verbally at the time of the exam or in writing within one week, of the reasons why you failed.
- *Consequences of failure.* --If you fail the exam, at the discretion of your examining committee, you may be given the opportunity for a second, final oral exam, which will be conducted at first. However, the examining committee is not obligated to offer you a second oral exam if they feel the deficiencies are too high. However, in most circumstances, you will be given guidance as to any deficiencies and specific direction regarding remediation measures. Remediation may entail additional coursework and independent study. If a second, final oral exam is given, it must take place within six months after the first exam. If you fail the final exam (whether it be the first or second exam given), then you will lose your status as a candidate for a PhD
- After the final exam (first or second), your major professor will ask the GPD to send the results (PASS or FAIL) to the Graduate School [PhD_comps_outcome.doc].

3.6 Thesis/Dissertation Proposal

3.6.1 MS Thesis and Ph.D. Degrees

You must submit a thesis/dissertation proposal (also called a prospectus) describing fully the work to be done. This proposal must be approved and signed by all members of the Committee, the GPD, and the Department Head and forwarded to the Graduate Dean at least four months (recommended) before the thesis defense or seven months (recommended) before the dissertation defense. A specific format is given for the title page (see Graduate Student Handbook online), but there is no specific format for the text. For Ph.D. students, the proposal must be submitted after passing the comprehensive examination (see above). The format of the proposal is to be determined by you and your examination/advisory committee; however, ideally it should be written in an appropriate publication format but with the "Results" and "Discussion" sections

replaced with "Anticipated Results." Include your experimental design, plans for data analysis, a timeline, and your publication plans. The Research Concepts course will provide you with the background for developing a proposal.

3.7 Thesis/Dissertation Defense/General Exam

The final defense is much more than just a rehash of your thesis/dissertation. The defense is intended to determine if you see the larger picture within which your work fits and determine whether you can adequately defend your work under scrutiny. Note, the entirety of the defense is fully open to any interested persons, including other students, faculty and the general public, but see rules of participation below.

3.7.1 Before the Defense

- You must have prepared and submitted a thesis/dissertation proposal (see “Thesis/Dissertation/Practicum Proposal”) describing fully the work to be done. For MS Thesis and PhD degree students, this proposal must be approved and signed by *all* members of your Committee, the GPD, and the Department Head and forwarded to the Graduate Dean at least four months (recommended) before the MS thesis defense or seven months (recommended) before the PhD dissertation defense [proposal_cover.doc and proposal_memo.doc].
- For Ph.D. students, you or your major professor must send a copy of the defense announcement [defense_announce.doc] to the Office of Degree Requirements via the GPD at least four weeks before the defense. That office will announce it to the university.
- You must obtain tentative approval of the thesis/dissertation as to subject matter and syntax by all members of the Committee before the defense can be scheduled. Specifically, at least one week before the thesis defense is scheduled or four weeks before the dissertation defense is scheduled, all committee members must email the Committee Chair confirming that they have read the thesis and approve your readiness to proceed to defense. After hearing from all committee members, it is up to the Chair to determine that you are ready to defend and with you coordinate the scheduling of defense date. Note, the thesis/dissertation need not be in its final version for tentative approval; the Committee may require amendments following the defense.
- You must put a copy of the tentatively approved thesis/dissertation in the department office at least five working days before the defense.
- Your major professor must distribute an announcement of the defense to all faculty and graduate students in the program at least one week before the defense [defense_notice.doc]. The announcement will include your name, thesis/dissertation title, the place and time of the

defense, names of the examining committee members (and the Moderator, if there is one), and a list of your graduate courses. Defenses should be scheduled only when the University is open and not on holidays or religious holy days.

- The entirety of the defense, including the seminar presentation, Q&A involving non-committee members, and examination by the Committee, is by default open to any interested persons, including other students, faculty, and the general public. However, you and your major professor may petition the GPD to have the committee examination portion of the defense closed to students and the public; however, faculty cannot be excluded from any portion of the defense. This petition must be received by the GPD, as appropriate, at least one week before the defense. If approved, the Committee Chair (or Moderator) will announce the closed exam during their review of the ground rules of the defense at the time of the defense (below).

3.7.2 Content of the Defense

- The emphasis of the defense will be on your thesis/dissertation and closely related subjects that require you to demonstrate an understanding of how your work fits into the broader context of environmental conservation.
- The Chair (or Moderator) will chair the defense. The recommended length is two to three hours but with a maximum of four hours. You or any member of the Committee may request the option of having a moderator, which may then be appointed either by the GPD (or the Department Head if the GPD is a committee member). You may appeal to the Department GPD or Head for a variance of rules either before defense or immediately following the defense announcement.
- The Chair (or Moderator) will review the ground rules of the defense and introduce you and the committee members.
- You will summarize your research in a seminar presentation. You will be expected to do this in 30-45 minutes.
- The Chair will invite questions from the audience; the presentation and Q&A session are not expected to exceed 60 minutes in total. After questions, there will be a break, and the candidate and committee members will reconvene to begin the formal examination. All other interested persons (faculty, students, public) are free to attend the examination but may not participate (i.e., they may not ask questions).
- You will be asked questions by each member of the committee (including Consultants) with each questioner given 20-40 minutes depending on the number of committee members and the time available. An examiner may yield the floor, with permission of the Chair, if another examiner wants to pursue a line of questioning toward a logical conclusion or to resolve any ambiguities. Note, non-committee members may be present during the examination, but they

are not allowed to ask you questions. They may participate in the ensuing discussion if and only if the Chair (or Moderator) deems it appropriate and solicits their participation.

- After the examiners are through, you and all other students and non-invited guests will be asked to leave.
- Nonvoting faculty and guests may address comments to the Committee. Nonvoting faculty and guests, excepting the moderator and Consultants, will then be asked to leave before the voting.
- Voting: All voting will be by secret, written ballot for PASS or FAIL. Only officially-appointed examiners vote, the Moderator and Consultants do not vote. After a brief discussion, a first-ballot will be taken. If the votes are unanimously PASS, no further discussion is necessary, and you will have passed the defense. If there are FAIL votes, there will be further discussion regarding the extent and seriousness of your weakness. There will then be a final vote. *The vote must be unanimously PASS for you to pass the defense.*
- You will be informed verbally of the result as soon as it is reached. Note, you may pass the defense, but still be required to make changes in the thesis/dissertation before it is signed in its final form.

3.7.3 After the defense

- The Committee will inform you of any changes required in the thesis/dissertation. *All committee members and the Department Head* (but not necessarily the Consultants) must sign your thesis/dissertation/professional paper in its final form [thesis_approval.doc].
- The Chair will notify the Graduate Dean of the date and results of the defense by a memorandum to be co-signed by the GPD [defense_outcome.doc].
- If you pass the defense, you must complete and sign the Degree Eligibility Form, obtain the required signatures, and deliver it to the Graduate School (Office of Degree Requirements) along with the required fees. For MS Thesis and Ph.D. Degrees, you must also submit your thesis/dissertation and the accompanying signature page to the Graduate School and see that *digital* copies are provided for the Department (delivered to the Main Office) and your major professor. Make sure and check on the deadlines set by the Graduate School for delivering theses/dissertations and other materials. Note, thesis/dissertation can now be submitted electronically, so check with the Graduate School for the procedures on submitting electronically.
- *Consequences of failure.* —If you fail the defense, you may petition (in writing) the Executive Committee of the Department within two weeks of the Examination. If the Executive Committee finds that your Committee has committed one or more procedural errors, it may ask your Committee to reconsider. If there are serious personality conflicts

involved, the Executive Committee may ask the GPD to petition the Graduate School for a new committee to be appointed which may conduct a new defense. Also, you may seek help from the Graduate School directly either by contacting the Assistant Dean or by contacting the Graduate Council. Be aware that they may refuse to hear your petition. Be aware also, that if things get to this point, it is most difficult to resolve the situation to everyone's mutual satisfaction. For example, it may prove impossible to find faculty willing to serve on a new committee. Also, you may find help and advice through the university's Ombuds Office. Finally, your Committee may decide to table a FAIL vote and conduct a second (last) defense after allowing you time to make changes in your thesis/dissertation paper and presentation.

3.7.4 MS Professional General Exam

For professional masters students, a general exam will be administered by the advisory committee. On passing, your major advisor will complete the relevant memo on the outcome of the general exam and send it to GPD for signature and submission to the graduate school. The graduate school requires this memo for graduation.

TIMETABLE, CHECKLISTS, AND FORMS

4.1 Suggested Timetable

You bear the major responsibility for completing your degree promptly. You may find that your major professor doesn't keep track of how long you have been enrolled in your program. This doesn't mean the following responsibilities are unimportant – it just means that you need to push your major professor to help you meet these scheduling goals. The timetable below is meant to be a guide to help you stay on track. However, many situations may require modifications to this timetable. It is the responsibility of you and your major professor to modify the timetable accordingly to see that all degree requirements are met in a timely fashion.

First semester

- Work with your major professor to define your thesis/dissertation.
- Through discussions with your major professor, pick an examination/advising committee (see “Examination/Advising Committee”). Get their approval to be named to the committee. *Have your major professor complete the committee appointment memo (committee.doc) and forward to the GPD for signature and submission to the Graduate School.*
- Prepare the list of courses you plan to take to ensure that you will meet the Core Area requirements (see “Core Area Requirements” below) and get your committee’s endorsement. Note, unlike MS students, Ph.D. students do NOT have any specific course requirements. Ph.D. students are nevertheless expected to demonstrate breadth and depth of understanding in each of the core topic areas in the comprehensive exam. Ph.D. students need to satisfy residency requirements as specified earlier. It is up to the student and their committee to determine how best to achieve this goal, whether through additional coursework or other means.
- Complete the curriculum plan (Curriculum_Plan.docx), course plan (Course_Plan.docx), research timeline (Research_Timeline.docx), and comprehensive assessment plan (Comprehensive_Exam.docx) in consultation with your Eco 601 course teacher (if applicable), major advisor, and advisory committee (if appointed). Completed copies of these forms with all signatures should be submitted to the main office for placing them in your records. These forms will serve as contracts with your advisor and advisory committee and provide transparency to your plan.
- For MS Thesis students, enroll in the following required courses:
 - ECo 601 (Research Concepts) – this course is designed for incoming (Master’s level) graduate students and is taught every Fall semester. Among other things, in this course, you will prepare your thesis proposal and receive critical feedback from your peers.

- ECo 602 (Analysis of Environmental Data) – this course is an introduction to statistical modeling for ECo graduate students in MS Thesis track and is taught every Fall semester. This purpose of this course is to provide the necessary foundation for understanding and using statistics in environmental conservation research. Exemptions from this course are allowed if you can demonstrate comparable statistical training.
- ECo 691A (Seminar Series in Environmental Conservation) – this is the departmental seminar, held every semester. You are required to enroll in any one of the semesters.

Before Final Semester

- For MS students,
- Complete all your Core Area requirements (see “Core Area Requirements” below). Remember, in the comprehensive assessment you are expected to demonstrate to your committee competence in each of the core topic areas, so it behooves you to have completed all necessary coursework before your comprehensive assessment.
- For MS Thesis students, complete your comprehensive Assessment (see “Comprehensive Exam”). Note, only after successful completion of the comprehensive Assessment will you be allowed to schedule your final thesis defense.
- For Ph.D. students, complete your comprehensive examination (see “Comprehensive Exam”). Note, only after successful completion of the comprehensive exam will you officially become a candidate for a Ph.D. *At least one week before the oral portion of the exam, have your major professor announce the exam to the graduate faculty and students [comps_notice.doc]. After the exam, have your major advisor complete the comprehensive exam outcome and candidacy memo [comps_outcome.doc] forward to the GPD for signature and submission to the Graduate School.*
- Present your proposal to your committee. Work with your major advisor to set up a meeting with your committee for a presentation. The purpose of this presentation is to get approval from your committee to move forward with your research plan. Remember, these are the individuals whom you must defend your thesis/dissertation/professional paper to at the end, so it is best to get their approval as to your research plan while you still have time to amend the plan. After the Committee approves of the proposal and signs the approval form [proposal_cover.doc], have your major professor complete the outline approval memo [proposal_memo.doc]. Forward this, along with the outline approval form (signed by all committee members, department head, and GPD) and two copies of the proposal, to the GPD signature and submission to the Graduate School (thesis/dissertation proposals get submitted to the Graduate School).

Final Semester

- For MS Thesis and Ph.D. students, complete your thesis/dissertation, carefully following the guidelines published by the Graduate School. Also, you can contact the Office of Information Technologies/Personal Computer Support Services (5-9730) which offers workshops to help users of common word processing packages deal with formatting tasks and details of thesis/dissertation preparation.
- Submit a draft of your thesis/dissertation to your committee for tentative approval. To fix a defense date, have each committee member email your major advisor indicating that they have reviewed a draft of your thesis and that they have approved the scheduling of your defense. For MS Thesis students, approvals from ALL committee members must be received by your major advisor at least one week before your scheduled defense. For Ph.D. students, approvals from ALL committee members must be received by the major advisor who informs the GPD at least four weeks before your scheduled defense.
- For MS Thesis students, schedule your defense. Note, your defense preferably be at least four months after the Graduate School approval of your thesis outline and must be one week after your major advisor has received approval from ALL committee members. *Have your major advisor notify all ECo faculty and students of your thesis defense via an email announcement at least one week before your defense [defense_notice.doc].*
- For Ph.D. students, schedule your defense. Note, this involves two steps. *First, a copy of the defense announcement [defense_announce.doc] must be forwarded via the GPD at least four weeks before the defense to the Office of Degree Requirements. They will post the announcement online in the Weekly Bulletin. Second, at the same time, have your major advisor notify all ECo faculty and students of your defense via an email announcement [defense_notice.doc].* IMPORTANTLY, your defense preferably is at least seven months after Graduate School approval of your dissertation outline and at least four weeks after the GPD has received the Defense announcement from the Committee Chair.
- For MS Professional students, schedule your general exam before your graduation in consultation with your committee. Your advisor will complete a memo at [MSP_defense_outcome.doc] on the outcome of the general exam and forward it to GPD for signature and submission to the Graduate School.
- Place a copy of your tentatively approved thesis/dissertation in the department office on the day of the defense announcement.
- Defend your thesis/dissertation to your committee and to the Department (see “Thesis/Dissertation Paper Defense”). *After the defense, have your major advisor complete the defense outcome memo [defense_outcome.doc] and forward to the GPD for signature and submission to the Graduate School.*
- In consultation with your major advisor, revise your thesis/dissertation and submit it to the Graduate School.

- Submit a digital copy of your final thesis/dissertation to the Department (to Linda Fortin).
- Complete the degree eligibility form (obtained from the ECo Department office) and forward to the Department Head and GPD for signature and submission to the Graduate School. This form needs to be turned in to graduate school **before the deadline** specified for each graduation date.
- Provide a copy of your final thesis/dissertation to your advisory committee. Make backup copies of data and any pertinent information related to your graduate work for your major advisor. Finalize publication plans with your major advisor.
- Clean desk and research area and return all campus keys.
- Leave forwarding address and telephone numbers at ECo Department office.

4.2 MS Professional Degree Checklist

<u>Item</u>	<u>Date Completed</u>
Name: _____	
Concentration: _____	
Beginning Semester (semester/year): _____	
Statute of limitations (4 years from admission): _____	
• First request for extension to SOL – Memo to Graduate School via GPD [SOL1.doc]	_____
• Second request for extension to SOL – Memo to Graduate School via GPD [SOL2.doc]	_____
Committee members chosen:	
• Memo to GPD [MSP_committee.doc]	_____
List of courses chosen and approved by the Committee:	_____
Core course work completed:	
• Department seminar, ECo 691A (one semester)	_____
Core topic area course work completed	
• Environmental Science: _____	_____
• Quantitative science: _____	_____
• Human dimensions: _____	_____
Comprehensive Assessment completed:	_____
General Exam outcome (pass/fail):	
• Memo to Graduate School [MSP_defense_outcome.doc]	_____
Degree Eligibility Form submitted to Graduate School and Department Head (before specified deadline for that graduation date):	_____
Desk and research areas cleaned; all keys returned:	_____
Forwarding address and telephone numbers to office:	_____

4.3 MS Thesis Degree Checklist

Item	Date Completed
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Name: _____

Concentration: _____

Beginning Semester (semester/year): _____

Statute of limitations (4 years from admission): _____

- First request for extension to SOL –
Memo to Graduate School via GPD [SOL1.doc] _____

- Second request for extension to SOL –
Memo to Graduate School via GPD [SOL2.doc] _____

Thesis topic area chosen: _____

Committee members chosen:

- Memo to Graduate School [MS_committee.doc] _____

List of courses chosen and okayed by Committee: _____

Thesis proposal approved by Committee, Department Head, and GPD and submitted to Graduate School (recommended at least 4 months prior to thesis defense):

- Proposal cover sheet [MS_proposal_cover.doc] _____
- Memo to Graduate School [MS_proposal_memo.doc] _____

Core course work completed:

- Research Concepts, ECo 601 _____
- Analysis of Environmental Data, ECo 602 _____
- Department seminar, ECo 691A (one semester) _____

Core topic area course work completed

- Environmental Science: _____
- Quantitative science: _____
- Human dimensions: _____

Comprehensive Assessment completed: _____

Thesis pre-approved by Committee (i.e., ready to defend; note, each committee member must email Chair at least one week before defense and indicate that the draft thesis has been reviewed and student is approved to defend): _____

Thesis defense scheduled (at least one week prior to defense and preferably four months after proposal outline received by Graduate School): _____

Notice to ECo Faculty and Students [MS_defense_notice.doc] _____

Thesis defense outcome (pass/fail): _____

- Memo to Graduate School [MS_defense_outcome.doc] _____

Thesis revised, signed and submitted to Graduate School: _____

- Thesis signed by Committee & Department Head [MS_thesis_approval.doc] _____

- Final thesis submitted to Graduate School _____

Degree Eligibility Form submitted to Graduate School _____

and Department Head (before specified deadline for that graduation date): _____

Data backup and publication plans finalized: _____

Desk and research areas cleaned; all keys returned: _____

Forwarding address and telephone numbers to office: _____



4.4 Ph.D. Degree Checklist

<u>Item</u>	<u>Date Completed</u>
Name: _____	
Concentration: _____	
Beginning Semester (semester/year): _____	
Statute of limitations (4 years from admission): _____	
• First request for extension to SOL – Memo to Graduate School via GPD [SOL1.doc]	_____
• Second request for extension to SOL – Memo to Graduate School via GPD [SOL2.doc]	_____
Dissertation topic area chosen: _____	
Committee members chosen:	
• Memo to Graduate School [PHD_committee.doc]	_____
List of courses chosen and okayed by Committee: _____	
Comprehensive Examination announcement:	
• Memo to Graduate Faculty [PHD_comps_notice.doc]	_____
Comprehensive Examination completed:	
• Memo to Graduate School [PHD_comps_outcome.doc]	_____
• Memo to Graduate School [PHD-doctoral_candidacy.doc]	_____
Dissertation proposal approved by Committee, Department Head, and GPD and submitted to Graduate School (recommended at least <u>seven months</u> prior to dissertation defense):	
• Proposal cover sheet [PHD_proposal_cover.doc]	_____
• Memo to Graduate School [PHD_proposal_memo.doc]	_____
Dissertation defense scheduled (at least <u>four weeks</u> prior to defense and <u>seven months</u> after proposal outline received by Graduate School):	
• Notice to Graduate School [PHD_defense_announce.doc]	_____

Dissertation pre-approved by Committee (i.e., ready to defend; note, each committee member must email Chair at least four weeks prior to defense and indicate that the draft dissertation has been reviewed and student is approved to defend): _____

Dissertation defense notice to ECo faculty (at least one week prior to defense):

- Notice to ECo Faculty and Students [PHD_defense_notice.doc] _____

Dissertation defense outcome (pass/fail):

- Memo to Graduate School [PHD_defense_outcome.doc] _____

Dissertation revised, signed and submitted to Graduate School:

- Diss. signed by Comm. & Depart. Head [PHD_dissertation_approval.doc] _____
- Final dissertation submitted to Graduate School _____

Degree Eligibility Form submitted to Graduate School

and Department Head ((before specified deadline for that graduation date): _____

Data backup and publication plans finalized: _____

Desk and research areas cleaned; all keys returned: _____

Forwarding address and telephone numbers to office: _____

4.5 Forms

Memos are needed for all communications within the program, as indicated in the checklist above. Anything that is submitted to the GPD and Graduate School should be a memo written in a letter of correspondence format. The standard required memos are described below, and a template has been provided. However, there may be times when a standard memo does not exist to meet your need. When in doubt, check with Linda Fortin in the main office of Holdsworth Hall, and if that doesn't work, call the Graduate School and ask what they specifically want on the submitted "form." Often these forms do not exist and must be customized to the occasion. Finally, when your signature is required, it is recommended that you sign all forms in black ink.

The following forms or templates for various memos that may be needed are available download from the Department website (<https://eco.umass.edu/for-current-students/forms/>) to facilitate communication between you, your advisory committee, the ECo Graduate Program, and the UMass Graduate School. It is you and your major professor's responsibility to fill out the appropriate form and forward it to the GPD promptly when communication with Graduate School is required. Note, these forms are templates only; **you need to replace everything in italics with your personal information**. Please read the templates carefully and review your final memo for completeness and accuracy.

MS Professional Degree Forms:

- [MSP paper approval signature-page-final-paper](#) – signature page for final professional paper
- [MSP memo-to-GPD-naming committee members](#)
- [MSP defense notice-email-memo-to-ECo-announcing-defense](#) – email memo to ECo announcing defense
- [MSP paper approval signature-page-practicum-outline](#)
- [MSP proposal cover-signature-page-for-practicum-proposal1 \(4\)](#) Practicum Proposal cover signature page
- [MSP proposal memo-memo-to-GPD-accompanying-practicum-proposal 10-10](#)

MS Thesis Degree Forms:

- [MS thesis approval-signature-page-for-final-thesis 10-10](#)– signature page for final thesis
- [MS committee-memo-from-GPD-naming-committee-membership](#)
- [MS defense notice-email-memo-to-ECo-announcing-defense](#)
- [MS defense outcome-memo-to-Grad-School-on-outcome-of-defense](#)– memo to Graduate School on outcome of defense

- [MS_proposal_cover-signature-page-for-thesis-proposal](#)
- [MS-proposal_memo-memo-to-Grad-School-accompanying-thesis-proposal](#)

PhD Degree Forms:

- [PHD_committee-memo-to-Grad-School-naming-committee-membership_2019](#)– memo to Grad School naming committee members
- [PHD_proposal_outline_cover_page_2019](#)Dissertation outline cover page
- [PHD_defense_announcement-memo-to-Grad-School-announcing-defense](#)– email memo to ECo announcing preliminary oral exam
- [PHD_defense_announcement-memo-to-Grad-School-announcing-defense_2019](#)– memo to Graduate School announcing defense
- [PHD_defense_notice](#) – email memo to ECo announcing defense
- [PHD_comps_outcome-memo-to-Grad-School-on-outcome-of-preliminary-exam_2019](#)– memo to Graduate School on outcome of preliminary Oral defense
- [PHD_defense_outcome-memo to Grad School 2019](#) – memo to Graduate School on Final Defense outcome
- [PHD_dissertation_approval-signature-page-for-final-dissertation_2019](#) dissertation_approval-signature-page-for-final-dissertation
- [PHD-proposal_memo-to-Grad-School-accompanying-dissertation-proposal_2019](#)– proposal memo to Graduate School accompanying dissertation proposal
- [PHD-doctoral_candidacy](#)– nomination to candidacy for the doctoral degree

Miscellaneous Forms (for all students):

- [SOL1](#) – memo to Graduate School declaring first statute-of-limitations extension
- [SOL2](#) – memo to Graduate School requesting second statute-of-limitation extension
- [Curriculum Plan](#)
- [Course Plan](#)
- [Research Timeline](#)
- [Comprehensive Exam.doc](#) – Comprehensive Knowledge Assessment Report
- [Travel Grant Application](#)

Appendix A. The list of course offerings in each of the core topic areas varies by concentration and is thus given separately in the description of requirements associated with each concentration, which is maintained as separate documents and is available online at the departmental website (<http://eco.umass.edu/index.php/degree-programs/graduate-programs/>). The concentration documents are linked under the section entitled "Organization of the Program." In addition, a list of Environmental Conservation (ECo) course offerings and when they will be offered is available for the same website, but it is subject to frequent changes, and course numbers ending in 91 and 97 will have an additional temporary letter designation (e.g., 697A) each semester, so check the schedule posted on SPIRE and department's course offering sheet (<https://tinyurl.com/y7pz3uu2>). Also note that courses offered by other departments can fulfill the core area requirements, subject to approval by the GPD.

Appendix B. List of Environmental Conservation (ECo) faculty (regular faculty plus adjuncts) and their primary (P) and secondary (S) (in many cases) affiliation with the areas of concentration. Note, the concentration affiliation is used to meet MS examination/advisory committee requirements since one member of the MS Committee must be an “outside of concentration” member having a primary concentration affiliation different from your own.

Faculty (on-campus and Conte.)	Concentrations				
	Wildlife, Fish & Conservation Biology	Forest Resources & Arboriculture	Water, Wetlands & Watersheds	Environ. Policy & Human Dimensions	Building Systems
Averill	P				
Barten		S	P		
Bates			S	P	
Bezanson		P			
Bloniarz		P			S
Bowlick				P	
Bradley	P		S		
Breger				P	S
Butler		P		S	
Catanzaro		P			
Cheng	P				
Clouston		S			P
Danylchuck	P		S		
DeStefano	P			S	
Elkinton	P				
Finn	P		S		
Fiocchi					P
Fletcher		S	P		
Fuller	P				
Griffin	P		S		
Haro	P		S		

Harper		P			
Henson			P		
Jackson	P		S		
Jordaan	P				
Kahl	P				
Kane		P			S
Kim					P
King	P				
Komoroske	P				
Letcher	P				
Maclean	S	P			
Markowitz				P	
McCormick	P				
Milman			S	P	
Nelson		P			
Nicolson			S	P	
Nislow	P				
Patterson		P			
Randhir			P	S	
Roy	P		S		
Schweik				P	
Schreyer		S			P
Sievert	P				
Stinson		P			
Sutherland	P				
VanDriesche	P				
Warren	P			S	
Weil					P

Appendix C. Academic requirements associated with the various degree concentrations are maintained as separate documents and are available online at the departmental website <https://eco.umass.edu/degree-programs/graduate-programs/environmental-conservation-m-s-ph-d/>