

Graduate Student Handbook

Department of Ecology



FALL 2020 Edition

**MONTANA STATE UNIVERSITY – DEPARTMENT OF ECOLOGY
GRADUATE STUDENT HANDBOOK**

or How to Survive Our Graduate School

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INTRODUCTION

Welcome to the Ecology Department at MSU!

This graduate student handbook serves two main purposes:

- It provides advice for understanding and completing each step of the degree process.
- It provides the information needed to manage your responsibilities to the department in your new professional role.

(Some specific advice or information may not apply to you, but your careful consideration of the complete contents is still requested!)

Expectations for an Ecology Graduate Student

Graduate studies are an opportunity to focus on an area of specialization in a discipline or profession of choice. Graduate studies are much more than earning an impressive GPA. It is expected that you will demonstrate the initiative, ambition, excitement, and creativity that an independent position will require when you graduate.

Recognize that more than coursework is required to become independent in your specialization. Extensive reading, beyond the requirements of a course, and a continuing discussion of your ideas for insight, revision, and expansion, will allow you to meet the purpose of the degree. This means that you should set aside time for these activities on campus.

Learn to ask questions that go beyond the facts. The ability to ask challenging questions is a reflection of your knowledge and its applications.

Evaluate yourself and your progress constantly. Consider revising your goals if the program becomes a chore, if your progress is comparatively slow, or if you do not find a challenge that is stimulating.

Remember that one of the reasons you were admitted into our graduate program was the perception that you could become a leader in your field.

Remind yourself that the faculty want you to succeed, but that you must provide the commitment to achieve success.

Practice the self-discipline that the faculty and your future profession are expecting.

SUMMARY OF GRADUATE DEGREE REQUIREMENTS

Please Note: The Graduate School website provides information on policies and procedures, deadlines, and all current forms you will need to complete your degree. The next few pages contain summaries and checklists of the most basic requirements for students in each type of degree – M.S. or Ph.D. If the checklists in this handbook are contrary to what the Grad School has published online, you may double check with the academic services coordinator or the Grad School but can most often assume the Graduate School website has the most accurate and up-to-date requirements.

Although there is some flexibility, you will avoid unnecessary problems if you follow the recommended sequence. Take some time now to fill in the semester deadlines. You can then simply check off each step as it is completed or record the date of completion.

For more detailed descriptions of terms and procedures from the checklists, see section IV of the handbook: “Descriptions and details,” or refer to the Graduate School policies & procedures online.

Reminder: Confirm any information (the most current requirements, credits, deadlines, thesis/dissertation formatting, etc.) and required forms on the **Graduate School website** (<http://www.montana.edu/gradschool/>). Check for **exact** dates and details whenever you are approaching a major event in the checklist provided below.

All Graduate School forms should be submitted to the Ecology Department for copying, filing, and forwarding on your behalf.

A. Checklist for Completing a Master's Degree

1. Before the end of your 2nd semester

a. Develop a preliminary Program of Study and choose a Committee

- ___ Discuss your career plans and graduate school objectives with your major professor (advisor/chairperson) and construct a tentative Program of Study. This should reflect your background and the knowledge base necessary to achieve a broad understanding of your degree field.
See Appendix V for suggested courses.
- ___ Prepare a preliminary outline of your research to facilitate constructive discussion of your research plans.
- ___ Review your research plans individually with potential committee members and request their feedback.
- ___ Choose and confirm your Graduate Committee members. *

*A minimum of three committee members is required for a master's committee. A majority of the committee members must be tenure track faculty in the department. Members of the committee should be individuals who can provide constructive input to your research and program of study. Check with your major professor for recommendations on prospective members.

You may have a tenure track faculty from another department, or an affiliate faculty member as co-chair or another member of the committee. If a potential committee member is not already a tenure track member of the faculty at MSU, you must have the Department and The Graduate School approve him/her as a committee member. First, provide a Curriculum Vita from the potential member with a letter explaining their expertise and how it applies to your project. The Department Head will then provide a recommendation to The Graduate School. This can be done in advance of your Program of Study meeting and should be submitted to the academic services coordinator.

Post Docs may NOT serve as committee members even if they are affiliate faculty.

When all have agreed to serve and any required documentation is provided, their names and signatures are required on the Graduate Program of Study and Committee Form to show their willingness and to give their approval to your Program of Study. This often happens during a student's Qualifying Exam.

b. Take the Qualifying Examination

- ___ Schedule Your Qualifying Exam. It is your responsibility to notify the department academic services coordinator and to reserve a suitable room, as well as necessary presentation equipment (laptop, projector) for committee meetings and examinations. The department academic services coordinator will offer assistance and suggestions. The department Library, 309 Lewis, is often available.
- ___ Take the Qualifying Examination. The Qualifying Exam is an oral examination over general ecology and is described in detail in Appendix I of this handbook. Upon successful completion of the Qualifying Exam, your committee members sign the Report on Exams form that your advisor will bring to the meeting. If a committee member is not able to be present, they may use video-conferencing to attend in accordance with the Video Conferencing Policy from the Graduate School. The department head gives the final approval on your form, and it is sent to The Graduate School and placed into your department file.

If you do not successfully complete the examination, you may take it again during the **following** semester. If you are unable to pass the examination on your second attempt, you will not be permitted to continue your graduate program in the Ecology Department.

c. Complete Your Program of Study and Paperwork

Based upon their evaluation in the Qualifying Examination, your Committee may suggest changes to your Program of Study using the Program Change form. Once a course is graded it cannot be removed from a Program of Study.

- ___ Have Committee members sign your final Program of Study to show their approval of your coursework and their appointment on your committee.
- ___ Submit the form to the department for the signature of the Department Head and for forwarding to The Graduate School.

If you do not meet the deadline for filing your program of study/committee form with The Graduate School by the end of your second semester of classes, a registration hold will be placed on your registration until it is approved. A one-time \$50 processing fee will be charged by The Graduate School to your student account upon approval of the Program of Study. No fee is associated with processing changes. You are responsible for this fee unless your advisor specifically approves payment by other means. *See the Fees & Holds page for more information.*

2. At the end of your coursework and research

a. Thesis Defense and Electronic Submission of Final Thesis

- ___ Register for at least 3 credits in the term during which you want to graduate.
- ___ Submit a Graduation Application to the Department, to be forwarded to The Graduate School before the deadline of the semester in which you plan defend your thesis. This date is usually the **third** Friday of the term. (Note date here: _____.)
A \$20 audit fee is charged to the student's account each term an application is submitted. A one-time \$40 commencement fee is charged to the student's account the first time they apply to graduate. See the Fees & Holds page for more information.
- ___ You must notify Ecology Department at least **14 days** before the scheduled date of your defense. It is your responsibility to ensure that: 1. **all** Supervisory Committee members can be present at the times and dates of the seminar and meeting, and 2. the seminar time and date are publicly advertised. Submit a flyer to the Academic Coordinator 2 weeks before your defense in order to notify the department of your defense and have it advertised on the MSU Calendar online. See office staff for help in securing a room for both your defense and closed-door committee meeting.
- ___ All theses & dissertations are submitted electronically to the Graduate School through an Electronic Thesis and Dissertation (ETD) process. Formatting guidelines and a Graduate School formatting advisor are available to assist you with formatting; see details on the web. It is recommended you start working with the formatting advisor early; they are not looking for content, just formatting. The deadline for submission of your ETD is typically 14 working days before the end of the semester. (Note date here: _____.)
- ___ The M.S. Thesis must be defended, and you should graduate, within 6 years of your first semester of enrollment. The Thesis Defense is a post-project seminar, open to the department and the public, in which your research and conclusions are presented with an opportunity for questions from the audience. Your Graduate Committee will hold a closed-door Defense Meeting on the same day as the seminar. Your Committee Chair must attend in person. *See The Graduate School Video Conferencing Policy.*
- ___ Once your defense is complete, it is your responsibility that all your committee members sign the Report of Thesis Defense form. The closed-door portion is considered the Comprehensive Examination and should be reported as such. Typically, the academic services coordinator will complete this form and have it available in your student file for advisors to bring to your defense for

completion. The Ecology office will obtain the signature of the Department Head and forward it to The Graduate School for signatures.

- ___ Upon final approval of your thesis by your committee, you have the responsibility to complete the required Certificate of Approval Form to The Graduate School.
- ___ Provide the required printed copies of your thesis for the Department of Ecology to be bound and catalogued in the Ecology Library. *See Appendix II for more details.*

If you are unable to meet graduation requirements before the semester deadline, you must withdraw your graduation application, submit a new application, and pay another \$20 audit fee for the correct semester. You are responsible for graduation fees unless your advisor specifically approves the payment. See your committee chair or Academic Advisor if you are interested in a One-Credit Extension in order to complete your degree requirements by the first class day of the next semester.

b. Master's Degree Final Graduation Checklist

- ___ Register for 3 credits in the term you wish to graduate
- ___ Complete your Graduation Application
- ___ Double-check that your Program of Study in DegreeWorks reflects the courses you have completed for your degree and update Program of Study as needed
- ___ Defend your Thesis and pass your closed-door committee meeting.
 - Turn in the Report of Thesis Defense Form
- ___ Submit your ETD (Electronic Thesis) to The Graduate School by the specified deadline
- ___ Complete the Certificate of Approval Form
- ___ Once your thesis is edited to your liking, communicate with the Ecology Department about getting copies printed and bound; remember that printing costs are your responsibility.
- ___ Return all keys to the Facilities Services Key Office (Plew Building) and remove all personal items from your graduate student office and lab. Respond to any check-out emails sent from the department about address changes/email lists/etc.

B. Checklist for Completing a Doctoral Degree

1. Before the end of your 3rd semester

a. Develop a preliminary Program of Study and choose a Committee

- ___ Discuss your career plans and graduate school objectives with your major professor (advisor/chairperson) and construct a tentative Program of Study. This should reflect your background and the knowledge base necessary to achieve a broad understanding of your degree field. Doctoral students do not have required courses; you will develop a Program of Study based on master's courses taken previously and new courses suggested by your advisor and potential committee members.
- ___ Prepare a preliminary outline of your research to facilitate constructive discussion of your research plans.
- ___ Review your research plans individually with potential committee members and request their feedback.
- ___ Choose and confirm your Graduate Committee members. *

*A minimum of four committee members is required on a doctoral committee. A majority of the committee members must be tenure track faculty in the department. Members of the committee should be individuals who can provide constructive input to your research and program of study. Check with your major professor for recommendations on prospective members.

You may have a tenure track faculty from another department, or an affiliate faculty member as co-chair or another member of the committee. If a potential committee member is not already a tenure track member of the faculty at MSU, you must have the Department and The Graduate School approve him/her as a committee member. First, provide a Curriculum Vita from the potential member. Your major advisor will need to write a letter of recommendation to the Department Head explaining why he/she should be a member and what he/she will contribute to your committee. The Department Head will then provide a recommendation to The Graduate School. This can be done in advance of your Program of Study meeting and should be submitted to the academic services coordinator.

Post Docs may NOT serve as committee members even if they are affiliate faculty.

The student and committee can elect to add a graduate representative from another department to the student's graduate committee. See The Graduate School Policy on Optional Graduate Representative online.

When all have agreed to serve and any required documentation is provided, their names and signatures are required on the Graduate Program of Study and Committee Form to show their willingness and to give their approval to your Program of Study. This often happens during a student's Qualifying Exam.

b. Take the Qualifying Examination

- ___ Schedule Your Qualifying Exam. It is your responsibility to notify the department academic services coordinator and to reserve a suitable room, as well as necessary presentation equipment (laptop, projector) for committee meetings and examinations. The Department graduate academic services coordinator will offer assistance and suggestions. The department Library, 309 Lewis, is often available.
- ___ Take the Qualifying Examination. The Qualifying Exam is an oral examination over general ecology and is described in detail in Appendix I of this handbook. Students who successfully passed a Qualifying Exam in the MSU Ecology Department as a M.S. student will not be required to take it as a Ph.D. student. Upon successful completion of the Qualifying Exam, your committee members

sign the Report on Exams form that your advisor will bring to the meeting. If a committee member is not able to be present, they may use video-conferencing to attend in accordance with the Video Conferencing Policy from the Graduate School. The department head gives the final approval on your form, and it is sent to The Graduate School and placed into your department file.

If you do not successfully complete the examination, you may take it again during the **following** semester. If you are unable to pass the examination on your second attempt, you will not be permitted to continue your graduate program in the Ecology Department.

c. Complete Your Program of Study and Paperwork

Based upon their evaluation in the Qualifying Examination, your Committee may suggest changes to your Program of Study using the Program Change form. Once a course is graded it cannot be removed from a Program of Study.

____ Have Committee members sign your final Program of Study to show their approval of your coursework and their appointment on your committee.

____ Submit the form to the department for the signature of the Department Head and for forwarding to The Graduate School.

If you do not meet the deadline for filing your program of study/committee form with The Graduate School by the end of your third semester of classes, a registration hold will be placed on your registration until it is approved. A one-time \$50 processing fee will be charged by The Graduate School to your student account upon approval of the Program of Study. No fee is associated with processing changes. You are responsible for this fee unless your advisor specifically approves payment by other means. *See the Fees & Holds page for more information.*

2. At the end of your coursework and research

a. Comprehensive Examination

The Comprehensive Examination is the major academic examination during doctoral study that assures to graduate faculty that you have attained sufficient mastery of a program of study. It must be both written and oral. You and your full committee are responsible for arranging the Comprehensive Examination schedule. This includes the potential assigned grad rep for the oral exam. The Committee Chair must attend in person and other committee members may attend through video conference in accordance with the Video Conferencing Policy from the Graduate School. This examination is valid for five (5) years from the term of successful completion.

____ You must be registered for a minimum of 3 credits during the term in which the examination is taken.

____ Two-thirds (2/3) of the course work required for a degree must be completed prior to sitting for the comprehensive exam.

____ You may choose to schedule and hold your Comprehensive Examination prior to the semester in which you defend your Dissertation. See The Graduate School website for information and requirements of the Comprehensive Examination.

____ The time and place of the examination must be announced by your committee at least one month before the examination by written notice to you.

____ The last day to take the comprehensive exam is on or before the 14th business day prior to the end of the term the student intends to graduate. (Note date here: _____)

____ The Department Head is responsible for giving written notice of the results of each section (oral and written) of the examination to you and to the Dean of The Graduate School no later than five (5) business days after the examination is held or after each section is administered..

You are allowed two (2) total attempts to pass the comprehensive examination. At least six (6) months must elapse before the second (2nd) attempt at the examination. Failure to pass the second (2nd) attempt results in termination of graduate study and dismissal from the academic program. Students who are dismissed from the program due to a second (2nd) failed attempt are ineligible to reapply to the same degree program.

b. Dissertation Defense and Electronic Submission of Final Dissertation

- ___ Register for at least 3 credits during the term in which you want to graduate.
- ___ Submit a Graduation Application to the Department, to be forwarded to The Graduate School before the deadline of the semester in which you plan defend your thesis. This date is usually the **third** Friday of the term. (Note date here: _____.)
A \$20 audit fee is charged to the student's account each term an application is submitted. A one-time \$40 commencement fee is charged to the student's account the first time they apply to graduate. See the Fees & Holds page for more information.
- ___ Each member of the graduate committee must be given a minimum of fourteen (14) business days prior to the defense date to read the dissertation. The graduate committee chair should discourage a candidate from defending if the candidate is not adequately prepared.
- ___ You must notify Ecology Department at least **14 days** before the scheduled date of your defense. It is your responsibility to ensure that: 1. **all** Supervisory Committee members can be present at the times and dates of the seminar and meeting, and 2. the seminar time and date are publicly advertised. Submit a flyer to the Academic Coordinator 2 weeks before your defense in order to notify the department of your defense and have it advertised on the MSU Calendar online. See office staff for help in securing a room for both your defense and closed-door committee meeting.
- ___ All theses & dissertations are submitted electronically to the Graduate School through an Electronic Thesis and Dissertation (ETD) process. Formatting guidelines and a Graduate School formatting advisor are available to assist you with formatting; see details on the web. It is recommended you start working with the formatting advisor early; they are not looking for content, just formatting. The deadline for submission of your ETD is typically 14 working days before the end of the semester. (Note date here: _____.)
- ___ The Ph.D. Dissertation must be defended, and you must graduate, within 10 years of your first semester of enrollment. The Dissertation Defense is a post-project seminar, open to the department and the public, in which your research and conclusions are presented with an opportunity for questions from the audience. Your Graduate Committee will hold a closed-door Defense Meeting following the public seminar and it is expected that the entire doctoral defense (both public and private portions) take place on the same day and back to back. However, if there are extenuating circumstances due to committee composition or time zones, the Graduate School policy can be appealed. An appeal must be supported by the student's chair or co-chairs and the department head. Your Committee Chair must attend in person. *See The Graduate School Video Conferencing Policy.*
- ___ Once your defense is complete, it is your responsibility that all your committee members sign the Report of Thesis Defense form. Typically, the academic services coordinator will complete this form and have it available in your student file for advisors to bring to your defense for completion. The Ecology office will obtain the signature of the Department Head and forward it to The Graduate School for signatures.
- ___ Upon final approval of your thesis by your committee, you have the responsibility to complete the required Certificate of Approval Form to The Graduate School.
- ___ Provide the required printed copies of your thesis for the Department of Ecology to be bound and catalogued in the Ecology Library. *See Appendix II for more details.*

If you are unable to meet graduation requirements before the semester deadline, you must withdraw your graduation application, submit a new application, and pay another \$20 audit fee for the correct semester. You are responsible for graduation fees unless your advisor specifically approves the payment. See your committee chair or Academic Advisor if you are interested in a One-Credit Extension in order to complete your degree requirements by the first class day of the next semester.

c. Doctoral Degree Final Graduation Checklist

- ___ Register for 3 credits in the term you wish to graduate
- ___ Complete your Graduation Application
- ___ Double-check that your Program of Study in DegreeWorks reflects the courses you have completed for your degree and update Program of Study as needed
- ___ Defend your Thesis and pass your closed-door committee meeting.
 - Turn in the Report of Thesis Defense Form
- ___ Submit your ETD (Electronic Thesis) to The Graduate School by the specified deadline
- ___ Complete the Certificate of Approval Form
- ___ Once your thesis is edited to your liking, communicate with the Ecology Department about getting copies printed and bound; remember that printing costs are your responsibility.
- ___ Return all keys to the Facilities Services Key Office (Plew Building) and remove all personal items from your graduate student office and lab. Respond to any check-out emails sent from the department about address changes/email lists/etc.

PROGRESS IS YOUR RESPONSIBILITY

You are responsible for meeting all REGISTRATION requirements and deadlines and/or CONFIRMATION OF ATTENDANCE requirements.

You are responsible for making sure that the prerequisite information is presented to The Graduate School (TGS) before a DEFENSE. You must also be registered for the correct number of credits during the semester of your defense or TGS may deny permission or refuse to recognize your defense.

You are responsible for completing your degree within the TGS established STATUTE OF LIMITATIONS. If you do not meet the recommended deadlines, your coursework may need to be revalidated (with written approval only) or retaken or you may have to reapply for admission to the program.

You are responsible for meeting the deadline for the APPLICATION FOR ADVANCED DEGREE.

FUNDING IS YOUR RESPONSIBILITY

You are ULTIMATELY responsible for making sure that you receive any funding during your program of study. Well before the beginning of EACH SEMESTER, check with your advisor or the graduate coordinator to make sure that the funding (stipend or tuition and/or fees) you are anticipating is IN PLACE.

You are responsible for REGISTERING EARLY ENOUGH to make sure that your graduate assistantship funding can be submitted and approved on time.

You are responsible for checking the balance on your STUDENT ACCOUNT regularly. Fees may post at any time without specific notification. These include Graduate School fees, student health services, and prescriptions.

ACCOUNTING DOCUMENTATION IS YOUR RESPONSIBILITY

You are responsible for providing a DETAILED LIST OF ALL PURCHASES from your grant and the grant number to the accountants. This list may be on an invoice or on a receipt. Your copy of the signed credit card slip is not a detailed list for all expenditures.

Know your responsibilities for TRAVEL and ask for help whenever it seems confusing.

DESCRIPTIONS AND DETAILS

Major Advisor or Graduate Committee Chair

The professor who supported your application into the Ecology degree program will also be your major advisor and graduate committee chair as you work to earn your degree. Since your major professor selected you to mentor through the degree process, he or she expects you to succeed and will do all that can be done to help you during your graduate work. Your committee chair has the experience to help you become a professional. You should approach him or her as a professional colleague to discuss your profession and to seek advice about your progress.

Your committee chair has the major responsibility to evaluate, and, possibly, to enforce, your progress in a timely way. If you are communicating freely and frequently, problems of frustration are less likely to occur. If it seems that a disagreement cannot be resolved with a professional discussion, remember that the graduate school representative, the department head, other committee members, or The Graduate School can be approached for help in resolving the conflict.

Major conflicts and misunderstandings can be avoided if you resolve two important issues early in your research. Authorship sharing and patent sharing must be formalized. Your advisor's expectations may be quite different than your own expectations so early, open discussion, and formal agreement, about sharing the results of your shared research will provide the foundation for cooperation. In cases of serious disagreement, it is your prerogative to request a change in major professor, but it is your responsibility to find someone else willing to serve in that capacity, and you may forfeit any research assistantship provided by your former major advisor.

Graduate Committee and Program of Study

During your second (MS) or third (PhD) semester of graduate study, it is a requirement to meet with your major professor and form the committee that will also help to mentor your progress. Together, you should complete a tentative list of courses and a schedule before the end of the required semester. The Program of Study for the graduate degree (not additional courses to satisfy deficiencies) must meet The Graduate School requirements as clarified here.

Program of Study Requirements

- All students earning a Master of Science degree from Montana State University must complete a minimum of 30 credit hours post-baccalaureate. A minimum of 20 course credits and a minimum of 10 thesis credits are required on the program of study.
- All students earning a doctoral degree from Montana State University must complete a minimum of 60 credit hours post-baccalaureate. For those who have completed a masters, a maximum of 30 credits may be applied to the PhD program of study. To complete the PhD, a minimum of 18 credits of dissertation credits and 12 course credits are required on the program of study. For candidates who have not earned a master's degree the program of study must include a minimum of 28 dissertation credits and 32 course credits in order to earn a PhD.

Your full Graduate Committee will need to meet to approve your Program of Study. (This form is often completed at the same time as the Qualifying Exam.) the Graduate Committee/Program Study Form requires the signatures from the full committee for approval to show their willingness to serve and to give their approval to your Program of Study. The academic services coordinator will forward the form for approval from the Department Head and TGS.

Committee Membership Requirements

A minimum of three committee members for the MS and four plus an optional grad rep assigned by the Graduate School for the PhD are required. Your major professor must be a tenure-track faculty member, but you may have an affiliate faculty member as co-chair. If a potential committee member is not already a tenure track member of the faculty at MSU, you will need to have the Department and The Graduate School (TGS) approve him/her as a committee member for voting purposes. Provide a Curriculum Vita from the potential member. Your major advisor will need to write a letter of recommendation to the Department Head explaining why he/she should be a member and what he/she will contribute. The Department Head will provide a recommendation. This can be done in advance of your Program of Study meeting and should be submitted to the academic services coordinator.

At least 50% of your committee must be members of the Department of Ecology. Post docs may NOT serve as committee members even if they are affiliate faculty. Faculty should be asked if they are willing to serve. When all have agreed to serve and any required documentation is provided, their names and signatures are required on the Graduate Program of Study and Committee Form to show their willingness and to give their approval to your Program of Study.

If you will be off campus during the required semester, you must complete this before you leave! A HOLD is placed on your registration by the Graduate School if you miss the semester deadline.

Once the committee membership and program of study are approved by the Head of the Department and the Vice Provost of The Graduate School, they may only be changed with their approval as well. There is a *Graduate Program Change* form for this process.

Students are not allowed direct access to their files. It is important that you have your own copy of your Graduate Program and Committee Form for your reference when you register. Once approved, your Program of Study will be built into your DegreeWorks and should be referenced there. You will need to check that the classes you have taken match the courses listed on this form when you are ready to graduate. Any changes to that program, or your committee membership, need official approval from several officials (on a designated form).

The required basic curriculum for the M.S. degree program is provided in *Appendix V*.

Research Proposal

Research proposals are not a formal departmental requirement, check with your major advisor for his or her policy on research proposals. The Research Proposal is a scholarly work and may be your first attempt at such an endeavor. A well-designed research proposal can do a lot to ensure your success. A proposal is no more than a thorough statement of the research that you are planning to do. Writing the proposal forces you and others to evaluate your ideas and to see whether they withstand critical scrutiny. It is better to identify weaknesses in research plans before the work is started than during the project (or even worse, after the work is completed).

All proposals must identify and discuss the relevance of studies that have been conducted by others and published. This literature review can also be included in your thesis or dissertation and represents early progress on your research. Obviously, it comes before the research, so you are not expected to have final results. Nonetheless, some students may have preliminary results from pilot studies. If you do not have any preliminary results, consider using hypothetical results to analyze graphically and/or statistically to help you and your committee members conceptualize what the results may look like.

This may be your first attempt at technical writing, something that will become a common professional endeavor. The ability to communicate effectively is critical. Talk to your major advisor and

committee members about technical writing and look at style manuals for assistance. Begin with your outline. Give early drafts to your graduate student peers for critiques and the more polished drafts to your major advisor for critical review. Numerous revisions and major rewrites (usually entailing more than checking spelling and grammar) may be necessary. You should recognize that many of the faculty may use the proposal as the document which illustrates your writing competency, one requirement to become a “candidate.”

The following criteria will help you evaluate your proposal.

1. An individual, who is an informed reader but not necessarily an expert in the field, will be able to understand what you are writing, trace the logical development of your ideas, and clearly understand your planned research.
2. The question (hypothesis) of your research is clearly stated.
3. The reason why your research is an important addition to previous research is well argued.
4. The methods that you use to collect your data are both carefully developed and explained.
5. The analysis of the data is described specifically.
6. The data analysis will provide a direct and meaningful answer to your question.
7. Alternative explanations for your anticipated results have been clearly considered and a means to discriminate among them has also been developed.
8. This study will be a significant addition to the knowledge in your field.

Note: The first six criteria deal primarily with the technical aspects of the proposal. Proposals from both MS and PhD students should fit these descriptions. Numbers 7 and 8 help evaluate the originality of the project and need full consideration from the PhD candidate’s proposal.

If your response is, “true, my proposal meets this criterion” to all of these, go through the list once again! Positive responses, following critical evaluation, to all these criteria indicate that you have done a good job and have progressed along the road to solving problems analytically and identifying important questions.

A profitable way of thinking about the proposal is that it should be easily adapted to become your introduction and method sections in your thesis/dissertation. There is no length requirement for the proposal, but it should be long enough to meet the suggested standards, plus provide the necessary literature citations to support claims. Pilot data can be included if any are available. Figures and tables should also be used.

Qualifying Examination

The qualifying exam is the first major exam that assesses your ability to synthesize and use information from many different sources. One of the biggest differences between graduate and undergraduate study is that *you must take substantial responsibility for your own learning*. With help from your major advisor and committee, you must identify your areas of focus, determine what you need to know, develop a plan to gain that knowledge and implement the plan. The qualifying exam, comprehensive exam, and thesis defense are used to structure this process and assess your progress.

Goals: The goals of the qualifying exam are:

1. To assess general preparation in ecology, and in the aspects of general biology most relevant to ecology. You are expected to have retained the background knowledge from a good undergraduate degree in the life sciences.
2. To identify strengths and weakness in your specific areas of specialization.
3. To provide experience in communicating complex ideas, and to assess communication skills.
4. To provide experience in critical thinking, and to assess critical thinking skills.

Timing: The qualifying exam will be completed by the end of the second semester for a M.S. degree or by the end of the third semester for a PhD degree, if possible.

The faculty views the preparation for this exam to be more valuable than the exam itself because the preparation will require you to read, synthesize and think about a broad range of subjects that will form the base of your graduate education.

Structure of the Exam:

- a) **Oral Test:** The qualifying exam is only an oral test. It has no formal written component (but see Research Proposal below). The exam typically lasts about 2 hours, but the committee can make it longer or shorter.
- b) **Areas of Specialization:** You must select four areas of specialization from six options, which are:
 - Scientific Methods & Quantitative Methods
 - Population Ecology & Conservation Biology
 - Community Ecology
 - Evolution & Genetics
 - Landscape Ecology
 - Physiological & Ecosystem Ecology

For each of these options, a set of example questions and required readings is attached. (See *Appendix I*.) These questions are not intended to be an exhaustive study guide. They are simply examples of the type of questions that faculty ask in the qualifying exam. The required readings are intended to provide a common background expected of all students in that area of specialization. Where a required reading list is not available you are encouraged to talk to your major professor and committee members about recommended reading. You can expect that your committee will draw from these sources for basic questions. For all qualifying exams, you are also expected to have retained the basic knowledge that is common to typical undergraduate degrees in population or organismal biology, ecology, or fish and wildlife. Note that this implies that you will have some grounding in each of the six areas of specialization.

- c) **Graduate Committee Discretion:** Your committee will also develop questions tailored more directly to your own project. Your graduate committee has considerable latitude in determining the structure of your qualifying exam. At least two months prior to the exam, you should speak to each member of your committee to get a clear picture of their expectations and their recommendations for preparation (in addition to these general guidelines). Discuss these expectations with your major advisor.
- d) **Research Proposal:** Proposal defenses are not a part of the qualifying exam. The department has no explicit requirement for a thesis proposal, but many committees will require you to give them a written proposal for your thesis project. Speak to your committee about their expectations for a proposal and discuss these expectations with your major advisor. Many committees will require an oral presentation of your research proposal as a meeting separate from the qualifying exam. This usually consists of discussion and questions based on the written proposal and on your oral presentation of it. Proposal defenses are common, but not currently required by the department or by the TGS.

Possible Outcomes of the Exam: The formal outcome of the exam is determined by majority vote; unanimity is not required. In case of a tie, the committee will discuss and re-vote. If still tied, the major professor will break the tie. Possible outcomes are:

- **Pass:** no further action required.
- **Pass with Informal Follow-Up:** This will be reported as a pass to the Graduate School after the exam. No further action formally required at levels outside the department, but with departmental requirements for further reading, written reports on areas of weakness, or addition of coursework to the proposed plan of study. The major advisor should provide documentation for the student's file.
- **Not Pass with Retake:** A timeline for a retake is established, in addition to the steps outlined for pass with informal follow up. Retaken exams will be no sooner than one month but no later than six months after the initial exam. Failure to retake on the planned schedule will result in a fail. The major advisor should provide documentation for the student's file and report the pass/fail outcome at the time of the retake.
- **Fail.** Failing the qualifying exam twice will result in the termination of your graduate program in the department.

Comprehensive Examination (Ph.D. only)

The Comprehensive Exam is used to determine that you are prepared to conduct independent research with success. It evaluates these three main areas: knowledge of your specialization and supporting areas; understanding of the philosophies current in your field; and ability to communicate your knowledge and understanding very well.

The exam has two parts. The written exam is a set of questions gathered from each member of the Graduate Committee that is answered with essays. The oral exam is the test of your ability to answer questions verbally. The oral portion must be attended by the optional graduate representative if one is assigned.

A typical Comprehensive Exam would consist of questions (minimum of one) from each committee member. Written answers must be completed over at least 5 working days but for no longer than 10 working days. The scope of knowledge to be addressed in written and oral questions can vary considerably from quite broad to quite specific. An individual committee member may require you to answer the written portion from memory or may allow you to use reference material. Both the scope and form of the exam are at the discretion of your Graduate Committee, collectively and individually. You should discuss their planned approach with them ahead of time so that you know what to expect.

A decision as to the acceptability of your answers will be determined within 2 weeks of the completion of the exam. To receive approval for this portion of the exam, at least two-thirds (e.g. 4 of 5) of your committee members must signify that you "passed" their portion of the exam. This could be accomplished with the approval of your original answers or through required follow-up work such as a review paper, etc. Failure to pass the written exam ends the Comprehensive Exam.

The oral exam is generally used for two purposes: (1) to clarify any ambiguous responses to your written exam and to probe deeper into your understanding in areas critical to your research and (2) to assess your ability to think on your feet and verbally communicate succinctly your understanding of the discipline. Ask your major advisor and graduate committee members how they perceived your performance on the written exam before you take the oral exam. This should help you to be fully prepared.

There are ways to help maintain your confidence during an oral exam. If you do not know an answer, do not "bluff". Bluffing is obvious, and it might stimulate questions to uncover your bluff. Instead, admit that you cannot answer the question now, or consider asking for a clarification of the intent of the question. If you recognize that you are feeling too emotional, ask for a brief pause; you may request permission to leave the room momentarily. If you feel "hassled," diffuse the situation rather than becoming

defensive or angry. Recognize that your committee has an obligation to the discipline to make sure all graduates are fully capable and that they must sometimes press you for such assurances. Be sure to keep in mind that these committee members are your mentors who want you to succeed. However, they will be and must be thorough in determining whether their expectations have been met.

The Committee will ask you to leave the room while the decision is made, possible outcomes include:

- **Pass:** This decision means that a majority of the committee members recommend that you can continue your candidacy in the PhD program.
- **Fail:** You are allowed two (2) total attempts to pass the comprehensive examination. At least six (6) months must elapse before the second (2nd) attempt at the examination. Failure to pass the second (2nd) attempt results in termination of graduate study and dismissal from the academic program. Students who are dismissed from the program due to a second (2nd) failed attempt are ineligible to reapply to the same degree program.

Thesis (M.S. only)

Your thesis is the high point of your degree work. You will want it to point to the professional and academic achievements that you have accomplished and that indicate that you are ready to find employment or to do specialized work in a PhD program.

You must understand and use the format requirements for The Graduate School. (See “The Graduate School Handbook for Thesis/Dissertation Writing.”) Your Graduate Committee may set additional requirements to follow.

Your thesis/dissertation must be well written. The writing process is challenging, and it will take a great deal of time. There should be many revisions. Do not expect to complete it with a single draft! Your fellow graduate candidates will be excellent reviewers for the early drafts. Ask your major advisor to comment on a more polished draft before you even consider presenting it to any other graduate committee members. Everyone must rewrite their thesis/dissertation! If you use the same criteria that you used for your research proposal, you will avoid glaring errors for correction.

You should consider writing one or more chapters of your thesis/dissertation in the format for the journal in which you intend to publish. This will give you practice in writing for publication, and you will be ready to publish sooner. However, the format for journals is not identical to The Graduate School (TGS) format in all cases. You will need to work with your advisor to creatively meet both requirements.

Since the thesis is the final presentation and discussion of your research results, it must be formally defended to your Graduate Committee. It is your responsibility find a date that works for each committee member and to formally notify each member, and the TGS, of the final date and location. This often occurs following your public defense.

Comprehensive Exam and Defense of Thesis (M.S. only)

The Department of Ecology combines an oral Comprehensive Exam and the Defense of Thesis in one evaluation session for master’s degree candidates. (There is at present no written comprehensive exam for master’s candidates.) Schedule several hours for your presentation, questioning, and evaluation.

Since the thesis is the final presentation and discussion of your research results, a public presentation of your work is the first requirement. Then it must be formally defended to your Graduate Committee.

IMPORTANT: Do not schedule your Defense of Thesis until you have clear indications that your committee is ready to approve your work.

In addition, your Graduate Committee must be given a copy of your thesis a minimum of two (2) weeks before you notify the TGS of your defense. Because the TGS requires a minimum of 14 business days' notice of your defense, you should not publicize your Defense of Thesis any sooner than three (3) weeks after giving it to your committee members. This timeline assumes that there will be no major problems. Be prepared for an individual committee member to require substantial changes before they agree that you are ready for your formal defense.

Because this is a formal presentation, your presentation should be well prepared and include visuals and/or media. Be sure to include the following insights into your research work:

- A clear statement of the question that your research addressed
- An explanation of the importance of your question considering earlier work by others
- A presentation of the methods and/or techniques of research and analysis of the data
- A clarification of any weaknesses in your data and/or how you might have done the research differently given the experience that you gained
- The conclusions supported by your data and their comparison with other findings

Graduate Committee Evaluation Session (M.S. only)

Generally, immediately following the public defense, but at least within 48 hours, your full Graduate Committee has the responsibility to conduct an oral thesis defense. The defense is used to clarify any ambiguous sections in your thesis or public presentation and to assess your ability to succinctly communicate your methods and results. Your committee chair must attend in person and all Video Conferencing policies must be observed.

There are ways to help maintain your confidence during an oral exam. If you do not know an answer, do not “bluff”. Bluffing is obvious, and it might stimulate questions to uncover your bluff. Instead, admit that you cannot answer the question now, or consider asking for a clarification of the intent of the question. If you recognize that you are feeling too emotional, ask for a brief pause; you may request permission to leave the room momentarily. If you feel “hassled,” diffuse the situation rather than becoming defensive or angry. Recognize that your committee has an obligation to the discipline to make sure all graduates are fully capable and that they must sometimes press you for such assurances. Be sure to keep in mind that these committee members are your mentors who want you to succeed. However, they will be and must be thorough in determining whether their expectations have been met.

Following the defense, the committee will vote on the quality of your thesis and your oral examination. These decisions are possible:

- **Pass:** This means that your committee will sign the *Report on Thesis Defense*, brought to the meeting by your advisor, recommending you be granted an advanced degree. This often includes minor revision of the thesis and/or passing of courses that you are currently taking.
- **Fail:** The student is allowed two (2) total attempts to pass the defense. At least two (2) months must elapse before the second (2nd) attempt takes place. Failure to successfully pass the second attempt results in termination of graduate study and dismissal from the academic program. Students who are dismissed from the program due to failure to pass the defense are ineligible to reapply to the same degree program. This is an unlikely event since your major advisor and supervisory committee would have indicated that likelihood much earlier.

Without exception, a decision of failure will be reviewed by The Graduate School and the Department Head.

Dissertation (Ph.D. only)

Your dissertation is the high point of your degree work. It will also open the doors to future research opportunities. This means that its degree of scholarship will be acceptable for peer-reviewed publication in your field of expertise. You must understand and use the format requirements for The Graduate School. (See “The Graduate School Handbook for Thesis/Dissertation Writing.”) Your Graduate Committee may set additional requirements to follow.

Your dissertation must be well written. The writing process is challenging, and it will take a great deal of time. There should be many revisions. Do not expect to complete it with a single draft! Your fellow graduate candidates will be excellent reviewers for the early drafts. Ask your major advisor to comment on a more polished draft before you even consider presenting it to any other graduate committee members. Everyone has to rewrite their dissertation! If you use the same criteria for your dissertation that you used for your research proposal, you will avoid glaring errors for correction. The originality of your research should be clear.

Since this work must be published, you might select options that will minimize your need to rewrite material before submission to a journal, monograph series, etc. You should consider writing one or more chapters of your thesis in the format for the journal in which you intend to publish. This will prepare you for writing for future publication, and you will be ready to publish sooner after your defense. However, the format for journals is not identical to The Graduate School (TGS) format in all cases. You will need to work with your advisor to creatively meet both requirements.

Since the dissertation is the final presentation and discussion of your research results, a public presentation of your work is the first requirement. Then it must be formally defended to your Graduate Committee.

IMPORTANT: Do not schedule your Defense of Dissertation until you have clear indications that your committee is ready to approve your work.

In addition, your Graduate Committee must be provided with a copy of your thesis a minimum of fourteen (14) business days before your defense. Because TGS requires a minimum of seven (7) days’ notice of your defense, you should not publicize your Defense of Thesis any sooner than three (3) weeks after giving it to your committee members. That assumes that there will be no major problems. An individual committee member may require substantial changes before they agree that you are ready for your formal defense.

Public Defense Seminar

A public seminar is part of the formal defense requirement for a MS and a PhD candidate. Schedule a maximum of 45 minutes presentation and allow at least 15 minutes for questions from the audience. It is your responsibility to find a date and time that fits the schedule of each committee member, including the optional Graduate Representative assigned by the TGS to a PhD committee. In addition, you must broadly advertise the seminar at least 7-14 days before the presentation. The departmental affairs coordinator will submit the required announcement for the MSU Calendar of Events and will help to advertise within the department, but you should also do some additional advertising in other departments which share research interests. Be sure to send a defense flyer that includes your name, title, and defense time and place to the department at least 14 days before your defense.

Because it is a formal presentation, the seminar should be well prepared and include visuals and/or media. Be sure to include these insights into your research work:

- A clear statement of the question that your research addressed
- An explanation of the importance of your question, considering earlier work by others
- A presentation of the methods and/or techniques of research and analysis of the data
- A clarification of any weaknesses in your data and/or how you might have done the research differently given the experience that you gained
- The conclusions supported by your data and their comparison with other findings

Defense of Dissertation Meeting (PhD only)

Generally, immediately following the oral presentation, but at least within 48 hours, your full Graduate Committee has the responsibility to conduct an oral dissertation defense. The defense is used to clarify any ambiguous sections in your dissertation or oral presentation and to assess your ability to succinctly communicate your methods and results. These decisions are possible:

- **Pass:** This means that your committee will sign the *Report on Dissertation Defense*, brought to the meeting by your advisor, recommending you be granted an advanced degree. This often includes minor revision of the thesis and/or passing of courses that you are currently taking.
- **Fail:** You are allowed two (2) total attempts to pass the defense. At least two (2) months must elapse before the second (2nd) attempt takes place. Failure to pass the second (2nd) attempt successfully results in termination of graduate study and dismissal from the academic program. Candidates who are dismissed from the program due to failure to pass the defense are ineligible to reapply to the same degree program. This is an unlikely event since your major advisor and supervisory committee would have indicated that likelihood much earlier. Without exception, a decision of failure will be reviewed by The Graduate School and the Department Head.

Leave of Absence and Continuous Enrollment

After a qualifying event, to maintain graduate status, a student must be enrolled in three (3) or more credits (including thesis or dissertation) each semester, excluding summer semester.

Qualifying events include:

- **Master's students:** after completion of required content course work on the approved graduate Program of Study (content coursework *excludes* thesis or dissertation credits) **OR** after the student passes *any portion* of the comprehensive examination.
- **Doctoral students:** after passing *any portion* of the comprehensive examination.

Students to whom continuous enrollment applies may have a leave of absence from the university for a maximum of three semesters, excluding summer term, without penalty. These leaves of absence may be taken as consecutive or individual semesters. No form or approval from The Graduate School is required to be absent but you must notify your major advisor and complete an Intent to Register before returning. Excess leaves of absence may be approved for documented medical reasons or military duty.

Registering for **less than 3 credits** is a leave of absence. Students who want to maintain access to MSU library resources may register for 1-2 credits. Students who are not registered (zero credits except summer semester) are not entitled to use any university facilities including the library. A comprehensive exam or defense of thesis/dissertation may not be conducted during a semester off (less than 3 credits).

Failure to maintain continuous enrollment (3 or more credits) constitutes evidence that the student has resigned from the degree program and Montana State University.

One Credit Extension Policy

This option is a **courtesy** only available to students who defend during a semester in which they have already applied for graduation. The first step is to withdraw your application for graduation and reapply with the request for the one credit extension.

To be eligible for the one credit extension these requirements must be met:

1. You must defend before the end of the semester in which you applied to graduate. You must be registered for 3 credits at the time you defend. If a student wishes to sit for the defense during the intersession (i.e., the time between terms), the student must be registered for a minimum of three (3) credits the term prior to the intersession.
2. Your thesis publication approval must be submitted to the Grad School by 5 pm on the first day of the immediately following semester. This may be submitted between the semesters. If you miss the start of the semester deadline, you must register for 2 more credits. You could also take a leave of absence and apply to graduate the following semester when you again register for 3 credits minimum.

You are **not** eligible for a tuition waiver or a research assistant appointment during the 1 credit extension semester. If you are not a resident, you will be charged at the full non-resident rate.

You will graduate at the end of the semester in which you are registered for one credit if you meet these requirements for the extension. Your degree will be awarded at the end of the term, but documentation of your completion of degree requirements is available from the Grad School upon request.

GRADUATE SCHOOL REQUIREMENTS

- All requirements, policies, and forms are updated on the TGS website, <http://www.montana.edu/wwwdg/>.
- It is recommended that you confirm all information there before you proceed at any point in your program or submit any required forms.
- The department staff and faculty are ultimately not responsible for checking for new information, policies, or forms though every effort will be made to stay up to date.
- The Graduate School site includes the current information about such their policies such as **limitations** on the **age of courses**, limitations on the **age of comprehensive exam**, **continuous enrollment**, and **requirements** for the program and study and committee approval.
- The department has the option to require additional limitations and/or requirements for completing your degree. The qualifying exam is an example of a department requirement.

STUDENT TOPICS

Orientation Meeting

Every graduate student is expected to attend a The Graduate School orientation meeting/reception at the beginning of fall or spring semester each year. Schedule of time and location is usually posted throughout campus and in the office. New graduate students will also receive a location notice in their email. New students are automatically charged an orientation fee which cannot be covered with grant funding. The Department may also hold an orientation/get together meeting for Graduate Students at the start of the semester. Graduate students are introduced to the department at the second meeting of the BIOE 494 Seminar.

During the Graduate School Orientation, you will receive training on mandatory topics such as ethics, Title IX, Safety & Risk, Library, Research Compliance, CITI Training, gaining residency and more. You must also be aware that the correct and most current graduate catalog is on-line. In the past, TGS has made changes to the online version of the catalog with no notification to students or advisors. It would benefit you to check the online catalog for all deadlines and procedures as you reach each milestone of your degree.

If you look at the on-line catalog, <http://www.montana.edu/gradstudies/catalog.html>, there are sections titled “Master’s Requirements” and “Doctoral Requirements”. These sections will have the most current information regarding your program.

ID/Cat Card

When you are accepted into the Graduate program here at Montana State University, you are assigned an eight-digit student identification number. This number is your Student ID or GID number, and it would be helpful if you could memorize it. You will need to obtain the MSU CatCard with this number for identification. You will always want to carry it with you. It allows access to the gym, library checkout, and other campus services. It would be your ID for any student discounts at local businesses, as well.

You will be charged a onetime \$15 student card fee when you first register for the cost of your MSU CatCard. It is issued in the CatCard Office located below the Miller Dining Commons in Hedges Complex Rm 31. A photo will be taken, or you can submit one online prior to pick up. This is a personal cost—almost no outside funding covers this expense.

The card can be used as a debit card at various places on campus if money deposits are made for the Cat Card.

Keys

There is graduate student office space in AJMJ. Each advisor has office space for students studying under him/her. Typically, all students with the same advisor share office space. You will need to obtain a form from the Ecology Office to pick up a key for the room to which you are assigned. Some advisors assign space in another building.

To get a key to your office you will need to fill out a pink slip (in the Ecology Office) and give to the Ecology business manager. Facilities Services will make a copy of the key and send you an email when it is available for pick up. You must provide a photo ID when picking up your key. Do not expect to be issued a key on the spot. When you are notified your key is ready, go to Facilities Services in the Plew Building near the corner of South 6th and Grant.

A GTA may be requested to obtain a key for the assigned lab classroom. A similar procedure will be followed.

If a key is lost, please report it as lost to both Facilities Services and the Ecology Department. A new Key Requisition Form will be required. There may be a charge for a lost key.

Any university keys should be turned in to Facilities Services before you leave campus at the time of your graduation. You may be requested to verify that you have returned all keys.

Please do not request keys for undergraduate assistants. Afterhours access to AJMJ can be requested by emailing the academic services coordinator with the student name and reason for access. The student must have a valid CatCard to gain entry.

Parking

Parking is handled through the University Police who are located on 7th Avenue near Kagy in the Huffman Building or purchased online. Every car that is parked in a University Parking area or on a street with designated parking signs must have a permit associated with its license plate number. The cost of the parking permit depends on the parking lot you wish to park in. If you do not have a permit, or your vehicle is parked incorrectly in a designated lot or parking area, you will be fined \$60-170 for each infraction. Your registration for courses or your transcript could be held if you have any outstanding fees or fines. There is a limited amount of free parking available on 11th Street, but you must be early or lucky to find a spot.

Updates on parking policies, fees and fines can be found at www.montana.edu/wwwmsupd/.

Bicycles

It is required to register bicycles with our police as well. There are bicycle thefts on campus, so your registration has strong value. Bicycle registration is free, and you will receive a registration decal. Bicycles are allowed on all campus walkways and should be parked in the bicycle racks only. Inappropriately parked bicycles are subject to impoundment.

OFFICE ESSENTIALS

Documentation

Throughout the course of your graduate study, you will be required to complete paperwork to document your progress toward your degree. All forms that have been approved for submitting the details of your progress can be found online. Your advisor and/or the office may or may not remind you of the deadlines for completing requirements that are specific to your program. You are ultimately responsible for submitting all your paperwork verifying the completion of each step toward graduation and in meeting all deadlines.

There are consequences if forms are not filed correctly or in a timely manner. Students will have a HOLD placed on registration for not filing the Graduate Program of Study prior to the end of the second (for master's students) or third semester (for PhD students) in attendance. If you have any questions about when forms need to be filed, check the Graduate School website, or call their office, at 994-4145. You may also inquire in our department office.

The department keeps electronic copies of all completed documentation of progress. When a document is submitted for approval (all required signatures), a copy is also made to verify that the paperwork was submitted on time. Since officials in several departments must sign for their approval, please allow several days for meeting a deadline. The academic services coordinator can keep you informed about the progress of your paperwork. If you have not heard whether your submission has been approved, you may call the office about your concern. No news is good news!

Ecology Library

The department's library is located next to the office in Room 309. The collection includes copies of theses and dissertations of former MSU and U of M students. There is a limited collection of donated periodicals. Any of these materials may be signed out for personal use. If you are planning on checking anything out, please check with office staff for sign out procedures and time limits. Lost theses cannot be replaced, so you are assuming a major responsibility when you take them with you. All theses and dissertations can also be accessed online through the Renne Library.

The library may also serve as a conference/lecture room. If you wish to use the room for committee meetings, oral qualifying exams, or any other academic purposes, reserve the time with the office staff. (You may also reserve a conference call phone.) The department staff has a master schedule. The staff can provide a list of alternative rooms when our library is unavailable. During unscheduled times, the library is open for individuals or small groups for reading or studying.

Computer Hardware, Software, and IP Addresses

If you need a laptop and a power point projector for campus presentations, each is available for loan through the department. There is an Outlook calendar for reservations and checkout records. Please ask the office staff to help you. Always remember to return the projector as soon as you are finished using it since another student or faculty may have reserved it for the next time block. As a backup, the Cooperative Fisheries Unit has a projector that they may allow students to borrow.

A scanner is available for approved use. The copier with the scanner is located in Lewis Hall 310. You need an ID code to use the copier.

You may use the student computer labs in Reid 305, 306, Roberts 109, 110, 111, Cheever 121 or EPS 110. The student computer labs do have assistants there to help you if you run into problems.

If you are provided with an MSU or grant owned personal computer, please notify the department staff so that the IP address of that computer can be recorded for accurate records. When you are no longer using the provided computer, also notify the office staff.

IMPORTANT: YOU MAY REQUEST A NEW IP ADDRESS. The department does recycle IP addresses to avoid a shortage of new IP address. The request for a new IP address or to transfer an IP address is available online. See the office staff **BEFORE YOU BUY ANY COMPUTER HARDWARE OR SOFTWARE**. Special procedures are required for each!

There are specific **procedures for disposal** of any computer equipment. Please check in the office before you get rid of any equipment.

Office Supplies

Only office supplies needed for teaching classes (i.e. your duties as a GTA) are provided by the department. Purchase your own supplies for projects, research needs, or personal use as directed under “Purchases” below. **IMPORTANT:** Before buying or charging any office supplies to a grant, find out if such supplies are specifically allowed by the grant.

Photocopying

Please do not hesitate to ask for assistance the first time you use the photocopier, or whenever you have forgotten how to make copies that are not basic and straightforward. The office staff will be happy to assist you in saving paper and time!

Plan your copying needs well in advance. **If copying jobs are too large for the copier to handle** without a break down of the machine, you will be required to use University Printing Services on campus or go to Kinko’s. These charges may be made to a grant if approved by your advisor, or you may request to use the department account number. If you plan ahead, the copying can be done by University Printing Services through their online ordering system with an index number for billing.

Do not make copies on the department copier on “write in the rain” paper. Bad things happen to our copier when you do. Please, check with InstyPrints, Kinko’s, or other local copy shops about the proper copy equipment that can handle “write in the rain” paper.

Only certain transparencies will work in our copier. More bad things happen to the copier using “cheap” transparencies which result in extremely costly repair. The correct transparencies are Type E. Please ask for help with the copier if you are inexperienced.

The department photocopier is not available for personal use. If you need to make copies of class notes, exams, or hand-outs for courses you are taking, copy them at University Printing Services, the MSU library, or a copy business.

If you need to make copies for your research project, verify through your advisor that copies can be made on your grant. (Some grants do not allow for office costs.) Then check with office staff for the copier user number assigned to your grant. You should write down or memorize your copier I.D. number for using the copier to save time for yourself and the staff.

Graduate Teaching Assistants making photocopies for class instructional purposes should use a copy number reserved for this purpose. Check with the staff regarding which I.D. number is to be used. The I.D. may be specific for your assigned course.

Fax Machine Use

The Fax machine is available for departmental use and in support of the research projects conducted by faculty and graduate students. There are fax cover sheets and sticky notes available. Directions about how to dial out of the University Phone System are located on the fax. If you wish to send a personal fax, there may be a fee. Please ask. There is no charge for receiving a fax at the Ecology Department number (994-3190), but no lengthy documents, please. If you have any questions, or have difficulty sending a fax, please ask the office staff.

Mail Services

Incoming mail (USPS) is received by the department and distributed by noon on most working days. The out-going mail is taken from the office every morning before 8:30 AM. FedEx Next Day Air arrives around 10:30 AM (next business morning) and 3:00 PM (next business day). FedEx Ground arrives around 2:00 PM. UPS delivers their packages around 10:30 AM. Efforts will be made to notify you about the arrival of priority mail.

USPS

The Campus Post Office is a full-service US Post Office located in Culbertson Hall. The hours for the Campus Post Office are from 9:00AM-4:00PM. The phone number is 994-2672.

The Campus Post Office may also be used to send on-campus mail. You may use recycled envelopes to send mail through campus mail. The address for on-campus mail consists of the name, department, and office location (room and building).

The Ecology Office in 310 Lewis Hall has a campus mail and a US mail drop off center. It is located in a drawer under the mailbox unit. Mail is sent out from this location before 8:30 AM every workday morning. Small packages that are to be charged to the department may be left at this location as well. Obtain a department mailing label which will provide the necessary information. Please ask for a mailing slip and/or code for large or heavy boxes and plan to take them to the Post Office yourself. You may be required to obtain a receipt and request reimbursement for unusually large or heavy packages.

Please remember to put your name on any piece of mail that is going out under the Department of Ecology. Without a name on the outside, if mail is returned as undeliverable it is necessary to open the letter to determine from whom it was sent. Mail sent out of the country may be returned if either address is too vague or there is no personal name in the return address.

There are additional locations for taking care of your personal mail. There is a US Mail drop off box in the Strand Union Building. The Ask-Us Desk has stamps available for sale.

UPS

It is best if UPS packages are addressed, packaged, and dropped off by the sender. UPS picks up at various drop-off locations on campus. The phone number for UPS domestic customer service is: 1-800-PICK-UPS; for International customer service is: 1-800-782-7892; and for tracking information is: 1-800-457-4022. None of the drop-off locations handle ground shipment of UPS packages. Air letters, small packages to be sent by air, and international letter shipments are the only available services at the drop-off locations.

To send a package UPS ground, you will need to go to their main office. The main UPS Office is located on Simmental Way off 19th Street.

UPS Center	The UPS Store
UPS Customer Counter	1627 West Main Street
95 Simmental Way	Bozeman MT

Bozeman, MT 59718
800-742-5877

406-535-8000

There are various UPS drop-off locations on campus, with each location having 5:00 PM as the final pick up time. Check these locations:

- ↪ Strand Union Building
- ↪ Bobcat Athletics
- ↪ Gaines Hall
- ↪ Culbertson Hall

Fed-Ex

Fed-Ex envelopes and mailing labels are available in the office. There are pre-printed mailing labels for departmental business. Since these charges are paid by the department, you must request the form from office staff. In the line next to the internal billing reference, you must record the index number that is to be billed for any department approved mail. This six-digit number will either be the department index number or your grant index number. Fed-Ex customer service may be reached at the following number: 1-800-238-5355. Using this service will avoid the necessity of being reimbursed for an expensive mailing.

There is a convenient Fed-Ex drop-off location in Kinko's, at the corner of College and 11th, it is open all night, although the last pickup time for Fed Ex is at 5:00 PM.

Receiving Mail

All students are assigned a mailbox when they arrive in the Ecology Department. Mailboxes are located in the Department Office, 310 Lewis Hall. Mailboxes are separated alphabetically, and graduate students are assigned boxes based on the first letter of their last name. Students associated with the Montana Fishery Cooperative Unit have one in the main unit office at 301 Lewis Hall. You are responsible for checking your mailbox on a regular basis.

As a courtesy to those who share your mailbox, please check it regularly to avoid missing important information and to prevent a buildup of mail. If there is mail you are not interested in keeping, please do not just leave in the mailbox. Inform the sender about any catalog or junk mail that you do not want to continue to receive. That way your name can be removed from the mailing list for that company/organization and the amount of junk mail the department receives will also be reduced.

Changes of address for payments or W-2 forms must be made through MyInfo.

If you are going to be away from campus for an extended period, as well as when you leave campus permanently, please give the academic services coordinator a forwarding address. A current address is especially important for reimbursement reasons and to forward any theses, tax documents, or personal mail.

Correspondence related to your studies or research should be addressed to you c/o The Ecology Department, Montana State University, P.O. Box 173460, Bozeman, MT 59717-3460. Please request that **invoices** or receipts are clearly addressed. The **shipping address** should clearly list your name! All items ordered should be addressed for receipt at 310 Lewis, 59717-3460, where someone is available to sign for them.

E- Mail Services

You are required to check your preferred email regularly. Every registered student is given an Office 365 email account and a personal web page. Instructions are available online through the University Information Technology Center's main web page for accessing your university email. You may use the

student computer labs in Reid 305, 306, Roberts 109, 110, 111, Cheever 121 or EPS 110 if you wish to check email as well.

The office maintains a current list of all email addresses for graduate students and uses email as the primary way to contact students. Announcements from the Graduate School, information about grants that are available to students, changes in policies, and opportunities to earn extra money are some of the information distributed via email. It is absolutely necessary that the office has your current email address to use and you check your email frequently.

Display/Bulletin Boards

There are several departmental bulletin boards located on the third-floor hallway of Lewis Hall. Seminar posters and other upcoming events are posted on the bulletin board just to the left of Lewis Hall 304 and across from the Ecology Library. Employment opportunities are posted to the online jobs and opportunities board. Notices for Fisheries positions may be found on the Cooperative Unit Board located across the hall from the Unit Office. Most position opportunities are forwarded by email.

If you are searching for a job or are looking to find a student to hire or to volunteer, there is an online job board managed by the departmental affairs coordinator. You can send notices of opportunities in to be added to the board, but we do ask that you notify us when the position has been filled so we can keep the board current and uncluttered.

Pictures of graduate students and faculty are posted in the display cases on the third floor of Lewis Hall. Please, take the time to send in a flattering and informative photo of yourself, especially involving some aspect of your research, to the academic services coordinator. Undergraduate students and visitors spend time reading and looking at this board, and diverse photographs help raise the interest level in our department.

Articles that get published about you and your research are ideal for posting in the display case. Do not be shy! Let us know when you have been interviewed for publication in a magazine or co-authored an article for publication. Send a copy or two to the main office and enjoy the recognition that you have earned. These articles help undergraduates understand what kind of work they could be doing after graduation.

Recycling

There are recycling bins on the 3rd floor of Lewis Hall. The University provides large bins for newspaper, magazines, cardboard, plastic, and cans in parking areas and utility roads on campus. Maintenance does not recycle.

MONEY MATTERS

General Information

Even though all academic matters for graduate students are handled by the Ecology Department Office, financial matters are divided. If your funding is through the Ecology Department, the staff in 310 Lewis Hall will help and answer questions. In general, students whose advisor works in the Montana Fisheries Cooperative Research Unit will go through that office for all grant accounting matters. There are a few exceptions to that rule. If you are not sure whom to ask, please ask your advisor or either one of the accounting staff.

Please keep the office updated with your contact information, including a home phone number (to be used only for emergencies) and email address. The email address on your graduate application form is not automatically assumed to be current because you may change service providers or your preferred email address.

Beginning Employment

A GTA, GRA, or GSA appointment requires you have employment status with MSU. A Fellowship is not an employment category.

The first time you are appointed, certain hiring forms need to be completed and submitted prior to you receiving any pay/stipend. These forms include your withholding statement (a W-4) and an Employment Eligibility Verification form (an I-9). In addition, there is a Vehicle Use Form and a Decedent's Warrant.

The Employment Eligibility Verification form (I-9) is an electronic form that you will fill out on-line. Department staff will need to verify your identification, which is part 2 of the form. The best documents for this are a passport or a valid driver's license and your social security card or birth certificate. Please see the department staff for a list of other possible documents if you don't have either of the above-mentioned documents. See "Payroll" for more details. ACH or Direct Deposit

There are **two forms of automatic deposit of payments from MSU**. If you are paid through Human Resources/Payroll, you fill out a Direct Deposit Request form for **payroll** direct deposit. If you receive payment through University Business Services, you are a "Vendor" and should request the Montana State University ACH Authorization form. (Both of these request forms are available in the office or online.) If you will be requesting **reimbursement** for any travel or purchases for the grant, you are a "Vendor." It is required that you request both forms of direct deposit. You may often be in the field when a check might arrive, you will receive your payment more quickly, and you will save the money required to print a check! If you do not have direct deposit, your paycheck will be held until you pick it up for up to *three* months.

There is no charge for ACH. A deposit slip or voided check from your checking or savings account, or a printed direct deposit form from your bank must be attached to the request. You may apply online for payroll ACH. Your first paycheck or vendor payment may not be direct deposited if it is submitted after the 20th of the month; the university needs time for a trial run to make sure everything is set up correctly. Subsequent payments will be directly deposited into your account and you will be notified via email.

Fellowships

Some grants provide support with a fellowship. A fellowship provides a monthly stipend that can also be used to cover expenses such as tuition, fees, and books. This fellowship payment is processed through the University Business Office instead of Human Resources/Payroll. Any tax liability is the responsibility of the recipient. Payments are made monthly and the dates of issue can vary. For example, if you are appointed from August 1 through December 31, your first stipend will come in August and your last would come during December.

Graduate Teaching Assistantships (GTA)

Graduate Teaching Assistants (GTAs) are nominated by their advisors and evaluated by the faculty in March and October of each year. You will be notified in writing of the offer of a GTA position. Acceptance or rejection of the GTA assignment must be in writing or email. Please refer to the online MSU [Graduate Student Appointment Policies and Procedures](#) for details of your appointment.

Graduate students who are appointed as Teaching Assistants are required to be enrolled in classes to be employed. During Spring or Fall Semester, a student must take a minimum of six credits. There are rarely any Summer GTA appointments available. Be sure to check the enrollment requirements for any paid position on campus.

You will receive a tuition waiver for a minimum of 6 credits from TGS. Resident tuition for up to 12 credits may be waived. You are requested to apply for residency during that year if you intend to register for less than 6 credits at any time. Your monthly stipend includes a small amount to cover health insurance. NO fees or insurance costs are provided. You must pay all fees or obtain funding for them and request the necessary paperwork to cover fees. Please register at least 3 weeks before the start of the semester so there is no delay in receiving your tuition waivers. (See *Appendix IV*.)

Your signature is required on an appointment agreement describing your course assignment and responsibilities before your appointment is considered completed. This is your acceptance of the assigned position.

You **cannot be appointed** until you have registered for your credits! You do not receive your tuition waivers until you have confirmed your attendance! Do not wait. You will also need to notify the Ecology Office if you change the number of credits you are registering for after you initially reported them.

If you are accepting a position as a GTA for the first time, the Graduate School conducts an orientation that is **mandatory!** You will need official exemption from the Department Head and the Graduate School if you cannot make this orientation. You will not be required to attend the orientation a second time.

Graduate Research Assistantships (GRA)

Graduate Research Assistantships may be available to students based on the specifications of their grant. Qualifications and the amount of the stipend are determined by these specifications and your advisor. Some grants have more money available and will cover tuition costs while others may have only a minimum amount available for assistance. You are responsible for knowing who handles your appointment, whether the Ecology Office, the Fisheries Coop Unit, or another campus office. Please refer to the online MSU [Graduate Student Appointment Policies and Procedures](#) for details of your appointment.

While the staff tries to remain aware of whose appointments are ending, sometimes a gentle reminder from the student to their advisor would be helpful. If you know that your appointment is ending, and you have not been asked by the office to sign a new form, please call and make us aware of your concern. Ultimately, it is your responsibility to be sure that you are appointed, funded, and/or paid!

Graduate students who are appointed as Research Assistants are required to be enrolled in classes to be employed. During Spring and Fall Semesters, a student must take a minimum of six (6) credits. Also, during the Summer Semester, a student must take a minimum of six credits in order to be appointed as a GRA. You will receive a tuition waiver for a minimum of 6 credits from TGS for non-resident tuition during your GRA appointment. You are requested to apply for residency. (It is possible, if other rules, such as continuous enrollment, do not apply, that a student may be appointed as a student short term hourly employee or a GSA appointment to avoid the minimum credit requirements. However, your non-resident tuition will not be waived.) Note that your status as full time or part time student will affect the amount deducted from your gross income. Be sure to check the enrollment requirements for any paid position on campus. (See *Appendix IV*.)

You **cannot be employed** until you have registered for your credits! You do not receive any provided tuition waivers until you have confirmed your attendance! Do not wait. You must have a zero-balance due in order to confirm your bill. This will only happen if you register on time and all your paperwork has been processed. You will also need to notify the Ecology Office if you change the number of credits you are registering for after you initially reported them.

- Please enroll at least three weeks before the start of the semester so that there are no delays in your funding for tuition, fees, or your stipend. If you are late in registering for the required number of credits, you will be paid as a regular employee, rather than as a GRA, and additional deductions from your paycheck will be automatic. Or, your appointment approval will be delayed, and your first payments will be late.

Your signature is required on an appointment agreement describing your responsibilities before your appointment is considered completed. This is your acceptance of the assigned position.

Graduate Student Assistantships (GSA)

Graduate Student Assistantships are a form of research assistantship (see GRA) for student enrolled in less than 6 credits per semester or during summer semester.

Graduate students who are appointed as Student Assistants are required to be enrolled in classes to be employed. During Spring and Fall Semesters, a student must take a minimum of three (3) credits and up to 5 credits. During the Summer Semester, if you have been enrolled during Spring Semester and will be enrolled in Fall Semester, you may be appointed as a GSA with no minimum registration requirement. You may be appointed with either research or teaching responsibilities.

You **cannot be employed** until you have registered for your credits! You do not receive any provided tuition waivers until you have confirmed your attendance! Do not wait. You must have a zero-balance due in order to confirm your bill. This will only happen if you register on time and all your paperwork has been processed. You will also need to notify the Ecology Office if you change the number of credits you are registering for after you initially reported them.

- Please enroll at least three weeks before the start of the semester so that there are no delays in your funding for tuition, fees, or your stipend. If you are late in registering for the required number of credits, you will be paid as a regular employee, rather than as a GRA, and additional deductions from your paycheck will be automatic. Or, your appointment approval will be delayed, and your first payments will be late.

Your signature is required on an appointment agreement describing your responsibilities before your appointment is considered completed. This is your acceptance of the assigned position.

Tuition Coverage

Depending upon the grant under which a student is working, tuition expenses and other fee waivers may be available. When you come into the office to sign your student appointment form, ask if your grant or advisor provide tuition/fee authorization. If you have no support for your tuition and believe you are eligible, please ask. You may be eligible for tuition/fee authorization with a 3rd party billing. All GTA's are eligible for a minimum of 6 credits of resident tuition waivers each semester that they are assigned a position.

You do not receive your tuition funding or fee waivers until you have confirmed your attendance! Do not wait. You must register for classes **and** confirm your attendance before each semester deadline in order to receive any tuition funding or waivers! If you have not registered before the start of the semester, you risk losing some tuition waivers or being charged a late fee. Please register at least a month before the start of the semester so that there are no delays in the depositing of the funds into your student account. (Your MyInfo account will allow you to view your status.)

A late fee is charged if you do not confirm your attendance before the payment deadline. Student Accounts does not want to deposit the money into your account if you will not be attending, so a confirmation of attendance is required. You must have a zero-balance due in order to confirm your bill. This will only happen if you register on time and all your paperwork has been processed. **A late fee charge is NOT automatically paid from your funds. You are responsible for paying a late registration fee** unless there are circumstances beyond your control. Only then may you request that the Ecology department send a request to waive the late fee charge.

If you try to confirm your attendance, and your grant money is not in your account, it is likely your paperwork has not been processed through all offices yet. Continue to check periodically and let the Ecology Office know if you still have a balance due when they indicate to check.

If you are a non-resident, you may be eligible for GATA Designation. This designation is available only after you register for classes.

GATA Designation

MSU has set the following criteria for awarding the special tuition rate to non-resident GTAs and GRAs effective July 1, 2011. If you meet the criteria below, you will be appointed with the GATA designation as with your GTA or GRA appointment. This designation means that even though you are a non-resident of Montana at the time of admission, the non-resident tuition will be waived. You will be billed for only the resident tuition.

Criteria for Awarding Special Tuition Rate to Non-resident GTAs and GRAs:

- GTA's and GRA's must be enrolled in a graduate degree-seeking program for a minimum number of 6 credits in the semester of their appointment.
- Stipends awarded to GTA or GRA students must be an amount commensurate with past practices in the department and meet the Graduate School minimum amount.
- GTA's and GRA's must be appointed for 19 hours per week. GTA and GRA appointments can be combined with Graduate School approval.
- Duties and responsibilities of GTA's and GRA's are as previously defined by the Graduate School.

Health Insurance

Although it is your responsibility to be sure that you have health insurance while you are in the degree program, these basics may help you to make your decisions.

- You must enroll in a minimum of **7 credits** per semester to be **automatically** eligible. This does not apply to summer semester.
- Graduate students have the **option** to contact Student Health Service directly and to **request the student health insurance** (with health and dental fees) even if you are registered for **less than 7 credits**. *This is your responsibility—no one can do it for you. *
- When any student registers for classes, you will be asked if you wish to accept or decline the student insurance plan. You will be reminded of the university policy regarding health insurance and advised that accepting the insurance will also add the health fee to your student account (unless your classes are off campus).
- All graduate students may use the Student Health Service, even if they have declined the student insurance coverage. If you have not paid the Student Health Service fee, you will be charged the fee during your first visit.
- If you have been covered in the spring semester, you are automatically enrolled in the insurance plan for summer with no additional charge.
- If you enter the program during the summer semester, no matter how many credits you are taking, you must request enrollment in the health insurance plan!
- Check with your advisor to find out if your funding includes health insurance options.
- If you are a GTA, part of your stipend is considered supplemental and can be used to fund your health insurance costs.
- When you choose to be covered by student health insurance, you are required to pay the health and dental fees as well even if you are registered for less than 7 credits.
- If you are 45 years of age or older, there is an additional health insurance cost.
- Contact Student Health Services if you need insurance for a dependent(s).
- **Prescriptions or health/dental service visits** are NOT “student fees.” These are your personal responsibility to pay or report to your insurance. These will be billed to your student account without notification.

Payroll

Payroll for a GTA, GSA or GRA is handled through Human Resources. This occurs on the 11th of the month for the preceding month’s hours. (It is earlier if the 11th is a Saturday or Sunday.) Taxes will be deducted according to the information on your W-4 and your student status.

Please remember that Montana State University pays for the previous month’s work – so your January paycheck would be for work performed in December. If you did not work in December, you would not receive a January paycheck, even if you started working in January. If you started work in January, your first paycheck would be on February 11th. A Fellowship Appointment is required by some grants. It is not payroll. See “Fellowships.”

Our ability to collect and forward or deposit a check into a personal account is limited. The department requires that you arrange to have your paycheck directly deposited into your bank account. There is no extra charge for this, and the money would be available to you in your account the day that paychecks are distributed. Checks are NOT mailed for 30-90 days.

You may sign up for direct deposit at the Personnel and Payroll Office, 19 Montana Hall. They will require a deposit slip or voided check from your checking or savings account. Your first paycheck may not

be direct deposited; the Payroll Office must receive your request before the 20th of the month to allow time to confirm the information. If you request after the 20th, your first salary payment will need to be picked up by you in Montana Hall. You do NOT receive a printed deposit slip; the information is online for viewing and printing as your needs require. Your W-2 for taxes will also be online unless a printed form is specifically requested.

If you change your mailing address, you can update this in MyInfo, personal services, or the old address will automatically be used! You may change your direct deposit preferences online. You must also inform Personnel and Payroll Services if you close a direct deposit account.

If you are employed by MSU in any way, be sure that you know the number of credits for which you must be registered in order to keep your student status, or you may find unwelcome employee deductions from your paycheck!

Purchases

Any major purchases, and possibly minor ones, will need to be approved by your advisor before you make them. Different advisors have different policies or procedures. Know their preferences and know the index number to which charges are to be made. Be aware that new MSU policies and grant funding **do not allow office supplies and equipment** to be billed to federal grants unless they are **specified** in the budget.

See also “Computer Hardware, Software, and IP Addresses” on p. 28. These purchases require additional procedures.

If you will be purchasing supplies from a local business, check with your grant accountant to determine if a direct billing account is available. If direct billing is possible, please make sure you get all the information about how to use the direct billing prior to using the service. In general, write the index number to which the amount is to be charged and sign your name legibly on the receipt. Turn in all receipts to the appropriate accounting staff. If you do not turn in your receipt, or if the information on the receipt is not legible, your ability to use the direct billing may be rescinded.

You may save a lot of money by using a department account for large companies. Check with the business manager the first time you order research supplies or use Amazon.com.

If direct billing is not available, you may need to use a Department Credit Card (PCard) to complete the purchase. The department accountants **must pre-approve** use of a department credit card. If you place an order with a department credit card, you are responsible for turning in a receipt to the cardholder with your name and index number clearly indicated on it. Invoices may be sent to you electronically should be forwarded to the cardholder or business manager. Failure to adhere to these policies will result in you losing the ability to charge orders on the departmental credit card.

- **Department credit card use is required for airfare, lodging, registrations, and/or car rentals.** You should make these purchases in 310 Lewis Hall.
- MSU Bookstore, campus charge and University Printing receipts need to be turned into the business manager with a notation on it specifying the index to charge. All receipts from department charge card (PCard) purchases should be sent electronically to the charge cardholder or you may provide them with a printed copy.

Reimbursements

If you use your own cash or a credit card to purchase items necessary for your degree program, you may request reimbursement. (See also “Travel” below.) You must provide a detailed list of all purchased items on either an invoice or a receipt and provide the index number when requesting a reimbursement. The copy of

the signed credit card slip is NOT a detailed list! You must be able to justify any unusual purchases. You may not be eligible for reimbursement for office supplies. Be sure to check the budget for the grant before you spend your own funds and also get approval from your advisor.

- Reimbursement must be requested **within 90 days** of the purchase! ***You cannot be reimbursed for late requests.***
- Be aware that reimbursement takes up to a month. It is to your advantage to apply for “Vendor” status with the business office. Reimbursement will still seem slow, but it will be directly deposited. (See “ACH” above.)

Travel - Currently in review, questions should be directed to Business Manager Bernadette Diaz

The most current policy and procedure details are found in *Appendix III*. Below is a summary of expectations.

For all out of state travel, including trips to Yellowstone National Park, (WY), you need to submit an out of state travel authorization form with your advisor's approval **10 days prior** to travel. Out of State Travel Authorization Forms are available at the Ecology Office or on the Office of Sponsored Programs web page. Please fill out the form and turn it in to the Ecology travel accountant at least one week prior to the start of your travel. This way all the signatures that are needed can be obtained, and there will be time to fix any problems that might come up. It is possible to receive a travel advance if major expenses are anticipated. Allow 3 weeks to process.

All purchases of airline tickets are to be made using the department credit card. You will need a completed travel authorization form when you make your reservations. Please come to 310 Lewis Hall to make your reservations on an office computer or phone so that you can use the correct credit card.

Receipts are required for "Other" expenses of more than \$24.99 per day.

Your boarding passes must be submitted as evidence that you actually made the trip even if someone else is paying for it.

Any travel expense reimbursement must be submitted on the Travel Expense Voucher Form which can be found online or on paper in the office. It is preferred that you complete a Travel Reimbursement Request form the CLS Fiscal Services has provided, as available in the Ecology Office. Please be sure you are using the most recent mileage rates! You will not be reimbursed until office has a fully completed and signed copy of the travel justification form. An itemized receipt is required for all expenses claimed during the travel including lodging. There is a per diem rate for meals. If you are not sure which expenses can be claimed, ask before you spend the money. For instructions on how to fill in a travel expense voucher or Travel Reimbursement Request form, contact the Ecology Business Manager. Travel Voucher Forms must be turned in within 90 days of the completed travel.

You are only allowed to submit two travel vouchers per month. This means if you are taking more than two business trips in a month, you should consolidate your trips onto one travel voucher. If you travel extensively, it may be helpful to think of two dates for travel voucher submission: the 15th and 30th of every month.

You may use a personal vehicle for travel and claim mileage reimbursement. (A Vehicle Use Agreement form must be filled out before you do any driving for department business.) The higher reimbursement rates are available only if you have contacted ENTERPRISE and confirmed that there is no effective vehicle available for your use before you use your personal vehicle. Write down the name of the person with whom you spoke! Mileage reimbursement rates are subject to change, so for current rates check the OPS information page at <http://www.montana.edu/wwwvr/grants/info.html>. If you have any questions, please contact the office staff.

Rented, state, and federal government vehicles should be parked in the lot adjacent to the Huffman Building (campus police). When renting cars from local businesses, do not take out the insurance they offer. MSU has insurance to cover these rentals.

Rental of a building, rental deposits, payments for utilities, and phone and/or internet services at a field study site are NOT travel expenses. Payment for these costs must be billed directly to the Ecology Department for payment. The service provider should contact the department to arrange for the payment, or you may provide the contact information so that the department can complete the arrangements.

Telephones

The telephones located in graduate student offices do not provide long distance service. You may dial a toll-free number. The department provides long distance service for project-related calls via a telephone in the main office.

A guide to telephone use/services is can be found here: <http://www.montana.edu/uit/telephone/>

- ↳ On-Campus calls: dial the last 4 digits of the 994-number
- ↳ Local calls: dial 9+ the 7-digit number
- ↳ Long distance calls: dial 8+1+ 9-digit number

Some advisors will allow their students to acquire a credit card for long distance calls related to research. Students will need to check with their advisor to determine if a phone card is allowed. If so, contact the office staff to set up a calling card for your research project.

Supervising Employees

Timesheets for your student workers or hourly workers are completed online and approved by your advisor. As the supervisor, you are responsible for making sure your employees complete the online timesheet. If employees do not complete this Webtime Entry by the deadline, we cannot guarantee that they will be paid on time, but they will be paid eventually.

Please remember that any students that you hire, or technicians or researchers hired on a temporary basis will need an assigned MSU ID (GID) in order to become an employee.

Carefully read p. 42, “Consensual Sexual and Romantic Relationships and Conflict of Interest” for your responsibilities under MSU policies.

Hiring Employees

It is assumed that you have spoken with your advisor before you consider a hire. Be sure that there is adequate funding for the length of the hire. Have an agreement on what **approved hourly rate** salary can be offered before you make begin the hiring process. These inflexible amounts are set by the State of Montana for state employees. If you are hiring an active student, more options may be available.

Do not offer a job to anyone without a proper interview and/or reference. If you hire without a thoughtful procedure, you may find yourself having to fire someone and paying a severance from your funding and interrupting timely research.

Be sure to talk with other grad students who have already experienced the process of hiring. Get suggestions on the kind of questions you should ask during an interview, references you might want to have, problems to avoid, etc.

Hiring someone to work for you is probably a new experience. There are many options for the type of appointment for your employees. **Please get accurate information from the Payroll Representative in the Ecology Department Office before you begin interviewing.** You must have accurate information to give to the person you interview and know what information you need from that person. You are not expected to know everything, and your questions are appreciated. Misinformation gives a poor start to any employee/employer relationship and will complicate the hiring process.

In general, when you offer the salary for the position, you may **ONLY** offer an **approved hourly rate** amount. You can only provide the **estimate of the gross monthly salary** for them. It is impossible to accurately supply a net income figure. Be sure that the start and end dates are clear to the new employee. Generally, a work week consists of 40 hours or less. Hours over 40 need to be approved by the supervisor.

Each employee whom you supervise must submit a monthly timesheet online. The office staff can calculate for you the number of hours your employee may work each month, and how many overtime hours, without going above your budget. If the employee is working in the field, additional rules may apply. If the employee is working more than 89 calendar days, he/she may be eligible for employee benefits such as sick leave. **You must check with the Payroll Representative in the Ecology Department Office before you begin interviewing and before offering any payment details to avoid legal complications.**

All of the appointment forms necessary (including government paperwork) for your employee to be paid for the month in which they begin working must be received by Human Resources before the 20th of that month. That means it should be in the Ecology office by the 10th of the month! If you hire anyone between the 20th day and the last day of any month, they will not receive the regularly issued paycheck on the 11th day of the next month. Please make every effort to **make your hiring decision early in a month** (or even the month before the work will begin) because multiple approvals are required, and the process can take two to four weeks to complete. This is especially true if you are hiring someone who will not be coming to Bozeman or who is a non-student foreigner or who works more than 90 dates.

All employees working more than 4 months will require a background check. This cost is charged to your grant. The applicant must be informed of this procedure when they apply for the position.

You may ask the office staff for suggestions in advertising your position or posting a work study position.

GRADUATE RESPONSIBILITIES

Seminars

Graduate students are expected to attend the Ecology Department seminars on Thursdays, beginning at 3:30 PM in 304 Lewis Hall. Ecology Seminar notices are posted each week during spring and fall semesters. The seminar list is also posted online from the main Ecology webpage. Students are required to attend all seminars while in Bozeman to broaden and strengthen the MSU educational experience. In addition, we cannot attract quality speakers if we do not have a good audience. All graduate students preparing presentations deserve your full support.

The Department maintains an email list, which includes all graduate students, to which additional seminar or defense notices are sent. Information about defense seminars and invitations also are posted on the bulletin board across the hall from the main office.

Fees

There is a schedule of tuition and incidental fees for both resident and non-resident students available for viewing [online](#). There are deadlines for paying fees listed in the front of each semester's Registration Handbook. If you do not pay by the deadline, you will be assessed a late fee.

You are assessed a one-time \$50 orientation fee your first semester in residence. This required Graduate School Orientation usually coincides with an Orientation session date and a meal has been provided after the first session.

Your CatCard ID fee cannot be paid for with grant funding. Your advisor may be willing to use his/her IDC funds for this cost, but this is a special request that you must initiate for approval.

Registration

It is extremely important to **register before the deadlines** posted in the Registration Handbook! If you do not register by the deadline, you will not be able to register via MyInfo. The only way to register after the deadline is through the add/drop forms.

Register **as soon as possible**. Your appointments and waivers cannot be submitted for approval until you are registered for the correct number of credits.

To register, you will need to check for your registration PIN in the Notes section of your DegreeWorks. Your registration number is required for online registration and is a six-digit number that will change each spring and fall semester. The summer and fall registration numbers are the same.

If you were not enrolled the previous semester, there will be no registration PIN available for you. In order to register for classes, you will need to file an "Online Intent to Register" form with the Registrar's Office at least 30 days prior to the start of the registration period for which you wish to register. That form is available online through your MyInfo.

The last day to pay the balance on your student account is listed in the front of the Registration Handbook. Also check the Registration Handbook for the **last day to CONFIRM YOUR ATTENDANCE!**

You will be charged at least \$40 for late student billing amounts which are NOT covered by any funding if your funding has posted but you have not confirmed by the final published deadline. You will not be charged a late fee if your funding has not posted to your account in time. **You are not notified of a late fee or health service fees that post.** You may find that your next semester registration is put on HOLD.

On HOLD means that you are not able to register until outstanding amounts are paid. It is your responsibility to register on time and check your student account on a regular basis. Holds will also show in your DegreeWorks.

IMPORTANT: If you have personally arranged for student loans, grants, or other financial aid, confirm the registration requirements for that funding. Contact Financial Aid for assistance. You must meet minimum credit requirements for many student appointments.

If you have completed your Program of Study OR have taken your Comprehensive Examination, you may be required to have Continuous Enrollment. You must then register for at least three credits each semester in which you remain in the degree program. (You are allowed 3 semesters maximum of “leave.”)

Confirm Your Attendance (Bill)

You are required to confirm your attendance in order for your funding to be applied to your account. You may do this online through your MyInfo as soon as you have a zero-balance due on your current Web Bill. Confirm as soon as the balance is zero dollars.

For the Fall Semester, the period for enrollment confirmation starts in the middle of July and runs until the last day to pay for classes without a late fee. For the Spring Semester, the period for enrollment confirmation starts at the end of November and continues until the last day to pay for classes without a late fee.

The sooner you confirm your enrollment, the less chance it will be that you are assessed a \$40 late fee. Especially if your grant or financial aid is paying for all your tuition, **you are required to confirm your bill/enrollment.** No payments, including those from grants or financial aid, will be credited to your account until you have verified that you will be attending school. These will show as “anticipated” funding.

Registering for classes or making a partial payment does NOT confirm your attendance/bill!

Grades

You can access your grades online through your DegreeWorks or from the Student Records link under the Student Services tab in your My Info.

Obtaining Residency

The Graduate School reviews residency status on a rolling basis. Students wishing to be declared a Montana resident should review the requirements thoroughly at least a year in advance. Simply moving to Montana, having a lease, or filing taxes is not enough to be considered a resident according to the Board of Regents Policy so it is important to review all requirements thoroughly. Additional guidance can be provided by the academic services coordinator or the Registrar’s Office. More information as well as all documents and the Board of Regents policy can be found here:

<http://www.montana.edu/registrar/residency/index.html>.

The advantage for establishing residency is that you may register for less than 6 credits a semester once residency is established and there is a significant difference in cost associated with a one-credit extension.

Title IX and Parenting

Title IX provides parenting and pregnant student rights. If you have questions about your rights, please contact the Office of Institutional Equity (OIE) on campus, oie@montana.edu or x2042. MSU has a University Family Advocate who can meet with you to discuss resources on campus, answer questions, and help ensure a positive experience for all parties.

Consensual Sexual or Romantic Relationships and Conflict of Interest

In General — There are legal risks in any sexual or romantic relationship between individuals in inherently unequal positions, and parties in such a relationship assume those risks. As a graduate student, such position relationships include (but may not be limited to) supervisor and employee, mentor and trainee, teaching assistant and student. Because of the POTENTIAL for conflict of interest, or the perceived conflict of interest, DISCLOSURE is required by university policy for all employees of the university. The MSU “[Relationships with Students Policy](#)” summarizes this policy in detail. Graduate students who are paid as a GTA or are receiving funding from a university administered grant are included under this policy.

A consensual sexual or romantic relationship is, simply, risky. The real or perceived integrity expected for supervision and evaluation may be threatened. The trust inherent in a position of authority is put at risk. In addition, such relationships may harm or injure others in the academic or work environment when others perceive an undue access or advantage, a restriction of opportunities, or a conflict of interest. Finally, circumstances may change and a situation of sexual harassment is possible. (Even when both parties have consented at the outset to a consensual sexual or romantic relationship, this past consent does not remove grounds for a charge based upon subsequent unwelcome conduct.)

That is why the Montana State University Policy for employees states:

A consensual romantic relationship in which one party has supervisory or evaluative responsibilities for the other is a conflict of interest and, as such, and as provided in the University Conflict of Interest (COI) Policy the party in the evaluative or supervisory position must promptly disclose the relationship to his or her supervisor and to the campus official responsible for COI reporting. The supervisor and the University official responsible for COI management shall take steps to ensure that the situation is appropriately managed in accordance with the campus COI Policy. This could result in the removal of the employee or student from the supervisory or evaluative responsibilities by their romantic partner. As provided in the [COI Policy](#), an employee's failure to promptly disclose a conflict of interest may result in discipline.

Your Responsibility as a Graduate Student -- When such relationships exist or may potentially exist, you, as the person in the position of greater authority or power, have the primary burden of accountability, and you have the responsibility to make sure that no conflict of interest occurs. You are responsible for taking action to eliminate or reduce the potential for harm and to disclose the relationship.

This means that you must notify your supervisor or department chair in advance about the potential conflict of interest. The chair or your graduate advisor can then exercise his or her responsibility to evaluate the situation and to determine the extent of disclosure to the university. The department has the option to take any action necessary to ensure compliance with the spirit of this responsibility, including transferring either or both employees in order to minimize disruption of the work or academic group. In an extraordinarily rare situations where this is not a possibility, your department supervisor must approve all evaluative and compensation actions.

AVOID SUCH SITUATIONS. Treat all of those under you the same way, with respect, regardless of race, age, gender, or disability. Remember that “sorry” isn’t enough.

There is a *nepotism policy* for employees, which also requires disclosure to avoid conflict of interest, which you may need to review when hiring. See the [Relationships in the Workplace policy](#).

Thesis/Dissertation Publication

Prior to writing your thesis, and during the writing process, refer to the [Electronic Theses and Dissertations](#) guide available on the Graduate School website. Understanding the formatting will help you

avoid rewriting based on formatting errors. You can save yourself a lot of effort if you read and follow the formatting requirements in the guide for electronic versions.

After your thesis/dissertation defense and approval by your graduate committee, your thesis/dissertation will need to be submitted to the Graduate School. The Graduate School checks the formatting of your thesis for online publication to determine how well it adheres to the requirements.

Upon final approval of your thesis by your committee, you have the responsibility to complete the *Certificate of Approval Form* which must be typed then signed by each committee member and then submitted.

The Graduate School requires students to submit the electronic version of their thesis/dissertation. There are specific guidelines for formatting the printed version of the thesis which differs slightly from the electronic version.

The Department of Ecology requires two bound copies of your thesis, one for the advisor and one for the library. Please check *Appendix II* for details. You are responsible for printing costs.

HANDBOOK APPENDIX

Appendix I

Qualifying Exam Areas of Specialization

SCIENTIFIC METHOD/QUANTITATIVE METHODS

Example Questions:

- Define accuracy, precision and bias, and use examples to illustrate each.
- Provide a brief outline of a process for doing science. How do models fit into this process? Observational studies? Experiments?
- Define, compare and contrast hypothesis tests and confidence intervals.
- For each of Student's t-test, ANOVA, Regression, and contingency table analysis, describe the kinds of questions that can be addressed, the kinds of data required, and principal problems to be aware of.
- Define induction and deduction and give examples of each with respect to the scientific method.
- How do replication, controls, and randomization each help you interpret the results of an experiment? What are some strengths and weaknesses of the hypothesis-testing and model-selection approaches to science?
- What assumptions are associated with a standard capture-recapture population estimate?
- What are common methods of estimating vegetation composition along environmental gradients?

Required Reading:

Gotelli, N. A. and A. M. Ellison. 2004. *A Primer of Ecological Statistics*. Sinauer Associates, Sunderland, MA.
Ch 1 -An introduction to probability.
Ch 2 -Random variables and probability distributions
Ch 3 -Summary statistics.
Ch 4 -Framing and testing hypotheses
Ch 5 -Three frameworks for statistical analysis

POPULATION ECOLOGY AND CONSERVATION BIOLOGY

Example Questions:

- What are the three types of idealized survivorship curves? How do they compare to curves fit to empirical data?
- Describe two methods that estimate mortality for an animal population and how you would determine if the population was over harvested.
- Describe the key properties of the logistic model of density-dependent population growth (or some similar model) using words, graphs, and equations.
- What are the main features of a life table? What are some useful things you can do with such data?
- In terms of population dynamics, what are demographic and environmental stochasticity? Which is generally more important?
- What is an extinction vortex? Describe one possible example.
- What is reproductive value?
- Layout the rough, basic framework of a population viability analysis. (There is more than one way to do this.)

- Why should we conserve rare species?
- *Niche Theory*. Define the ecological term niche. What statistical methods are used to quantify the niche of a population? How does the niche of an organism influence its habitat selection?
- Is the Endangered Species Act effective? What are some of the important issues in implementing the ESA? How could it be improved?
- Anglers have expressed concern that the yellow perch fishery in Canyon Ferry Reservoir is over-fished and requires more restrictive harvest regulations. List the population parameters and fishery characteristics that would need to be quantified to assess the validity of this assertion, describe how they relate to each other, and provide a study design for estimating them.
- You are working on a density-dependent turtle population that has the following relationships for the birth rate b_N , the death rate d_N , as a function of population size (N): (modeled closely after a question from Gotelli's book; see reading list)

$$b_N = 0.10 + 0.03N - 0.0005N^2$$

$$d_N = 0.20 + 0.01N$$

Plot these functions in the same graph and discuss the population dynamics of the turtle. How does this model differ from the logistic model?

- Why are some organisms iteroparous and others semelparous?

Required Reading:

Gotelli, N. A. 2004. *A Primer of Ecology*. Sinauer Associates, Sunderland, MA.

Ch 1 – Exponential population growth

Ch 2 - Logistic population growth

Ch 3 - Age-structured population growth

Ch 4 - Metapopulation dynamics

Begon, M., C. R. Townsend, & J. L. Harper. 2006. *Ecology: from Individuals to Ecosystems*, 4th edition. Blackwell, Cambridge.

Ch 4 - Life, death and life histories

COMMUNITY ECOLOGY

Example Questions:

- What are some basic methods of describing the structure of a community?
- What is the difference between a community and an assemblage?
- How do introduced species affect ecosystems?
- Define competition, describe its different forms, list its requisites, and describe how to determine its occurrence.
- Write out a pair of equations that describe the dynamics of a pair of species that compete with one another. Define all of the variables and explain the structure and logic of the equations. If it is a heuristic model, explain the model's general predictions. If it is a model that is meant to be applied empirically, explain a way in which it could be applied. Identify the underlying assumptions of the model and discuss its limitations as a description of population dynamics for competing species in the real world.
- Indices of Biotic Integrity (IBIs) are commonly used to assess anthropogenic degradation of aquatic systems. Describe what IBIs involve and explain their underlying principles.
- Explain the MacArthur/Wilson theory of island biogeography. Describe a potential application.

- Define ecological succession. What are the primary models of successional development and the underlying mechanisms?

Required Readings:

Begon, et.al. 2006. Ecology from Individuals to Ecosystems, 4th edition. Blackwell, Cambridge.

- Ch 5 - Intraspecific competition
- Ch 8 - Interspecific competitions
- Ch 9 - The nature of predation
- Ch 10 - The population dynamics of predation

Gurevitch, J., S. M. Scheiner & G. A. Fox. The Ecology of Plants. Sinauer Associates, Sunderland, MA

- Ch 9 - Community properties
- Ch 10 - Competition and other interactions among plants

EVOLUTION/GENETICS

Example Questions:

- What is the difference between evolution and natural selection? Do individuals evolve? Do populations evolve?
- What are some mechanisms of evolution other than natural selection?
- What are the requirements for natural selection?
- What is fitness?
- What is mutation?
- What is phylogenetic inertia?
- Discuss extinction rates and mass extinction events. What causes most extinctions at present? How do current extinction rates compare to background rates?
- What are the major forces of evolution, and how do they work?
- What are the requirements for adaptive evolution by natural selection?
- What is heritability? Describe at least one way in which heritability is measured.
- What are environmental and demographic stochasticity, and how do they influence a population's probability of extinction?
- What is meant by r and K selection? Are these useful concepts?
- What is an extinction vortex?
- What is an Evolutionarily Significant Unit (ESU) or a Distinct Population Segment (DPS)? Why are they important? How might one use genetic data and/or other data to identify such units?
- What is inbreeding? Describe one way to measure it. What is inbreeding depression? Describe one way to measure it.
- Describe two types of neutral genetic variation that are commonly measured. For each, describe two uses for such data.
- Explain the cladistic method of systematics. What is a monophyletic group? What is the major problem with strict application of cladistics when identifying taxonomic units such as species?
- How many species are there on earth? If you cannot give a number, what are some of the problems or uncertainties associated with answering this question?
- Give two definitions of species. What aspects are shared by almost all modern definitions of species? Why is it difficult to apply these definitions operationally: that is, why are we still discussing what a species is, centuries after Linnaeus?

Required Reading:

Conner & Hartl. 2004. A Primer of Ecological Genetics. Sinauer Associates, Sunderland, MA.

OR

Frankham, R., J. D. Ballou, and D. A. Briscoe, 2004. A Primer of Conservation Genetics. Cambridge University Press, Cambridge, U.K.
Chapters 1-7

LANDSCAPE ECOLOGY

Example questions:

- What questions does the field of landscape ecology address that differ from other sub disciplines of ecology?
- Describe two techniques currently used to describe landscape condition.
- What is the definition of a keystone species? Describe, from the literature, the effect that a particular keystone species has on the land/waterscape in which it resides.
- Describe the effects of landscape fragmentation on ecosystem health at both large and small (local) spatial scales.
- What are some positive and negative aspects of disturbance on ecosystems? Your examples could be from either anthropogenic or naturally occurring disturbance events.
- What factors need to be considered in choosing a reference site for a field research project?
- How does succession influence landscape dynamics? How do equilibrium and disequilibrium landscapes differ? What ecological factors lead to a landscape showing a dynamic steady state equilibrium?
- In what ways might landscape pattern influence the population dynamics of an organism? Define metapopulation dynamics. What are the methods typically used to model metapopulation dynamics? How might the concept of source/sink population dynamics be relevant to the management of a national park?
- Describe the scientific method and some of the challenges involved in applying the scientific method to landscape scale questions. How can these be overcome?
- Describe the process of habitat fragmentation by human activities. How do landscape patterns change as fragmentation proceeds? How do species differ in their responses to habitat fragmentation? What are the mechanisms by which some species may be lost from an increasingly fragmented landscape? What are the possible genetic consequences to a population of habitat fragmentation? What management strategies can be used to mitigate the effects of fragmentation? In what types of ecosystems is fragmentation likely to have a large effect on native species?
- How does landscape ecology differ from ecology more generally? What are two of the most important principles of landscape ecology? Discuss the concept of scale, why it is important in landscape ecology and how hierarchy theory helps. Provide an overview of landscape metrics: what are the classes of metrics and the groups; what are examples of metrics used for each group; what have been some of the problems with using these metrics in landscape studies?
- What is the purpose of simulation modeling in ecosystem and landscape ecology? Describe the nonspatial approaches that have been used to model vegetation dynamics. What are the challenges in adding consideration of spatial factors (such as biophysical gradients) to models of vegetation dynamics? How can these models be validated? What are the means by which simulation models of population dynamics, ecosystem dynamics, and human economics can be integrated?

- Overview adaptive management. How effectively has it been implemented; how can this be improved?

Required Reading:

- Gustafson, E. J. 1998. Quantifying landscape spatial pattern: What is the state of the art? *Ecosystems* 1:143-156.
- Pulliam, H. R. Sources and sinks: Empirical evidence and population consequences. Pages 45-56, 63-69 *in* O. E. Rhodes, R. K. Chesser, and M. H. Smith, editors. *Population Dynamics in Ecological Space and Time*. The University of Chicago Press, Chicago, IL.
- Reice, S. R. 1994. Nonequilibrium determinants of biological community structure. *American Scientist* 82:424-435.
- Turner, M. G., R. H. Gardner, R. V. O'Neill. 2001. *Landscape Ecology in Theory and Practice*. Springer, New York.
- Wiens, J.A. 1989. Spatial Scaling in Ecology. *Functional Ecology* 3(4):385-397.

PHYSIOLOGICAL AND ECOSYSTEM ECOLOGY

Example Questions:

- Starting with a living plant, describe the terrestrial carbon cycle. How do plants gain carbon, and how does carbon cycle through ecosystems?
- Starting with a living plant, describe the terrestrial nitrogen cycle. What are the pools, and what are the critical processes of transformation?
- What other elements are required and cycled by plants? How do these cycles differ by element?
- How are plants, animals, and microbes all similar with respect to nutritional requirements? How do they differ, and what are the implications of these differences?
- How are the temperature requirements of plants and animals similar and how are they different? How do the respective groups manage heat budgets?
- Starting with a living plant, describe the ecosystem water cycle. Why do plants need water? How do ecosystems influence hydrological regimes?
- What is net primary productivity? Draw a conceptual model of state variables and controls on forest productivity within a stand. What approaches have been used to map NPP continentally? What can satellites tell us about NPP? How are satellite data and simulation models interfaced to map NPP at these scales?
- What factors limit primary productivity in aquatic systems? Terrestrial systems?
- Biodiversity. Draw the shape of the relationship where net primary productivity is the independent factor and species richness is the dependent factor. Draw the relationship where species richness is the independent factor and NPP is the dependent factor. What is the theoretical explanation for each of the models? Which of these is more common in nature? How can these two models be integrated conceptually?
- How can we predict species richness of an ecosystem based on niche theory? How can managers of a national forest use niche theory to guide strategies for maintaining native species diversity?

General Reading Applicable to All Areas:

- Mackenzie, A., A. S. Ball, and S. R. Virdee. 2001. *Instant notes in ecology*, 2nd edition. Bios Scientific Publishers, Oxford.

Appendix II

Publishing Your Thesis/Dissertation

TGS Requirements

Prior to writing your thesis, and during the writing process, refer to the [Electronic Theses and Dissertations](#) guide on the Graduate School website. Understanding the formatting will help you avoid rewriting based on formatting errors. You can save yourself a lot of effort if you read and follow the formatting requirements in the guide.

After your thesis/dissertation defense and approval by your graduate committee, your thesis will need to be submitted to the Graduate School. The Graduate School checks the formatting of your electronic thesis/dissertation to determine how well it adheres to the guidelines in the preparation guide mentioned above.

If you are concerned about formatting guidelines, take the time to call or email the formatting advisor. You are encouraged to send drafts in for review by the formatting advisor early. Remember, they are reviewing for formatting only, not content. Also, they must review every thesis/dissertation that will be submitted that semester so they may not have time to get through yours if you wait until the last minute.

Electronic Version of Thesis

The Electronic Theses and Dissertations (ETDs) project at Montana State University is a collaborative effort between the Graduate School, MSU Libraries, graduate degree granting departments and students.

All theses/dissertations are submitted to our office electronically, known as an ETD. The Graduate School does not require a bound paper copy of your thesis or dissertation. Please check with your department for their requirements or suggestions for a bound copy.

ETDs are published on the MSU Library's website. Students may choose to have their ETD freely available worldwide or hold their work for a period of up to one year. After one year, all ETDs will be available online to the general public.

A final copy of your ETD, in *.pdf format, is to be completed before the TGS published deadline, which is typically 14 working days before the end of the semester you graduate. Please check Dates & Deadlines page on TGS web site for the exact date each semester.

There is a specific approval form for the electronic thesis/dissertation that must be signed by all committee members! It is due at the same time that your thesis/dissertation is due.

Department Requirements

After it has been approved and signed by the Graduate Dean, you are required to provide the Ecology Department with 2 (two) printed copies.

You will need to **provide all copies for binding**. Depending on the number of personal copies you want to have to take with you, the number of printed copies varies. Once you have determined the number of copies you need, have that many copies printed (this is at your expense), and bring them all into the Departmental office. It is your choice to print one- or two-sided pages, to use grayscale or color, and to use specialty paper but the department has suggested options available. You will:

- Select a color for the title font
- Select a color for the binding cover
- Provide the minimum 2 required printed copies for binding

- Provide the index number (if approved) for any personal copies
- Pay for unfunded personal copies (check or cash only)

The Department does pay for the binding of the (2) required copies. Any additional copies you provide to have bound will be invoiced to you.

Because binding takes approximately 4-6 weeks, you will be contacted via email to confirm your mailing address before they go out. You may also be notified, and arrangements can be made for any pending charges related to your bound copies.

Appendix III

2014 Travel Cheat Sheet – **Currently in review, questions should be directed to Business Manager Bernadette Diaz**

10 DAYS before you leave...

1. Complete a Travel Justification Form for all out-of-state travel. (Yellowstone National Park is out-of-state.) This form must be approved PRIOR to travel.
 - a. Air travel, rental car, and lodging expenses must be purchased online using an MSU credit card. If you do not use an MSU credit card, a written explanation must be attached to your receipts.

If you purchase air travel, rental car, or lodging using a personal credit card, it is considered a travel advance. This means receipts need to be submitted to the Business Office within 10 days of your return.
 - b. Lodging: If you are staying at a high cost city and will be claiming more than \$77/night, first, use the website below to find the maximum allowable per diem rates:
http://www.gsa.gov/Portal/gsa/ep/contentView.do?P=Mtt&contentId=17943&contentType=GSA_BASIC
Second, fill out the “Actual Cost of Lodging” section of the Travel Justification Form. High cost rates must be approved by the Business Office/Office of Sponsored Programs prior to travel.
If your in-state travel requires you to stay in a high cost city, you must complete the Travel Justification Form.
 - c. Travel advances: Based on state travel policy, advances refer ONLY to meal per diems and miscellaneous expenses for taxis or airport shuttles. To receive the advance before you leave, you must submit your request 2-3 weeks (20 days) prior to travel.
 - d. If you plan to claim costs for guests at business meals that may be over \$30, please submit the Hospitality Approval Form before you leave.

ASAP after you return...

2. Complete the Travel Voucher (available online):
 - a. List all MSU credit card expenses (including incidentals) in the appropriate box at the bottom of the form.
 - b. If flying, please provide us with an itinerary and boarding passes as proof of travel.
 - c. Mileage: If you wish to be reimbursed at \$0.56/mile, your signature is required in the appropriate box at the bottom of the travel voucher form. You must also include the name of the Motor Pool person with whom you spoke and the date you called Motor Pool. If this information is not included, you will receive the MSU Motor Pool rate of \$0.27 cents/mile. Mileage above 1,000 miles that was compiled in the same calendar month is reimbursable at \$0.53/mile.
 - d. Always provide detailed invoices or receipts for lodging and “other expenses”. List all “other expenses” in the appropriate box at the bottom of the travel voucher form. (If you use your personal credit card, see 1, a, above.)
 - e. Taxable meals: If you do not stay overnight at a location, all meal reimbursements are taxable to you and will be deducted from your payroll. Business meals are exempt if you document who you met with and business discussed at the meal(s). Business meals over \$30 require a Hospitality Approval form to be completed before you leave.
 - f. Don't forget to sign the form!

Traveling to Canada or Mexico??? A valid passport is required.

Appendix IV

TGS Reminder on Graduate Assistantship Agreement Form Deadlines:

Credits – Graduate Students must be registered **in a minimum of 3 credits** in each semester they hold an assistantship. TGS will not approve the appointment until registration (3 credits) minimum can be verified in Banner.

Payroll Deadline – Employment approval is required by **20th of the month** worked to be paid on the following 11th of the month payday.

Please keep in mind that someone can only hold an assistantship if they are in a student status. (Continuing students retain student status during the summer and do not have to register for credits during the summer.) At this time a graduate student must be registered for a minimum of 3 credits to qualify to be a GSA in fall or spring. A minimum of 6 credits is required for a GRA or GTA appointment for the fall and spring semesters.

We understand that some graduate students have had some difficulty receiving their paychecks in a timely manner which is unfortunate. Our office cannot approve the electronic appointment until we know that the student is registered for the minimum credits. Until that point, they are not eligible for the assistantship.

It is a hardship for most students who do not receive their paycheck in a timely manner. Students need to realize that they need to be registered for the minimum number of credits well before the 20th of the month in which they are working if they want to be paid on the following 11th of the month payroll. Also, the earlier the forms are turned into our office **and** you are registered, the earlier we can approve the appointment and forward yours to payroll. The volume of new appointment forms can be overwhelming in the beginning of a semester.

Appendix V

M.S. Graduate Curriculum Programs of Study – updated for 2016-2017 AY

M.S. in Fish and Wildlife Management

Fisheries Interest Program		SEM		Sub Totals	Totals
Required	Primer Courses	F	S		
BIOE 554	<i>Foundations of Ecology and Management</i>	1			
BIOE 555	<i>Communication in Ecological Sciences</i>		1		
	Total Primer Courses Credits			2	
Required	Fisheries Courses (Choose two)				
WILD 510	<i>Fisheries Science (even years)</i>		3		
WILD 513	<i>Fisheries Habitat Management (even years)</i>	3			
WILD 525	<i>Human Dimensions of FWL Management (even years)</i>		3		
	Total Fisheries Courses Credits			6	
	Total Required Courses Credits				8
Electives	Approved Program of Study Courses Credits <i>(Statistics courses highly recommended)</i>				12
Thesis	Required Graduate School Credits				10
TOTAL					30

Wildlife Interest Program		SEM		Sub Totals	Totals
Required	Primer Courses	F	S		
BIOE 554	<i>Foundations of Ecology and Management</i>	1			
BIOL 555	<i>Communication in Ecological Sciences</i>		1		
	Total Primer Courses Credits			2	
Required	Wildlife Courses (Choose two)				
WILD 501	<i>Applied Population Ecology</i>		3		
BIOE 521	<i>Conservation Biology</i>	3			
WILD 525	<i>Human Dimensions of FWL Management (even years)</i>		3		
BIOE 515	<i>Landscape Ecology & Management (odd years)</i>	4			
WILD 504	<i>Wildlife-Habitat Relationships (even years)</i>		3		
	Total Wildlife Courses Credits			6-7	
	Total Required Courses Credits				8-9
Electives	Approved Program of Study Courses Credits <i>(Statistics courses highly recommended)</i>				11-12
Thesis	Required Graduate School Credits				10
TOTAL					30

M.S. in Biological Sciences

Ecology Program		SEM		Sub Totals	Totals
Required	Primer Courses	F	S		
BIOE 554	<i>Foundations of Ecology and Management</i>	1			
BIOE 555	<i>Communication in Ecological Sciences</i>		1		
	Total Primer Courses Credits			2	
Required	Organismal & Population Level Courses (Choose one)				
BIOE 521	<i>Conservation Biology</i>	3			
BIOE 532	<i>Physiological Plant Ecology (even years)</i>	3			
BIOE 548	<i>Conservation Genetics</i>	3			
WILD 501	<i>Applied Population Ecology</i>		3		
	Total Organismal & Population Level Courses			3	
Required	Community, Ecosystem, & Landscape Level Credits (Choose one)				
BIOE 542	<i>Community Ecology (odd years)</i>		3		
BIOE 515	<i>Landscape Ecology & Management (odd years)</i>	4			
LRES 568	<i>Ecosystem Biogeochemistry</i>		3		
	Total Community, Ecosystem, & Landscape Level Credits			3-4	
	Total Level Course Credits			6-7	
	Total Required Courses Credits				8-9
Electives	Approved Program of Study Courses Credits <i>(Statistics courses highly recommended)</i>				11-12
Thesis	Required Graduate School Credits				10
TOTAL					30