

ECOLOGY PROGRAM AREA MASTER’S PROGRAM HANDBOOK
REQUIREMENTS, POLICIES, PROCEDURES, AND GUIDELINES

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Introduction

The purpose of this document is to describe the requirements, policies, procedures, and guidelines of the Ecology Program Area (EPA) Master's Degree Program. It is a supplement to other documents for which each graduate student should be familiar and have in his/her possession. These documents are the *SDSU Graduate Bulletin*, *The Graduate Teaching Associate / Graduate Assistant Handbook* (available at the Graduate Division website; see below), and the *Master's Thesis and Project Manual, SDSU*, available at Aztec Shops Bookstore (594-7535). Many forms and documents are available to you at the Graduate Division of the Graduate and Research Affairs website: <http://aztecgrad.sdsu.edu/gra/Default.aspx>.

Many university resources and policies are summarized in the "Orientation and Handbook for New Graduate Students" available at: http://grad.sdsu.edu/current_grad_students/handbooks_and_links. Importantly, the university's rules for course repeats and Master's degree grade requirements are summarized on pages 7-8 in that handbook.

The EPA Master's Degree Program is not separate formally from the Biology Master's Degree Program, meaning that Ecology does not maintain its own degree program. The EPA program does, however, have specific policies and procedures in addition to those of the Biology program. You are bound by these policies if your thesis advisor is a faculty member in or associated with the EPA. This document may be revised at any time by a simple majority vote of tenured and tenure-track EPA faculty.

"Classified" and "Conditionally Classified" Standing

Students are admitted to the EPA Master's Degree Program with either "Classified" or "Conditionally Classified" standing. If you are Conditionally Classified, you must complete requirements (set forth by the Biology Graduate Coordinator, the Ecology M.S. Graduate Coordinator, and your thesis advisor) before you can obtain classified status. *Your earliest objective should be to obtain Classified status by completing these requirements.* Please note that the student should initiate a Change of Status request by submitting the appropriate electronic form. Failure to do so will prevent you from registering for courses in subsequent semesters (typically the Fall semester of your 2nd year).

In order to be admitted to the program and receive Classified standing in the Ecology Program Area, students generally must meet the following requirements:

1. A Bachelor's degree in Biology or a degree related to Biology (e.g., Environmental Science, Range Management) from any accredited college or university. If a lack of adequate requirements is perceived, then a committee* will be formed to evaluate a student's background, academic objectives, and coursework requirements. The committee will decide the need for any additional coursework and may make other recommendations. In the case of a student with a bachelor's degree unrelated to Biology, a committee meeting is mandatory, and the committee will expect the student to complete core courses in Biology. A faculty member may request a committee meeting for any incoming graduate student applying to work in their laboratory.

* *A committee will be composed of the Ecology M.S. Graduate Coordinator, the EPA Chair, the EPA thesis advisor, and another EPA faculty member chosen by the thesis advisor.*

2. An overall undergraduate GPA of 2.85 or better for the last 60 semester units or equivalent.
3. A GPA of 3.0 or better on all upper division biology courses.
4. Two letters of recommendation.
5. Faculty sponsorship: admittance to the program requires the sponsorship of an EPA faculty member willing to accept a student into his/her laboratory.

Coursework

Your official program is the 30 units you must complete to obtain a Master's degree in Ecology, of which at least 15 units must be from graduate courses (600-level or higher). You will file your Biology Department Worksheet for the Official Program of Study **with the Biology Graduate Advisor midway through your 3rd semester**, but you should work closely with your thesis advisor beginning in your first semester to develop an appropriate program. If you are required to take additional courses deemed necessary by the Ecology M.S. Graduate Coordinator or committee that has reviewed your coursework, such courses are in addition to the required 30 units. The Program of Study must contain at least 30 units but no more than 31 units of approved coursework. You are certainly free to take additional courses, but such courses will not be a part of your official program.

Coursework requirements. Biology 645 and Biology 745, *Theory and Principles of Ecology*, must be taken in your first fall and spring semesters as a two-part series upon entering the M.S. program in Ecology. In addition, you must take at least one graduate-level, 2-3 unit seminar course, and an upper-division or graduate-level course in statistics is strongly recommended. Biology 799, *Thesis* (three units), should be taken the last semester of anticipated graduation. If you do not graduate in that semester, you may enroll in Biology 799B the next semester as you complete your degree. Note that while you are taking 799 (3 units) or 799B (0 units), you are considered a fully enrolled graduate student. You may be allowed to transfer up to 9 units of coursework *at the graduate level* from another university.

You can request a waiver of any specific requirement. You should initiate such requests through your thesis advisor and the Ecology M.S. Graduate Coordinator, hopefully with their support. Ultimately, such requests must be approved by the Biology Graduate Advisor and the Dean of the Graduate Division.

Independent study courses. The Department of Biology may benefit in terms of resources as more students sign-up for independent study units as they conduct their thesis research. You are encouraged to take units of Research (Biology 797), and the "EEB Seminar Series" (Biology 795). To sign up for the EEB Seminar (one semester credit only for 1 unit), see Medora Bratlien in the Biology office. **You can receive up to a total of six units of credit for 797 units.** Even if you have received all of the credit that you can obtain with Biology 797, you can take more units to fill out your course load to six units each semester, the number of units considered to be a full-time graduate student. Full-time status can be important for maintaining scholarship or grant requirements or in obtaining financial support.

Preparation for Advancement to Candidacy (to be completed within first 4 semesters)

1. Complete required coursework: *Theory and Principles of Ecology*, Biology 645 and Biology 745 (offered fall and spring semesters each year) and at least one 600-level or higher seminar course (not including the Ecology and Evolutionary Biology departmental seminar). In addition, an upper-division or graduate course in statistics is strongly recommended. If you are required to take other courses as determined by the Ecology M.S. Graduate Coordinator and your thesis advisor (calculus, physics, chemistry, genetics, evolution, or other courses that relate to a student's interests and field of study), you should complete them in a timely fashion to achieve Classified standing. If a student is admitted with course deficiencies, he/she will be expected to complete these courses within two semesters, obtaining grades of B or better in all of them. If a student does not meet coursework requirements before the end of the third semester, the Ecology M.S. Graduate Coordinator will convene a committee* as described previously.
2. **File the Worksheet for the Official Program of Study** (obtain from Information for Current Masters Students website (<http://www.bio.sdsu.edu/CurrentM.S.cStudentInfo.html>)). Complete the worksheet, have your thesis advisor and the Ecology M.S. Graduate Coordinator sign it, and give to the Biology

Graduate Advisor. **You should file this document by the middle of your third semester, even if you have not yet presented your thesis proposal.** The Biology Graduate Advisor will enter this information online, but will not be finalized until after the proposal is complete and they receive a signed copy of the Thesis Proposal Form (see below).

3. Assemble your thesis committee. This committee will consist of at least three faculty members, including your thesis advisor, another faculty member in the Biology department, and a faculty member at SDSU from outside the department but within the university (see “Thesis Proposal and Thesis Committee” below). You may have an additional thesis committee member, if desired, from outside the university (e.g., adjunct faculty, faculty at other universities, or scientists at state and federal agencies, as appropriate).
4. Complete a written and oral thesis proposal for approval by your thesis committee and the Ecology Program Area faculty.
5. **File a Thesis Proposal Form** (see the Biology department website) that will document completion of your thesis proposal for Advancement to Candidacy. The form must be signed by your thesis advisor and the Ecology M.S. Graduate Coordinator before giving the form to the Biology Graduate Advisor.

Thesis Proposal

The development of a thesis proposal describing the research you will conduct represents a major milestone in the pursuit of your degree. **You are required to successfully present your proposal both in writing and orally by the end of your 4th semester in the program.** Failure to pass your proposal by the end of your 4th semester will result in a loss any departmental funding for the following year. However, you are strongly encouraged to present your thesis proposal by the end of your 3rd semester to facilitate timely completion of your degree. This may be the first time you have been expected to develop and plan a substantial research project. Reading the relevant primary literature, consulting with your thesis advisor, and talking with fellow graduate students about your interests and ideas should help you produce a quality proposal.

A. Selection of Your Thesis Committee. You must have selected your entire committee prior to the oral presentation of your thesis proposal. Discussion with your thesis advisor as to whom you should ask to serve as second and third members of your thesis committee is strongly recommended. The second member of your committee must be another tenured or tenure-track faculty member in the Department of Biology. The third committee member is a faculty member from any other department at SDSU. You might talk to other graduate students about an appropriate committee member from another department. If you have an external thesis advisor and a permanent EPA faculty member serving as co-chairs of your committee, you still must have the two additional faculty members on your thesis committee [note: your official thesis committee form can be filed with the Graduate Division only after you have been Advanced to Candidacy, and generally this is done in the semester that you plan to graduate]. **All three primary members (two from Biology and a faculty member from another department at SDSU) of your thesis committee are expected to be present at your thesis proposal. You are required to have at least two of the three committee members in attendance to present your proposal. Attendance by committee members via streaming video is allowed provided the thesis advisor is present at the proposal fest (see “E. Oral presentation of proposal” below). When these conditions are not met, students will not be allowed to propose and must wait to propose until the next available time slot at another proposal fest.**

B. Option for an External Thesis Advisor. Normally your thesis advisor is a tenured or tenure-track faculty member in the Ecology Program Area. Sometimes, however, a student may wish to work under the guidance of a person who is an adjunct EPA faculty member or who is a faculty member or scientist

at another institution. That is an option, but it requires that a tenured or tenure-track faculty member within EPA must agree to serve as co-chair of the thesis committee and to assume responsibility for all formalities and providing the student space and other resources the student may need at SDSU.

C. Preparation of Written Thesis Proposal. Once you have selected a thesis advisor, he/she has primary responsibility for helping you to define your research project and to develop a written proposal.

Faculty members vary in the degree to which they will assist you in defining your research project and the methodology for it. At one extreme there's the "sink-or-swim" approach, wherein the professor lets you pick the project and methodology and provides only occasional and general suggestions. This approach is excellent for the development of your intellectual independence, but may also result in a higher degree of difficulty. At the other extreme, you may have been accepted into your advisor's laboratory to work on a specific research project, and so you may find yourself obligated to carry out a particular thesis topic that has already been defined in moderate detail. Most situations lie somewhere in between these two extremes.

The written proposal should be on the order of 6-10 single-spaced pages in length and contain at least four main elements: an introduction, a proposed methodology, a bibliography, and an estimated budget. Keep in mind that you must plan ahead to give everyone on your thesis committee adequate time to review your proposal. You should give a first draft of your proposal only to your thesis advisor, who will then edit the proposal and may ask you to rewrite it for further edits or after one revision, provide the rest of your committee with copies. A reasonable guideline is that students provide their thesis advisor with a draft of their proposal **at least 4-5 weeks** before the proposal presentation date. The rest of your thesis committee should have **at least two weeks** to review the proposal once they receive it. Not following these timelines is unwise as it will tend to irritate faculty, something that you don't want to do when it is their turn to ask questions after your presentation!

The introduction should contain a concise review of existing knowledge on your specific topic or question, a statement of the objectives of your project, and an explanation of its significance. The methods should outline your sampling or experimental design and how you plan to conduct your study, collect your data, and analyze them. Preliminary data are often collected in development of the proposal, so they should be presented and analyzed if appropriate. Specification of your exact sampling or experimental design is essential. The statistical methods you plan to use in analyzing your data also should be indicated. You should also indicate the use of facilities, supplies, and equipment.

Preparation of a budget serves several purposes. It requires you to evaluate the various costs of your project. If the project will require additional funds, you and your advisor should review together the possibilities of obtaining supplemental funds from other sources. The preparation of a budget early on is valuable in that it forces detailed planning and consideration of many technical and logistical aspects that you might otherwise not consider until it is too late. Categories in your budget should exist for at least the following major types of expenses: equipment, supplies, student assistants, and travel. Under each category there should be an individual listing for any item or subcategory with a cost exceeding \$25. Pricing for items can be estimated by speaking with your advisor, other faculty, or students, and looking at websites of research supply companies. Note that SDSU has contracts with some scientific supply companies to offer products at reduced prices; for more information speak with your advisor or staff in the Biology main office.

D. Faculty Review of Written Proposal. Before you can present your thesis proposal orally to the EPA faculty, consent of your thesis advisor must be provided to the Ecology M.S. Graduate Coordinator. This consent is typically provided as an email from you to the Ecology M.S. Graduate Coordinator that is cc'ed to your thesis advisor. In this email, you request a specific proposal presentation date. You will not be scheduled to present your proposal unless such consent is obtained. You must provide the Ecology MS

Graduate Coordinator with evidence of committee approval of the written proposal no later than 2 days prior to the scheduled Proposal Fest date (see section E below). If you have selected an external thesis advisor, then you need the written consent of *two* regular Biology faculty members, at least one of which must be from the EPA. You are encouraged to retain an additional signed copy of the written proposal for your records.

In giving such consent, these faculty members are stating that in their opinion the main substance of your proposed project is reasonable for a Master's thesis project, that the project is feasible, and that your methodologies are appropriate and defined in sufficient detail. Because of scheduling issues, advisor consent is typically provided before the written proposal is fully complete. In these instances, consent indicates that the advisor believes the written proposal can be completed prior to the proposal fest.

Development of your written proposal and obtaining approval of it can be done in various ways. The best and most efficient way is to discuss your ideas with your thesis advisor and other faculty members. It is also very helpful to discuss ideas and development of a draft with your fellow students. Develop a draft of your proposal and discuss it with your thesis advisor. He/she may have you revise it a few times. Do not submit copies of the proposal to other faculty members until your thesis advisor tells you it is ready for their inspection. The above procedure is not mandatory but it may save you some embarrassment and imposes less on your thesis committee.

The objective of this review of your written proposal is to guarantee the appropriateness of your project, to force you to develop detailed and realistic plans, and to avoid requiring EPA faculty members and students to sit through presentations of ill-conceived or incompletely devised proposals. You are *not* expected to be an expert in the subject matter or to have every detail worked out in advance. However, you do want to avoid being asked, following your oral presentation, to redesign your project or to rewrite your proposal. It should be obvious from the written proposal that your project is scientifically sound and interesting and that it can be completed in a reasonable amount of time.

E. Oral Presentation of Proposal. You must also have met all of the other requirements for classified standing before you can give your oral presentation. Scheduling of the time of your oral presentation should be done in consultation with your thesis committee and the Ecology M.S. Graduate Coordinator. We set aside at least two dates in each of the fall and spring semesters for several students to present proposals at an "Ecology Proposal Fest". The goal is to set aside dates so that the greatest number of your fellow graduate students and EPA faculty can attend. EPA does not allow presentations of proposals during official vacation periods and during the summer. Your entire thesis committee and the Ecology M.S. Graduate Coordinator (or a designee) are expected to be present. At least three EPA faculty members must be present; all EPA faculty and graduate students who do not have time conflicts are expected to attend your proposal. Generally, LS 101 is scheduled for thesis proposals. The Ecology M.S. Graduate Coordinator will send out an email to the ECOMS listserv one month prior to proposal fests. You reserve a date by replying to this email (cc'ed to your advisor) requesting your preferred date. Prior to students in their 4th semester, these requests will be handled in the order that they are received.

However, to balance out the number of proposals across the proposal fests in the Spring Semester, students in their 4th semester will be assigned a date for their oral proposal. These students will typically be assigned a proposal date early in the semester. This is because in the event that you do not pass your proposal, you would potentially still be able to propose again later in the semester and avoid the consequence of failing to propose successfully by the end of your 4th semester (i.e. avoiding losing departmental support for your next year; see section "***G. Failure to Present or Pass Thesis Proposal,*** below). Students in their 2nd semester will be allowed to choose their oral proposal date in Spring semester. Typically, the spring proposals will occur in March and April. The Ecology M.S. Coordinator will add an additional proposal fest in February if those two proposal fests each have four proposals.

The date, time, place, the title of your oral presentation, and the names of your thesis committee members may be announced publicly in three ways: the Ecology M.S. Graduate Coordinator will arrange to put notices in the Biology Department calendar, the Biology Department electronic weekly newsletter (Biology Bulletin), and the listservs for EPA faculty and graduate students. You may also prepare several conspicuous notices and post them on appropriate bulletin boards in the Life Science and Physical Science buildings (please remove them afterwards!).

Students must provide the Ecology MS Graduate Coordinator with evidence of committee approval of the written proposal no later than 2 days prior to the scheduled Proposal Fest date. This evidence will consist of a hard copy of the written proposal signed by your thesis advisor and at least one other regular Biology faculty member (usually the second member of your thesis committee). This approval will serve as insurance for the student and as a final check to confirm that students are ready to give their oral proposal. **Students failing to meet this deadline will not be allowed to present their oral proposal during that Proposal Fest.**

Presentation of your proposal should not take longer than **25 minutes**. If you are not finished after 25 minutes, the Ecology M.S. Graduate Coordinator or designee will allow up to five more minutes for your presentation. At the end of 30 minutes, the presentation is stopped if not finished. The reason for this is to allow sufficient time for questions by your committee and others attending the presentation. Usually the first 5 minutes will be an introduction to the subject matter, with the remaining time used for a description of your proposed objectives, methodology, sampling or experimental design, and analysis. Several practice oral presentations of your proposal will be invaluable, and don't hesitate to ask your thesis advisor and fellow students to serve as the audience and critics.

Following your official presentation, the audience will be encouraged to ask you questions about your project and to make suggestions for its improvement. Traditionally, your thesis committee members are given the first opportunity to comment or ask questions, followed by 1-2 students and other faculty, and then the general audience. Do not take offense if you are asked a barrage of questions; such questions serve as constructive criticism with which to improve your project and to get you to think about possible pitfalls.

At the end of the question period, everyone leaves the room except EPA faculty and committee members. At that point, faculty will discuss the quality of the proposal and decide whether to recommend, and perhaps require, changes in the project and whether to approve, conditionally approve, or reject the thesis proposal. The final decision will be based on the majority of votes of the faculty and committee members present at the oral proposal. With conditional approval, the faculty, including the thesis committee, will provide the conditions that must be met, within a specified time period, for approval of the thesis proposal. The thesis committee is then charged with ensuring that the conditions are met, upon which the student has received approval of their proposal. When changes are suggested, the student may be invited back into the room to discuss them. In the case of minor changes, oversight of their implementation is usually left in the hands of the thesis advisor and committee. If major changes are deemed necessary, the faculty may require that the written proposal be revised and then reviewed by the thesis committee. If your proposal is rejected, you will need to discuss with your thesis advisor how to proceed.

F. Approval of Thesis Proposal. If your thesis proposal is approved, congratulations are in order! You should file a **Thesis Proposal form** (see <http://www.bio.sdsu.edu/CurrentMScStudentInfo.html>) signed by your thesis advisor and the Ecology M.S. Graduate Coordinator and the Biology Graduate Advisor.

G. Failure to Present or Pass Thesis Proposal. There are several conditions that, if not followed, will result in a student being denied further departmental support (TA/GAship) and, possibly, removal from the Ecology graduate program:

Students must successfully propose their thesis by the end of their 4th semester in the program. Students who do not meet this objective are automatically evaluated as having “unsatisfactory progress” in their annual progress report and are not eligible for departmental support (TA/GAship) the next year. Because proposals are only allowed at pre-determined dates within a semester, this scenario is why 4th semester students will be required to propose early in the Spring Semester. Failure to present their proposal in a 5th semester results in removal of the student from the Ecology M.S. program.

Worksheet for the Official Program of Study, Thesis Proposal Form, and Advancement to Candidacy

By the middle of your third semester, you should file your Biology Department Worksheet for the Official Program of Study with the Biology Graduate Advisor (<http://www.bio.sdsu.edu/CurrentMScStudentInfo.html>). To do this, complete the form in consultation with your advisor, and then submit your form to the Biology Graduate Advisor for their signature. You may request that the Biology Graduate Advisor change your POS depending on future availability of courses or other issues by consulting with your thesis advisor, the Ecology M.S. Graduate Coordinator, and the Biology Graduate Advisor. POS substitutions may not be made for courses that are already completed, even if the grade was low.

The Biology Graduate Advisor will enter this information into webportal. Because EPA does not allow you to Advance to Candidacy until you have successfully proposed your thesis, we require an additional step before the Biology Graduate Advisor finally submits your Official POS. Namely, you must complete the Thesis Proposal Form for the Biology Masters Program after you have successfully proposed your research at a proposal fest. This form also requires signatures from your thesis advisor, the Ecology M.S. Graduate Coordinator, and the Biology Graduate Advisor. Once the Biology Graduate Advisor receives the signed Thesis Proposal Form, they submit the Official POS.

Approximately two weeks after the Official Program of Study has been filed, the Graduate Division will automatically send you the Advancement to Candidacy Form. However, you are advised to follow up with the Graduate Division to check on the status of this. You will be advanced to candidacy when your thesis advisor supports advancement and the Ecology M.S. Graduate Coordinator so recommends. Once advanced to candidacy, you may obtain a Thesis Committee Form from the Graduate Division and collect the signatures of your committee members, and then send the form on to the Biology Graduate Advisor, who will sign and forward it to the Graduate Division. The Thesis Committee Form is normally filled out in the semester when you expect to graduate and you are taking Biology 799 (thesis units), but this form may be required earlier for students beginning their third year in the program if they will continue to serve as TAs or GAs.

Once your Thesis Committee Form has been submitted to the Graduate Division, you may not make any changes to your thesis committee without completing the following procedure. To request a change you must: 1) notify in writing any faculty member whose removal from your committee you are requesting, 2) request in writing that the removed committee member acknowledge the change, and 3) file a new thesis committee form with Biology Graduate Advisor. The Biology Graduate Advisor will then submit the signed letter from the removed committee member and the new thesis committee form to grad affairs. Your thesis advisor and the Ecology M.S. Graduate Coordinator should be kept informed of your request and its result. Occasionally a faculty member may wish to withdraw from a committee after a Thesis Committee Form is signed and submitted. He/she may do so simply by sending a letter to the Biology Graduate Advisor, the Graduate Dean, and the Ecology M.S. Graduate Coordinator, stating the reasons for withdrawal. The student will then be obliged to find a replacement and submit a new Thesis

Committee Form. Requests from faculty to withdraw from a committee occurring before the Thesis Committee Form is signed and submitted need only consist of an email.

Thesis Progress Meetings

All classified graduate students in EPA must arrange a **Thesis Progress Meeting** with their thesis committee members once each semester. The thesis advisor and at least one Biology thesis committee member must be present. The student is responsible for arranging the meeting with at least two weeks notice to the faculty. This meeting is designed to ensure that the student is making adequate progress toward completing his/her Master's thesis and to identify any problems (logistical, conceptual, or otherwise) in the project. In this meeting, the student and faculty will briefly address the feasibility and practicality of the project, what has been accomplished to date, and what is to be accomplished in the future. If the committee determines that unsatisfactory progress has been made, they will so advise the student and offer advice for improvement. In this case it is recommended that another meeting shall be called within the year to review the student once more.

The Ecology M.S. Graduate Coordinator will distribute a **Progress Report (see next page)** to all Ecology M.S. students each semester. This report will be filled out where appropriate by the M.S. student, given to the thesis advisor and the second Biology committee member for their comments and signature, and returned to the student for his/her signature. The student is then required to give this report to other thesis committee members and to the Ecology M.S. Graduate Coordinator by the date indicated. Failure to complete the progress report in a timely manner can result in a student being denied the opportunity to present their thesis proposal, or to defend their thesis, until the form is submitted.

Receiving a negative progress report (e.g. "Not Satisfactory") indicates that you are not making adequate progress towards graduation. A single negative progress report should serve as a wake up call and it is meant to allow you to improve. However, if you receive two progress reports with "not Satisfactory" ratings, then you will lose departmental support for a year starting as soon as the following semester.

ECOLOGY M.S. STUDENT PROGRESS REPORT

FALL 20__ / SPRING 20__

Student must schedule a meeting with their Thesis Advisor and the Second Biology Committee Member.

Student must distribute copies of the completed, signed document to all committee members and original to the Ecology M.S. Graduate Coordinator

STUDENT INFORMATION	Name _____
	First Enrolled (Term/Yr) _____
	Overall GPA _____

MARK (X) IN APPROPRIATE BOXES

PROGRESS	Not Started	Partially Complete	Completed	Comments
Coursework				
Thesis Proposal				Date _____ [Anticipated / Completed]
Data Collection				
Data Analysis				
Writing Thesis / Defense				Date _____ [Anticipated]

SUMMARY OF MEETING WITH THESIS ADVISOR AND 2ND BIO. COMMITTEE MEMBER

Student progress is: excellent satisfactory marginally satisfactory not satisfactory

Date of Meeting: _____
 Thesis Advisor – I attended this meeting and I approve: _____
 Second Biology Committee Member– I attended this meeting and I approve: _____
 Student- I attended this meeting and I approve: _____

Thesis Preparation and Review

At this stage in your graduate career, you will begin to draw more heavily on skill sets such as: statistical analysis, word processing, writing, and the ability to hold a smile in the face of sometimes conflicting requests on the part of your thesis committee members.

Format considerations. Your finished thesis must meet very specific requirements as to its format, described in the *SDSU Dissertation and Thesis Manual*, available at the Division of Graduate Affairs website (http://aztecgrad.sdsu.edu/gra/dissertation_and_thesis.aspx) and at Aztec Shops Bookstore (619-594-7535). You should also consult the CBE style manual and select a refereed journal appropriate for your topic to use as a format guide.

As you begin to write your thesis, you should also plan to publish your research in the scientific literature. You should decide, with the advice of your thesis advisor, on the journal to which you would like to submit your work. Then you can, within the limits set by SDSU's format requirements, adjust the format and structure of your thesis so as to make very easy its conversion into a manuscript suitable for submission to the selected journal.

SDSU thesis specifications give you much leeway in the design and formatting of tables and figures. These are the very heart of your thesis and manuscript and should be prepared with thought and care. Their structure and size should reflect awareness of the journal's page size and column width and the penchant of editors to reduce figures more than authors think is reasonable. Because figures are often time-consuming to prepare, you definitely want the figures you present in your thesis to be suitable for the selected journal. Figures and tables usually should be prepared in more-or-less finished form before you begin writing, or at least before you begin writing your RESULTS section. The format used for your thesis and bibliography citations must be exactly that required by some specific refereed journal in your field. When you submit your finished thesis to the University Thesis Review Service you must include a photocopy of a recent article in that journal. This article will be used as a model by the thesis reviewer.

Role of thesis advisor. Your advisor may have fairly specific ideas as to how you should structure your thesis and you should solicit his/her advice as you develop your tables and figures and begin writing.

The length of your introduction is not really a matter of format, but is a crucial item to consider in this regard. Editors like manuscripts with concise introductions, perhaps several paragraphs to a couple of manuscript pages in length. Some thesis advisors think this is also fine for a thesis, but others prefer a longer, more discursive review of the topic that demonstrates your mastery of the literature. Your thesis advisor has the final word on this matter, so check with him or her before you begin writing your introduction and other components of your thesis.

Your advisor will usually want to see and review at least one full draft of your thesis before you have your other committee members review it. Most commonly your thesis advisor will want it to be revised at least once or twice before he or she judges it ready for review by others. **You should follow his or her advice**; it is the hope of the second and third members of your committee that you and your thesis advisor will have taken care of most major problems before it gets to them. **Allow sufficient time for the review process!!** Work with your thesis advisor to agree on an appropriate time frame for review and subsequent review by committee members. Again, it is unwise to irritate your thesis committee by not allowing for sufficient time in providing them a draft of your thesis for review. Also remember, that the time it takes for review will depend on the quality of your draft and the current workload of your thesis advisor.

Role of other thesis committee members. Approval of your thesis is the joint responsibility of all of your committee members. Occasionally a second or third committee member may “rubber stamp” a thesis, but this constitutes dereliction of duty. When any committee member signs off on your thesis,

they are stating that they feel the substance, clarity, and technical accuracy of the thesis, as far as they can judge, meet or exceed what they believe to be the minimum requirements for a thesis. To the maximum extent possible, each committee member should reach an independent judgment on these matters, and each member should recommend whatever improvements or changes seem warranted. Sometimes these changes will all be minor, but sometimes there will be some major ones, e.g., reanalyzing data, rewriting an entire section, or reconstructing illustrations! In brief, don't assume that only your major advisor is going to read your thesis critically or that only your major advisor has the right to request major changes in your thesis.

Appendices. An appendix consists of supplementary material presented at the end of your thesis following the Literature Cited section. Appendices can be very useful to a thesis and students may include them when appropriate. Appendices are useful mainly in permitting both a more smoothly flowing text and a fuller presentation of the data on which the thesis is based. They may facilitate preparation of the body of the thesis in a form that will require little modification before submission to a scientific journal. They allow easier access to the data on the part of the student, the thesis committee or, indeed, any person who in the future might be interested in seeing the data, either to check the original analyses and conclusions or to see what additional information it may contain.

Appendices in Biology theses are normally of two types. In one, detailed descriptions may be given of techniques or procedures or even of entire subprojects within the thesis research program. Descriptions of some such subprojects may not be easily or appropriately included in the body of the thesis. Operationally the objective perhaps should be to include in the body of the thesis only as much detail as would be appropriate in a manuscript to be submitted to a journal. This facilitates your preparation of such a manuscript.

The second type of appendix is a table of data. The data presented in the text, figures, and tables of the body of a thesis usually are in the condensed form of various summary statistics (means, standard errors, P values, etc.). These may not be the raw data, strictly speaking. But when included, they should at least be sufficiently extensive as to permit recalculation of all means, standard errors, indices, and statistical analyses presented in the thesis.

Thesis Defense

The thesis defense consists of an oral public presentation and defense of the findings and conclusions of the thesis project. **It must take place before the thesis committee gives final approval to the thesis.**

Scheduling. The defense may be scheduled only after all members of the thesis committee have seen a draft of the thesis that, in their judgment, is acceptable. That is, each considers it to be in final form or to need only minor further revision. The student should not attempt to schedule the defense so long as one or more committee members feels that major additional changes in the thesis are needed. Committee members are not obliged to give credence to a student's claim that such major additional changes can be made quickly.

It is the responsibility of the student to arrange for a day, time, and room to present the thesis defense. Students should also notify the Ecology M.S. Graduate Coordinator of the defense, providing a title, committee members, date, time, and room so that the thesis advisor may advertise the defense via e-mail. The defense must be scheduled with at least two-weeks notice. A thesis defense may be scheduled at any time during the year mutually agreeable to the thesis committee and the student. Except in unusual circumstances, however, it is expected that the time will be one that will favor attendance by other EPA faculty members and students. All EPA faculty and graduate students who do not have conflicts are expected to attend. The thesis defense should be announced by notices posted on several appropriate bulletin boards in the Life Science and Physical Science buildings, and by e-mail to

Ecology faculty and students. It may also be announced in an issue of the Department of Biology weekly newsletter, the Biology Bulletin.

The length of a thesis defense is up to the student and his/her advisor, but a general rule of thumb is that the presentation of a defense not exceed 40-45 minutes. This will allow time for questions from your thesis committee and other faculty, staff, and students.

Final Deliberations. The defense is followed by a period for questions and discussion. At the close of this period, all persons except the thesis committee members and interested faculty will leave the room, and the group will discuss the candidate's performance and any unresolved matters concerning the thesis itself.

After deliberations, the thesis committee may choose to approve and sign the thesis, or they may recommend corrections be made before final approval can be provided. Signing the thesis signifies your committee's approval of the thesis and of the awarding of a Master's degree to the candidate. Only the thesis committee members have the right to vote on the acceptability of the thesis and adequacy of the thesis defense. Their approval must be unanimous, however. If one or more committee members refuse to approve the thesis, it usually indicates that the defense was held prematurely or that previously undetected flaws in the thesis were discovered at the defense.

When such flaws are discovered, the procedures to be followed will be entirely up to the thesis committee. They must ascertain whether, in their own judgment, the putative flaws are real ones. If they are real but minor, the committee may decide to give the thesis advisor full responsibility for overseeing their correction. In such a case, the other committee members may be willing to sign the title page on the spot. If the flaws are major, the same procedure can be adopted, but it would also be reasonable for all committee members to withhold their signatures until they have seen a revised draft of the thesis.

The sole objective is to assure that the flaws are corrected. Generally, once the thesis defense has been given, the only flaws that would be grounds for non-acceptance would be those concerning the internal coherence of the thesis. Simply, the conclusions and interpretations must be consistent with the methodologies used and the data obtained. If they are not, then reanalysis (logical, conceptual, mathematical and/or statistical) and rewriting are required. That is, another revision is needed but additional data-gathering is not.

Submission of Thesis to University

After your thesis defense and the approval of the thesis by your thesis committee, you will submit your thesis to the university for review. There are several deadlines associated with turning in your thesis for graduation within a certain semester. You should plan to accommodate these deadlines in arranging your thesis defense and in getting final approval of your thesis by your committee. Visit the Graduate Division website for more information.

Program Timelines

Graduate students almost always underestimate the time required for the completion of course work, thesis proposals, defenses, drafts of their theses and other procedures, often by months. Depending on your project, **a master's thesis is expected to take at least two years and completion usually involves an additional year**, especially if you are heavily involved in fieldwork and it has a seasonal or some other temporal component (see example timeline on pg. 22). With respect to writing a thesis, students underestimate (a) the time required to learn or relearn the statistical methods required by their data, (b) the time required to prepare a complete first draft, (c) the time your thesis advisor needs to review your drafts, (d) the time required that each thesis committee member will take to review a near-final draft, (e) the

number and extent of changes the committee members are going to suggest or require, and (f) the time required to revise the thesis in accordance with these recommendations or requirements.

At the time you are working on your thesis, you are going to be very wrapped up in your needs, in the trials and tribulations of an intensive writing and learning experience, and probably very concerned about deadlines of various sorts. As you request reviews of your thesis drafts begin to schedule a thesis defense, it is important to keep in mind that your committee members are occasionally out of town for conferences, field work, vacations, and sabbatical leaves, or are extremely busy with the myriad of other duties required of them. Thus, as *your* deadlines draw near, you must keep track of the availability of your committee. It would be wise to assume that your thesis committee has many other tasks and pressures and would adhere to the adage "Poor planning on your part does not constitute a crisis for me". After your thesis advisor has revised one or more of your thesis drafts and recommends that you submit your revised draft to the rest of your thesis committee, plan that your thesis committee members will take at least 2-3 weeks to review a draft of your thesis.

Interdisciplinary Masters Degree Programs ("Special Majors," see *Graduate Bulletin*)

If a student's special needs and interests spanning two or more academic disciplines cannot be met adequately within the requirements of the Master of Science in Biology, an interdisciplinary Master's program may be arranged. Termed a Special Major, this degree is administered by the Graduate Division Office, not the Biology Department. The program of study must reflect careful and deliberate planning. The program and the student's thesis research are normally supervised by a committee of faculty members from at least two departments. Ecology students in the past have combined biology with geology, chemistry, anthropology, geography, engineering, and other fields.

Any student contemplating entering such an interdisciplinary program should carefully study the Special Major section of the Graduate Bulletin before discussing the possibility with a prospective major advisor.

Publication of Thesis Research

Publication of the results of your thesis research in a highly respected refereed scientific journal is strongly encouraged. If it's good enough for a Master's degree in Biology at SDSU, it should be good enough to be published. One approach is to write your thesis as a manuscript, so that once completed, it can be re-formatted and submitted to an appropriate journal (see next page). Consultation with your thesis advisor before writing your thesis is essential!

Journal Selection. Selecting the appropriate journal for your manuscript is a critical decision. It is one that should be made early in the thesis preparation process and with the advice of your thesis advisor. Depending on the significance and clarity of your findings, the acceptability of your manuscript will vary greatly from one journal to another in the same field. Generally, you should select a journal with the broadest readership in ecology (and thus more prestigious) but one in which given your findings will have a high or reasonable probability of being accepted. If the manuscript is rejected, the manuscript may have to be reformatted before being sent to another journal.

If your thesis committee has guided you well in developing the substance of your thesis and you have prepared your thesis with a careful eye toward the style and format requirements of a particular journal, then developing a manuscript from your thesis should be an easy task. In fact, it is often wise to write your thesis as a manuscript for a particular journal and submit it about the same time as the completed thesis.

Despite the simplicity of the task, some students with publishable thesis work never take this additional step. This is unfortunate both for science and for the student. After so much investment of time and

resources, nothing is contributed to the open literature. Your potential contribution sits in the archives of a single library where it may never again be read.

The reasons for this situation seem clear and mostly psychological. It is easy to lose sight of the importance and value of your findings during the preparation of your thesis, especially after experiencing your committee's criticisms of revision after revision. You may then develop a somewhat negative view of your work. The main responsibility of your thesis committee is to be rigorous and critical and thus to prepare you well for your thesis defense and the production of a quality thesis and publication.

Underestimation of the value of your findings combined with possible weariness after months of writing and rewriting usually make a vacation from your thesis a top priority for the period following your defense. You also may have new responsibilities, such as a job or a family or a move to another area; you may even have assumed these prior to your defense. Moreover, the jobs available to a person with a Master's degree (as compared to a person with a doctoral degree) often will not depend much, at least initially, on whether the person has published their thesis or other original scientific work. Yet, funding from your advisor's grant or contract, and the help of your advisor and lab mates, incurs an obligation to a funding agency and your advisor to publish the results of your work.

Authorship Ethics. The question of whether you should be sole author of the article based on your thesis or whether additional persons should be listed as co-authors needs to be addressed at the beginning of your graduate career. It is important that you and your advisor have a clear understanding of how you will structure authorship/coauthorship long before you submit your work for publication. It is common for faculty advisors to be coauthors on manuscripts resulting from theses; however, faculty members differ widely in their standards and expectations. Some expect to receive co-authorship if you make major use of a piece of equipment or expendable supplies in their laboratory. Others are reluctant to accept co-authorship even when they have made large and varied contributions to a project. Most situations fall in between these two extremes. The best way to avoid strife regarding authorship and data ownership is to have a frank discussion early in your graduate career. In fact, this advice applies to any situation, throughout your career, in which you are collaborating on research.

Field Research: Special Considerations

Use of State Vehicles. A limited number of vehicles are available from the Department of Biology, use of which is reserved primarily to Department of Biology faculty, staff and students. The Ecology Program Area also manages vehicles for use by EPA faculty and students. For policies and regulations governing use of these vehicles speak with the Biology Graduate Programs Coordinator (currently Jamie Rhine). Graduate students may use these vehicles if a) they are state employees (e.g. teaching assistants) or official "volunteer employees", b) possess a Defensive Driving Certificate, c) follow proper sign-out and check-in procedures, d) observe all other policies and regulations concerning vehicle use, and e) have adequate insurance. An online course is offered through SDSU to obtain a defensive driving certificate. Use should be kept to the minimum miles necessary because of costs, and the user must refill the vehicle with fuel to the level of fuel present when using the vehicle.

Use of Personal Vehicles. You are responsible for your own insurance and liability when you drive your own vehicle for research use. You should fill out a T-2 form for traveling on university business, whether in a state vehicle or personal vehicle (see Medora Bratlien in the Biology main office).

Collecting Permits and Endangered Species. The California Department of Fish and Wildlife regulates the taking of many kinds of specimens. If you plan to take specimens, you will need a Scientific Collecting Permit. Application for a permit is made to the California Department of Fish and Wildlife in Sacramento. Application forms may be obtained through the Sacramento office and will require the

signature of your faculty sponsor. Submit your application early; it can take months to obtain approval to perform your collections.

Special permission is required from both state and federal authorities for any activities involving the collection or disturbance of endangered species. Because of the extraordinarily limited use an investigator can make of these species, their use in a Master's project generally is not advised.

Use of SCUBA in Research. Students planning to use SCUBA in their research or in any other activity under the jurisdiction of SDSU must obtain and maintain certification from the SDSU Diving Safety Officer. The Diving Safety Officer serves under the direction of the SDSU Diving Control Board, and is administered through the Dean of the College of Sciences. Informational materials specific to the SDSU program are available from the Diving Safety Officer, Mike Anghera (manghera@mail.sdsu.edu), in the College of Sciences.

Coastal and Marine Institute Laboratory. The SDSU Foundation, with the assistance of faculty with expertise in marine biology, completed a laboratory building, the Coastal and Marine Institute Laboratory (CMIL) on San Diego Bay in 2006. Through an agreement between SDSU and the U.S. Geological Survey (USGS), both SDSU faculty and students and USGS personnel inhabit the facility. Currently, the facility has larger mesocosms, sea tables, and aquaria, along with three temperature-controlled environmental rooms and three light-controlled rooms for specific experiments. Fume hoods, an autoclave, and other equipment have been placed in the analytical lab and equipment room. Faculty offices, a sensitive equipment lab, shop, and diving locker have been completed. The CMIL also provides running seawater and a closed recirculating seawater system. Boats for general use are available to certified boat users for projects; CMI possesses three 18 ft. Parkers, one 23 ft. Parker, and several individual faculty maintain a boat for use by themselves and their students. If you would like to work at CMIL, you should discuss your needs with your thesis advisor. Management and control of the CMIL is under the direction of Dr. Todd Anderson, Director of the Coastal and Marine Institute.

Conflict Resolution (Student-Advisor). Occasionally students and advisors may have a conflict than needs resolution. In these instances, the two parties should communicate their concerns to each other. If this fails, or if the conflict is such that help is needed, the Ecology M.S. Graduate Coordinator will mediate a conversation between these parties.

Marine Collector. Organisms used for marine-related courses are collected by Constance Gramlich, the SDSU Marine Collector. Constance has a wealth of knowledge concerning marine organisms and may help you in finding particular organisms or where such organisms occur. She also works in setting up and breaking down labs or courses, manages the seawater collected from the Scripps Pier, and does a host of other tasks. You can contact Constance at gramlich@sdsu.edu.

Field Stations. Three field stations located in San Diego County and operated by SDSU are available for student field research. They contain pristine areas with controlled access. Use of the field stations for graduate theses is encouraged, and in special cases logistical or financial support can sometimes be provided for field station projects. Both field stations have accommodations for lectures, laboratory, overnight lodging, water, and electrical power.

The *Santa Margarita Ecological Reserve* is a 1500 ha area located about 100 km north of San Diego near Temecula. The topography is low hills and canyons and ranges from 500 to 2000 feet in elevation. The reserve is dominated by the gorge of the Santa Margarita River, the last free-flowing stream in southern California. The vegetation is mostly chaparral but significant areas of coastal sage scrub, oak woodland, and riparian woodland along the Santa Margarita River are also present.

The *Sky Oaks Biological Field Station* is located about two hours (148 km) northeast of San Diego off Highway 79 at the end of the Chihuahua Valley Road about 8 mi (13 km) north of Warner Springs in San Diego County. The station covers a portion of a broad valley dissected by several drainages and adjacent lower-mountain slopes. Elevation ranges from 1200 to 1500 m (3900 to 4900 ft). Higher mountains surround the station on three sides. The vegetation is primarily a chaparral/oak woodland complex. Extensive areas of nearly pristine oak woodland occur in the valley bottom and along drainages. The larger drainages support riparian woodland, and there are also small areas of grassland and old-field areas.

The *Tijuana River National Estuarine Research Reserve* is located near the US and Mexico border in coastal southern San Diego County. The reserve contains a diverse suite of estuarine, aquatic, and terrestrial habitats. The estuary contains rich mud flats and salt marshes including a newly restored model marsh. These wetlands also include many fresh water pools, some with Fairy Shrimp and Western Spadefoot Toads. This abundance of fresh and salt water provides for many bird-watching opportunities.

On land, the reserve contains one of the largest intact coastal sand dunes in Southern California, providing nesting habitat for the Snowy Plover and the Least Tern and is refuge for many reptiles and amphibians including the Coast Horned Lizard and the Baja Racer. These dunes are also home to several restoration and vegetation studies with many unique and endemic plants. The dunes are bordered by marsh upland to the east and by coastal sage scrub (maritime succulent scrub) to the southeast. The cholla and box thorn dominated upland provides shelter for many animals such as the Black-tailed Jack Rabbit and Belding's Savannah Sparrow which may be seen from the nature trails throughout the upland. The coastal sage scrub in the southern region of the reserve contains large stands of many rare succulants: Shaw's Agave, Coast Barrel Cactus, Fish-hook Cactus and Snake Cholla.

EPA faculty familiar with the Field Stations should be consulted for further information and policies regulating their use. Scholarships may be available to students for their thesis research.

Field Buddy System. Field research in San Diego County is becoming increasingly dangerous due primarily to drug traffic and illegal immigration. For that reason, students in the field should try to have at least one person with them at all times, especially if their field site is in an area where there are few people. Be sure to inform someone when you go into the field, where you intend to be, and when you intend to return. It is wise to take a cell phone with you to the field site.

Special On-Campus Facilities

Ecology Stockroom. The EPA maintains a large inventory of equipment and supplies useful for various types of field and laboratory work, maintained in LS 238. Expensive items (generally totaling more than \$200) can be purchased only at the request of your thesis advisor and with approval of the EPA Chair.

You must sign out for materials you borrow from the stockroom. When returned they should be clean and in good working order. If you lose or damage beyond repair any piece of equipment, you may be billed for at least 50% of its replacement cost.

Ecology Analytical Laboratory. An additional resource that may be available to students is the Ecology Analytical Laboratory. This facility has the capacity to carry out certain types of analyses needed for graduate student research projects, principally those for nutrients and other elements in water, soil, and tissue samples.

If you wish to have the chemist do some analyses for you, your request should be submitted in writing and should be signed by your thesis advisor. There is a high demand for the services of the chemist. You should be sure that the analyses requested are truly needed, and you should be prepared to assist the chemist in processing your samples. Also, you should recognize that work backlogs sometimes develop that result in considerable delays in getting your results. At present there is no charge for analyses done by the EPA Chemist. As the operation runs on a small budget, however, your thesis advisor may be

asked to cover purchase costs of some new glassware, reagents, etc., though not necessarily those used for analysis of your samples.

Computer Facilities. A computer room with both PCs and Macintoshes are available classroom use only in LS 126. Currently, however, the room is being used for course instruction only. In case of problems with any department computers or those in the lab of your faculty advisor, please call 594-4881 (the College of Sciences computer help desk). The department also maintains a mobile cart containing 30 Mac laptops for use in classroom instruction.

Electron Microscopy Facility. The *College of Sciences Electron Microscopy Facility* is administered through the Biology Department and is located in the basement of the Physical Sciences Building (PS 1 Suite). There are three instrument rooms each with a small darkroom for film development. These rooms house: Philips EM 410 TEM (transmission electron microscope) equipped with low dose focusing device, Gatan Cryospecimen holder, and Gatan Anticontaminator; Hitachi S-500 SEM (scanning electron microscope) plus critical point drier and sputter coater for specimen preparation; Nikon Microphot light microscope equipped with optics for both DIC (differential interference contrast) and fluorescence. A Princeton Gamma tech Energy Dispersive Microanalysis system with a Sun 3/60 color graphics workstation to collect and process data from X-ray detectors on both the TEM and SEM as well as standard video images. A fourth instrument room houses a Denton 502 vacuum evaporator and a Reichert-Jung Cryofract 190 freeze fracture apparatus. Microtomes are housed in a fifth room and include an RMC cryoultramicrotome, LKB Nova, Reichert-Jung OM U2, and two Sorvall MT2B ultramicrotomes. The facility also includes a large wet lab with hood for specimen preparation, a large printing darkroom with Durst enlarger, and an office for technical staff. Persons interested in using this facility should contact Dr. Steve Barlow.

Herbarium. Students who need to identify plants have two herbaria available to them. The Evolutionary Biology Program Area maintains a teaching herbarium in LS 267. The herbarium contains pressed specimens of most of the common vascular plant species of San Diego County. There are also two student workstations, microscopes and reference books. It is used by courses in plant systematics and California flora and is also the repository of some research collections. Students may use the herbarium by arrangement with the curator.

The Natural History Museum in Balboa Park has a major regional herbarium with large collections for southern California and Baja California. The Museum encourages use of its herbarium by qualified students and professionals. Because the herbarium contains many valuable specimens, expect to be required to take some brief instruction in the protocols and procedures of herbarium usage. Contact the Curator of Botany at the Natural History Museum for further information. SDSU faculty can help you make contacts with the SDNHM.

Map Collection. A collection of topographic and other maps for California and adjacent regions is maintained in a map cabinet in LS 235. These may be borrowed for short periods of time for use in teaching or research.

Growth Chambers. The EPA has a Growth Chamber Facility and some additional growth chambers for use in experimental work with plants, insects, or other organisms that requires controlled environmental conditions. The Facility consists of a main building near South Life Sciences and built-in growth chambers (LS 259A, B, G), a prep room (LS 259F), a large (LS 259E) and a small (LS 259H) room for housing free-standing growth chambers. If your research will require growth chambers, consult with your thesis advisor.

External Sources of Support

The best sources of information on funding sources are your thesis advisor and more senior graduate students. Several grants and scholarships are available directly to graduate students, and this not only provides you with more financial resources to conduct your research, it is an excellent way to bolster your resume or curriculum vitae. If you are fortunate, your advisor may already have a grant that could cover some of your research costs and even possibly a stipend for yourself.

There are hundreds of potential sources of support for ecological research to which you or you and your thesis advisor might apply. Recognize that the competition for these funds often is intense, so apply to many potential funding sources and don't be discouraged by negative results. There are some sources of grants that have reasonably short review processes and where a good proposal has a reasonable chance of eliciting some support. Many of these sources provide only small grants but even a few hundred dollars can make all the difference to a project.

The EPA also sponsors the Farris Travel Award and the Professor Emeritus & Ecology Faculty Graduate Student Travel & Research Fund for master's students presenting their research at conferences.

Seminars

You have the opportunity to attend many presentations by diverse speakers in biology and other fields. You are expected to take advantage of this opportunity as much as possible. The Monday noon Department Seminar Series is coordinated by a faculty member features speakers representing all areas of ecological and evolutionary biology, and molecular and cellular biology. This seminar series can be taken for credit (one semester only for one unit) and all graduate students are expected to attend seminars weekly if possible. It is to your benefit to attend seminars for your intellectual growth and to learn how to ask insightful questions; attending seminars is an important part of your graduate education! Importantly, besides learning more about different fields, you can also learn something (good and bad) about how to give oral presentations, extremely useful for your thesis proposal, thesis defense, and future seminars that you may present. Among the most instructive departmental talks are the oral thesis proposals and thesis defenses presented by your fellow graduate students. They can be more educational and entertaining than talks by more highly credentialed speakers. Recently, M.S. students have have successfully petitioned Grad Affairs to take this course for one graded unit, as opposed to credit/no credit. This can be helpful when students are a unit short of graduation requirements. To pursue this option, students must have a compelling justification and should present this to the Biology Graduate Advisor. They are whom submits the petition finally to Grad Affairs.

Other seminars are given on an irregular basis by scientists who happen to be visiting SDSU for shorter or longer periods, by candidates being interviewed for faculty positions in our department, and by our own faculty members and research associates. You should also take advantage of seminars at other institutions in the area, including the University of California, San Diego, University of San Diego, and Scripps Institution of Oceanography, and the San Diego Natural History Museum. Schedules of seminars are announced over e-mail and often posted near the Biology Department office.

Finally, you are strongly encouraged to take seminar courses offered by faculty within EPA or by other department faculty. These courses provide you the benefits described above and the conceptual basis for particular topics. Often these seminar courses will help you develop ideas and topics that may develop into possible thesis projects or provide you ideas for future research.

Teaching Assistantships

Students who are accepted into the program with a Teaching Assistantship (TAship) are typically provided up to three years of TA support from date of admission. All other students may be capable of switching over to TA funding after their first year in the program. However, because EPA has an established protocol to distribute TAships amongst the faculty equitably, moving a student onto TA funding after their first year would require that this student's advisor's ranking amongst the other EPA faculty was such that it would allow them to accept a new student. Should that be true, the faculty can decide to switch the student to a TAship rather than accepting a new student with a TAship.

General Information

International Student Center. This organization is for the benefit of foreign students that are attending SDSU and for SDSU students that wish to study abroad. Visit the following link for more information: <http://www.sa.sdsu.edu/isc/index.html>.

California Residency. Out-of-state students should start the process of establishing California residency immediately. Becoming a resident will provide you in-state status and lower your tuition and fees considerably. Obtain a California Drivers license and register your car in California. Register to vote. Open a California bank account. Also save your first gas, electricity, rent and water bills in case residency is challenged. Establishing residency generally takes a year. More information can be found here:

Note:

Office and Lab Space. Office and lab space is provided by your thesis advisor or may be provided in some cases by the EPA Space Committee.

Mailboxes. Mailboxes are assigned to all Ecology graduate students. Mailboxes for Master's students are located along the south wall of the Departmental office complex. You should check your box regularly for important Departmental and Ecology Program Area news.

Photocopying. Graduate students who are serving as TAs will have a code for photocopying course materials. Personal photocopying is not available for students within the department.

Building Keys. Life Sciences or Physical Sciences room and building entry keys are available to students. The key slip form (available in LS 102) must be initialed or signed by your faculty sponsor, and a department secretary.

Parking and Escort Service. Parking permits are necessary for parking on campus and are enforced 24 hours per day, 7 days a week. Female students who are on campus at night should not hesitate to use the Department of Public Safety's night escort service (594-6659).

Weekly Newsletter. The Department produces an electronic weekly newsletter (Biology Bulletin) during the academic year. It contains official notices, including seminars, thesis proposals and defenses, application deadlines for teaching positions, financial awards, and other information. The newsletter is distributed to Biology faculty, staff, and students. All graduate students should read the newsletter on a regular basis. You can contribute information to the newsletter by sending an e-mail to Medora Bratlien (mbratlien@mail.sdsu.edu).

Contact Information:

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Example Timeline (3-yr thesis, Proposal in Semester 3):

	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6
Complete required course work	X	X				
Complete course work	X	X	X	X	X	
Enroll in Biology Seminar (Biol795: can take anytime but only once for credit)	X					
Assemble thesis committee			X			
Propose thesis			X			
File Thesis Proposal Form			X	X		
File Worksheet for Official Program of Study			X			
Enroll in Thesis research (Biol 797)			X	X	X	
Advance to Candidacy				X		
File Thesis Committee Form						X
Enroll in Biol 799						X
Defend thesis						X
Submit thesis to university						X

TASKS FOR ECOLOGY M.S. GRADUATE COORDINATOR

- Proposal Fests
 - AUGUST: Reserve LS101 for Fall and Spring Proposal Fests
 - Send announcements to Bio calendar, Bio weekly newsletter, and EPA listservs
 - Alert EPA listservs about upcoming Proposal Fests one month prior. Schedule proposals.
 - Attend/Host Proposal Fests
 - Confirm Committee is present.
 - Send Jamie a summary of the outcomes after each proposal fest.
 - FEBRUARY: Send 4th semester students a reminder of the need to propose.
- Progress Reports
 - AUGUST: Email M.S. students to submit a signed progress report.
 - FEBRUARY: Email M.S. students to submit a signed progress report.
- Worksheets for Official Program of Study
 - SPRING: Email 3rd semester students to submit their POS.
- Thesis Proposal Forms
 - Email M.S. students reminding them to submit Thesis Proposal Forms if they have successfully proposed.