

Ph.D. HANDBOOK TABLE OF CONTENTS

Abbreviations.....	2
Orientation.....	2
Interim Advisory Committee.....	2
Laboratory Rotations.....	3
Quarterly Advisory and Review Committee.....	5
Quarterly Exams (First Year)	
General & information on grading.....	6
IMB.....	7
ION.....	7
CEEB.....	7
OIMB.....	8
Selecting a Dissertation Advisory Committee.....	9
Teaching Requirement.....	10
GTF Procedures and Information.....	12
Application for Training Grant Support.....	12
Required Clearance for Doctoral Dissertation.....	12
Proposal Examination (Second Year)	
IMB & ION.....	14
CEEB.....	16
OIMB.....	17
Advancement to Candidacy.....	18
Evaluation of Progress.....	19
Dissertation Preparation & Timetable.....	21
Final Oral Exam.....	22
Seminars and Journal Clubs.....	22
Special Considerations for Other Than A Fall Term Star.....	22
Summary of Department and University Regulations.....	24
Guidelines for a Thesis Master's Degree.....	25

GENERAL OVERVIEW OF THE DEPARTMENT OF BIOLOGY Ph.D. PROGRAM

The following abbreviations are used in this handbook:

CEEB: Center for Ecology and Evolutionary Biology

DAC: Dissertation Advisory Committee

GAC: Graduate Affairs Committee

IAC: Interim Advisory Committee

IMB: Institute of Molecular Biology

ION: Institute of Neuroscience

OIMB: Oregon Institute of Marine Biology

QE: Quarterly Exams

QARC: Quarterly Advisory and Review Committee

ORIENTATION

A series of orientation activities for incoming graduate students will be scheduled for the two weeks prior to the start of classes. All incoming students are expected to attend, although exceptions may be made for students at OIMB. The activities include training in lab safety, CPR, first aid, teaching effectiveness, and workshops on topics relevant to life as a graduate student. In addition, social events, institute or center retreats, and meetings with Interim Advisory Committees are scheduled for this period. Incoming students will be notified of the orientation schedule early in the summer prior to their arrival on campus.

INTERIM ADVISORY COMMITTEE

The Graduate Affairs Committee (GAC) will appoint an Interim Advisory Committee (IAC) for each new student before the beginning of the first term in residence. The committee shall consist of two or three Biology Department faculty, including at least one faculty member who is familiar with the requirements of the student's intended area of study. Typically, the IAC includes a representative of the Graduate Admissions Committee and a representative of the Graduate Affairs Committee from the student's center or institute. At the discretion of the Graduate Affairs Committee, special committees can be assembled for students whose interests span program boundaries (e.g., Evo-Devo). A meeting between the student and the Interim Advisory Committee will occur before registration for the first term in residence. The student will be notified of the makeup of the committee and of the meeting arrangements as soon as possible after arrival on campus.

During this meeting:

- 1) The student's background, goals, and plans for a graduate program will be discussed. Specific advice will be offered about the first year program of course work. The department recommends that students register for 16 credit hours each term.
- 2) The sequence of steps toward the degree will be discussed, including the nature of teaching assignments and examination policies.
- 3) Advice will be offered to help the student choose laboratories for lab rotations. It is understood that students will make decisions about winter and spring rotations later in the year. The IAC meeting serves to clarify the philosophy and logistics of the rotations but the student is responsible for making arrangements for laboratory rotations, as described below.
- 4) The nature of graduate teaching assignments will be discussed and the student advised about the process of allocating teaching assignments (see page 11). Three terms of teaching are required for graduation from the program (see page 10). The teaching experience is intended to help the student develop teaching skills.

Unless the student or IAC requests additional meeting(s), the IAC meets only once with the student before being replaced by the Quarterly Advisory and Review Committee (QARC) at the end of the Fall quarter.

LABORATORY ROTATION PROGRAM

Choosing an area of research for the Ph.D. dissertation and finding a faculty member to serve as dissertation advisor are crucial tasks that a beginning graduate student must complete during the first year. To aid students in this process, the Biology Department has a lab rotation program. This program exposes students to a variety of biological subdisciplines and research philosophies, and it helps students become integrated into our scientific community by introducing them to the personnel in different laboratories and, in some cases, different institutes or centers. Through immersing themselves in various lab groups during the first year, students gain a sound basis for choosing the lab best suited to their interests, personalities and abilities.

First year students in the Ph.D. program are required to spend one term in each of three different laboratories. **As soon as it is practical (at least several weeks before the end of the term prior to the planned rotation), students should contact faculty in whose labs they are considering for their next rotation to discuss possible rotation projects, and to determine whether a rotation that term will be feasible. Students are encouraged to use the rotation program to explore as wide a range of biological subdisciplines as their interests dictate.**

They are urged to rotate into labs of any interest group, or even into a lab in another department. Except for extraordinary circumstances, a student will go to a different lab each term.

Students typically choose a dissertation laboratory before the end of spring term, and begin their dissertation research in the summer of their first year. If a student has not decided upon a dissertation lab by the end of spring term, it is possible for the student to arrange a fourth rotation in summer term if approved by the head of the research unit (ION, IMB, CEEB, OIMB) most closely aligned with the student's research interests. In some cases, arrangements can also be made for a newly admitted student to do research during the summer before beginning their Ph.D. program. If a student chooses to do this, their dissertation laboratory will still be chosen at the end of spring term of the first year (although petitions to waive the spring rotation will be considered if the summer rotation was unusually substantive). See page 9 for more information on choosing a dissertation advisor. Failure to identify a dissertation advisor (and have them in agreement) within the first year is regarded as insufficient progress and is grounds for termination from the program (see page 19).

The following guidelines for students and faculty are meant to prevent any misunderstandings about rotation expectations and evaluation:

- 1) At the beginning of each rotation, the student should meet with the faculty mentor to discuss expectations for the rotation. Expectations should be made as explicit as possible, including a description of what would be deemed passing work. Faculty members are reminded that students may be teaching, taking courses and taking quarterly exams at the same time they are rotating; thus, they cannot devote their entire effort to lab work. However, students should plan to immerse themselves in their rotation projects. While it is possible that a publication may result from a rotation, this should not be an expectation, nor should a positive scientific result from a project be required for a passing grade in a rotation. Not all research projects are successful and, while students are expected to devote considerable time to the rotation, a solid effort, not positive results, should be the principal criterion for passing a rotation. Students should also get a clear understanding of the hours of effort expected from the faculty mentor before starting the rotation. This can vary substantially from lab to lab.
- 2) During the rotation, the faculty mentor and student should meet on a regular basis. During these meetings, the faculty should provide feedback about the student's performance and whether the rotation is meeting the agreed-upon expectations.
- 3) A rotation lasts only a single term. Thus, at the end of the term a rotation is over, even if the project has not been completed. The student is under no obligation to complete the project at a later time. Similarly, unless the student has

made specific arrangements with the faculty mentor, the student should not expect the project to be “saved” in case he or she decides later to join that lab.

4) If a student is potentially interested in joining a rotation lab, s/he should have an explicit conversation with the faculty mentor at the end of the rotation to find out whether they would be welcome to do so.

5) At the end of the term, the faculty mentor must provide a written evaluation of the student’s performance during the rotation to the GAC member for the research unit that admitted the student (e.g., ION, CEEB, IMB, OIMB). If a student has not met the expectations for satisfactory progress, this should be reflected in the report. However, because they should have received previous feedback that their performance was inadequate, an unsatisfactory evaluation should not come as a surprise to the student. A summary of the rotation report will be included in the Quarterly Progress Report prepared by the student’s QARC (see below).

Rotation Presentations

During finals week of each term, students describe their rotation projects in a symposium of short “rotation talks” organized by the respective research units. It is expected that faculty mentors will assist students in preparing their rotation talks (e.g., by critiquing a practice talk). Each student should organize a ten to twelve-minute talk that will include:

- 1) A brief introduction to the project, relevant background information, and how the project related to the laboratory’s goals.
- 2) Results obtained, if any (if no results - explain what problems were encountered, etc.).
- 3) Description of the next step to be taken based on the results obtained. There will be up to five minutes of discussion and questions following the presentation. All faculty and first-year students are expected to attend; others are also welcome.

QUARTERLY ADVISORY AND REVIEW COMMITTEE (QARC):

The QARC advises and reviews the progress of each first-year Ph.D. student. It is composed of a member of the GAC and the head of the research unit (CEEB, IMB, ION, OIMB) most closely aligned with the student’s research interests. If desired, the student may select a third QARC member from the Biology Department faculty. The QARC meets with the student shortly after the rotation presentations (Fall, Winter and Spring quarters of the first year) to discuss the student’s progress and plans. The GAC member of the QARC then prepares a Quarterly Progress Report that summarizes the student’s progress, including a summary of the rotation report, quarterly exam grade, teaching evaluation, plans

for future rotations, coursework completed and pending, and any other relevant information. The Quarterly Progress Report will be sent to the student and included in the student's permanent file. Feedback given at these meetings should be taken very seriously. Failure to remedy deficiencies noted in the Quarterly Progress Report can be grounds for termination from the program due to unsatisfactory progress.

QUARTERLY EXAMS

Students are required to take three quarterly exams (QEs), one each in the fall, winter and spring terms of their first year. The purpose of the quarterly exams is to allow students to investigate a scientific area in detail, to become skilled at reading and critiquing primary literature, to learn to identify new questions that arise from a set of observations, and to independently conceive approaches to answering those questions. Students are encouraged to work in groups and to discuss QE information prior to the exam.

Quarterly exams are written by faculty in each of the research units each term. Students are free to choose which exam they will take (including QEs offered by the Chemistry Dept.) after the preparatory material has been made available by the faculty writing the exams, with the following exceptions: ION students with a cellular/systems/cognitive concentration **must** take the exam in this area each term, CEEB students **must** take the CEEB QE during spring term and OIMB students **must** take the OIMB QE each term.

Quarterly Exam Dates, Fall 2008 – Spring 2009

Institute/Concentration	Fall	Winter	Spring
IMB	Oct. 16*	Jan. 15*	Apr. 9*
ION: Development	Oct. 16*	Jan 15*	Apr. 9*
ION: Systems/Cellular/Cognitive	Week 5	Week 5	Week 5
CEEB	Oct. 16*	Jan. 15*	Abstract: Apr. 9* Proposal: May 11*
OIMB	Week 10	Week 10	Week 10

*dates are tentative and may be updated.

Quarterly exams will be given letter grades. Consistent with Graduate School and departmental policy, a grade of **B or above is considered satisfactory**, a **B- is considered marginal**, and a **C+ or lower is considered unsatisfactory**. A student who earns a C+ or lower on one exam will need to make it up by taking

the fall term quarterly exam during their second year. A total of three quarterly exams with a grade of B- or better are required. A student who earns a B- or lower on two exams must meet with their QARC to discuss whether they should continue in the graduate program and, if so, under what conditions.

IMB: Preparatory information for the QE will be available online one week before each exam. Each exam will be a two-hour evening session in which students answer questions related to the preparatory material. The exams should be graded and returned to the students within two weeks after the exam, and the faculty member who wrote the exam will meet individually with each student to discuss the result.

ION: QE's will be given Fall, Winter and Spring quarters in each of two broad areas: developmental neuroscience and cellular/systems/cognitive neuroscience. The developmental neuroscience QE's will follow the same schedule as IMB QE's, and during some terms may be the same as the IMB QE. The cellular/systems/cognitive QE's will be given in connection with the three-term neuroscience core course during week 5 of each term. These QE's will also be open to students not enrolled in the course. Non-enrolled students wishing to take these QE's are required to notify the course instructor as soon as the exam materials are posted each term.

CEEB: QE's in the fall and winter will follow the same schedule and procedures as the IMB exams. Students planning to carry out dissertation research in a lab in CEEB must take the CEEB spring quarterly exam. As with the other QE's, an individual faculty member in CEEB will administer and grade this exam. To pass, a student must write a research proposal on a topic of interest that is unrelated to their anticipated dissertation topic. To ensure that the topic is appropriate, the student must first submit an abstract to the administering faculty member by April 9 (the date of other QE's in spring term). This abstract should identify the topic and general approach. Once the topic is approved by the administering faculty (in writing or by email), the student must complete their proposal and submit it for grading within 30 days. Criteria by which the proposals will be judged are the same as those outlined for the second year Proposal Examination (see page 16). This QE allows CEEB students to demonstrate an independent ability to identify an important research topic, frame a testable hypothesis and design and interpret experiments to test the hypothesis. No faculty input is allowed, but students are encouraged to consult with their peers during preparation of their proposals. These proposals should be written in the format for pre-doctoral fellowship applications submitted to the National Science Foundation (NSF); the faculty member administering the exam is responsible for providing the guidelines (or correct website address) to the students by the end of the first week of spring term). Students who do not pass this exam will have the opportunity to retake it during the summer or fall term.

OIMB: Ph.D. students in marine biology must take the OIMB quarterly exams during the three terms of their first year. Two of these exams will be comprehensive in nature and will test general knowledge of biology with the expectation that students demonstrate understanding at the level of a BS degree in biology. In the third quarter, Ph.D. students will write a mock proposal (described below) similar to that done in the CEEB group.

During the first IAC committee meeting, the student will choose two quarters in which to take their knowledge-based quarterly examinations. During the quarter in which the student is not taking a knowledge-based quarterly examination, they will instead write a research proposal on a topic of their choice.

Grading of OIMB QE's and potential retakes will follow the same rules as the rest of the department (page 6).

Areas for the two OIMB knowledge-based quarterly examinations:

The topics for each quarter are listed below. At the beginning of each term in which a student will take one of these exams, the students will be given a reading list that may include readings in basic concepts, as well as some recent literature. The written exams will be given during the last week of the regular term (i.e., not during finals week) and will be evaluated by one or more marine faculty with expertise in the areas that the respective exams cover.

Fall term: Ecology, Physiology, Biochemistry, Molecular Biology

Winter term: Evolution, Genetics, Functional Morphology

Spring term: Biological Oceanography, Development, Microbiology

The third OIMB QE, the "mock proposal":

To ensure that the topic is appropriate, the student must first submit an abstract to the administering faculty member (to be selected by the student) prior to writing. This abstract should identify the topic and general approach. Once the topic has been approved by the administering faculty (in writing or by e-mail), the student can complete their proposal and submit it by the last week of the term. Criteria by which the proposals will be judged are the same as those outlined for all other second year Proposal Examinations (see page 13). This exam allows OIMB students to demonstrate ability to identify an important research topic, frame a testable hypothesis and design and interpret experiments to test the hypothesis. Students are encouraged to consult with their peers during preparation of their proposals. These proposals should be written in the format for pre-doctoral fellowship applications submitted to the National Science Foundation (NSF); the faculty member administering the exam is responsible for providing the guidelines (or correct website address) to the students. As with the other exams, the proposal will be given a letter grade.

SELECTING A THESIS ADVISOR AND DISSERTATION ADVISORY COMMITTEE

Before the end of spring term, the student should speak with faculty members of laboratories in which s/he may wish to do their dissertation research. Students are expected to take the initiative in contacting faculty members with whom they would like to do their dissertation research. The final decision is made by mutual agreement between student and dissertation advisor. They should discuss possible dissertation projects and determine whether dissertation work in that laboratory will be possible. The advisor, in agreeing to mentor a student, assumes responsibility to provide space, materials, and equipment, insofar as these are available, for the student's dissertation research. It is possible, although uncommon, for a student to change advisors, e.g. if research interests change, or if the arrangements turn out to be unsatisfactory to either the student or the advisor. If a student is unable to secure a faculty advisor, the student cannot continue in the program.

DACs for ION, IMB and CEEB students:

As soon as a student becomes associated with an advisor (no later than the beginning of the second year of study for the Ph.D.), the student and advisor should discuss the make-up of the Dissertation Advisory Committee (DAC). A specific recommendation to the chair of the Graduate Affairs Committee must be made through the Graduate Program Coordinator by December 1st. The DAC must meet with the student **no later than April 15th** of the student's second year. If this is not possible, the student must notify the Graduate Program Coordinator in writing as to the reason and the date of the DAC meeting.

The five DAC members must be tenure-track faculty and must include at least three full or associate members of the student's Institute/Center or at least three members of the Biology Department. At least two members must be in the Biology Department (one of these can be the Dissertation Advisor) and at least one member must be from outside the Biology Department but on the UO campus. At least four members must be on the UO campus. Any non UO faculty member must be approved by the Graduate School before they can serve on the committee. The dissertation advisor will be one of the five members, but may NOT be the outside member. The student should choose one member to chair the committee; the chair must be in the Biology Department and a full or associate member of the student's Institute/Center, but cannot be the Dissertation Advisor. The chair will prepare reports of the annual DAC meetings.

Once the student has passed the quarterly exams and proposal exam (see below), met the teaching requirement, and any course requirements, and has begun to make satisfactory progress in the chosen lab (as determined by the advisor, the

DAC and the GAC), the student will be advanced to candidacy. The decision to advance to candidacy will usually be made by the end of spring term in the second year. At this time, the department head will forward the DAC membership to the graduate dean. The graduate dean will then officially appoint the DAC. If the student is not making satisfactory progress in the chosen lab by the end of spring term following their qualifying exams, they can then be dismissed from the program (see section on advancement to candidacy).

The DAC will meet with the student annually (or more often if the student and/or DAC deems appropriate) to review his or her program and to prescribe any additional requirements including specific coursework. The timing and requirements for this review are described in detail under Evaluation of Progress on page 18. **It is the student's responsibility to schedule DAC meetings.**

DACs for OIMB students:

OIMB Ph.D. students should discuss the make-up of their DAC with their advisor during the summer after the first academic year. The committee should be selected by the beginning of fall term of the second year, and the first meeting with this committee should occur after the student's qualifying exam and prior to the beginning of the spring term. This committee cannot be officially appointed as the DAC until the student passes his/her proposal exam and has been officially advanced to candidacy, but the committee will function to provide advice and feedback as thesis research is developed.

The DAC committee should contain five members including at least two members of the OIMB faculty, an outside-the-department member, and one member of the Biology Department who is not resident at OIMB. That member will serve as the chair of the proposal examining committee and as the chair of the DAC.

TEACHING REQUIREMENT

All candidates for the Ph.D. degree are required by the department to serve three terms as a teaching assistant (GTF) for courses within our program. First-year students normally serve as GTF for one course during each of the three quarters in the academic year. In special cases teaching may be deferred if the student's home institute/program agrees and can demonstrate a workable plan that is consistent with the requirements of available funding sources. **A student cannot advance to candidacy until the teaching requirement has been fulfilled** (see page 18). Students with a strong interest in teaching may serve as a TA for additional terms beyond the required three terms during their graduate career, but only with the consent of their dissertation advisor.

A written evaluation of the student's work as a teaching assistant will be completed at the end of the quarter by the faculty member(s) with whom they have

served as a TA. This information will become part of the student's graduate file and a copy will be given to the student.

To ensure equitable distribution of teaching assistantships among students, and to provide competent teaching for the courses being offered each term, the following guidelines will be used in assigning graduate teaching fellows to courses:

1) Number of teaching fellows required: The curriculum director will keep an account of the number of teaching fellows required for each course offering. This accounting will be revised each year based on the most recent experience with the course. At the beginning of each academic year, allocation of the teaching fellows required for all terms will be estimated.

2) Assignment of teaching fellows to specific courses: Each term the courses offered within the department will be matched to individual teaching fellows according to the specialized needs of the course and to the specific teaching skills of the students. Whenever possible, the needs and wishes of both the professors and the graduate students will be accommodated during this matching process, but we cannot guarantee that the student will receive their first choice. All of the graduate students with firm commitments of support as teaching fellows for a term should receive assignments before other graduate students are considered for teaching fellowships.

3) Allocation of teaching fellowships to otherwise unsupported graduate students: All graduate students without current support who are interested in teaching assignments should apply to the curriculum director at least one term prior to the beginning of the term for which support is needed. If there remains a need for more teaching assistants, and if funds are available, these applicants will be considered for teaching needs on a term-by-term basis using the following principles:

- a) Only students in good standing will be considered.
- b) Only students competent for the particular teaching needs will be considered.
- c) Both need and availability of alternative funds and prior departmental support will be taken into account when choosing students.
- d) Ph.D. candidates will take precedence over M.S. candidates.
- e) Fifth year Ph.D. students will take precedence over more advanced Ph.D. students, unless the more advanced students were not supported during their fifth year.
- f) Whenever possible, appointments will be converted into half-time positions so that more students can be supported.

GTF PROCEDURES AND INFORMATION

GTF Workspace: If a room is needed for a review session or a special meeting, please contact Ariel Bordenave (department secretary). Plan to give a little lead-time, as she will need to negotiate with the Registrar's Office. Should you need a room in which to hold office hours, Rooms 25 Klamath and 360 Onyx may be reserved through Ariel as well.

Access to Private Meeting Space: Please see above.

Telephones: GTFs are welcome to use a phone in the Biology Officer (77 Klamath) for work-related calls. Likewise, if someone needs to reach a GTF, they may call the Biology Department and a staff member will take a phone message and forward it to the GTF.

Computers: The Biology Department has its own computer lab located in Room 33 Klamath Hall which GTFs may use as needed. There is also a work/study station equipped with a computer in the Biology Office that may be used in the event the computer lab is not available.

Office Supplies: The Biology stockroom (125 Huestis Hall) has supplies and equipment for the department's GTFs to use for instructional purposes. A limited amount of some supplies are also available in the Biology Office.

Photocopies and Printouts: GTFs are welcome to use the copier in the Biology Office; or for larger copy jobs, the Campus Copy Center is also available. Ariel Bordenave (department secretary) can assist in making arrangements for Campus Copy Center jobs.

APPLICATIONS FOR TRAINING GRANT SUPPORT

Several training grants are available to support a subset of Ph.D. students in the Biology Department. An email soliciting applications to these training grants will be sent to all first year graduate students late in the spring term. Each student should discuss with her/his prospective dissertation advisor which, if any, of these training grants is appropriate to apply for, taking into account the nature of the planned thesis project and whether the advisor is listed as a "trainer" on the grant.

REQUIRED CLEARANCE FOR DOCTORAL DISSERTATION

The required clearance form must be completed, signed and on file in the Graduate School before you collect data. This form is available on the Graduate School website, and must be completed on screen before signatures are obtained. University policy requires that students who expect to engage in research involving human or animal subjects receive approval of their research procedures

prior to the collection of data. Protocol forms and a detailed explanation of procedures may be obtained from the Office of Human Subjects Compliance (541) 346-2510 or the Office of Veterinary Services and Animal Care (541) 346-4958.

PROPOSAL EXAMINATION

In the second year, all Ph.D. students will take a proposal exam. The format of the exam varies among research units within the department (see following sections).

There are three possible outcomes for all students:

- PASS*

- REVISE* – Specific points brought up by the exam committee must be addressed within a set amount of time determined by the committee. The committee will evaluate whether the revision is adequate.

- FAIL* – An unsatisfactory exam will allow for an automatic retake within a time frame set by the exam committee. The exam committee will specify the basis for the retake and make suggestions for improving the exam. Students may request that a specific faculty member be replaced on the retake exam committee. No more than one member of the committee can be replaced at the student's request, and the replacement must be approved by the GAC. This request should be submitted in writing to the GAC at least three weeks prior to the retake exam. Other members of the exam committee may also be changed, at the GAC's discretion. A student may call a meeting of their DAC to discuss options available to them if they feel they do not want to retake the proposal exam.

If a student does not pass the retake, the student's DAC will meet with the exam committee, review the student's file, and meet with the student soon after the second unsatisfactory proposal exam to discuss the situation and possible routes for the student. The student's performance in the laboratory, in courses, on quarterly exams, and in teaching will all be considered by the DAC in developing a recommendation. Unless performance outside of the exam context has been exceptional, it is likely that the DAC will recommend that the student leave the program. However, under some circumstances, the DAC could recommend that the student take the proposal exam again. Students who fail the proposal exam may be eligible to receive an M.S. degree upon recommendation of the exam committee and their DAC.

Aspects of the proposal exam specific to each research unit are discussed separately below.

IMB & ION

In the fall term of the second year, all Ph.D. students will write a research proposal (details below) and defend it in an oral presentation. The subject of the proposal should fall within the general focus of the student's research unit, but in IMB and ION, students must develop a proposal on a topic outside the research focus of their dissertation laboratory. Students should consult with the GAC representative from their research unit if they are uncertain about the suitability of a topic.

Students must develop the ideas and write these proposals on their own (see the following page for suggestions on writing the proposal). However, they may discuss them with other students and postdoctoral fellows. They may also solicit advice on techniques from faculty, but they should not discuss the logic and design of their hypothesis and experiments with faculty members.

All IMB and ION students must submit a short (2-3 sentence) description of their planned proposal topic and a brief (1-2 sentence) statement of the question/hypothesis to be addressed to the Graduate Program Coordinator by **September 5**. Students will be notified by September 9 about the suitability of their topic. Proposal Abstracts (described below) will be due **September 19** (e-mail them to the Graduate Program Coordinator, Donna Overall doverall@uoregon, and to either Bill Roberts [ION] (billr@uoregon.edu) or Alice Barkan [IMB] (abarkan@molbio)).

Abstracts should be no longer than one page and should:

- Summarize the key pieces of evidence that lead to the question/hypothesis, and then concisely state the question/hypothesis that the proposal will address.
- Break the large question down into several smaller questions that will be addressed by the proposed experiments.
- Provide a general and very brief description of the approaches that might be taken to answer the questions that are posed.

Feedback will be provided by Alice Barkan (IMB) or Bill Roberts (ION) after consultation with other faculty by **September 26**. This feedback will be in the form of one of the following:

- 1) Abstract Approved:** The abstract suggests that a good proposal can be developed in this area.
- 2) Modify Approach:** The abstract suggests that a successful proposal could be developed in this area; however, the student should consider the specific comments offered.
- 3) Revise Abstract:** The abstract suggests that a high quality proposal would be difficult to develop in this area. The student should develop a new proposal topic or a new approach to the same topic.

The Graduate Program Coordinator will schedule the oral presentations, which take place in November. Students must submit a copy of the completed proposal to each member of their exam committee by at least one week prior to the date of their exam.

The duration of the entire oral portion of the exam is two and a half hours or less. Each exam begins with a concise presentation of the proposal by the student. Faculty may ask questions that are directly related to the proposal, questions that explore the student's understanding of the techniques being used, and questions that test the student's understanding of closely related areas.

The examination committee will consist of four tenure-track faculty members, at least two of whom are from the Biology Department. To avoid any possible conflicts of interest, the dissertation advisor may not serve on the committee. The student taking the exam will choose one member of the proposal exam committee. The purpose of this is to allow the student to choose a faculty member who can provide expertise in the area of the proposal, and thus facilitate exam discussion. The student's choice for the exam committee member must be submitted by email to Donna Overall by 9/29/08. The Graduate Affairs Committee will appoint the other members. One of the four exam committee members will be designated by the Graduate Affairs Committee to serve as the chair of the exam.

Immediately following the oral presentation, the student will be informed of the outcome. After the oral presentation, the chair of the exam committee will write a report documenting the exam and will submit this, along with the committee's decision, to the Graduate Affairs Committee. A copy of the report will also be given to the student.

Guidelines for Preparation of the Written Proposal (IMB/ION)

The major aim of the proposal exam is to evaluate the ability of a student to identify an interesting or significant biological problem, to propose hypotheses (or models) that explain or solve the problem, and to design experiments that test the hypotheses or that distinguish between alternative models. For the purpose of the exam, a good problem is one for which explanatory hypotheses can be devised and tested using established experimental techniques.

The proposal should include a clear statement of the question each experiment will address, and how answering that question affects the viability of the hypothesis/model being explored. The possible outcomes of each experiment should be described, and the relationship between these outcomes and rejection or confirmation of the hypotheses should be made explicitly. The logical flow of the experiments should be clear. Often a flow chart, organized in an "if...then" format, is useful to illustrate the structure of the proposal.

The review of the literature in the proposal, while essential, should be kept short; it is not necessary to discuss every approach that has ever been made to the problem. The strongest proposals summarize only the key prior observations that lead to the question being addressed.

These general points lead to the following criteria by which the proposals will be judged:

- 1) Is the problem clearly and briefly stated and well justified? Is the question a significant one that, if answered, will have implications beyond the specific experimental system used in the proposal?
- 2) Is there a clear, concise, and complete statement of the hypotheses or models?
- 3) Are the hypotheses or models reasonable, based on prior work in the field? Does the proposal demonstrate knowledge and understanding of the area?
- 4) Is the general plan of approach logical, clearly stated, and suited to address the questions posed? Although the written proposal should minimize details of standard experimental procedures, students should be prepared to demonstrate their understanding of the techniques they propose to use, and to justify the choice of techniques.
- 5) Are the possible outcomes of each experiment described? Are the implications of each possible outcome with regard to the hypotheses/models under investigation summarized? Are conclusions made rigorously; are ambiguities described explicitly?
- 6) Are various details of the experiments or observations handled adequately (e.g. feasibility, statistical significance, controls, etc.)? Does the proposal demonstrate knowledge and understanding of the particular area?
- 7) The written proposal should not exceed 3,000 words.

CEEB

Students planning to carry out dissertation research in a CEEB lab must take the CEEB proposal exam. This exam will be administered during winter term of the second year. For this exam, students will write and defend a proposal on the research they intend to do for their dissertation. The proposal should be written in the format for individual research applications submitted to the National Science Foundation (NSF; the normal format would be that of a Dissertation Improvement Grant). The oral defense portion of this exam will also include a test of general knowledge in ecology and evolution.

The exam committee will be composed of four faculty members, at least two of whom are full or associate members of CEEB familiar with the research being proposed. The student is allowed to choose one committee member; the other

members will be chosen by the GAC chair in consultation with the CEEB GAC member and the student's advisor. Insofar as possible, there should be significant overlap between the examination committee and the names proposed for the student's DAC. Unlike proposal exams in other research groups, this proposal will be developed in consultation with the dissertation advisor and anyone else the student desires to consult. A major function of this exam is for students to develop a clear plan for their dissertation research and to present it publicly.

Although your major advisor cannot participate in the exam as an examiner, they are allowed to watch as completely silent observers. The exam will begin with an oral presentation of the proposal presentation; this will be open to all members of CEEB, including students. The student's presentation will be followed by a public question and answer session. The remainder of the exam will be closed to all but the student, the examining committee and advisor (as a silent observer). The public portion of this exam will not exceed one hour; the closed portion will not exceed two hours. The Graduate Program Coordinator will schedule these exams for the eighth week of the term, and provide copies of the guidelines for proposal preparation to each committee member. The written proposal must be given to all committee members, and to the Graduate Program Coordinator, no later than two weeks prior to the scheduled exam date. Students must notify the Graduate Program Coordinator of their choice of a committee member in writing by the second Friday of winter term, January 16. This exam will be graded in the same manner as all other proposal exams (see page 13). A student who does not pass this exam has the same options described above for students who do not pass the other proposal exams (see page 13).

OIMB

Students planning to carry out dissertation research in a lab at OIMB must take the OIMB proposal exam. The student will prepare a dissertation proposal, describing the intended dissertation research, and encompassing the entire dissertation as envisioned at that time. The proposal should be prepared according to the general guidelines (1-7) given on page 16 of the Graduate Student Handbook. The proposal should follow the NSF format and should not exceed 15 pages of text and figures.

The proposal will be provided to the DAC by the end of the first week in January in the student's second year. The oral exam will take place by the end of January, year two. The DAC will serve as the examining committee, and the chairperson of the exam will be the non-OIMB, Biology Department member of the committee.

The exam will focus on the dissertation proposal, but may proceed with questioning that moves from the particular proposal to more general topics. The DAC, being familiar with the student's performance on the quarterly exams, will evaluate the student's background accordingly. The categories of examination

outcomes (Pass, Revise, Fail), and subsequent actions are as described earlier in the Graduate Student Handbook.

ADVANCEMENT TO CANDIDACY

Advancement to candidacy is a formal step that indicates that all requirements for the Ph.D. degree, except completion and defense of a dissertation, have been met. It typically occurs at the end of the second year, but will be delayed if teaching has been deferred or other requirements have not been fulfilled. The DAC will recommend that a student be advanced to candidacy when:

- 1) Three quarterly exams and three rotations have been completed with satisfactory evaluations.
- 2) The proposal exam has been passed.
- 3) The teaching requirement has been fulfilled.
- 4) Courses required by the advisory committees (IAC, QARC and DAC) have been taken, or a plan for their completion has been approved by the DAC.
- 5) A GPA of 3.0 or better has been maintained for graded credits, with no incompletes. A grade of P is required in all required courses taken P/NP.
- 6) At the end of the second year, the DAC, which includes the advisor, will have a meeting focused on the student's ability to perform independent research. At this meeting, the DAC will be evaluating whether or not the student is motivated, working hard, reading the literature, thinking, and having some successes with research. If this meeting is positive, the DAC will recommend advancement.
- 7) The final decision to advance a student to candidacy will be made by the GAC and Graduate School after considering all six criteria above.

Note: It is only after advancement to candidacy that a student may take dissertation credits (BI 603) – see summary of departmental regulations for graduate students at end of handbook.

EVALUATION OF PROGRESS

Regarding incomplete grades: at any one time, a student shall have no more than two incompletes. All incompletes shall be completed within one year of incurring them. No student can be advanced to candidacy until they have cleared all incompletes from their transcript. Only BI 603 Dissertation or BI 503 Thesis should show as 'incompletes' on the transcript. The Graduate School is responsible for changing those grades at the time of degree completion.

First Year

Quarterly evaluation of first year students by the QARC is described previously (on page 5).

In addition, near the end of the first year (or possibly during summer term), the Graduate Program Coordinator and Graduate Affairs Committee (GAC) review the files of each first year student to ascertain whether or not the student has made satisfactory progress. The criteria for satisfactory progress include:

1. Satisfactory quarterly evaluations by the QARC.
2. Three laboratory rotations have been completed with satisfactory evaluations.
3. Satisfactory teaching evaluations.
4. GPA of 3.0 or better in graded coursework and no grades of NP or I.
5. Grades of B- or better on 3 quarterly exams, with no more than one B-.
6. Identification of a thesis advisor by the end of the summer of year 1.

Other issues might arise that are deemed unsatisfactory; if so, these will be documented in writing. Exceptions to these criteria may be made by the GAC if there are extenuating circumstances.

Second Year and Beyond

In the second and subsequent years, the GAC and Graduate Program Coordinator review progress toward the Ph.D., and the GAC makes recommendations about continuation in the program. The responsibility for demonstrating satisfactory progress is primarily in each student's hands, and secondarily in those of the advisor and the DAC. The criteria for satisfactory progress for years 2 and beyond include:

1. Grade of 'Pass' on the proposal exam (year 2).
2. Satisfactory progress in dissertation research, as determined by the dissertation advisor and DAC.
3. GPA of 3.0 or better in graded coursework and no grades of NP or I.

Failure to meet these criteria for each year will trigger a detailed review by the Graduate Affairs Committee and may result in termination from the program.

Students must meet with their DAC at least once each year, and must provide written progress reports at least one week prior to their meeting to: 1) each member of their DAC and 2) the Graduate Program Coordinator, who will place these in their file for review by the GAC. The required contents of the report are explained below. We urge each student to write thoughtfully and completely about their progress each year, bearing in mind that members of the faculty outside their immediate area of specialization will read and evaluate their reports. The GAC cannot recommend continuation unless the progress report, the report of the

DAC chair, and the recommendation of the DAC are on file by the deadline specified below. It is the responsibility of the student to set meeting times with the Graduate Program Coordinator, and then to notify the coordinator as soon as the time is finalized so reminders may be sent to the committee.

The most competent group to evaluate the progress of a student is his or her DAC. Accordingly, the responsibility of evaluation is placed on the DAC. The DAC will meet with the student each winter term to review the student's progress toward the Ph.D. degree. Responsibilities of the DAC and the student are outlined below.

Annual DAC meetings should take place by the end of winter term, with the following exceptions allowed:

- Second year students have until April 15 to hold their first DAC meeting.
- Students who are scheduled to give a formal talk on their thesis research (e.g. an organized research talk or a talk delivered to the zebrafish group) in a given academic year, may elect to hold their DAC meeting after that talk. If the talk is later in the year than winter term, the student must request to postpone their DAC meeting until immediately after the talk. These requests must be made to the Graduate Program Coordinator **BEFORE THE END OF WINTER TERM.**

The DAC will meet annually with the student to evaluate progress. These meetings are to be held in the winter of each academic year, with the exceptions outlined above, and committee reports written by the DAC chair are to be filed with the Graduate Program Coordinator. **Failure to meet with the committee and file a report means that the student is not eligible for continued support from any university source in the following academic year.** The student is responsible for seeing that meetings are held.

The chair of the DAC will provide a written report of the annual DAC meeting to the GAC in which they indicate whether they feel the student is making satisfactory progress toward their Ph.D. degree. The student's progress report, the report of the DAC chair, and the DAC's recommendation, will become part of the student's permanent record. Evaluation of progress should be based on the student's progress report and on the oral presentation at the meeting. The progress report should include the following:

- a) A list of courses taken, with grades received, and a list of teaching assignments, presented on a term by term basis.
- b) A description of research activities, including publications.
- c) Planned research and courses for the coming year.
- d) A timetable for completion of the dissertation (fourth year and beyond).

Items "b" and "c" are especially important, and will form the bulk of most progress reports. This portion of the report should contain a clear and concise statement of the scientific question that is being addressed, a description of the experimental approach, a summary of results obtained, and a statement of how these results bear on the question posed.

The DAC is responsible for seeing that progress is made toward satisfying all departmental, Graduate School, and University requirements for the Ph.D. degree. The DAC is also responsible for ensuring that students supported on training grants fulfill the appropriate course requirements.

A report prepared by the DAC chair and reviewed by the committee should cover the items outlined above. The report should include an estimated time to completion of the degree, and a recommendation regarding the student's standing for next year. One of three recommendations can be made:

- Continuation as a graduate student with support. Only in extraordinary circumstances may the DAC recommend continuation without support.
- Continuation as a graduate student, but with a warning that progress is not completely satisfactory. Areas of expected improvement should be clearly indicated.
- Termination as a graduate student one term after the unsatisfactory progress warning has been issued, if their progress is not deemed completely satisfactory by the DAC. A student not recommended for continuation by the DAC may appeal this recommendation to the Graduate Affairs Committee.

A copy of the committee chair's report is to be placed in the student's file and a copy given to the student.

DISSERTATION PREPARATION AND TIMETABLE

Preparation of a written dissertation takes a considerable amount of time. It is strongly recommended that the student meet with the DAC before writing begins, but after all planned experiments are completed, to ensure that the committee agrees that the experimental work is complete. This meeting should take place three to four months prior to the planned defense. Writing should be done in conjunction with the dissertation advisor, and a polished, well-prepared version of the dissertation must be given to the members of the DAC at least three weeks prior to the scheduled defense.

The Graduate School provides a website to aid in the process of completing requirements for the dissertation defense (<http://gradschool.uoregon.edu/?page=graduation>). There the student will find instructions relating to the process of completing the degree (forms to use, etc.). If

a student wishes to include in their dissertation substantial portions of material that has been published with or without co-authors, or is intended to be published with co-authors, then s/he must seek permission from their DAC and the Graduate School at least one term prior to scheduling their defense. If the student plans to submit a dissertation in journal format style, they must obtain approval from the Graduate School at least one term prior to the defense. Likewise, students must register for a minimum of 3 credits of BI 603 Dissertation both the term before and the term of their defense (with a total of at least 18 credits). Once the student applies for their degree and then applies for their final oral defense online, DAC committee members are automatically requested to indicate their agreement to attend. This process may take some time to complete, so begin the process as soon as possible. Once these two steps have been completed, the Graduate Program Coordinator can prepare a form to accompany the student's abstract to the Graduate School. It is the student's responsibility to retrieve the form from the Graduate Program Coordinator and deliver it, along with four copies of the abstract to the Graduate School at least three weeks before the defense.

FINAL ORAL EXAMINATION

This shall consist of an open and public research seminar, followed by a private session of the candidate with members of the DAC. During the public presentation, the candidate should be prepared to defend the dissertation by responding to questions from the audience. The private session with the DAC will serve as the formal final examination.

SEMINARS AND JOURNAL CLUBS

Students are required to participate in seminar courses in their area, and at least one journal club each term during the academic year. Each student is expected to give one journal club presentation each year, starting in the second year. See the catalog for current journal club offerings.

SPECIAL CONSIDERATIONS FOR STUDENTS ENTERING AT A TIME OTHER THAN FALL TERM

While most Ph.D. students begin their program of study during fall term, occasionally a student will arrange to begin during a different term. For those students, the following schedule will apply:

Winter Term Admit. Aside from rotations and associated activities, the student will be treated as a fall term student of the current school year, and will be expected to take quarterly exams winter and spring terms. Those rare students who begin in winter term will have the option of taking their proposal exam the following winter term rather than fall term. If the student chooses to delay their proposal exam, they will take their third quarterly exam fall term. Otherwise, they

will take their proposal exam in the fall term and their third quarterly exam in winter term. They should further discuss their plans with both the chair of the Graduate Affairs Committee and the Graduate Program Coordinator early in September.

Spring Term Admit. Aside from rotations and associated activities, the student will be treated as a fall term admit for the coming school year. Thus, they will be expected to take their quarterly exams during the following fall, winter and spring terms, and they will take their proposal exam during fall term of the following year.

SUMMARY OF DEPARTMENTAL REGULATIONS FOR GRADUATE STUDENTS

Students should consult the University Catalog for general requirements of the Graduate School. The following are additional requirements as stipulated by the Department of Biology, or are clarifications of Graduate School policies.

1) Course load

- a) It is recommended that graduate students take a full course load each term (16 credit hours), including credit in informal courses such as research, reading, supervised college teaching, etc.
- b) Graduate students may take no fewer than 9 credit hours during any term in residence.
- c) Students working toward a Ph.D. must register for a minimum of 18 hours of Dissertation (BI 603) before their degree can be awarded. They may register for these hours anytime after advancement to candidacy (preferably in their last 3 terms), but **MUST** be registered for a minimum of 3 credits of Dissertation (BI 603) both the term prior to and during the term in which the student plans to defend.

2) Continuous enrollment

- a) A full-time graduate student is required to be enrolled during each term of the regular academic year from the time of first enrollment until his/her degree is awarded. A student is enrolled as either a student in residence, or a student on leave of absence (no fees charged).
- b) If a student fails to maintain continuous enrollment, s/he will be considered as withdrawn. If such a student wishes to renew studies, he or she must reapply for admission.
- c) A student should enroll for summer session for the number of credits that reflect his/her workload.

3) Financial Support

- a) Financial support is usually limited to Ph.D. candidates.
- b) A student receiving financial support is: 1) expected to devote full time to his or her graduate studies and teaching or research duties, 2) not to be otherwise gainfully employed within or outside the university. In cases of financial hardship, the Graduate Affairs Committee should be consulted. It may waive this rule or make other arrangements.
- c) Financial support is guaranteed for four years provided the student is making "satisfactory progress" toward the Ph.D. degree. Progress is assessed by the GAC on an annual basis.

GUIDELINES FOR A THESIS MASTER'S DEGREE

OIMB offers only a MS with Thesis, and these guidelines were written for OIMB students. However, the information about graduate school requirements, deadlines, scheduling, and the role of the advisor and committee apply to students in any of the other research units.

The thesis is the end result of independent research and must be written according to the UO Graduate School requirements as set forth in the *Style Manual for Theses and Dissertations*.

You should also familiarize yourself with the Graduate School requirements for a MS degree with thesis. These can be found in the *University of Oregon Undergraduate and Graduate Bulletin*. There is a copy in the library and one in the office.

To summarize these requirements, you need:

- 1) A total of 45 graduate level credits, 24 of which must be graded and taken while in residence at the UO.
- 2) At least 30 hours must be in graduate-level Biology courses.
- 3) Nine of these 45 credits must be BI 503 thesis, and 9 must be taken at the 600-level.
- 4) To maintain a 3.00 GPA
- 5) For a Master of Science there is no language requirement.

OIMB MS PROGRAM SCHEDULE

Satisfactory performance is required for continuing participation in the Master's Program. The following outline is the ideal sequence of events for a MS student at OIMB. There will be exceptions to this sequence. Some students will need to have individualized programs based on this structure, but with a different timetable. Such students must discuss deviations from this outline with their advisor and formalize a specific timetable.

Fall Term 1

Coursework – Enroll in appropriate OIMB courses in consultation with the advisor.

Seminars – Attendance and participation in a graduate seminar is required during each term in which a student is registered unless field work requires that the student be away from OIMB. Students who are registered at the University solely

for the purpose of defending their thesis, who are not living nearby, and who are not regularly working at OIMB, need not attend seminar during the quarter in which they defend. Attendance at the Marine Biology seminar on Friday afternoons is also very strongly encouraged.

Winter Term 1

Coursework – Possibly take courses in Eugene. If in Eugene, attendance and participation in a graduate seminar or journal club is required.

Research – Continue exploration of potential research topics. By the end of this term, students should have confirmed their research questions with their advisor.

Spring Term 1

Coursework – Possibly take course in Eugene. If in Eugene, attendance and participation in a graduate seminar or journal club is required.

Research – Establish a thesis committee, prepare a thesis proposal (see below), and meet with committee regarding the planned research. **Deadlines: By May 15**, establish a 3-person committee, one of whom is the advisor. Also complete the research proposal and have it approved by the advisor. **By May 21**, the thesis advisory committee should have received a copy of the research proposal. **By June 1**, the student should meet with their committee to discuss the research proposal and their overall progress.

Summer Term 1

OIMB courses where appropriate, Marine Biology seminar.
Initiate research if not already started.

Fall Term 2

OIMB courses only if appropriate. Grad seminar and marine biology seminar.
Devote as much time as possible to research.

Winter Term 2

Grad seminar. Continue research.

By January 15 submit a written progress report on research to the committee. **By February 1**: The student should have met with their committee to discuss completion of their degree. At this meeting, research findings and plans for completion will be discussed. The student should outline a schedule for completing their research and writing their thesis.

It is imperative that the student establish a schedule agreed upon by their committee **by February 1**, as many deadlines for revisions, and for submitting documents to the Graduate School must be met in the final (spring) quarter.

Spring Term 2

Grad seminar. Research.

Thesis preparation and defense.

GRADUATE.

THESIS PREPARATION

This schedule applies for any quarter the student plans to graduate. The first drafts of the thesis should be given to the advisor on a schedule to be set up between the advisor and the student. After revisions have been incorporated and the draft approved by the advisor, the student needs to give this draft to the other members of their thesis committee for their feedback and comments. Upon receiving approval of this draft from each committee member, the student may schedule their thesis defense. A revised, penultimate draft of the thesis should be given to all committee members **one week** prior to defending. The public defense should be scheduled **no later than three weeks prior** to the Graduate School deadline for submission of thesis. **No later than one week after** the defense, the student should give the final version of their thesis to their advisor for final approval.

WRITING A THESIS PROPOSAL

A proposal should consist of a coherent presentation that includes an Introduction, Statement of Questions or Hypotheses Addressed, Background (if necessary), Methods and Experiments, Expected and Possible Outcomes, Significance, Timetable, and Literature Cited.

The Introduction should review the topic that will be addressed in the proposal and include a reasonably thorough literature review of prior studies. The goal of the Introduction is to set up a perspective from which to view the planned research work. Students should avoid discussing every approach or fact known about their planned topic.

A Statement of Questions should concisely state the questions to be answered or hypotheses to be tested.

Background can contain any additional information necessary to supplement the Introduction and which is necessary to introduce or justify the methods and experiments.

Methods and Experiments should outline specific experiments or observations to test the hypothesis or hypotheses (or distinguish among alternative hypotheses) mentioned after the introduction. The materials to be used, the exact design of experiments, descriptions of the data to be collected, and methods of analyzing that data, including statistical tests, should all be covered in this section.

Expected and Possible Outcomes should outline the possible outcomes of the planned experiments or observations. The relationship between these outcomes and rejection or confirmation of the hypotheses should be made explicitly.

Significance of the proposed research should cover the uses of information gained in the research. The relevance of the research and the answer(s) it yields

need to be set into context of science in general and the specific areas of science that the thesis research addresses.

Timetable should report the schedule to accomplish the experiments and analyze the results, and prepare a thesis. Give appropriate supporting information about start and end times, or how long an experiment is expected to run. Try to give realistic estimates of time to analyze results.

Literature Cited should include complete references to all literature cited in the proposal -- see a journal or style manual for format.

When you prepare your proposal, consider whether the following are addressed, as these will be the criteria for evaluating your proposal:

- 1) Is the problem (or set of closely related problems) clearly and briefly stated?
- 2) Is there a clear, concise, and complete statement of the hypotheses or models?
- 3) Are the hypotheses or models reasonable? Does the proposal demonstrate knowledge and understanding of the area?
- 4) Is the general outline or plan of the experimental or observational approach clearly stated? What experiments or observations are planned, and what are the possible and expected outcomes?
- 5) What can be concluded about the hypotheses or models from the possible outcomes of the experiments? Are new hypotheses or experiments and observations necessary?
- 6) Are various details of the experiments or observations handled adequately (e.g., feasibility, statistical significance, controls, etc.)? Does the proposal demonstrate knowledge and understanding of the particular area?
- 7) The written proposal should not exceed 3,000-3,500 words.

ROLE OF THE ADVISOR

The thesis advisor is the OIMB permanent faculty member most responsible for the oversight of research and preparation of the thesis. That person should be the mentor and should be very closely familiar with the work and research plan of each Master's student. Besides providing guidance and feedback in all aspects of the research plan and its execution, it is the responsibility of the advisor to establish with the student a reasonable timetable for obtaining a Master's degree.

ROLE OF THE THESIS COMMITTEE

The 3-member committee (including the advisor) is responsible for evaluating the academic performance of the student, thesis proposal, and the thesis resulting from independent research conducted by the Master's student. The choice of members of the committee should be made according to the research and educational goals of a Master's student. Committee members should be viewed as important resources for proposal execution and evaluation. It is up to the student to tap the resources. Membership on this committee should be discussed between the advisor and student prior to its appointment.

The thesis committee must approve the thesis proposal and the thesis. Each member of the committee is expected to actively participate in the project execution and evaluation, and should voice their opinions throughout thesis work.