

**SCHOOL OF BIOLOGICAL SCIENCES  
GRADUATE PROGRAM GUIDELINES  
2018 - 2019 ACADEMIC YEAR**



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*“Graduate studies are organized and conducted according to the rules and bylaws of the Graduate College of the University of Nebraska-Lincoln (UNL). The Dean of Graduate Studies is responsible for coordinating and administering graduate-level programs and policies at UNL... In practice, the governance of graduate programs is by and through the Graduate Program Committees (in each major department) and the UNL Graduate Council, in accordance with the policies and regulations of the University wide Graduate College... Each administrative unit authorized to offer major work leading to the masters or doctoral degree has a Graduate Committee... General supervision over graduate studies in each department is vested in the Graduate Committee.”*

—Graduate Studies Bulletin

This document describes the procedural requirements and details associated with the granting of masters and doctoral degrees by the School of Biological Sciences (SBS). For graduate program governance purposes, the SBS has defined three specializations with which faculty and graduate students are affiliated. Each specialization (Genetics, Cellular, & Molecular Biology, Ecology, Evolution & Behavior, Plant Pathology, Bioinformatics or Complex Biosystems) is indicated after the major on official records and transcripts. Requirements set forth and supervised by the SBS Graduate Program Committee described herein include general requirements of the School as well as specific requirements of each specialization. General requirements for graduate degrees at UNL established by the Graduate College can be found in the Graduate Studies Bulletin published online by the Graduate College, available at: [bulletin.unl.edu](http://bulletin.unl.edu). Some relevant sections of the bulletin are reproduced in this document for your convenience.

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# General Information and Requirements for Graduate Studies in the School of Biological Sciences (SBS) and the Department of Plant Pathology

## Specializations

SBS offers graduate degrees with focus in one of three specializations: Ecology, Evolution and Behavior (EEB), Genetics, Cell, and Molecular Biology (GCMB), and Plant Pathology. EEB and GCMB are SBS specializations. The Plant Pathology specialization is administered by UNL's Plant Pathology Department, but the degrees are awarded through SBS. Graduate applicants indicate a specialization on their application. An Interdisciplinary Bioinformatics specialization (<http://bioinfolab.unl.edu/unlbioinfo/specialization>) is also available for PhD students; students who elect this specialization must also select an SBS specialization. Faculty affiliated with the EEB, GCMB, and Plant Pathology specializations are listed on page 25.

Once admitted to the program, students are required to follow requirements of UNL's Graduate Studies, the SBS Graduate Program, and their chosen specialization. Although graduate students are typically affiliated with the same specialization as their advisor, students may choose any specialization, with approval from the Graduate Committee. With approval of the Graduate Committee, students may transfer between specializations.

Forms that must be completed are available on the SBS website ([www.biosci.unl.edu](http://www.biosci.unl.edu)) and the Graduate Studies website (<http://www.unl.edu/gradstudies/current/degrees>).

## Graduate Committee

The SBS Graduate Committee is charged with coordinating recruitment of new graduate students, providing a timely review of graduate student applications, and making recommendations to the Director for admission and support of new students. The Graduate Committee also conducts an annual review of graduate student academic performance and progress, recommends changes in graduate student status, certifies examining and supervisory committees, and recommends curricular changes to the curriculum committee.

The Graduate Committee will consist of the Chair, two representatives from the EEB and GCMB specializations, and one representative from the Plant Pathology specialization. The EEB and GCMB representatives will serve two-year staggered terms and will be elected by SBS faculty in their respective specializations. The chair will be selected from the pool of elected representatives and appointed by Graduate Studies. From whatever specialization the Chair is selected, the faculty member receiving the third most votes will fill the vacated representative position.

## Applications to SBS

Application instructions and general information are posted on-line ([www.biosci.unl.edu](http://www.biosci.unl.edu)) and the official application form for admission to a Graduate Program at UNL can be found at the UNL Graduate Studies website (<http://www.unl.edu/gradstudies/>). The Graduate Coordinator is responsible for processing application materials and providing guidance to students expressing an interest in the SBS Graduate Program. Typically students apply by December 1<sup>st</sup> for admission the following fall. EEB

and GCMB students are admitted for spring matriculation only under exceptional circumstances and must be accepted by a majority vote of faculty in the respective sections.

### **Degree Options**

The School of Biological Sciences awards the Doctor of Philosophy (PhD) and Option I Master of Science (MS) degrees as currently defined by the Graduate College. Graduate training in the School is research-oriented; thus SBS does not admit students to pursue an Option II or III MS degree. Under exceptional circumstances a student in the program may petition to complete an Option II or Option III MS degree, with approval from the Graduate Committee. Students may pursue a PhD directly, or may enter the PhD program following completion of an MA or MS degree.

### **Requirements for Admission**

Applications must include transcripts from all previously attended colleges and universities, a statement of research experience and research interests (outlining the student's academic interests and long-term goals), a CV or resume, scores from the quantitative, verbal and analytical portions of the Graduate Record Examination (GRE), and a TOEFL examination score for students whose native language is not English. Scores from the GRE Advanced Subject Test are recommended if they are in an appropriate area (e.g. Biology, Biochemistry and Molecular Biology, or Chemistry). Minimum standards are a B.A. or B.S. degree (or equivalent) from an accredited institution, cumulative grade point average equivalent to a 3.0 (B), and scores above the 50<sup>th</sup> percentile on the verbal, quantitative and analytical portions of the GRE. For international applicants, a TOEFL score of 565 for paper-based test, 225 for computer-based test, or 85 for the internet-based test is required. In lieu of an applicant meeting one of the above criteria, consideration for admission may be based on a personal interview and/or correspondence. In addition, applicants must identify three individuals from whom letters of recommendation will be requested.

### **EEB and GCMB**

Graduate recruiting is organized by each section. The section representatives to the Graduate Committee coordinate the initial evaluation of applicants, invitations to interview, and final ranking of applicants. Prospective student interviews are arranged in February or March. Formal meetings with faculty and current graduate students are usually held on a Thursday/Friday, and social events follow in the evening. Ranked lists from each specialization are evaluated by the Graduate Committee, which makes recommendations to the Director regarding admission and financial support. Admitted students receive a formal offer letter, and the deadline for student acceptance of financial support is April 15<sup>th</sup>.

## Change in Degree and Minor Information

### Change of Degree

Students wishing to change their degree program must complete a [Change of Degree form](#).

**Students wishing to change from the PhD to the MS** program are required to obtain approval of their PhD Supervisory Committee and the Graduate Committee. Note that Graduate Studies guidelines are that a student cannot defend his/her MS thesis in the same semester in which they switched from the PhD to the MS program.

**Students wishing to change from the MS to PhD** program are required to obtain the approval of their MS advisor, proposed PhD advisor (if different from the MS advisor), current MS Advisory Committee, and the Graduate Committee. **Masters students may request a change to the PhD program no earlier than their third semester.** A student may defend his/her MS thesis and obtain a MS degree en route to the PhD, or move directly into the PhD program without completing an MS.

### Minor in Biological Sciences

Students majoring in fields of study outside SBS may obtain a minor in Biological Sciences with approval of the SBS Graduate Committee. A letter of intent should be sent to the SBS Graduate Chair prior to the beginning of the course of studies, and the SBS Graduate Committee needs to approve the proposed Memorandum of Courses or Program of Studies. A minor in SBS for the MS degree requires at least 9 hours of graduate course work in Biological Sciences; a minor in SBS for the PhD degree requires at least 16 hours of graduate course work in Biological Sciences, with 6 of those hours in 900-level courses or 800-level courses without a 400-level counterpart. BIOS credit hours used to complete the minor in Biological Sciences must be in courses whose home department is Biological Sciences (i.e., not cross-listed courses whose home department is not Biological Sciences).

## School of Biological Sciences Degree Requirements

The Office of Graduate Studies at the University of Nebraska—Lincoln publishes the *Graduate Studies Bulletin* online (<http://bulletin.unl.edu>). This publication lists the requirements for graduate studies at UNL that apply to all academic programs, including the School of Biological Sciences. A student is expected to satisfy the requirements in force at the time of admission to a degree program. The relevant parts of the Bulletin are reproduced below (pp. 9-22). **The School of Biological Sciences** sets forth specific requirements to confer MS and PhD degrees in addition to those listed in the Graduate Studies Bulletin. Details of these requirements and expected procedures are formalized by each specialization (see pp. 27-34). Some SBS requirements not listed in the *Graduate Studies Bulletin* include:

### PhD and MS students in EEB and GCMB

**New Student Orientation:** Before classes begin in the fall semester the Chair of the Graduate Committee and the Graduate Coordinator will conduct an orientation for all incoming students. At this meeting each student will receive a copy of the Graduate Handbook, and the guidelines and general expectations of our program will be discussed.

**Guidance Interview:** Prior to or early during the first semester in residency each student will meet with his/her potential advisor and/or specialization faculty to determine the coursework to be taken during the first semester and receive detailed information concerning School and specialization requirements and procedures. Following the Guidance Interview students must submit a completed Guidance Interview form to the Graduate Coordinator.

**Professionalism course:** All incoming students are required to take this course in their first fall semester. This course is typically taught by the Graduate Committee Chair. Topics covered include scientific writing, the publication process, oral and poster presentations, CVs, research ethics, grant writing, communicating science to a broad audience, formal and informal networking, and general advice on how to succeed as a graduate student.

**Seminars:** Each specialization will run a seminar course every semester, and all SBS students are required to participate in one of these seminars in each semester in which they are in residence. Specialization seminars will include a mix of outside speakers, SBS faculty and student speakers, and brown-bag discussions. In the case of schedule conflicts a student may register for an alternative seminar with the approval of his/her Supervisory Committee.

**Presentation to the SBS Community:** All students are required to present their work (either proposed, in progress, or completed) to the greater SBS community each year. Student presentations may be oral, as part of one of the specialization seminars (915A or 915E), or as a poster at the annual Biology Graduate Students Association symposium.

### Annual Progress Report, Academic Performance, Probation, and Termination:

1. By the first day of the fall Semester, students beyond their first semester must submit their Annual Report electronically to their faculty advisor, Supervisory Committee and to the Graduate Coordinator. **It is highly recommended that you submit your report to your faculty advisor before submitting to the rest of the Supervisory Committee.** Supervisory Committee members are to evaluate student Annual Reports and submit their evaluation to the Graduate Coordinator via email. If evaluations of Needs Improvement or Unsatisfactory are given, faculty **must** justify this recommendation in writing.

2. No later than two weeks after the first day of the fall Semester each committee member must email the Graduate Coordinator with their evaluation and a brief justification of that evaluation (Satisfactory, Needs Improvement, Unsatisfactory). Failure to complete Graduate Studies, SBS, or specialization requirements is grounds for a less than Satisfactory evaluation. In addition, poor research progress is grounds for a less than Satisfactory evaluation.

3. The Graduate Coordinator will inform the student (and their committee) of his/her evaluations.

4. If any evaluations are **Needs Improvement** the student will be required to schedule a meeting with his/her committee. At this meeting deficiencies will be discussed and suggestions to overcome those deficiencies will be proposed. **No later than November 15<sup>th</sup>**, the student's advisor should submit a letter to the SBS Graduate Committee summarizing the salient points of the meeting. No remediation plan is necessary and no other action is needed.

5. If any evaluations are **Unsatisfactory** the student will be required to schedule a committee meeting. At this meeting a plan for remediation must be developed. **No later than November 15<sup>th</sup>** the student's adviser should submit a letter to the SBS Graduate Committee (cc'd to the student and Supervisory Committee) summarizing the deficiencies and describing a plan for remediation.

Within 6 months (no later than **April 15** of the same academic year) the student must have another committee meeting to determine if the plan for remediation has been satisfactorily completed. If the student has completed the plan and is making satisfactory progress the advisor must report this change in status in writing to the SBS Graduate Committee.

Students that fail to achieve satisfactory status by **April 15** will be put on probation. Once on probation the student will have another 4 months to achieve satisfactory status. **Failure to achieve Satisfactory status constitutes grounds for dismissal from the graduate program.** A student who has not achieved Satisfactory status will not be allowed to register for the fall semester.

6. Receiving Unsatisfactory evaluations for similar reasons from the majority of the Committee in two consecutive years constitutes grounds for dismissal from the graduate program.

## ***SUMMARY OF PROCEDURES FOR THE MS DEGREE***

\*All forms and reports should be submitted to the Graduate Admissions Coordinator **FIRST**  
 downloadable forms for MS students can be found at  
<http://www.unl.edu/gradstudies/current/degrees#masters> and  
<http://biosci.unl.edu/current-students>

Action / Form*	Use	When to Submit	Signatures Required	Procedure
<p><b><u>Guidance Interview &amp; Specialization affiliation Submission Form</u></b></p>	<p>The guidance interview is instructive for registering for classes, explaining Specialization-specific procedures and addressing general questions.</p> <p>The student commits to follow Specialization guidelines.</p>	<p>During the 1<sup>st</sup> week</p>	<p>Faculty Advisor or Specialization representative</p>	<p>The student meets with the potential advisor and/or the Specialization representative to the Graduate Committee (plus other Specialization faculty if required).</p>
<p><b><u>Master's Examining Committee</u></b></p>	<p>Designating a Faculty Advisor and forming a Committee must be done before the end of the first academic year.</p> <p>The MS Committee is charged with determining the formal course program and monitoring the student's progress.</p>	<p>Last day of classes in 1<sup>st</sup> academic year</p>	<p>Faculty Advisor and Graduate Chair</p>	<p>The Committee members must be approved by the SBS Graduate Committee.</p> <p>A minimum of <u>three</u> committee members required (at least one must be an SBS Graduate Faculty).</p> <p>Once the committee is approved, the student must meet with the Examining Committee at least once a year.</p>
<p><b><u>Change in Master's Examining Committee</u></b></p>	<p>Should the Faculty advisor or other member remove themselves from the committee, submit a memo to the SBS Graduate Chair with the new committee make-up. <b>(Written Memo)</b></p>	<p>As needed</p>	<p>Faculty Advisor  New committee member</p>	<p>The new Committee Member(s) must be approved by the SBS Graduate Committee.</p>
<p><b><u>Annual Report</u></b></p>	<p>Graduate students meet with committee members at least once a year.</p> <p>This report summarizes the academic &amp; research progress in a given academic year. Shows dates and results of annual committee meeting.</p>	<p>1<sup>st</sup> day of fall semester</p>	<p>Committee Members  Faculty Advisor</p>	<p>Forms are distributed late in the spring semester.</p> <p><b>Failure to submit the annual report constitutes grounds for dismissal. See section on Annual Reports and Academic Performance in page 6.</b></p>

<p><b><u>Memorandum of Courses</u></b></p>	<p>The courses needed to complete an "Option I" Master's degree.</p> <p>To be determined by Faculty Advisor &amp; Examining Committee following Specialization recommendations.</p>	<p>Last day of classes in 1<sup>st</sup> academic year</p>	<p>Faculty Advisor</p> <p>Graduate Chair</p> <p>Graduate Studies Dean</p>	<p>Minimum of <b>30</b> semester hours of credit.</p> <ul style="list-style-type: none"> <li>✓ <b>20-24</b> semester hours of course work, excluding seminars and P/NP courses</li> <li>✓ <b>6-10</b> semester hours of thesis hours</li> <li>✓ <b>8</b> semester hours must be taken in courses consisting of 900-level or 800-level with no 400 counterpart.</li> </ul> <p><b>No more than 3 cr of seminar courses with substantial coursework may be counted in this category.</b></p>
<p><b>Written Comprehensive Exam</b></p>	<p>The Examining Committee administers the exam to the student, <u>as specified by the Specialization</u>; covers the student's approved program of study. This exam cannot be waived.</p>	<p>Before the beginning of 2<sup>nd</sup> academic year.</p>	<p>The Faculty Advisor notifies the Graduate Committee in writing of the outcome</p>	<p>Format follows Specialization guidelines.</p>
<p><b><u>Final Examination Report</u></b></p>	<p>After all coursework has been completed and any outstanding incompletes have been removed.</p>	<p>At least <b>four</b> weeks prior to the final oral examination.</p> <p><b>Submit to Graduate Admissions Coordinator</b></p>	<p>Faculty Advisor</p> <p>Graduate Chair</p> <p>Graduate Studies</p>	<p>Complete Parts 1 - 5, have the Grad Admissions Coordinator verify, Graduate Chair signs, and then form is submitted to Graduate Studies.</p> <p>Graduate Studies return the form prior to the Oral Defense.</p>
<p><b>Oral Comprehensive Exam</b></p>	<p>Thesis Defense, Cannot be waived.</p>		<p>No signatures needed.</p>	<p>\$25.00 non-refundable fee</p>

# MS Students

## **MS students in EEB and GCMB**

**MS Examining Committee:** This committee must be formed by the student by the end of the first academic year, and must meet at least annually to discuss and evaluate the student's progress. It is the student's responsibility to call meetings with his/her supervisory committee. The MS Examining Committee must have three members, and at least one member must be a budgeted SBS Graduate Faculty member.

**MS Memorandum of Courses:** Students must submit their Memorandum of Courses (which includes all courses that must be completed before the degree is granted) by the end of their first academic year. Typically students discuss their Memorandum of Courses with their Examining Committee at their first committee meeting.

**MS Comprehensive Exam:** MS students must complete the Comprehensive Exam, administered by the student's Examining Committee, before the beginning of their second academic year. This exam is intended to assess the student's mastery of the fundamentals in his/her field and evaluate his/her potential to conduct Masters level research. The exam will consist of written and/or oral presentations on the topic of the student's research followed by an oral exam. The Supervisory Committee will determine whether or not the student passed the exam. The Faculty Advisor will notify the Graduate Committee in writing of the outcome. If a student fails the Comprehensive Exam, a second chance will be offered within six months. A second failure will be grounds for dismissal from the MS program.

**Final Oral Exam:** The student presents a public talk describing his/her thesis research. A closed door examination by the Examining Committee follows. The student passes the Final Oral Exam if no more than one member of the Examining Committee votes to fail the student. The Faculty Advisor will notify the Graduate Committee in writing of the outcome. If the student fails the examination, a written description of what the student must do before taking another exam must be filed with the Graduate Committee (see Graduate Studies Bulletin for more details).

**Excerpts from the Graduate Bulletin** [http://bulletin.unl.edu/graduate/Masters\\_Degree\\_Requirements](http://bulletin.unl.edu/graduate/Masters_Degree_Requirements)  
**Requirements for the Master of Science Degree** (applies for a major in Biological Sciences)

### **Options for the Master's Thesis**

#### **Option I. (SBS only confers the Option I research degree)**

The Master's degree under Option I should be chosen by those who are preparing for careers in research and scholarly work or in college or university teaching. Under this option a student must earn a **minimum of 30 semester hours of credit, consisting of 20 to 24 semester hours of regular course work, and present a thesis equivalent to 6 to 10 semester hours**. At least one-half of the required work, including thesis, must be taken in one major subject (at least 18 hours for the master of education degree). The remaining work may be in supporting courses or in a minor consisting of at least 9 semester hours. **Eight hours credit, in addition to the thesis, must be earned in courses open exclusively to graduate students (900 level or 800 level without 400 or lower counterparts).**

The subject of the thesis should be chosen from the candidate's field of major interest and must be approved by the departmental Graduate Committee. The thesis should reveal a capacity to carry on independent study or research and should demonstrate the student's ability to use the techniques employed in her/his field of investigation. Research activities involving human subjects or live vertebrate animals may not be conducted at the University of Nebraska-Lincoln (UNL) unless the research activities have been reviewed and approved by the appropriate board or committee. The Institutional Review Board (IRB) reviews projects involving human subject research and the Institutional Animal Care and Use Committee (IACUC) reviews the use of animals in research. These reviews are in accordance with Federal regulations and UNL assurance documents to the Office for Human Research Protections (OHRP). The IRB New Protocol Submission form must be completed on-line at <http://nugrant.unl.edu>; the Application to Use Animals is available at <http://research.unl.edu/orr/qa.shtml>. Note that the IRB and IACUC will not review projects already in progress; approval must be secured prior to the initiation of the research. Evidence of IRB/IACUC approval must be submitted at the time the final version of the thesis or dissertation is filed.

The thesis must conform in style and form to the guidelines set forth in the Guidebook for the Preparation and Submission of an Electronic Thesis found on the Graduate Studies website at <http://www.unl.edu/gradstudies/current/degrees#masters>. **An electronic copy of the thesis and abstract must be presented for preliminary review to the Master's Degree Specialist in the Office of Graduate Studies at least two weeks (one week in the summer sessions) before the date for the Candidate's oral examination.** A Candidate is not eligible for the oral examination until the thesis is completed and approved by the major adviser. After the thesis has been successfully defended, it needs to be electronically submitted to the Master's Degree Specialist for a final review prior to being uploaded to digital commons.

### **Residency and Time Requirements**

A candidate for an Option I Master's degree must complete 10-12 semester hours of the required credit in regularly scheduled campus courses, excluding credit in thesis research. At least one-half of the work for a Master's degree must be in the department or area constituting the student's major.

The work required for a Master's degree must be completed within ten consecutive years. Course work exceeding ten years will not apply toward the partial fulfillment of the degree requirements for Masters Degrees at the University of Nebraska-Lincoln.

### **Memorandum of Courses**

The Memorandum of Courses must be filed before the student has received grades (letter grades, no reports or incompletes) in more than one-half of the prescribed program. It must also be approved by the student's adviser, the departmental or area Graduate Committee, the Graduate Committee in the student's minor, and by the Dean of Graduate Studies. **A student may NOT file a Memorandum of Courses and graduate in the same**

**semester or summer session.** See Master's Degree Forms and Deadlines on the Graduate Studies website.

### **Master's Thesis**

The Master's thesis and abstract in preliminary form must be approved by the adviser prior to applying for the final oral examination or for its waiver (at least four weeks prior to the examination). An electronic copy of the thesis and abstract in preliminary form must be submitted to Master's Degree Specialist in the Office of Graduate Studies for approval at least **two weeks** (one week in summer) prior to the final oral examination. This copy will be reviewed by the Master's degree specialist and the student notified of any changes to be made. Please refer to The Guidebook for the Preparation and Submission of an Electronic Thesis on the Graduate Studies website for the exact format to be followed  
<http://www.unl.edu/gradstudies/current/degrees/masters.shtml>.

The thesis and abstract should be double spaced. The margins should be at least one-and-one-half inches (1.5") at the left and one inch (1") on each of the other three sides. If plates or folded tables are included, they should have exactly the same margins as the text, or should be folded to come within them. Footnotes should be single spaced and should be placed at the bottom of the page to which they pertain unless special instructions are given by the department concerned.

The thesis must be typed. Acceptable type includes a dark print from a letter quality printer. All final copies must be either printed or copied on 20 lb. (minimum) white, 25 percent cotton watermarked bond paper not designed for easy erasure.

Following the successful completion of the oral examination, the student should submit another electronic copy to the Master's Degree Specialist for final approval. Once the student receives notification of final approval, the thesis should be uploaded to Digital Commons. Upon a successful upload, the student will receive an email notification which will need to be printed out. The student will then bring the printed notification, one copy of the title page, two copies of the abstract and their signed Final Examination Report Form to the Master's Degree Specialist in the Office of Graduate Studies, 1100 Seaton Hall. The title page and one of the abstracts will be stamped for approval and returned to the student for depositing in 318 Love Library. The Final Examination Report Form will be signed by the personnel in the Library and the student will proceed to the Cashier in Canfield Administration Building to pay the archiving fee. The cashier will sign off on the Final Examination Report Form and the student will then bring the form back to the Office of Graduate Studies.

The student should consult her/his major adviser about the number of additional copies of the thesis which should be prepared, and also about the binding of these copies. One copy must be filed in the departmental office of the major and ordinarily one copy is furnished to the major adviser who directed the study.

### **Examinations**

Within 24 months prior to the date of graduation, a comprehensive (written and/or oral) examination is (are) required to cover the student's approved program of study, as specified by the appropriate departments. The comprehensive examination in the minor field(s) (written and/or oral) may be waived subject to the approval of the minor department(s) provided all grades in the minor department are at least a B or pass.

If an oral examination is required, the examining committee, approved by the Office of Graduate Studies on recommendation of the major department, will consist of at least three members representing the major department and the minor department (if applicable). If the degree is being earned under Option I without a final oral examination, the thesis must be approved in writing by a Graduate Faculty member in addition to the major adviser. All professors on the examining committee must either be on the Graduate Faculty, or be non-Graduate Faculty approved to perform specified Graduate Faculty duties. If a member of the examining committee other than the chair leaves the employ of the University, or retires, a replacement should be appointed. In certain circumstances where a special and needed continuing expertise is involved and the faculty member is willing to continue serving, the departing faculty member may continue as a member or co-chair of

the committee, with approval of the department Graduate Committee and the UNL Dean of Graduate Studies.

In the event that members of an oral examining committee are not unanimous regarding passing a Candidate, the student is to be approved for the degree if only one examiner dissents. However, in each case, the dissenting member of the committee will be expected to file a letter of explanation in the Office of Graduate Studies.

If a student fails to pass the final oral or written examination for an advanced degree, their committee must file a report on the failure in the Office of Graduate Studies and indicate what the student must do before taking another examination. Another examination may not be held during the same semester or the same summer session in which the student failed.

**Procedure Summary for the Master's Degree:** See Master's Degree Forms and Deadlines on the Graduate Studies website <http://www.unl.edu/gradstudies/current/degrees#masters>

1. Admission to UNL Graduate Studies.
2. Registration by consultation with the chair of the Graduate Committee and the major adviser and with the approval of the Dean of Graduate Studies.
3. Removal of admission deficiencies.
4. Examining Committee and Memorandum of Courses, required for Candidacy, must be filed before grades (letter grades, no reports or incompletes) have been received in more than one-half of the program and on recommendation of the major and minor departments and approval of the Dean of Graduate Studies.
5. Application for advanced degree at the Graduation Services Office, 109 Canfield Administration Building, at the outset of the semester or session in which graduation is planned.
6. The Final Examination Report for the Master's degree must be received in the Office of Graduate Studies at least four weeks (three weeks in summer) before the final examination, if required, but in no case later than four weeks before the final date for oral examinations. The report will be accepted after all course work on the program of studies has been completed, or is in progress, and any outstanding incompletes have been removed.
7. The presentation of a preliminary copy of the thesis and abstract to the Graduate Studies Office, two weeks (one week in summer) prior to the oral examination, if required. If the oral examination is waived, the preliminary copy of the thesis and abstract must be presented to the Office of Graduate Studies no later than two weeks before the final date for oral examinations for any given session.
8. Passing of written examinations, if required, in major and minor fields at least one week prior to the time the oral examination is to be taken.
9. Passing of an oral examination administered by the examining committee.
10. Confirmation of upload of thesis including the abstract to Digital Commons, one copy of the title page, two copies of the abstract and the signed Final Examination Report Form to Graduate Studies to be stamped. Title page and one abstract will be delivered to the Dean of University Libraries, and archiving fee is paid to the Cashier's Office. Upon receiving the signatures of the Library and the cashier on the Final Examination Report Form, it is returned to the Office of Graduate Studies.

## Summary of Procedures for the PhD Degree

\*All forms and reports should be submitted to the Graduate Admissions Coordinator **FIRST**  
 downloadable forms for PhD students can be found at  
<http://www.unl.edu/gradstudies/current/degrees/doctoral> and  
<http://biosci.unl.edu/current-students>

Action / Form	Use	When to Submit	Signatures Required	Procedure
<b><u>Guidance Interview &amp; Specialization affiliation Submission Form</u></b>	<p>The guidance interview is instructive for registering for classes, explaining the Specialization specific procedures and general questions.</p> <p>The student commits to follow Specialization guidelines</p>	During the first week of classes	Faculty Advisor or Specialization representative	The student meets with the potential advisor and/or the Specialization rep to the Graduate Committee (plus other Specialization faculty if desired)
<b><u>Supervisory Committee, Designate Advisor</u></b>	<p>Designates the Faculty Advisor and forms the Supervisory Committee.</p> <p>The Supervisory Committee is charged with determining the formal course program, following Specialization recommendations, and monitoring the student's progress.</p>	Last day of classes in the 1 <sup>st</sup> academic year	Faculty Advisor  Graduate Chair  Graduate Studies Dean	<p>Committee members must meet the following requirements: 5 members, at least two must be SBS graduate faculty members; one '<u>outside representative</u>' must be affiliated to a unit other than SBS.</p> <p>Once the committee is approved, student and Supervisory Committee must meet within three weeks, to establish a Program of Studies. <b>Student and Committee must meet at least once each year.</b></p>

<p><b><u>Program of Studies</u></b></p> <p>If a change needs to be made after the form is submitted the advisor must email Graduate Studies and the Graduate Coordinator.</p>	<p>The courses needed to complete a PhD</p> <p>To be determined by Faculty Advisor &amp; Supervisory Committee, following Specialization recommendations</p>	<p>Last day of classes in 1<sup>st</sup> academic year</p>	<p>Faculty Advisor</p> <p>Graduate Studies Dean</p>	<p>Minimum credit = 90 hrs.</p> <p>At least 45 credit hours must be completed at UNL <u>after</u> filing the form. Normally includes 35-45 cr hrs. of graduate coursework (at least 27 cr. at UNL to meet residency requirement) and 45 - 55 hours of dissertation research. Typically, 6-9 cr hrs. of coursework (Up to 12 maximum) may be transferred from a master's degree previously awarded at another institution.</p> <p>6 hours of seminar coursework are required. Supervisory Committee (following Specialization guidelines) determines if a language or special research tool is needed.</p> <p>Submit form to SBS Graduate Coordinator, to be forwarded to Graduate Studies.</p>
<p><b><u>Annual Report</u></b></p>	<p>Graduate students meet with committee members at least once a year.</p> <p>This report summarizes the academic &amp; research progress in a given academic year. Shows date and result of annual committee meeting.</p>	<p>Annually on the 1<sup>st</sup> day of fall semester</p>	<p>Committee Members</p> <p>Faculty Advisor</p>	<p>Forms are distributed late in the spring semester. The form will need to be completed each year the student is in the program.</p> <p><b>Failure to submit the annual report constitutes grounds for dismissal. See section on Annual Reports and Academic Performance in page 5.</b></p>
<p><b>Doctoral Preliminary Evaluation</b></p>	<p>Assesses the student's mastery of the fundamentals in his/her field and the potential for conducting doctoral-level research.</p>	<p>No later than the end of the 3<sup>rd</sup> semester</p>	<p>Examining Committee or Faculty Advisor sends memo to the Graduate Committee</p>	<p>Each Specialization specifies the requirements for the Preliminary Evaluation. See the Specialization guidelines for more information on specific procedures.</p>
<p><b>PhD Comprehensive Examination</b></p>	<p>The Supervisory Committee will administer the written comprehensive.</p> <p>Format follows Specialization guidelines</p>	<p>By the end of the 3<sup>rd</sup> year, when coursework in Program of Studies is complete.</p>	<p>Faculty Advisor writes a memo to the Graduate Committee to pass on the result of the exam.</p>	<p>Format follows Specialization procedures</p> <p>The Supervisory Committee and/or Specialization guidelines may additionally require an oral Comprehensive Exam also.</p>

<p><b><u>Admission to Candidacy</u></b></p>	<p>After the Comprehensive Exam is graded and all language and research tool requirements satisfied, the Supervisory Committee recommends admission to Candidacy.</p>	<p>Generally after passing the Comprehensive exam at the end of the third year (at least 7 months prior to dissertation defense)</p>	<p>Complete Application for Admission to Candidacy form.</p> <p>Supervisory Committee signs.</p>	<p>Following Admission to Candidacy the student must register for at least one credit hour during each academic semester until the Degree is received, even if the number of dissertation hours on the program of studies has been reached.</p> <p>Failure to register will result in termination of the Candidacy.</p>
<p><b><u>Final Oral examination</u></b></p>	<p>The student presents a public talk about the salient results of the thesis research.</p> <p>Closed-door oral examination with the Supervisory Committee follows.</p>	<p>During the semester in which graduation is planned</p>	<p>Supervisory committee signs</p>	<p>Presentation should be advertised and open to the public.</p>
<p><b><u>Application for Advanced Degree</u></b></p>	<p>In order to graduate.</p>	<p>The beginning of the semester in which graduation is planned.</p> <p><u>Deadlines vary per semester.</u></p>	<p>No signatures needed.</p>	<p>\$25.00 non-refundable fee</p>

# PhD Students

## PhD students in EEB and GCMB

**PhD Supervisory Committee:** This committee must be formed by the student by the end of the first academic year, and must meet at least annually to discuss and evaluate the student's progress. It is the student's responsibility to call meetings with his/her supervisory committee.

The PhD supervisory committee must have five members (including the primary advisor), and at least two members must be budgeted SBS Graduate Faculty and one member must be external to SBS. Current graduate studies policy stipulates that the external member is a UNL faculty member affiliated with a department other than SBS. A faculty member from another institution may serve as the external member, but non-UNL faculty must be certified by the SBS Graduate Committee and Graduate Studies (see Graduate Studies Bulletin for procedures to appoint adjunct committee members).

**PhD Program of Studies:** Students must submit their Program of Studies to the SBS Grad Committee by the end of their first academic year. The Program of Studies lists all courses that must be completed before the degree is granted, as well as any Research Tool (e.g. computer language or statistical expertise) required by the Supervisory Committee. Typically students discuss their Program of Studies at the first meeting of their Supervisory Committee.

**PhD Preliminary Evaluation:** PhD students must complete the Preliminary Evaluation, administered by the student's Supervisory Committee, **no later** than the end of the third semester. This evaluation is intended to assess the student's mastery of the fundamentals in his/her field and to evaluate his/her potential to conduct doctoral level research. See the specialization requirements for more information on the evaluation. The Supervisory Committee will determine if the student's performance is Satisfactory or Unsatisfactory, and the Faculty Advisor will notify the Graduate Committee in writing of the outcome. If a student's preparation is deemed Unsatisfactory a second Evaluation will be given within six months. A second Unsatisfactory will be grounds for dismissal from the PhD program.

**PhD Comprehensive Exam:** PhD students must take their Comprehensive Exam by the end of their sixth semester (end of their 3<sup>rd</sup> year), and they are encouraged to take this exam by the beginning of their 3<sup>rd</sup> year. The exam is administered by a minimum of four members of the student's Supervisory Committee and examines the student's breadth of knowledge and understanding as it pertains to his/her general research area.

The exam will have two portions:

*Written Portion:* The student will write a proposal using a NIH or NSF grant proposal format. The student will propose a research topic that must be pre-approved by their Supervisory Committee or Faculty Advisor. The written proposal will be provided to the Supervisory Committee no later than two weeks prior to the scheduled oral component of the exam.

*Oral Portion:* The oral exam will cover focal areas identified *a priori* by the members of the Supervisory Committee and more specific questions relating to the written portion of the exam. Upon request, each member of the Supervisory Committee will provide focal areas of questioning and/or reading materials for the oral exam no later than four weeks prior to the exam.

Immediately following the oral portion of the exam, each member of the Supervisory Committee will vote to pass or fail the student. A majority vote is required for the student to pass. The Faculty Advisor will notify the Graduate Committee in writing of the outcome. If the student fails the examination, a second chance will be offered within 6 months. A second failure will be grounds for dismissal from the PhD program.

**Admission to Candidacy:** Once the student completes his/her research tool (if any) and passes his/her Comprehensive Exam he/she advances to candidacy. The Candidacy form is typically completed at the Comprehensive Exam.

**PhD Final Oral Examination:** The student presents a public talk describing his/her dissertation research. A closed door examination by the Supervisory Committee follows. The student passes the Final Oral Exam if no more than one member of the Supervisory Committee votes to fail the student. The Faculty Advisor will notify the Graduate Committee in writing of the outcome. If the student fails the examination, a written description of what the student must do before taking another exam must be filed with the Graduate Committee (see Graduate Studies Bulletin for more details).

**Excerpts from the Graduate Bulletin** [http://bulletin.unl.edu/graduate/Doctoral\\_Degree\\_Requirements](http://bulletin.unl.edu/graduate/Doctoral_Degree_Requirements)

**Requirements for the Degree of Doctor of Philosophy** (applies for a major in Biological Sciences)

### **Academic Residency Requirements**

The Office of Graduate Studies has established an academic residency requirement for the purpose of ensuring that the doctoral program should be reasonably compact, continuous, and cohesive; and that a substantial portion be in fact done at and under close supervision by the University. The academic residency requirement is part of the student's approved program.

For a student beginning a doctoral program in the University of Nebraska system with a Bachelor's degree, the academic residency requirement for the PhD is 27 hours of graduate work within a consecutive 18-month period or less, with the further provision that 15 of these 27 hours must be taken after receiving the Master's degree or its equivalent.

For a student beginning a doctoral program in the University of Nebraska system with a Master's degree, the academic residency requirement for the PhD is 27 hours of graduate course work within a consecutive 18-month period or less.

For 1) a member of the University staff who is engaged at least half time in instruction or research in their major area, or 2) a person employed in their major field, the residency requirement is 24 credit hours of graduate work within a consecutive two-year period with the further provision that they take at least 12 of these after receiving the Master's degree or its equivalent. For important restrictions, refer to "University Staff Exemption."

In exceptional circumstances, where it is clear that the purpose of residency will be fulfilled although the above formal conditions are not met, the student's supervisory committee may, with the approval of the Dean of Graduate Studies, designate an alternative procedure for satisfying the residency requirements.

A minimum of three full years of graduate study is normally required to complete a program for the degree of doctor of philosophy. Neither the courses taken nor the time spent in study determines the granting of the degree. It is given primarily for high attainment in some special field of scholarship and for demonstrated power of independent research in a subdivision of this field.

**The time limit on granting the doctoral degree is eight years from the time of filing the student's program of studies in the Office of Graduate Studies.** The Supervisory Committee will determine what course work taken prior to filing of a program of studies, including hours earned toward the Master's degree(s), will be accepted as part of the 90-hour program. The Committee is not obligated to reduce the doctoral program of studies by applying course work taken toward a previously earned Master's degree(s). Prior course work should be assessed in relation to its contribution to framing a research foundation for the doctorate. Each course accepted must be determined to be current and relevant in relation to the desired degree.

Students who have earned a previous doctoral degree at any institution, including the University of Nebraska, may seek additional doctoral degrees. The subsequent doctoral degree(s) may be in the same discipline as the previously earned degree(s), or in a different discipline. However, no graduate credits will be accepted as transfer credit toward a subsequent doctoral program if the course work has been applied toward a previously completed doctoral degree at any institution, including UNL. Course work applied toward a previously earned Master's degree may be considered for transfer to a subsequent doctorate at the discretion of the Supervisory Committee.

### **Appointment of Supervisory Committee**

In order to assure that students are under careful advisement and mentoring throughout their careers, a

**Supervisory Committee is established before a doctoral student has accumulated 45 credit hours** including any transfer hours but excluding research or language tools. Upon recommendation of the departmental or area Graduate Committee in the student's major, the Dean of Graduate Studies appoints, for each student, a supervisory committee of at least four Graduate Faculty. **(While the Graduate College only requires four members on PhD committee, SBS requires a five member committee.)** All professors on the supervisory committee must either be on the Graduate Faculty or be non-Graduate Faculty approved to perform specified Graduate Faculty duties. At least one Graduate Faculty member external to the academic department or area in which the doctorate is to be granted must be included on the committee responsible for supervising the student's doctoral program of studies. The representative of the minor department on the committee may serve as the outside representative. The establishing of a supervisory committee is based upon the student's:

Demonstrated ability in the fundamental subject matter of his/her major field, and professional promise. The minor or related fields, if applicable, will be represented on the committee.

See Doctoral Degree Forms and Deadlines on the Graduate Studies website:  
<http://www.unl.edu/gradstudies/current/degrees#doctoral>

### **Changes to the Supervisory Committee**

If the chair of a PhD supervisory committee leaves the employ of the University or retires, the Office of Graduate Studies must be notified immediately and a change in the supervisory committee made as follows:

- a. Graduate Faculty who have retired and been appointed to emeritus status may co-chair the supervisory committees of doctoral students with a resident Graduate Faculty member.
- b. Retired faculty members not appointed as emeritus, relinquish their Graduate Faculty status and must be replaced on doctoral supervisory committees.
- c. If the student has already achieved Candidacy, the former chair who has left the employ of the University (not through retirement) may be permitted to continue as co-chair of the supervisory committee, with the concurrence of the departmental Graduate Committee and the UNL Dean of Graduate Studies. A second co-chair must be appointed who is a resident Graduate Faculty member.
- d. If the student has not yet achieved Candidacy, a new chair of the supervisory committee who is a resident Graduate Faculty member must be appointed immediately, with the concurrence of the departmental Graduate Committee and the UNL Dean of Graduate Studies.

If a member of the supervisory committee other than the chair leaves the employ of the University or retires, a replacement should normally be appointed who is a resident Graduate Faculty member. Faculty who have been appointed to emeritus status may continue as committee members. In certain circumstances where a special and needed continuing expertise is involved and the staff member is willing to continue serving, he/she may continue as a member of the supervisory committee, with the approval of the Supervisory Committee Chair and the concurrence of the UNL Dean of Graduate Studies.

### **Courtesy Members of Doctoral Supervisory Committees**

(Policy change approved by UNL Graduate Council, 2-12-2009)

The UNL graduate faculty welcomes associations with faculty members from other institutions who might contribute unique expertise to our doctoral programs. These external experts, who must hold a doctoral degree appropriate to the discipline and have academic accomplishments comparable to the criteria for UNL Graduate Faculty, are eligible for appointment as "courtesy" members of doctoral supervisory committees. Courtesy faculty are appointed as voting members of the supervisory committee and must be willing to participate in the

student's doctoral program in a manner consistent with this role. The courtesy member may serve as one of the two appointed readers; but may not serve as committee chair, co-chair, or outside representative.

1. A courtesy association is not granted as a blanket status and must be approved separately for each supervisory committee upon which the individual is nominated to serve.
2. Only one courtesy member may serve on each supervisory committee, and the committee must include a minimum of four members of the University of Nebraska Graduate Faculty.
3. Appointment of a courtesy member is accomplished by the submission of the "Courtesy Committee Member" form signed by the supervisory committee chair and graduate committee chair. A current CV from the courtesy member should be submitted with this form (the CV may be e-mailed to ebachman1@unl.edu).

See Doctoral Degree Forms and Deadlines on the Graduate Studies website:  
<http://www.unl.edu/gradstudies/current/degrees#doctoral>

### **Program of Studies**

Within the semester of its appointment the committee will meet to designate and subsequently to file in the Office of Graduate Studies a complete program of studies, including any language or research tool requirements, and the general area of research for the dissertation. The student's program of study must conform to one of the following plans:

1. The student chooses a major from the list of approved doctoral programs. At least half of the graduate work, including the dissertation, will be done in this field. The remaining work, subject to the approval of the supervisory committee, may include either:
  - a. supporting courses in the same or in related departments, or
  - b. a minor field of study outside of the major department. The minor must include at least 15 semester hours with 6 hours in courses open exclusively to graduate students (900 level or 800 level without 400 level or lower counterparts). It may be taken in any department which has been approved to offer a major leading to a Master's degree. In addition, the minor for the PhD may, in certain departments, be completed in a subdivision of the administrative department. Approved fields of study, which may be selected within each administrative department, must be approved by the Graduate Council for use as a minor and are indicated in this bulletin in the sections of the programs for the respective departments.
2. The student may select a field of study which integrates material offered in two or more departments without meeting the specific major requirements as outlined under 1. Such a program of study must be in an approved interdepartmental area for which a special area Graduate Committee representing the departments concerned has been appointed by the Dean of Graduate Studies.

The committee is not obligated to accept credits beyond the Master's degree which were completed prior to its appointment. At least half of the total program of courses and dissertation research must be completed following submission of the program to the Office of Graduate Studies. Any subsequent change in the program or in the dissertation topic is approved by the supervisory committee and the action reported to the Office of Graduate Studies.

The minimum amount of graduate credit is 90 semester hours, including a dissertation. **Not fewer than 45 semester hours must be completed at the University of Nebraska after the filing of the program of studies.** The PhD program will normally include a minimum of 12 hours and a maximum of 55 hours of dissertation research. The time limit on granting the doctoral degree is eight years from the time of filing the student's program of studies in the Office of Graduate Studies.

**See Doctoral Degree Forms and Deadlines on the Graduate Studies website**

<http://www.unl.edu/gradstudies/current/degrees#doctoral>

**Language and Research Tool Requirement**

There is no uniform language or research tool requirement for UNL Graduate Studies. However, certain departments have specific research tool requirements and/or language requirements, which are explained in the sections of this bulletin describing the program in the department or interdepartmental area.

Prior to admission to Candidacy and at least seven months before the final oral examination the student must have satisfied the language and research tool requirements for their department as noted in the bulletin.

**Comprehensive Examination and Admission to Candidacy**

When a student has substantially completed studies in the doctoral program (PhD, EdD, DMA), he/she must pass a written comprehensive examination, in major and minor or related fields. The written comprehensive examination is not a repetition of course examinations but is an investigation of the student's breadth of understanding of the field of knowledge of which their special subject is a part.

At the discretion of the supervisory committee, the student may also be required to pass an oral comprehensive examination. The oral examination may include the minor or related fields in addition to the major field of study. The supervisory committee arranges for written or oral examinations.

When the student has passed the comprehensive examination, satisfied language and research tool requirements of her/his approved program, and removed any provisional admission requirements, the committee will recommend to the Office of Graduate Studies the doctoral student's admission to Candidacy by filing the Application for Admission to Candidacy for the doctoral degree, noting the dates of completing the comprehensive examination(s). **The application must be filed at least seven months prior to the final oral examination** (dissertation defense).

**Following admission to Candidacy the student must register for at least one credit hour during each academic-year semester until he/she receives the doctoral degree, even if the student has already met the total dissertation hours on their approved program of study. Failure to register during each academic-year semester will result in termination of the program of study.**

**NOTE:** Should the Supervisory Committee determine the student has failed the comprehensive examination, a letter must be submitted by the chair of the supervisory committee to the Dean of Graduate Studies stating the conditions under which the student may attempt another examination, or part thereof, not earlier than the following academic term. Typically, but upon the discretion of the supervisory committee, only two attempts to pass the comprehensive examination will be permitted.

**For the Application for Admission to Candidacy form**, see doctoral deadlines and forms at

<http://www.unl.edu/gradstudies/current/degrees#doctoral>

**Final Examination**

The final examination for the doctoral degree is oral and open to members of both the University community and the public. During the dissertation presentation and general questioning all persons may be present. However, at the end of the public hearing there will be a closed questioning portion of the examination where all persons except the Candidate, doctoral supervisory committee, and invited faculty must be excused. It is given by the supervisory committee after the Candidate's studies have been completed and the dissertation accepted. The committee also determines its character and length. The examination may be devoted to the special field of the dissertation or to the Candidate's general knowledge, or it may be designed to test judgment and critical powers.

The final oral examination for the PhD will not be scheduled unless the chair of the supervisory committee and

at least two other members of the committee are available for the examination. Exceptions may be made only by permission of the Dean of Graduate Studies. In any event, the supervisor of the dissertation must have seen and approved the completed dissertation before the examination will be scheduled.

The final oral examination over the dissertation may be waived only with the unanimous consent of the supervisory committee. The committee reports the results of the final oral examination or the reason for its waiver to the Office of Graduate Studies.

In the event that members of an oral examining committee are not unanimous regarding passing a Candidate, the student is to be approved for the degree if only one examiner dissents. However, in each case, the dissenting member of the committee will be expected to file a letter of explanation in the Office of Graduate Studies.

If a student fails to pass the final oral examination for an advanced degree, his/her committee must file a report on the failure in the Office of Graduate Studies and indicate what the student must do before taking another examination. Another examination may not be held during the same semester or the same summer session in which the student failed.

**See Doctoral Degree Forms and Deadlines** on the Graduate Studies website:  
<http://www.unl.edu/gradstudies/current/degrees#doctoral>

### **Dissertation**

The dissertation is of no fixed length. It should treat a subject from the Candidate's special field, approved by the supervisory committee. It should show the technical mastery of the field and advance or modify former knowledge, i.e., it should treat new material, or find new results, or draw new conclusions, or it should interpret old material in a new light. Each candidate for the degree shall submit with the dissertation an abstract of the same, not exceeding 350 words in length including the title. A guidebook for dissertation preparation is available on the Office of Graduate Studies Web site. For specific formatting guidelines, the Guidebook should be consulted.

**Research activities involving human subjects or live vertebrate animals may not be conducted at the University of Nebraska-Lincoln (UNL) unless the research activities have been reviewed and approved by the appropriate board or committee. The Institutional Review Board (IRB) reviews projects involving human subject research and the Institutional Animal Care and Use Committee (IACUC) reviews the use of animals in research. These reviews are in accordance with Federal regulations and UNL assurance documents to the Office for Human Research Protections (OHRP). The IRB New Protocol Submission form must be completed on-line at <http://nugrant.unl.edu>; the Application to Use Animals is available at <http://research.unl.edu/orr/qa.shtml>. Note that the IRB and IACUC will not review projects already in progress; approval must be secured prior to the initiation of the research. Evidence of IRB/IACUC approval must be submitted at the time the final version of the thesis or dissertation is filed.**

### **Reading Committee**

The dissertation and abstract are reviewed by a reading committee of two members from the supervisory committee, excluding the chair/co-chair. The manuscripts must be presented to members of the reading committee in time to permit review and approval, which must be indicated at least three weeks in advance of the final oral examination. The application for the final oral examination and a rough draft of the title page and abstract must be presented to the doctoral program specialist in the Office of Graduate Studies for preliminary review at least three weeks before the final oral examination.

## **Depositing the Dissertation**

Following the successful completion of the oral examination, the student should consult the instructions received at the time of filing the Application for Final Oral Exam before submission of required items in the Office of Graduate Studies, 1100 Seaton Hall.

Only abstracts/dissertations that meet all published requirements can be approved and stamped for depositing in 318 Love Library. The student must also present to the Dean of University Libraries a signed agreement for the publication of the abstract and processing of the dissertation.

Before the degree is granted, each Candidate pays a processing fee and a fee to cover the cost of publication of the abstract in Dissertation Abstracts International.

## **Summary of Procedure for the Doctor of Philosophy Degree**

This summary of procedure should be studied carefully in connection with the Graduate College calendar. See Doctoral Degree Forms and Deadlines on the Graduate Studies website <http://www.unl.edu/gradstudies/current/degrees#doctoral>.

1. Admission to UNL Graduate Studies by the evaluation of official transcripts presented in person or by mail before registration.
2. Registration after consultation with advisers in major and minor departments.
3. Submission to the Office of Graduate Studies of an Appointment of the Supervisory Committee form approved by the departmental or area Graduate Committee before 45 hours of credit have been accumulated toward the degree.
4. Submission to the Office of Graduate Studies of a Program of Studies form approved by the supervisory committee setting forth the complete plan of study for the degree with a minimum of 45 hours exclusive of language and/or research tools remaining to be taken. The time limit on granting the doctoral degree is eight years from the time of filing a student's program of studies in the Office of Graduate Studies.
5. Satisfactory completion of foreign language or research tool requirements set forth in the approved program and passing of comprehensive examinations in major and minor or related fields when the student's program of courses is substantially completed.
6. Admission to Candidacy for the PhD degree by filing an application in the Office of Graduate Studies of the passing of the comprehensive examinations and the completion of language and research tool requirements (at least seven months before the final oral examination).
7. Filing of an application for the degree at the Office of Registration and Records, 107 Canfield Administration Building. This application is effective during the current term only. It must be renewed at the appropriate time if requirements for graduation are not completed until a later term.
8. Presentation of the dissertation and the abstract to the members of the reading committee in sufficient time for review and approval, which must be obtained at least three weeks before the final examination.
9. At least three weeks prior to the date of the oral examination, presentation to the Office of Graduate Studies of the application for final oral examination and a copy of the title page and abstract for preliminary review.
10. Passing of any required final oral examination.
11. Deposition of the required documents as detailed in the instructions received at the time of filing the application for Final Oral Exam with the Dean of University Libraries after approval by the doctoral programs specialist in the Office of Graduate Studies. Delivery of the Report on the Completion of the Doctoral Degree form, signed by members of the supervisory committee, the Dean of University Libraries, and the Comptroller, to the Office of Graduate Studies. In addition, one bound copy of the dissertation is to be deposited with the student's major department.

## **Graduate Specializations 2017-2018**

### **Ecology, Evolution & Behavior (EEB)**

**Faculty:** Drs. Bachman, Basolo, Brassil, Cressler, DeLong, Fritz, Gardner, Gibson, Hebets, Knops, Lyons, Meiklejohn, Montooth, Pilson, Russo, Shizuka, Storz, Tenhumberg, P. Wagner, W. Wagner, Woodman, Zera & Zink

**Grad Comm Reps:** Drs. Hebets & Tenhumberg

**Courtesy:** Drs. Bevins, Hoagland, Leger, Powell, Powers, Reinhard, Stevens & Wedin

### **Genetics, Cellular and Molecular Biology (GCMB)**

**Faculty:** Drs. Angeletti, Atkin, Avramova, Blum, Brown, Cerutti, Chia, Christensen, Couch, Li, E. Moriyama, H. Moriyama, Nickerson, Osterman, Riekhof, Weaver, Weber, Wood, Yu, C. Zhang & L. Zhang

**Grad Comm Reps:** Drs. Chia & Cerutti

**Courtesy:** Drs. Alfano, Baenziger, Barletta, Benson, Black, Buan, Ciobanu, Clemente, Cui, DiRusso, Fernando, Fromm, Goodman, Hallen-Adams, Herman, Herr, Hutkins, Izard, Ladunga, Mitra, Mower, Osorio, Pattnaik, Petersen, Petro, Ramer-Tait, Riethoven, Schachtman, Staswick, Stone, Van Etten, Walia, Wiebe, Wilson, Xiang & Zhou

### **Plant Pathology (PP)**

**Faculty:** Drs. Adesemoye, Alfano, Everhart, Funnell-Harris, Garcia Ruiz, Giesler, Harveson, Herr, Jackson-Ziems, Mitra, Powers, Steadman, Tatineni, Van Etten, Wegulo, Wilson, Yuen & Zeng

**Grad Comm Rep:** Dr. Mitra

**Courtesy:** Drs. Bradshaw, Drijber, Hallen-Adams, Hein, Kruger, & Nickerson

### **Definitions**

Faculty – Faculty budgeted in either SBS (EEB and GCMB) or Plant Pathology (PP)

Courtesy – UNL faculty budgeted in a Department other than SBS (for EEB and GCMB) or Plant Pathology (for PP). These faculty may serve as faculty advisor to SBS (EEB and GCMB) or Plant Pathology (PP) students.

## **Ecology, Evolution and Behavior (EEB) Specialization Requirements**

The EEB Specialization is composed of faculty members that share interests in ecological and evolutionary processes. Research interests include: animal cognition, aquatic ecology, behavioral ecology, biodiversity, ecotoxicology, evolutionary biology, evolutionary ecology, evolutionary genetics and genomics, evolutionary physiology, parasitology, phylogenetics, physiological ecology, population and community ecology, and theoretical ecology.

Our goal is to develop broadly trained biologists that have both the conceptual tools and expertise necessary to address fundamental ecological and evolutionary research questions. To meet this goal, our graduate curriculum includes a list of suggested core courses for first year students as well as a list of additional courses. This curriculum also includes a required seminar series that focuses on research design and completed research. Seminars and discussion groups relating to more specialized research areas are frequently offered by EEB Faculty.

### **Required Coursework**

Students are expected to register for either the EEB seminar course (BIOS 915E) or the GCMB (BIOS 915A) seminar course in each semester that they are in residence on the UNL campus. The EEB seminar meets weekly, and presentations may include seminars by external speakers and/or EEB students, post docs, or faculty presenting proposed, in progress, or completed work. In addition, MS and PhD defense talks may be given at the EEB seminar. Students are required to present in BIOS 915E every year. In addition, students who receive SBS Special Funds are required to present a poster at the BGSA Symposium the following year.

### **Suggested Coursework**

The coursework for individual students will be tailored to their research interests and should be determined primarily by the student's Supervisory Committee. However, the following three core courses are recommended for all EEB students, and would serve the students best if taken in their first year in the program.

Class	Credit Hours	Typically Offered
Bios 803 – Principles of Evolution	3	F
Bios 804 – Principles of Behavioral Ecology	3	S
Bios 805 – Principles of Ecology	3	S

In addition, each student, in consultation with his/her Supervisory Committee, will determine which additional coursework is appropriate. Some regularly offered courses include:

Class	Credit Hours	Typically Offered
Bios 829 – Phylogenetic Biology	4	F - alternate years
Bios 854 – Ecological Interactions	3	S - alternate years
Bios 897 – Evolutionary Genomics/Population Genetics		Variable
Bios 953 – Advanced Population Ecology		Variable
Bios 955 – Behavioral Ecology		Variable
Bios 959 – Advanced Community Ecology		Variable
Bios 960 – Biosystematics and Nomenclature	3	S - alternate years
Bios 962 – Animal Communication	3	S - alternate years
Bios 924 – Molecular Phylogenetics	3	Variable
Stat 801 – Statistical Methods	4	Variable
Stat 802 – Experimental Design		Variable
Bios 856 – Mathematical Models in Biology	3	F
Bios 877 – Bioinformatics	3	S
Bios 951 – Quantitative Analysis	3	S - alternate years
Psyc 941 – Fundamentals of Research Design and Data Analysis I	3	Variable
Psyc 942 – Fundamentals of Research Design and Data Analysis II	3	Variable
NRES 803 – Ecological Statistics	4	Variable

\*This reflects historical patterns and not necessarily future offerings. The Department cannot guarantee when and if a class will be offered.

#### Additional Expectations

The EEB Specialization expects its graduate students to participate in all of the activities that are designed to enhance their education, training, and interactions with each other and the Specialization faculty. These activities include interacting with visiting speakers and participation in the Biology Graduate Student Association (BGSA) annual student symposium. Students are required to present in BIOS 915E every year. In addition, students who receive SBS Special Funds are required to present a poster at the BGSA Symposium the following year.

## **Genetics, Cell, and Molecular Biology Specialization Requirements**

The GCMB Specialization is composed of faculty members that share interests in Genetics, Cell and Molecular Biology. Research areas are diverse, and include: cell biology, molecular genetics, microbiology, virology, immunology, biochemistry, bioinformatics, animal/plant pathology, genetics, genomics, systems biology, and molecular evolution.

Our goal is to develop broadly trained biologists that have both the conceptual tools and expertise necessary to address fundamental research questions in cell and molecular biology. To meet this goal, our graduate curriculum includes a list of suggested core courses for first year students as well as a list of additional courses. This curriculum also includes a required seminar series that focuses on research design and ongoing research (BIOS 915A). Additionally, GCMB faculty frequently offer seminars and discussion groups relating to more specialized research areas.

### **Required Coursework**

Students are expected to register for the GCMB (BIOS 915A) or EEB (BIOS 915E) seminar course in each semester they are in residence on the UNL campus. The GCMB seminar meets weekly, and presentations may include seminars by external speakers and/or GCMB students, post docs, or faculty presenting proposed, in progress, or completed work. In addition, MS and PhD defense talks may be given at the GCMB seminar.

### **Suggested Coursework**

The coursework for individual students will be tailored to their research interests and should be determined primarily by the student's Supervisory Committee. Three of the following core courses are recommended for all GCMB students, and would serve the students best if taken early in their program.

Class	Credit Hours	Typically Offered*
BIOS 807 Biology of Cells and Organelles	3	S
BIOS 818 Advanced Genetics	3	F
BIOS 820 Molecular Genetics	3	S
BIOS 827 Practical Bioinformatics Laboratory	3	S
BIOS 877 Bioinformatics and Molecular Evolution	3	S

In addition, each student, in consultation with his/her Supervisory Committee, will determine which additional coursework is appropriate. Some regularly offered courses are listed below.

## 1. Genetics, Genomics, and Molecular Biology Related Courses

Class	Credit Hours	Typically Offered*
BIOS 802 Cancer Biology	3	F,S
BIOS 807 Biology of Cells and Organelles	3	S
BIOS 812 Human Genetics	3	F
BIOS 818 Advanced Genetics	3	F
BIOS 820 Molecular Genetics	3	S
BIOS 945 RNA Biology	3	F - alternate years
BIOS 998 Special Topics: Epigenetic Regulatory Mechanisms	3	F - alternate years
BIOC/BIOS 831 Biomolecules & Metabolism	3	F,S
BIOC/BIOS 832 Gene Expression and Replication	3	F,S
BIOC/BIOS 839 Survey of Biochemistry	3	Variable
CHEM/BIOS 932 Proteins	2	F
CHEM/BIOS 933 Enzymes	2	F
CHEM/BIOS 934 Genome Dynamics and Gene Expression	3	F
VBMS/BIOS 964 Signal Transduction	3	S – alternate years

## 2. Bioinformatics, Molecular Evolution, and Systems Biology Related Courses

Class	Credit Hours	Typically Offered*
BIOS 826 Computational Systems Biology	3	F
BIOS 827 Practical Bioinformatics Laboratory	3	S
BIOS 828 Perl Programming for Biological Applications	3	F Variable
BIOS 829 Phylogenetic Biology	4	F
BIOS 856 Mathematical Models in Biology	3	Variable
BIOS 877 Bioinformatics and Molecular Evolution	3	S
BIOS 924 Molecular Phylogenetics	4	Variable
BIOS 942 Genetics, Genomics, and Bioinformatics of Prokaryotes	3	F - alternate years
ASCI 832 Genome Analysis	3	S
ASCI 896 Statistical Genomics	3	S, Variable
LIFE 891 Life Sciences Research: Integrating quantitative computational approaches	3	F,S
STAT 801 Statistical Methods in Research [general statistics]	4	F,S
STAT 842 Computational Biology	3	F
STAT 843 Next-Generation Sequencing and Systems Biology	3	S

### 3. Microbiology Related Courses

Class	Credit Hours	Typically Offered*
BIOS 840 Microbial Physiology	3	F
BIOS 843 Immunology	3	F
BIOS 844 Geomicrobiology	3	F
BIOS 897 Special Topics: Fungal Genetics and Cell Biology	3	Variable
BIOS 940 Microbial Diversity	3	Variable
BIOS 947 Industrial Microbiology and Biotechnology	3	F - alternate years
BIOS 950 Medical Molecular Virology	3	F - alternate years
BIOS 966 Advanced Viral Pathogenesis	3	F - alternate years
BIOS 998 Special Topics: Viral Oncology	3	S - alternate years
AGRO/BIOS 847 Soil Microbiology	3	S
AGRO/BIOS 963 Genetics of Host-Parasite Interaction	3	Variable
FDST 805/BIOS 845 Food Microbiology	3	F
FDST 806/BIOS 846 Food Microbiology Laboratory	2	F
FDST 855 Microbiology of Fermented Foods	2	S
FDST 855L Microbiology of Fermented Foods Laboratory	1	S
FDST 908 Topics in Advanced Food Microbiology	Variable	Variable
PLPT 867 Plant Associated Microbes	4	S - alternate years
VBMS/BIOS 841 Pathogenic Microbiology	3	S
VBMS 852 Molecular Virology and Viral Pathogenesis	3	F - alternate years
VBMS 951 Advanced Molecular Infectious Diseases	3	S

### 4. Plant Biology Related Courses

Class	Credit Hours	Typically Offered*
BIOS 825 Plant Biotechnology	3	F - alternate years
BIOS 871 Plant Systematics	4	S
BIOS 878 Plant Anatomy	4	F - alternate years
BIOC/BIOS 834 Plant Biochemistry	3	Variable
AGRO/BIOS 810 Plant Molecular Biology	3	S
AGRO 919 Plant Genetics	3	F - alternate years

\*This reflects historical patterns and not necessarily future offerings. The Department cannot guarantee when

and if a class will be offered.

### **Additional Expectations**

The GCMB Specialization expects its graduate students to be involved in all of the activities that are designed to enhance their education, training, and interactions with each other and the Specialization faculty. These activities include interacting with visiting speakers and participating in the Biology Graduate Student Association (BGSA) annual student symposium, and attending other research forums, such as the SBS and Center for Biotechnology Seminar Series, Plant Science Innovation Symposium, Nebraska Center for Virology Symposium, etc.

### **PhD Preliminary Evaluation**

The specific format should be determined by the Supervisory Committee. Typically, students prepare a written proposal consisting of: Aims, Background/Significance, Preliminary Data (if obtained) and Experimental Design describing their proposed research project. The student then prepares a short presentation to defend that proposal in an oral examination that is administered by the Supervisory Committee.

Alternatively, the Supervisory Committee can administer various questions in oral or written form that cover several areas of the students program of study and research area. These examinations are designed to assess the fundamental knowledge of basic concepts in genetics, cell and molecular biology.

# **Plant Pathology**

## **Specialization Requirements**

The Plant Pathology Department offers MS and PhD degrees as parallel specializations in Biological Sciences and Agronomy. Students in the Plant Pathology Department's graduate program engage in research that contribute to the Department's mission of providing effective and environmentally-responsible solutions to plant disease problems. The research activities can be grouped into four broad areas: (i) host-pathogen interactions, (ii) microbial ecology, (iii) diagnostics, and (iv) plant health management.

### **MS Written Comprehensive Examination**

MS students must take a comprehensive examination within seven months, but at least one month before, the thesis defense. The form of the exam is up to the discretion of the committee.

### **PhD Preliminary Exam**

The exam will be administered by a three member Preliminary Exam Committee. The advisor will not participate in the exam. The Committee will request the student to write a grant proposal in an area different from his/her dissertation research and evaluate the proposal. The decision as to whether the student passes or fails the exam will be based a majority vote of the Committee members. Students who fail the exam may repeat the exam no sooner than three months and no later than six months after the exam. Results of the examination will be transmitted to the Graduate Committee of the degree-administering unit and used by the advisor and Supervisory Committee in planning the student's graduate program.

### **PhD Comprehensive Examination**

The goal of this exam is to evaluate comprehensive understanding of plant pathology. Any method that will accomplish the goal (e.g., written and/or oral questions from faculty; or writing and defending a grant proposal) and is agreed upon by the student's supervisory committee can be used.

### **Required Coursework**

Biology of Plant Pathogens (PLPT 801) and Ecology and Management of Plant Pathogens (PLPT 802) are required for all Plant Pathology graduate students. These courses are offered every year for three credits each, with Introductory Plant Pathology (PLPT 369 or equivalent) and Biochemistry as prerequisites. Plant Disease Field Tour (PLPT 891) is also required for all Plant Pathology graduate students. The course is offered every year for one credit hour.

For PhD students in Plant Pathology, one of the following courses is required: Phytopathogenic Nematodes (PLPT 866), Plant Associated Microbes (PLPT 867), Genetics of Host-Parasite Interaction (PLPT 963) or Plant Virology (PLPT 965).

**Additional Requirements**

Plant Pathology graduate students are required to present a minimum of one seminar per year.

**Plant Pathology Graduate Course Requirements:**

<b>Graduate Course</b>	<b>MS Students</b>	<b>PhD Students</b>
PLPT 801 Biology of Plant Pathogens (3 cr hrs.)	Required – 3 hrs.	Required – 3 hrs.
PLPT 802 Ecology & Management of Plant Pathogens (3 cr hrs.)	Required – 3 hrs.	Required – 3 hrs.
PLPT 891 – Plant Disease Field Tour (1 cr hr.)	Required – 1 hr.	Required – 1 hr.
PLPT 968 Plant Pathology Seminar (1 cr hr.)	Required – 2 hrs. for SBS students and 1 hr. for AGRO students	Required – 3 hrs. for SBS students and 2 hrs. for AGRO students
Agronomy seminar	Required – 1 hr. for Agronomy students only	Required – 1 hr. for Agronomy students only
ONE course from these for PhD:		Required – 3-4 hrs.
PLPT 866 Phytopathogenic Nematodes (3 cr hrs.)		
PLPT 867 Plant Associated Microbes (4 cr hrs.)		
PLPT 963 Genetics of Host-Parasite Interaction (3 cr hrs.)		
PLPT 965 Plant Virology (3 cr hrs.)		
One AGRO course in: crop ecology, breeding, plant physiology, or soil science (3 cr hrs.)	Required – 3 hrs. for Agronomy students only	Required – 3 hrs. for Agronomy students only
Guidance Interview	During first semester	During first semester
TOTAL	9 hrs. for SBS students	13-14 hrs. for SBS students