Neuroscience Graduate Program

Degree Requirements Booklet

Fall 2010
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Neuroscience (NEURS)

Campus Location
The curriculum of the Neuroscience Intercollege Graduate Degree Program is designed to allow flexibility so that students may start the Fall semester of their first year at either campus and move to the other campus for the Spring semester and either stay there or move back to their original campus after the third rotation, depending on their final choice of a thesis advisor. Information on Neuroscience faculty members, their research projects and their campus location can be found at [http://www.huck.psu.edu/education/neuroscience/faculty-and-research](http://www.huck.psu.edu/education/neuroscience/faculty-and-research)
All students need to inform the Neuroscience Co-Chairs of their plans for the Spring semester by November 1 of the Fall semester.

Advisors

*Faculty Advisor*
The Co-Chair on each campus serves as the faculty advisor for students entering the program. Each Chair is available for specific questions about the program and for more general discussions of a student's progress. The Director also signs course registration forms during the first year. After a student has selected a thesis advisor, that faculty member will assume these responsibilities.

*Thesis Advisor*
Students are expected to choose their thesis advisor and permanent laboratory home by the end of the first academic year. A student may choose any member of the Neuroscience Graduate faculty, provided they are willing to accept the student and provided that space and resources are available in their laboratory. Usually, the student will have rotated with this faculty member and is familiar with the laboratory and research program.

Academic Requirements

*Courses*
The coursework in the Neuroscience option consists of required courses, electives, and other requirements (biostatistics, professional development, and ethics).

<table>
<thead>
<tr>
<th>University Park Campus</th>
<th>Hershey Campus</th>
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<tbody>
<tr>
<td><strong>Year 1 Fall:</strong></td>
<td><strong>Year 1 Fall</strong></td>
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<tr>
<td>BIOL 469. Neurobiology (3)</td>
<td>NEURO 520. Cell. and Molec. Neuroscience (3)</td>
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<tr>
<td>CHEM 597. Neurochemistry <em>or</em> BMB 401 Biochemistry (3)</td>
<td>NEURO 597. Neurochemistry (3)</td>
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<tr>
<td>IBIOS 596. Laboratory Rotations (3) (1/ea)</td>
<td>PHSIO 503. Cellular Physiology (1)</td>
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<td></td>
<td>NEURO 530. Professional Development (1)</td>
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<td></td>
<td>IBIOS 596. Laboratory Rotations (2) (1/ea)</td>
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<tr>
<td>Register for CITI on-line RCR course</td>
<td>Register for on-line RCR course</td>
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<td><strong>Year 1 Spring:</strong></td>
<td><strong>Year 1 Spring:</strong></td>
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<tr>
<td>BIOL 470. Functional and Integrative Neurosci. (3)</td>
<td>NEURO 521. Systems Neuroscience (3)</td>
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<td>Course Code</td>
<td>Course Title</td>
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<tr>
<td>BBH 496</td>
<td>Neuroanatomy, Behavior and Health (3)</td>
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<td>NEURO 511</td>
<td>Human Neurobiology (3)</td>
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<tr>
<td>BIOL 426</td>
<td>Developmental Neurobiol (3) or BIOL 479. General Endocrinology (3) or BIOL 497. Mol. Basis of Neurol. Disease (3) or BIOL 404. Cell. Mech. of Vert. Physiol. (3) or BMB 598G. Mol. Biol. of Animal Dev. (3)</td>
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<tr>
<td>HDFS 597</td>
<td>Techniques in Human Neuroscience.</td>
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<td>OR</td>
<td>PSY 511 Foundations of Social, Cognitive, and Affective Neuroscience</td>
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<td>OR</td>
<td>E SC 597F Introduction to Neural Engineering: Fundamentals of Interfacing with Brain</td>
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<td>OR</td>
<td>E SC 597A (PHYS 597A) Neural Control Engineering (3)</td>
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<td>OR</td>
<td>KINES 565: Neurophysiological Basis of Movement.</td>
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<td>OR</td>
<td>KINES 497 The Neurobiology of Motor Rehabilitation in Stroke.</td>
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<tr>
<td>IBIOS 596</td>
<td>Laboratory Rotation (1)</td>
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<td>IBIOS 5XX</td>
<td>Professional Development (1)</td>
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<tr>
<td>Candidacy Examination: End of Spring Semester</td>
<td>Candidacy Examination: End of Spring Semester</td>
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<td>Year 2 Fall:</td>
<td>Year 2 Fall:</td>
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<tr>
<td>IBIOS 598A Seminars in Neuroscience (1)</td>
<td>NEURO 522. Seminars in Neuroscience I (2)</td>
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<tr>
<td>IBIOS 591. Ethics in the Life Sciences (1)</td>
<td>IBIOS 591. Ethics in the Life Sciences (1)</td>
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<td>STAT 500 (or 501) Applied Statistics (3)</td>
<td>HES 515. Introduction to Biostatistics (3)</td>
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<td>IBIOS 602. Superv. Exp. in College Teaching (1)</td>
<td>IBIOS 602. Superv. Exp. in College Teaching (1)</td>
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<td>XXXX xxx. Elective course (3) *</td>
<td>XXXX xxx. Elective course (3) *</td>
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<td>IBIOS 600. Thesis Research (2)</td>
<td>IBIOS 600. Thesis Research (2)</td>
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<td>Year 2 Spring:</td>
<td>Year 2 Spring:</td>
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<tr>
<td>IBIOS 598A Seminars in Neuroscience (1)</td>
<td>NEURO 523. Seminars in Neuroscience II (2)</td>
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<td>Elective (3)</td>
<td>Elective (1-3)</td>
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<tr>
<td>IBIOS 600. Thesis Research (6)</td>
<td>IBIOS 600. Thesis Research (6)</td>
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<tr>
<td>IBIOS 602. Superv. Exp. in College Teaching (1)</td>
<td>IBIOS 602. Superv. Exp. in College Teaching (1)</td>
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<tr>
<td>Comp. Exam: End of Spring Semester</td>
<td>Comp. Exam: End of Spring Semester</td>
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<td>Years 3-5</td>
<td>Years 3-5</td>
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<tr>
<td>IBIOS 601. Thesis Preparation (0 credits)</td>
<td>IBIOS 601. Thesis Preparation (0 credits)</td>
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<tr>
<td>IBIOS 595. Internship (1) (optional)</td>
<td>IBIOS 595. Internship (1) (optional)</td>
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<td>Thesis Defense</td>
<td>Thesis Defense</td>
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(* Electives
Students are required to take a minimum of three (3) credits of elective courses during the first two years in addition to the required courses listed above. This elective course is typically taken (as listed) in the Fall semester of the 2nd year. Elective courses at UP include any 400 and 500 level courses pending approval by the Advisor and the Co-Chair - available elective courses vary from year to year.
**Competence in Written and Spoken English**

An English competency requirement must be satisfied by non-native English speakers before any teaching duties are assigned, as prescribed by the Graduate School. All entering international students, whether or not they hold a Teaching Assistantship, will be required to take a Test of Spoken English (TSE), which is administered by the University’s Center for English as a Second Language (ESL). A score above 250 on the TSE satisfies the ESL requirement; students scoring under 250 will be required to take courses to improve their spoken language and to retake the test before being allowed to teach.

The Graduate School requires that all Ph.D. candidates demonstrate high-level competence in the English language, including reading, writing and speaking. At University Park, competence in written and spoken English is assessed as part of the candidacy exam. At Hershey competence is assessed in the Professional Development course [NEURO 530]. Passing these courses satisfies this requirement. In the event of failure, the Option Director will recommend a program for improvement and subsequent re-examination.

**Supervised Experience in College Teaching**

A two-semester teaching requirement will be satisfied during the second year in residence. The Supervised Experience in College Teaching booklet lists the courses available and the teaching duties at University Park. Students are asked to prioritize their top three course selections prior to official assignment. Teaching at Hershey is arranged by the Co-Chair.

**Grade-Point Average/Unsatisfactory Scholarship**

Students are required to have a minimum grade-point average of 3.0 for doctoral candidacy, admission to the comprehensive examination, thesis defense, and graduation. One or more failing grades or a cumulative grade-point average below 3.0 may be considered evidence of unsatisfactory scholarship and be grounds for dismissal from the University [See http://www.psu.edu/bulletins/whitebook/$gradreqs.htm].

**Responsible Conduct of Research Training Requirement: NEW for Fall 2009!**

Starting in Fall 2009, all new students in the Neuroscience graduate program must complete an online Responsible Conduct of Research (RCR) training course during their first year. The online course is offered through the CITI (Collaborative Institutional Training Initiative) Program and supplements the in-class, discussion-based RCR training provided in IBIOS 591, Ethics in the Life Sciences, a required 1-credit course typically taken during the second year. Together, these two courses satisfy RCR training requirements mandated by Penn State’s SARI (Scholarship and Research Integrity) Program, an RCR initiative organized through the Office for Research Protections (administrative unit within the Office of the Vice President for Research).

First year students should register for the online CITI RCR course as soon as possible in the Fall semester. To register, go to the SARI Program, Online Training Program page (http://www.research.psu.edu/training/sari/program) where you will find instructions and a link for the CITI Program (http://www.citiprogram.org/). Select Pennsylvania State University as the participating institution and register for EITHER the CITI Biomedical Science course (for most students) or the CITI Human Subject Participation course. The latter is suitable for students who strongly anticipate doing thesis research with human subject participants; it meets both general (SARI) RCR requirements and specific RCR training required by the Institutional Review Board (IRB) for Human Participants Research at Penn State. Whichever course is chosen, students must work on their own to complete the course modules and pass the on-line quizzes. All modules must be completed by the end of the first Spring semester; and a copy of the student’s Completion Report must be submitted to the Program administrative office before June 15th.

**Laboratory Rotations**

Students at UP undertake three 4-week laboratory rotations during the Fall semester. Students at Hershey undertake three 6-week laboratory rotations, two in the Fall semester and one in the Spring. The purpose of these rotations is to provide students with the opportunity to become acquainted with different projects, laboratory
environments and techniques to allow an informed choice of a thesis project and advisor. The rotation advisor will provide the student with a defined project and clear expectations as to the amount of work involved and the work schedule; the student should also meet regularly with the advisor to discuss the progress of the rotation.

Students may choose any member of the Neuroscience Graduate Faculty for a rotation provided the faculty member is looking for additional students. If a particular project interests you, make an appointment to discuss the rotation project with the faculty member. The Chair will be there to help and provide guidance to narrow your choices.

Candidacy Examination
The purpose of the Candidacy Exam is to establish that the student has acquired sufficient proficiency in the discipline of Neuroscience for admission to Candidacy for the Doctoral Degree. The Candidacy Exam is taken at the end of the first year. As prescribed by the Graduate School, students must have a minimum grade-point average of 3.0 to be eligible to take the Candidacy Examination.

Format
The Candidacy Examination consists of written and oral components and is administered by the Neuroscience Curriculum Committee, which solicits propositions from program faculty and assigns oral examiners. For the written component, students are asked to defend or refute a general proposition in an area of neuroscience: students are provided with a list of propositions and asked to select two within 2 days. The written paper (15 pages) is due 14 days later and is graded by two to three faculty members who are experts in the subject area. The oral examination is based on topics in neuroscience covered in the first year courses. This examination is administered by faculty representatives of the first-year neuroscience courses.

Evaluation
Students are judged on their combined performance in the written and oral portions of the exam. In the event of failure, the Neuroscience Option Steering Committee will determine whether the student may take another examination.

Doctoral Committee
In the Fall of the second year in the program, as soon as possible after the student has passed the candidacy examination, the student will form a doctoral committee in consultation with the thesis advisor. The doctoral committee consists of four or more members of the Graduate Faculty and includes at least two members in the major field (i.e., neuroscience). The “outside” committee member may be a member of the Neuroscience Intercollege Graduate Degree Program but must be from a different department than the student’s thesis advisor. The committee is usually chaired by the student's thesis advisor, except in rare circumstances. [Detailed policy on doctoral committees can be found in the introduction to this booklet and in the Graduate Programs Bulletin: http://www.psu.edu/bulletins/whitebook/Gradreqs.htm]

The doctoral committee provides general guidance for the student and administers the Comprehensive Examination and Thesis Defense. Committee members should be knowledgeable and interested in the general area of the proposed research. Students consult with their advisor when choosing the members of their thesis committee.

It is recommended that the student meet with the doctoral committee at least once each year. Typically committee meetings occur following the student’s annual presentation in the Neuroscience Discussions (HMC) or Neuroscience Club (UP) series. It is the student’s responsibility to call for and organize these meetings. Students are expected to document progress on their thesis research and their future plans in writing for their committee.
Comprehensive Examination

The Comprehensive Exam is designed to test the student's maturation "from a consumer of knowledge to a generator of knowledge". This exam is usually taken at the end of the second year and consists of a written research proposal followed by an oral examination. The Comprehensive Examination is administered by the student's doctoral committee. It is a rule of the Graduate School that students must have a minimum grade-point average of 3.0 to be eligible to take the Comprehensive Examination. The student must also have satisfied the English competence requirement and should have completed all required coursework. The oral examination must be formally scheduled by the Graduate School, which requires three weeks' notice.

Written Proposal

The proposal may be on any topic, including the student's prospective thesis research, and follows the format of a NIH Predoctoral Fellowship application. The topic of the proposal and the Specific Aims must be agreed upon by the student and his/her thesis advisor. After agreeing to the topic and wording of the Specific Aims, the student's advisor should have as little to do with the proposal as possible. This means no verbal or written communication, no access to grant proposals, and as little interaction with other people in the laboratory other than what is needed to continue ongoing experiments. Obviously, the student is free to utilize any published (or in press) papers that are available, but the logic, experimental design, and writing must belong entirely to the student. The written proposal must be completed and delivered to the members of the doctoral committee at least one week before the oral examination. It should be emphasized that this proposal need not correspond to the student’s intended dissertation research, although it usually does. The purpose of the exam is to test the student’s ability to develop a coherent research plan and support that plan with logical arguments, supported by literature.

Oral Examination

Students are expected to present the rationale and general approach of their proposal (approx. 20 minutes), followed by an oral examination by the committee on the proposed experiments, predicted results, interpretation of data, and knowledge of relevant background material.

Evaluation

Students are judged on their combined performance in the written and oral portions of the exam. A favorable vote of at least two-thirds of the committee is required for passing. In the event of failure, the examining committee will determine whether the student may take another examination.

Dissertation & Final Oral Examination

Completion of the requirements for a Ph.D. degree in the Neuroscience Intercollege Graduate Degree Program entails the preparation of a dissertation (written thesis), a final oral examination (thesis defense), and formal acceptance of the thesis by the student's doctoral committee.

Thesis Preparation

The Graduate School has strict guidelines for the preparation and format of the written thesis; see the Graduate Programs Bulletin [http://www.psu.edu/bulletins/whitebook/$gradreqs.htm] or the thesis guideline [http://www.gradsch.psu.edu/current/thesis.html], for details. Extensive consultation with the thesis committee is strongly encouraged: it is expected that the student should distribute one or two drafts of the dissertation to committee members for review and critique prior to the defense. Students should plan to provide a first draft of the dissertation no less than 2 months before the anticipated date for the final oral examination. The goal is that the dissertation should be in final form for the oral examination.

Oral thesis defense

The final oral examination consists of a public presentation of the thesis research, followed by a closed meeting with the student's doctoral committee. The examination should be scheduled after the student has fulfilled all of the graduate school requirements for the degree; three weeks' notice is required by the Graduate School for scheduling this examination. The dissertation should be delivered to the members of the doctoral committee two
weeks before the defense. A favorable vote of at least two-thirds of the thesis committee is required for passing
the final oral examination.

Thesis Acceptance
This is the final step of the process: the thesis must be accepted, as indicated by the signatures of two-thirds of the
doctoral committee and the program director.

Miscellaneous

Internship
The internship experience is optional. Typically after the second year in residence, students can spend a summer
in an internship at a medical center, government laboratory or in an industrial environment. The time frame for
the internship is negotiable with the Thesis Advisor and Co-Chair.

Student Presentations
Students beyond their first year in the program will be required to give a presentation of their research each year
in the Neuroscience Club (UP) or Neuroscience Discussions (HMC) series. This is an informal presentation
intended to keep the faculty and fellow students apprised of progress in research and to provide practice in
presentation. The students are advised to use this opportunity to inform the thesis committee of their research
progress.

Attendance
It is a program requirement that all Neuroscience Graduate Students attend ALL Neuroscience and Huck
Institutes’ Seminars.

Governance
Neuroscience is governed by the Neuroscience Advisory Committee on each campus. The committees for this
academic year consist of:

University Park Campus
Victoria Braithwaite, Ph.D., Associate Director, Penn State Institute for Neuroscience
Ping Li, Ph.D., Prof. of Psychology, Linguistics, and Information Sciences and Technology
Robert Sainburg, Ph.D., Prof. of Kinesiology and Neurology

Hershey Campus
Robert Milner, Ph.D., Co-Director, Professor of Neural & Behavioral Science
Robert Bonneau, Ph.D. Assoc. Prof. of Microbiol. & Immunol.
John Ellis, Assoc. Prof. of Psychiatry & Pharmacology
Kathryn LeNoue, Prof. of Cellular and Mol. Physiol.
Susan Grigson, Ph.D. Assoc. Prof. of Neural & Behav. Science
Hui-Lin Pan, Ph.D. Prof. of Anesthesiology
Chester Ray, Ph.D. Assoc. Prof. of Medicine
Ian Simpson, Ph.D. Prof. of Neural & Behavioral Science
IBIOS 590. HUCK INSTITUTES’ COLLOQUIUM (2) Students typically take this course in the Fall and Spring semesters of their first year. In Colloquium, students are introduced to a wide variety of topics of contemporary and future importance in the life sciences. A particular focus is placed on topics where science is likely to impact on society (and society on science). Topics are drawn from the area introduced by the speaker and can span the entire spectrum from basic research to the social, legal, moral and ethical implications of the science. A significant challenge in Colloquium is to organize and coordinate a presentation using contemporary presentation software, such as PowerPoint, in an environment in which part of the audience is present at a remote site. Students are required to attend the lectures and the dinners following the lectures. Students also participate in the group presentations during discussion sessions and submit written reports. Reports may be submitted to the co-chairs of the graduate program/option who may add them to the student’s permanent record. Students receive A-F quality grades.

IBIOS 591. ETHICS IN THE LIFE SCIENCES (1) Students examine integrity and misconduct in life sciences research, including issues of data collection, publication, authorship, and peer review. Students receive A-F quality grades.

IBIOS 595. INTERNSHIP (1, optional) For students interested in exploring academic, government, medical, law, or business corporate approaches to research. This is an external work assignment relevant to individual research or career goals. Students receive a R (satisfactory/passing) or U (unsatisfactory/failing). Only R credits are counted for credit totals. Students typically participate in an internship the summer of their first year. Contacts, positions, applications, course registration, course requirements, and grading are processed through the Eberly College of Science Cooperative Education Program (814-865-5000). Additional credits of IBIOS 595 are at the expense of the student. Interested Huck Institutes’ graduate students are to discuss the opportunity with their graduate program/option chair and/or their faculty advisor to help determine the best timing for this experience.

IBIOS 596. INDEPENDENT STUDIES: LABORATORY ROTATIONS (1-3 per semester pending graduate program) For students exploring potential Ph.D. projects and faculty advisors. Students receive a R (satisfactory/passing) or F (unsatisfactory/failing). Only R credits are counted for credit totals.

IBIOS 600. THESIS RESEARCH (1-9 per semester pending graduate program) For students who have been matched with a faculty advisor AND have not taken/passed their comprehensive exams. Students may receive A-F grades or R/F grades at any time. By the time students pass their comprehensive exams, no more than 12 credits worth of IBIOS 600 may have the A-F quality grade.

IBIOS 601. THESIS PREPARATION (0 per semester) For those students who passed their comprehensive exams. This course appears on the transcript but does not have any grade or credit associated with it.
IBIOS 602. SUPERVISED EXPERIENCE IN COLLEGE TEACHING (1) Students receive either a lecture, lab, or recitation class to help teach. Students also participate in the Huck Institutes teaching assistant training sessions and receive A-F grades on their transcripts from their faculty course supervisors. Please note that these grades are not computed in with the overall GPA. International graduate students must pass an English proficiency exam before any teaching duties are assigned.

English Requirement for International Students
The English Requirement for International students is that prescribed by the Graduate School. Depending on the graduate program, all entering international students, whether or not they hold a Teaching Assistantship, will be required to take a Test of Spoken English (TSE) which is administered by the University's Center for English as a Second Language (ESL).

Given at the beginning of fall and spring semesters, international students are required to pre-register for the TSE. The test scores from the TSE are posted on the University's Administrative Information System (AIS) computer. Below is the course of action for the various TSE score ranges.

- > 250 approved for teaching and the ESL requirement will be satisfied.
- 230-249 required to schedule and pass ESL 118G.
- 200-229 required to pass ESL 117G*. These students will not be permitted to teach in a classroom situation, and may instead be assigned to grading and/or proctoring duties.
- <200 required to schedule and pass with the grade of A ESL 115G, before ESL 117G*. These students will not be permitted to teach in a classroom situation, and may instead be assigned to grading and/or proctoring duties.

* At the end of this course, students are re-tested. Based upon these test results, students are either approved for teaching, placed in a subsequent ESL course, or asked to retake the course.

Students, who are required to enroll in ESL courses, must complete the ESL requirement by the end of the second semester of residency. Students who fail to satisfy this requirement may be terminated from the respective graduate program, at the discretion of the graduate program chair.

Safety Training Sessions / Examinations
Within the first semester of residence, all students are required to take/pass the radioisotope safety and chemical waste disposal training sessions offered at the respective campus.

Grade Point Average
Credit hours are earned only for the grades A, B, and C. However, all A and F grades are included in the computation of the grade point average. Grade points are assigned as follows:

A = 4 (above average graduate work)
B = 3 (average graduate work)
C = 2 (below average graduate work)
D = 1 (failing graduate work)
F = 0 (failing graduate work)
Grades D and F are not acceptable for graduate credit. If a course is repeated, then both grades are used in computing the cumulative grade point average.

**Unsatisfactory Scholarship**

Students are required to have a minimum grade-point average of 3.0 for the doctoral candidacy examination, admission to the comprehensive examination, thesis defense, and graduation. One or more failing grades, a cumulative grade-point average below 3.0, or failing any of the examinations may be considered evidence of unsatisfactory scholarship and be grounds for dismissal from the University (see the Appendix III of the Graduate Programs Bulletin www.psu.edu/bulletins/whitebook/$appendices.htm).

**Assistantships and Student Status**

Students with teaching or research graduate assistantships must be registered as full time students to maintain stipend eligibility. Full time status is considered either a minimum of nine credits each fall and spring semester (pre-comprehensive exam) or XXX 601 (0 credits, post-comprehensive exam). The assistantship appointments typically originate with the department of the faculty advisor. If no faculty advisor has been identified, as likely the situation with first year doctoral students, students should consult with their respective Graduate Program Chair.

**Thesis Submission and Exit Interview**

Upon completion of the degree, students are to provide the Graduate Program with a paper copy of their thesis. Students also participate in both the University and Huck Institutes’ Exit Interview Process. For the latter, students may meet with the Graduate Program Chair or appropriate representative.

**Activate Intent to Graduate**

Students must present their thesis in accordance with the Penn State University guidelines as described in the THESIS GUIDE Requirements for the Preparation of Master's and Doctoral Theses*. Current copies can be obtained from the Thesis Office:

115 Kern Building  
University Park, PA 16802  
Phone: 814/865-5448  
Web site: http://www.gradsch.psu.edu/gs_overview/thesisguide

At the beginning of the semester that students wish to graduate, they are to either:

1. access eLion via [www.eLion.psu.edu](http://www.eLion.psu.edu), if in the PSU computer system  
or
2. call Graduate Enrollment at 1-814-865-1795, if not in the PSU computer system

**Internships (optional)**

As members of the Huck Institutes of the Life Sciences, all graduate students may participate in a three month internship in academia, industry, or government and receive credit on their transcript by enrolling in IBIOS 595 (1). Non-traditional settings are also available. Students interested in this opportunity should initiate discussion early on with their advisor and Graduate Program Chair to help determine the best timing for this experience (typically the first or second summer).

**Teaching**

Depending on the graduate program, teaching experience may be required or optional. For a teaching experience beyond a departmental funding means or as a requirement, the Huck Institutes of the Life Sciences Supervised Experience in College Teaching Booklet lists courses available and corresponding
teaching responsibilities at the respective campuses. Besides an opportunity to develop teaching skills in a classroom setting, students also participate in the Huck Institutes teaching assistant training sessions and receive credit on their transcript by signing up for IBIOS 602 (1). Students interested in this opportunity should initiate discussion early on with their advisor and Graduate Program Chair to help determine the best timing for this experience.

**Doctoral Thesis Committee Composition**

According to the Graduate Degree Programs Bulletin published by the Graduate School regarding Doctoral Committees: (http://www.psu.edu/bulletins/whitebook/gradreqs.htm)

- 4 person minimum of approved PSU Graduate Faculty.
- 2 members must be inside the major and 1 member must be outside the major. Note - the outside member must be member of the approved PSU Graduate Faculty. The outside member for intercollege graduate programs may be inside the major but committee membership must have representation from more than one department. The outside member may not be a co-funded faculty from the same department, have budgetary ties, or conflict of interest (aka co-author paper) with any of the other committee members.

- A person not affiliated with PSU may be added as a special member (beyond the 4 members of the approved PSU Graduate Faculty) upon recommendation of the head of the program and approval of the graduate dean. A memo plus the individual's C.V. must be drafted with approval signature spaces for the Graduate Program Chair plus Ms. Cynthia Nicosia (Director, Graduate Enrollment).

- Have committee chair or one of the co-chairs be a member of the approved PSU Graduate Faculty. Typically this is the faculty advisor or someone in the graduate program.

- The doctoral candidate and three committee members must be physically present for the comprehensive exam and defense. No more than one person may be present via telephone. Telephone or video conference arrangements must be approved by the Dean of the Graduate School. A form letter is available for this special request.

- Need approval of 2/3 of the committee members for passing comprehensive exam and defense dissertation.

- **Need to submit paperwork 3-4 weeks prior to your scheduled comprehensive exam and defense. Please contact the appropriate staff member:**
  - **Hershey:**
    - Lori Coover H179 Hershey Medical Center; 717-531-1045; ljc11@psu.edu
  - **University Park:**
    - Janice Kennedy 101 Life Sciences Bldg.; 814-865-3155; jkk5@psu.edu
• Please note- Graduate Programs may have additional committee composition criteria.
Masters (M.S.) Degree

Masters students must have a minimum of 30 credits and a 3.0 overall GPA (see Graduate Degree Programs Bulletin (http://www.psu.edu/bulletins/whitebook/gradreqs.htm)

If pursuing a masters thesis option, up to 6 XXX 600 credits may be A-F graded and 12 credits need to be in the major at the 400-600 level (excluding XXX 600). The students select a thesis committee (upon consultation with faculty advisor), write a thesis, and defend their work.

If a Graduate Program offers a non-thesis option, graduate students should consult with their chair for details. 18 credits need to be in the major at the 500-600 level.

If pursuing a masters non-thesis option, the student must have a first authored manuscript (based on his/her research) that has been either accepted and/or published in a peer reviewed journal. 18 credits need to be in the major at the 500-600 level. The manuscript is given to at least the faculty advisor and the Option Chair for evaluation.

IBIOS 595 (Internship) and IBIOS 596 (Rotations) credits all count toward the 30 credits. However, any IBIOS 602 (Teaching) credits do not count toward the 30 credits. If all course credits and requirements are met, students do not have to be registered for classes while writing and/or defending their work.

Activate Intent to Graduate
At the beginning of the semester that a student wishes to graduate . . . . .
  if in PSU’s computer system: access e-Lion at www.elion.psu.edu
  if not: call 1-814-865-1795 to reach Graduate Enrollment