



UNIVERSITY *of* MARYLAND
Graduate Program in Life Sciences

Program in Toxicology
Student and Faculty Handbook

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1. Purpose of this Document

These guidelines are intended to supplement the regulations of the Graduate School of the University of Maryland, Baltimore (UMB) and the Graduate Program in Life Sciences (GPILS). All students are strongly encouraged to study and observe the policies described in the Graduate School's most recent graduate catalog and on their website (<http://www.graduate.umaryland.edu>), and on the GPILS website (<http://lifesciences.umaryland.edu>). Additional regulations and expectations described in this handbook are program-specific and are designed to answer most questions you may have regarding our program and your course of study. If after reviewing these Guidelines you have any further questions, we encourage you to discuss them with us.

A Message from the Directors

We hope that you will have a rewarding academic career as a graduate student in the Program in Toxicology, and we are here to support your success as a member of the University of Maryland, Baltimore community. To that end, we want to ensure that you have access to the policies and regulations that pertain to you as a student. If you have further questions after reviewing these guidelines, we encourage you to come and speak with us.

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2. Program Description

Ph.D. Program in Toxicology

M.S. Program in Toxicology (Thesis and Non-thesis)

Tracks: Molecular & Mechanistic Toxicology

Toxicology & Environmental Health

The University of Maryland System-wide Program in Toxicology is a unique interdisciplinary graduate program based at the University of Maryland (UM) campus in Baltimore. Our program provides training in molecular and mechanistic toxicology and the translation of basic research findings to health protection through the advancement of environmental health programs. Toxicology program faculty on multiple UM campuses bring diverse areas of expertise to research questions that address the human and ecological impacts of natural toxins, industrial chemicals, and pharmaceuticals used by society. The Program in Toxicology offers PhD, MD/PhD, MS (thesis and non-thesis) degrees in mechanistic and translational toxicology.

Molecular and Mechanistic Toxicology Track. Research opportunities in molecular and mechanistic toxicology focus on mechanisms of cellular responses to environmental chemicals, drugs, and radiation in mammalian systems. Students are trained in modern molecular biology, biochemical, and knockout animal model approaches used to investigate complex biological processes, including oxidative and free radical stress, cell signaling in cell survival and death, cell cycle control, and cell proliferation and differentiation. Faculty research areas include carcinogenesis, chemoprotection, developmental abnormalities, neurological, cardiovascular and renal system toxicity and protection, aging, and mechanisms of drug action and drug development. Opportunities to study mechanisms of action of environmental endocrine disruptors in vertebrate and invertebrate aquatic organisms are available at the UM Chesapeake Biological Laboratory, a marine research center located on the Chesapeake Bay (www.umces.edu/cbl).

Toxicology and Environmental Health Track. The Toxicology and Environmental Health track offers graduate training and research opportunities in forensic and analytical toxicology, chemical risk assessment, and environmental health. Research opportunities focus on methods development for the detection of illicit drugs use, and for studies of the environmental fate and effects of hazardous chemicals. Faculty research areas include the health effects of endocrine disruptors, health surveillance studies in metal exposed populations, the development of new biomarkers of exposure and effects, and factors that alter individual susceptibility to the adverse health effects of environmental and occupational chemicals.

For more information on the program and tracks, please visit our website using the following link:
<http://toxicology.umaryland.edu/Pages/Home.aspx>.

3. Expectations

3.1 Expectations of Advisors for M.S. and Ph.D. Students

Upon entering the graduate program, students are assigned an academic advisor. The assignment is based upon which track the student is interested in. Students will later identify a research advisor who will mentor them through their doctoral dissertation project. The initial academic advisor may become their research mentor, but this is not required.

The role of the academic advisor is to serve as a resource for students on academic matters helping them assimilate into the program, make course selections, identify prospective rotations, and choose a research topic and dissertation mentor. Specific expectations and guidelines for student advising are as follows:

Time Commitment and Availability

The academic advisor should have regular contact with the student(s) he or she is advising. At a minimum, advisors should meet with advisees once per semester. Advisors should also be available for student questions during the semester in person or by email or telephone.

Course Planning and Selection

The academic advisor should assist their student(s) with course selection and planning. Course descriptions can be found on the GPILS website (http://lifesciences.umaryland.edu/Pages/course_catalog.aspx). Course requirements for the academic program and a list of possible electives can be found in Section 6.1.1 of this handbook.

Student Progress

Advisors should be familiar with their students' timelines and milestones so that they can provide guidance and assess the each student's progress in courses, rotations, and identification of a research topic and advisor. The steps to completing M.S. and Ph.D. degrees are detailed in this handbook.

The advisor should review their student's grades after each semester. Grades will be provided by the academic office, but if not received, should be requested by the advisor. Some classes have prerequisites that include having performed satisfactorily in previous courses, and advisors should assure that students are meeting these requirements.

Assistance in Identifying Rotations and Research Advisors

Many students, especially those not familiar with our department or campus, will be unaware of possible opportunities for research rotations. The advisor should help the student focus his or her interests and suggest possible opportunities or faculty members who could serve as rotation mentors and/or research advisors.

3.2 Expectations of Students

As a student in the Program in Toxicology, you are part of a professional community of scientists. Your training will provide numerous opportunities for scientific collaboration and personal interaction with other scientists both within and outside of the program. Following are expectations for conduct that apply to all members of our community, including students. Adhering to these expectations promotes a productive and positive experience for all members of our community.

Professionalism:

- Maintain a high level of professionalism at all times in terms of communication, behavior and dress.
- Treat all faculty, staff and fellow students with respect.
- Keep your physical surroundings clean and in order. If you are sharing space (e.g., classrooms) or equipment (e.g., computers) with other individuals, always leave the area neat, clean and secured.
- Communicate concerns about the program in a respectful and professional manner.

Responsiveness:

- All important campus related emails will be sent to your University of Maryland account. Reply promptly to email from faculty and administrative staff.
- Notify program director, academic coordinator, course instructors, and mentors if there is a change in your email address or other contact information.
- Post a vacation message when you will be away from your email for more than 24 hours.
- Respond promptly to requests for information.

Attendance:

- Attend scheduled classes, meetings, and departmental seminars/journal clubs.
- Inform instructors if you must miss a class.
- Arrange a weekly schedule and a vacation schedule with your rotation (or research) mentor.

4. Policies and Procedures

4.1 Policies for all Graduate Students

M.S. Program

The M.S. Program in Toxicology follows standard Graduate School performance requirements with regard to minimum grade point average, continuous enrollment, time to degree and academic integrity. Students in the M.S. Program are required to maintain a cumulative grade point average of 3.0 on a 4.0 scale. Final letter grades are assigned using a plus or minus grading system. Students must register every fall and spring semester, unless on an approved Leave of Absence. A Leave of Absence must be approved by the student's advisor/mentor and the program director. All requirements for the M.S. degree must be completed within five years after admission. All students are expected to meet the highest standards of integrity. For further details, please visit the Graduate School website on Academic Performance and Progress in Master of Science Programs at http://www.graduate.umaryland.edu/catalog/academic_performance_master.html.

Ph.D. Program

The Ph.D. Program in Toxicology follows standard Graduate School performance requirements with regard to minimum grade point average, continuous enrollment, time to degree, advancement to candidacy and academic integrity. Students in the Ph.D. Program are required to maintain a cumulative grade point average of 3.0 on a 4.0 scale. Final letter grades are assigned using a plus or minus grading system. Students must register every fall and spring semester, unless on an approved Leave of Absence. A Leave of Absence must be approved by the student's advisor/mentor and the program director. Ph.D. students must be admitted to candidacy within five years of the first semester of enrollment and at least two full semesters before graduation. All students are expected to meet the highest standards of integrity. For further details, please visit the Graduate School website on Academic Performance and Progress in Ph.D. Programs at http://www.graduate.umaryland.edu/catalog/academic_performance_phd.html.

4.2 Procedures for all Graduate Students

Registration

All graduate students are responsible for registering for classes each fall and spring semester unless a Leave of Absence has been approved. There are several steps to the registration process:

- Students should schedule a meeting with their academic advisor at least 8 weeks before the start of each fall and spring semester.
- During the meeting, students should discuss the courses that they intend to take during the upcoming semester. Academic advisors should sign off on the student's Course Registration Request Form

(<http://www.graduate.umaryland.edu/documents/CRF.pdf>) to indicate their approval of the desired course work.

- Student registration is locked by default. Once the academic advisor has approved the course work for the following semester, the Course Registration Request Forms should be submitted to the program coordinator. Registration will then be unlocked.
- Students must then log on to the SURFS website (<http://simsweb.umaryland.edu/>) to complete the registration process at least 6 weeks before the start of the semester. Instructions detailing this process will be emailed to the Student's university email account. Please note that if there is an outstanding balance on a student's account, he or she will not be able to register. This "hold" on the student's account must be taken care of by the student by contacting Students Accounts to pay their bill before they can register.
- All new incoming student registrations will be completed by the program coordinator after discussion with the students' academic advisors.

Non-degree Coursework

The non-degree status is for students seeking to enhance their knowledge by completing one or more graduate courses, but who are not pursuing a degree. Should the student subsequently be admitted to the program, there is no assurance that credits earned as a non-degree student will be transferred. In cases where the program does grant such a request, no more than six credits will transfer for the degree.

Changing a Schedule or Course Registration(s)

Students must register for coursework each fall and spring term to maintain eligibility for a degree (registration is not required for summer and winter terms except under specific circumstances). Adjustments to course registrations should only be made prior to the start of the semester and should be undertaken in consultation with the students' instructors and/or advisors. Following the start of the term, changes may only be made in accordance with stated timetables. Further, students must file the necessary form(s) for registration changes with the appropriate university officials' signature(s) of approval before changes are complete or official.

To Add a Course:

Week 1: Fall, spring or summer term: Students may add course(s) through the end of Week 1 only. (Winter term: Students may add a course through the end of Day 2 only.) Complete Add/Drop form (http://www.graduate.umaryland.edu/documents/Add_Drop.pdf).

To Drop a Course:

Week 1 – 3: Fall, spring or summer term: (winter term, through end of day 2) – Students may drop course(s) through the end of week 3 with proper approvals and with no notation on their transcript. Complete Add/Drop form (http://www.graduate.umaryland.edu/documents/Add_Drop.pdf) form with instructor and advisor or program director. Partial (80%) or no refund will be given depending upon the Drop date.

Week 4 – 8: Students may drop course(s) through the end of week 8 with instructor and advisor or program director approval. A notation of "W" will appear on the transcript. Complete Add/Drop form (http://www.graduate.umaryland.edu/documents/Add_Drop.pdf) with instructor and advisor or GPD. Course(s) dropped counts as an attempt. No refund is given.

Beginning the 9th week of the term (or from day 3 to end of winter term), students are not permitted to Drop a course. The student must complete the course, negotiate/request an Incomplete, or request the instructor to grant a Withdraw Pass or Withdraw Fail (WP/WF) – Use Course Withdraw Form (<http://www.graduate.umaryland.edu/documents/courses/CourseWithdrawal.pdf>). No refund.

Withdrawing from a Course - Withdraw Pass/Withdraw Fail

If a course withdrawal is approved beginning 9 weeks after the start of a fall or spring semester course or after the first two weeks of a summer course, the student will receive a withdrawal mark of "WP" or "WF" for each course attempted. A withdrawal mark of "WP" means that the student was passing the course at the time of withdrawal and a withdrawal mark of "WF" means she or he was failing at the time of withdrawal. Each "WP" and "WF" mark will appear on the official transcript. "WP/WF" marks are not included in the calculation of semester, term

or cumulative grade point averages. However, “WF” marks are included as course failures when determinations of academic probation or academic failure are made. There are no refunds for WP/WF marks. Completion of a signed, approved Course Withdrawal Request is required (<http://www.graduate.umaryland.edu/documents/courses/CourseWithdrawal.pdf>).

Cancellation of Registration

Registered students compelled to leave the university before the start of a given term must file a letter of cancellation of registration with the Graduate School. Failure to file this letter and to obtain approval by the Graduate School will result in loss of refund. Once the semester begins students are subject to the other schedule adjustment guidelines, policies and procedures (Add/Drop, Withdrawing, etc.) cited above.

Leave of Absence

Students who wish to continue in a degree program, but cannot study in a particular semester, session, or year, must take a leave of absence with the approval of their academic advisor, program director and the Graduate School. Students must complete a Leave of Absence Request form and present it to their program director and to the Graduate School for approval. The Graduate School notifies students of leave approvals and of the terms of re-enrollment. While there is no minimum number of times a student may request a leave of absence, leaves do not extend the time required to complete degree requirements. Completion of a signed, approved Leave of Absence (LOA) Request is required (<http://www.graduate.umaryland.edu/documents/LOA%20FORM.pdf>).

Academic Misconduct

Fabrication, falsification, plagiarism, cheating, improprieties of authorship, facilitating academic dishonesty or any other type of academic misconduct will not be tolerated. Students pursuing a Ph.D. or M.S. degree in the Toxicology Program are expected to maintain academic integrity and honesty at all times. Please refer to the Graduate School policies regarding academic misconduct at http://www.graduate.umaryland.edu/grad_policies/misconduct.html. The M.S. and Ph.D. Programs in Toxicology follow Graduate School policy in dealing with instances of academic misconduct.

Course Grade Appeal Procedure

The Graduate School provides students with a mechanism for reviewing course grades alleged to be arbitrary or capricious. If a student receives a grade that he or she feels does not reflect performance in the course, information at the following link should be carefully reviewed:

http://www.graduate.umaryland.edu/grad_policies/policy_grading.html. This procedure is followed by the M.S. and Ph.D. Programs in Toxicology.

Ombuds Committee

The Ombuds Committee was created by the Graduate School for the purpose of resolving disagreements between a graduate student and the graduate program with which he or she is involved. The M.S. and Ph.D. Programs in Toxicology encourage students to use the mediation services of the Ombuds Committee if they become involved in a dispute that cannot be successfully resolved at the program level. A step-by-step list of procedures for utilizing the Ombuds Committee can be found at http://www.graduate.umaryland.edu/grad_policies/ombuds.html.

Appeal of Academic Dismissal

The M.S. and Ph.D. Programs in Toxicology abide by Graduate School policies for appeal of academic dismissal, which can be found at http://www.graduate.umaryland.edu/grad_policies/appeal.html.

Preparing for Graduation

At the beginning of the semester during which a student plans to graduate, he or she should consult the Graduate School website (http://www.graduate.umaryland.edu/graduate_people/graduating.html) for the current forms and deadlines. For clarification on any of the information provided, please call the Graduate School at 410-706-7131. Note that students must be registered for at least one credit in the semester during which he or she plans to graduate, including summer and winter semesters. All Ph.D. students applying for graduation must have registered for an overall total of at least 12 doctoral dissertation research credits (TOXI 899) and must have

completed a successful Dissertation Defense. It is the responsibility of the student to provide the program coordinator with copies of all forms submitted to the Graduate School.

Graduate Student Association (GSA)

You are encouraged to participate in the GSA, which offers special services for graduate students, including grants for lab supplies, travel fellowships, and use of laptop computers. For more information regarding the GSA and the names of your program representatives, please refer to the GSA website at <http://www.graduate.umaryland.edu/gsa/index.html>. If you are interested in becoming an active member or representative in the GSA, please email them at gsa@umaryland.edu for further information.

Student Answer Book

The UMB “Student Answer Book” is available on-line at <http://www.umaryland.edu/student/sab>.

4.3 Additional Policies and Procedures for Ph.D. students receiving GRAs

As first year graduate research assistants (GRAs), students are expected to attend class, participate in seminars and journal clubs and perform research rotations. By the end of the first year, students should have chosen a mentor and research facility in which to pursue their thesis work. By 18 months, students will be expected to be financially supported by their thesis mentor and thus should work out with their mentor the schedule they will follow regarding hours working in the lab, sick time, vacation time, etc. As stated in the Graduate Assistant Policies and Guidelines

(<http://www.graduate.umaryland.edu/documents/graduate%20assistantship/GA%20Guide%202011-2012.pdf>),

students are not eligible for vacation or sick leave. However, mentors have their own policies which may allow flexibility. The University of Maryland recommends that the mentor or supervisor provide the Graduate Assistant with two weeks of leave each calendar year and a limited amount of time for absence due to unexpected sickness, family or any other emergency. Leave time for Graduate Assistants should be granted on an equitable and nondiscriminatory basis. Leave may be scheduled, with the permission of the supervisor, at times that do not conflict with the duties of the assistantship. The granting of these benefits is at the discretion of your mentor. Once a mentor is identified, the mentor should send a letter to the Program Directors with a copy to the Program Coordinator confirming their promise of financial support for the stipend, tuition, fees, and medical insurance for the student, with the start date and their intent to continue their support throughout the duration of the student’s PhD career.

Doctoral Student Funding

Students in the program can receive financial support through several mechanisms, including graduate research assistantships (GRAs) awarded by the university, training grant funds, research grant funds, employer funding, or self-funding.

GRA support includes tuition, stipend and health insurance and is available through the Graduate School for the first 18 months in the program, at which time students with GRA support must transition to another source of funding and the research mentor or a training grant takes over the funding of their GRA, which will continue to include coverage of tuition, stipend and health insurance. Thus, by no later than 18 months after starting the first semester, all students should have transitioned to a new source of funding for their dissertation research and should be working actively to develop their dissertation research projects.

Regardless of funding source, during research rotations and later when working on dissertation projects, students are expected to put 100% of their time and effort on their studies and their research. In most cases, all the research work that students do is directly related to their dissertation and academic development. However, in some cases, a GRA-funded student may be assigned by their rotation or dissertation mentor up to 20 hours per

week of work that is not necessarily related to his or her progression toward a degree. These students are expected to devote 100 % of their effort to their studies or research project after completion of the 20 hour work commitment. For further information about this policy, see the Graduate Assistant Guide found at <http://www.graduate.umaryland.edu/documents/graduate%20assistantship/GA%20Guide%202011-2012.pdf>.

Student Stipends

Student stipends are determined by the Graduate School and revised each academic year. The current stipend levels are as follows:

Level I	\$26,000 (entry level)
Level II	\$27,000 (after passing Qualifying Exam)

Tuition Remission and Payment by Grant Forms

During the first 18 months, graduate research assistants are responsible for completing Tuition Remission Forms online (http://hr.umaryland.edu/benefits/tuition_remission_process.htm) each fall and spring semester. Completed forms must be submitted to Celeste Gerhart in the Graduate School at least 6 weeks before the start of the semester. It is important that these forms be submitted on time. Late forms result in account holds and registration problems.

Once a student is being funded by a mentor, after completing the Tuition Remission Form online, they must print it out and have the mentor's administrator enter the project ID on the form, and then have the mentor or the mentor's administrator sign the form. This must be done each fall and spring semester. Completed forms must be submitted to Linda Horne, the program coordinator, at least 6 weeks before the start of the semester for which tuition remission is requested. In addition, a Payment by Grant Form (<http://www.fincsvc.umaryland.edu/images/tuition-payment-PS.pdf>) must be completed in order for the student to receive health insurance. Please note that students must register for classes before completing the Payment by Grant Form as the form requires an insurance and fee amount from the student's SURFS bill. These forms must be completed and submitted to the program coordinator at least 6 weeks before the start of the semester.

Graduate research assistants must register as full-time students to remain eligible for their stipend, tuition remission, and health insurance benefits each semester that they hold an assistantship. Tuition is remitted for 20 credits combined for fall and spring semesters. All students who receive a GRA must also register for 7 credits of ABGA 900 in each of the fall, spring and summer semesters. These credits do not count against the 10 credits for which tuition will be remitted. Summer semesters are not covered according to the Graduate School's policy. All other fees and auxiliary benefits are the responsibility of the graduate student.

Research Rotations

- Purpose: Research rotations provide students with opportunities to 1) learn how to function and flourish in a research setting; 2) identify an area of research that the student will pursue for his/her dissertation work; 3) identify a source of funding for the student's dissertation work; and/or 4) learn a specific skill (e.g., laboratory technique, statistical method) necessary for the dissertation work.
- Time Commitment: All PhD students (regardless of the source of their funding) perform research rotations during the first 18 months of the GRA. For students in the Toxicology Program, it is recommended that students do at least 2 rotations, with the duration of the rotation and the weekly schedule for working on the rotation project determined by negotiation with the rotation mentor. The selection of the first rotation is made during the fall of the student's first year in the program and should be arranged to begin in early December at the end of the Core Course (or early July if the student is taking the Summer Bridge Program).
- Expectations and Opportunities: Rotations are a time of learning and growth, and the more time and energy students put into them, the more benefits they will reap in terms of new knowledge and expanding research

and career opportunities. During the rotations, students work on projects that are mutually beneficial to the mentor and student. The student gains by learning new skills, techniques and ways of thinking; the mentor's research is enhanced by a new set of eyes, hands and observations. Students will maximize the benefits of their rotations if they 1) agree upon a project and expectations with their mentor at the outset; 2) pay careful attention to what's going on in the research setting regarding his or her specific project and in general; 3) work hard; 4) work independently, but 5) ask questions when they need help; 6) read both readings recommended or assigned by the mentor and those obtained through inspired literature searches; and 7) maintain regular communication with the mentor to discuss all that he or she is finding and learning along with challenges and pitfalls that inevitably arise when one is engaged in research.

- **Selection Process:** The selection of rotations is made by the student in collaboration with the student's advisor/program director. The selection is based on the individual student's needs and interests. Thus, students who have already identified their area of interest are encouraged to identify rotations with one or more mentors in the identified research area who are likely to have research grant funds or training grant funds to support the student's future dissertation work. Students who do not yet have a preferred research area are encouraged to identify rotations with one or more mentors who work in fields of potential interest and who are likely to have research grant funds or training grant funds to support the student's future dissertation work. All students may choose, with the consent of their advisor/program director, to do one rotation whose goal is to learn a specific skill.
- **Form Submission:** Once a rotation has been selected, the student fills out a Research Rotation Proposal Form (<http://toxicology.umaryland.edu/Documents/Lab%20Rotation%20Proposal%20Form.pdf>) in collaboration with the rotation mentor, outlining the goals of the rotation. The form is reviewed and signed by the rotation mentor, the student's academic advisor and the program director, and submitted to the program coordinator. At the end of each rotation, the student submits to the academic advisor/program director an evaluation in which they assess the extent to which the goals were attained. Once signed by the academic advisor/program director, the program coordinator must also receive the completed Laboratory Rotation Completion Form (<http://toxicology.umaryland.edu/Documents/Lab%20Rotation%20Completion%20Form.pdf>).

5. Requirements

5.1 Toxicology Seminar

The Toxicology seminars provide additional educational opportunities for students. At these seminars, students, guests, and faculty members review and discuss original work and recent advances in toxicology. Both M.S. and Ph.D. students in Toxicology are expected to attend the seminars on a regular basis. They are held every Thursday during fall and spring semesters at 4:00 pm in Rm. 450, Howard Hall. These seminars are also known as TOXI 618 Seminar in Toxicology providing 1 credit per registered semester. Although all Toxicology students are required to register and obtain 3 credits of TOXI 618 in order to meet course requirements, all students are expected to attend even if they do not register for a particular semester. If you are registered for TOXI 618 you are expected to present your research or choose and discuss a recent article of interest.

5.2 Ethics Course

A course on scientific ethics is required of all students and this requirement is met by CIPP 907 Research Ethics. The course is a two-semester course beginning in the fall. It is held one evening per month. You may register for the course to receive a Pass or Fail grade for 1 credit or you may just audit the course. Either way a certificate of completion is issued. Once the certificate is obtained by the student, a copy should be given to the program coordinator.

In this course various aspects of research ethics will be examined, including data collection and ownership, issues in the use of human and animal subjects, responsibilities of authorship, identifying and handling conflicts of interest, scientific misconduct, the peer review system, collaborative research in academia and industry, mentor/mentee relationships, contemporary ethical issues, and the role of the scientist as a responsible member of society. Each session has a readings list assigned and involves in depth small group discussions of relevant cases with faculty leadership. Postdoctoral fellows, and students not needing the credit, may sign up for the course informally, but will still be expected to participate fully in order to receive a letter of course completion. Grading will be based on group participation and leadership of at least one group discussion.

6.0 Timeline and Requirements for Advancement of Training

6.1 Year 1-2:

During the first two years, students are expected to:

- Complete 30 credits of Course Work
- Complete at least 2 laboratory rotations
- Select a mentor and start their thesis research
- Complete their Qualifying Exam

6.1.1 Toxicology Program Coursework

ABGA 900 Graduate Research Assistant: Any PhD student receiving a GRA must register for 7 credits of ABGA 900 during each Fall, Spring, and Summer semester.

All students must attain a grade of B or better in all required courses. A student receiving a grade of C or less in a required course must retake that course, or equivalent. Students who fail to maintain a 3.0 average overall are placed on academic probation. Students having two semesters with a cumulative GPA less than 3.0 may not take the Qualifying Exam, are subject to dismissal from the Graduate School, and are ineligible to be awarded a Master's degree. Students must receive at least a 3.0 cumulative in Mechanisms in Biomedical Sciences: From Genes to Disease (GPLS 601) in order to continue in the program.

Courses meet either annually or biannually, and virtually all students satisfy their course requirements within the first two years. Occasionally, a student will take a specialized course in later years for education enrichment, but, after qualifying exams, the bulk of time is spent in laboratory research. Detailed descriptions of the courses are available on the GPILS website <http://lifesciences.umaryland.edu/>. Students on GRAs will receive tuition remission for a maximum of 20 credits per year.

Mechanistic Toxicology Track Course Work (30 credits total)

Required Courses

- 8 credits of GPLS 601 Mechanisms in Biomedical Science (Core Course) (**Fall/8 cr**)
- 3 credits of GPLS 623 Molecular Toxicology (**Fall/3 cr**)
- 3 credits of PATH 603 General Pathology (**Fall/3 cr**)
- 3 credits of PREV 621 Biostatistical Methods (**Fall/3 cr**)
- 3 credits of TOXI 618 Seminar in Toxicology (**Spring & Fall/1 cr**)
- 2 credits of TOXI 609 Methods in Toxicology (Lab Rotation) (**Spring & Fall/variable 1-3 cr**)
- 2 credits of Pharmacology (choose from the following):

GPLS 607 Fundamentals of Pharmacology (**Spring/2 cr**)

PHAR 600 Principles of Drug Discovery (**Fall/3 cr**)

PHAR 601 Principles of Drug Development (**Spring/3 cr**)

PHAR 602 Pharmacokinetics (**Fall/3 cr**)

- 6 credits of General Electives (May be selected from “Suggested Electives” list below)
- CIPP 907 Research Ethics (**Academic year starting Fall/1 cr or may be audited informally**)

In addition to these courses, you will need 12 credits of TOXI 899 Doctoral Dissertation Research to graduate.

Suggested Electives

- GERO 711 Biology of Aging (**Fall, Spring/3 cr**)
- GPLS 616 Molecular Mechanisms of Signal Transduction (**Fall/3 cr**)
- GPLS 624 Molecular Oncopharmacology (**Spring/3 cr**)
- GPLS 633 Pathways in Neuroscience (**Fall, Spring, Summer, Winter/1 cr**)
- GPLS 665 Special topics in Cancer Biology (**Fall/3 cr**)
- GPLS 701 Advanced Molecular Biology (**Fall/3 cr**)
- GPLS 702 Basic Immunology (**Spring/3 cr**)
- GPLS 705 Basic Human Genetics I (**Fall/4 cr**)
- GPLS 709 Advanced Biochemistry (**Spring/3 cr**)
- GPLS 717 Molecular Genetics and Development in Model Organisms (**Fall/2 cr**)
- GPLS 721 Imaging Methods in Membrane Biology (**Spring/2 cr**)
- GPLS 769 Advances in Immunology (**Fall/2 cr**)
- GPLS 790 Advanced Cancer Biology (**Spring/3 cr**)
- HGEN 601 Human Genetics I (**Fall/4 cr**)
- PHAR 600 Principles of Drug Discovery (**Fall/3 cr**)
- PHAR 601 Principles of Drug Development (**Spring/3 cr**)
- PHAR 602 Pharmacokinetics (**Fall/3 cr**)
- TOXI 601 Advanced Toxicology (**Spring/3 cr**)

Example of a Typical Schedule of Classes for the First Two Years for Students in the Molecular and Mechanistic Toxicology Track

1st Fall Semester	Credits	1st Spring Semester	Credits
		TOXI 601 Advanced Toxicology I	3
GPLS 601 Mechanisms in Biomedical Science	8	TOXI 609 Methods in Toxicology	1
CIPP 907 Research Ethics	1	GPLS 607 Principles of Pharmacology	2
		TOXI 618 Seminar in Toxicology	1
2nd Fall Semester	Credits	2nd Spring Semester	Credits
GPLS 623 Molecular Toxicology	3	GPLS 624 Molecular Oncopharmacology	3
PREV 621 Biostatistical Methods	3	TOXI 618 Seminar in Toxicology	1
PATH 603 General Pathology	3	TOXI 898 Precandidacy Research	3
TOXI 609 Methods in Toxicology	1		

Toxicology and Environmental Health Track (30 credits total)

Required Courses

- 3 credits of TOXI 601 Advanced Toxicology I (**Spring/3 cr**)
- 3 credits of TOXI 602 Advanced Toxicology II (**Fall – odd years/3 cr**)
- 3 credits of Pharmacology (choose from the following):
 - GPLS 607 Fundamentals of Pharmacology (**Spring/2 cr**)
 - PHAR 600 Principles of Drug Discovery (**Fall/3 cr**)
 - PHAR 601 Principles of Drug Development (**Spring/3 cr**)
 - PHAR 602 Pharmacokinetics (**Fall/3 cr**)
- 3 credits of PATH 603 General Pathology (**Fall/3 cr**)
- 3 credits of PREV 621 Biostatistical Methods (**Fall/3 cr**)
- 3 credits of TOXI 618 Seminar in Toxicology (**Spring & Fall/1 cr**)
- 6 credits of TOXI 609 Methods in Toxicology (Lab Rotation) (**Spring & Fall/variable 1-3 cr**)
- 6 credits of General Electives (student’s choice – could be from “Suggested Electives” list below)
- CIPP 907 Research Ethics (**Academic year starting Fall/1 cr or may be audited informally**)

In addition to these courses, you will need 12 credits of TOXI 899 Doctoral Dissertation Research to graduate.

Suggested Electives

- TOXI 607 Forensic Toxicology (**Spring – odd years/3 cr**)
- TOXI 625 Aquatic Toxicology (**Spring – even years/3 cr**)
- TOXI 611 Exposure, Risk, and Public Health (**Spring – scheduled as needed/2 cr**)
- PREV 600 Principles of Epidemiology (**Fall/3 cr**)
- PREV 668 Environmental & Occupational Health (**Fall/3 cr**)
- PREV 780 Molecular Epidemiology (**Fall/3 cr**)
- GPLS 601 Mechanisms in Biomedical Science (Core Course) (**Fall/8 cr**)
- GPLS 623 Molecular Toxicology (**Fall/3 cr**)
- CHEM (UMBC) - Analytical Chemistry

Example of a Typical Schedule of Classes for the First Two Years for Students in the Toxicology and Environmental Health Track

1st Fall Semester	Credits	1st Spring Semester	Credits
PHAR 600 Principles of Drug Discovery	3	TOXI 601 Advanced Toxicology I	3
PREV 668 Environmental & Occupational Health	3	TOXI 609 Methods in Toxicology	3
PATH 603 General Pathology	3	TOXI 625 Aquatic Toxicology	3
CIPP 907 Research Ethics	1	TOXI 618 Seminar in Toxicology	1
2nd Fall Semester		2nd Spring Semester	
TOXI 602 Advanced Toxicology II	3	TOXI 607 Forensic Toxicology	3
PREV 621 Biostatistical Methods	3	TOXI 618 Seminar in Toxicology	1
PHAR 602 Pharmacokinetics	3	TOXI 609 Methods in Toxicology	3
TOXI 609 Methods in Toxicology	1		

6.1.2 Qualifying Exam Procedure

After selecting a research mentor and beginning their thesis research, students should:

- Establish a Graduate Committee consisting of five to six faculty members. The student's research mentor and track director are automatically selected members of the committee. One member has to be outside the home department of the mentor. The mentor serves as chair of the committee.
- Write three Abstracts for non-thesis research proposals.
- Submit the Abstracts to their Track director who will take a committee vote to determine which of the abstract topics the student should write up as a full-length proposal (Maximum 15 Pages including figures and references).
- Set a date for the qualifying exam and submit the detailed proposal at least 15 days before the date of qualifying exam. The program coordinator can help locate and reserve a room.
- Present the proposal to the committee and answer questions on the contents of the proposal and other questions related to courses taken and current affairs in science. One of three grades will be given (PASS, MARGINAL PASS, or FAIL).
- Complete the requirements established by the Committee for changing a MARGINAL PASS to a PASS, or retake the Exam a second and final time in case of a FAIL.

Once the qualifying exam has been passed, the student is eligible to apply for candidacy for the PhD degree. The application for candidacy form can be found on the Graduate School website (<http://www.graduate.umaryland.edu/documents/candidacy-1.pdf>). The student is responsible for making sure that the academic coordinator receives a copy of the application for candidacy form to keep on file. Students supported by Graduate Research Assistantships (GRAs) become eligible for the Level II stipend when they achieve candidacy. Once a student is accepted into candidacy for their PhD degree, their daily work is focused on their thesis research.

6.2 Year 3-Until Completion of Degree Requirements:

After admission to candidacy, a student should assemble a thesis committee in consultation with their mentor. The committee is often but not required to be the same as their qualifying examination committee. The mentor and track director are automatically selected members of the committee. The student will need to select 3-4 additional members to serve on the committee, including at least one from outside the mentor's department. At least 3 members of the committee must be UM graduate faculty members (a list of UMB graduate faculty is located at: http://www.graduate.umaryland.edu/graduate_people/list/grad_faculty.html). The mentor will serve as chair of the committee. The names of the faculty members on the committee should be given to Linda Horne, Program Coordinator. The Graduate School form "Nomination of Members of Final Doctoral Examining Committee" should also be completed and turned into the Graduate School (http://www.graduate.umaryland.edu/documents/doctoral_committee%20update-1.pdf).

The student should then:

- Organize a Committee meeting with members of their thesis committee no longer than six months after completing their qualifying exam.
- Write a proposal for their thesis research and fix a date to meet with their committee to present and defend their proposed research.

- When complete, send their research proposal to their committee members at least two-weeks before the meeting.
- Finalize their research plan based on the discussions with their committee members.
- Complete their research, meeting on a regular basis with their committee (at least every 6 months). In addition, after each 6 month committee meeting, the student's mentor should submit a report summarizing the student's progress to the program coordinator, with signatures from the committee members (See "STATUS REPORT SIGNATURE PAGE" at the end of the handbook).
- When the student and mentor agree that the student is close to completing their research plan, the student should schedule a DETAILED RESEARCH PROPOSAL REVIEW committee meeting to defend and develop a plan for finishing their project. At this meeting, the student may ask permission to write their final dissertation.
- The student should write their dissertation, working closely with their mentor.

6.2.1 Final PhD Thesis Defense

- When the student and their mentor feel their dissertation is complete, the student should schedule a date for their dissertation defense.
- Submit their dissertation to the designated readers on their committee at least 4 weeks prior to their defense date. When approved by the readers, the student should obtain their signatures on the graduate school form "Certification of Completion of the Doctoral Dissertation" and submit this to the Graduate School (http://www.graduate.umaryland.edu/documents/certify_dissertation.pdf) at least 2 weeks prior to their defense date. The thesis, revised if necessary, should then be submitted to the remaining members of their committee at least 2 weeks prior to the defense date.
- Present their research at their dissertation defense as a formal seminar open to the public, the UMB research community and their committee members, followed by a closed door meeting/evaluation with their committee. The committee will determine whether the student: 1) Passed their examination with minor changes needed in their dissertation, 2) Passed their examination but their dissertation requires significant changes or 3) Failed their examination. All committee members must be present and sign the final document, the Report of the Examining Committee.
- Complete the final dissertation, incorporating revisions discussed by the committee at the student's dissertation defense and following graduate school guidelines.

6.2.2 Completion of Graduate School Forms and Requirements for PhD Degree

- Students are advised to consult the Graduate School calendar frequently during preparation for their Final Dissertation Defense. Important deadlines can be found at http://www.graduate.umaryland.edu/graduate_people/index.html.
- Students should be sure to consult the Graduate School website for the dissertation style guide as well (<http://www.graduate.umaryland.edu/documents/Electronic%20Thesis%20and%20Dissertation%20Style%20Guide%202010.pdf>).

Students are responsible for submitting all necessary forms to the Graduate School in order to graduate, with copies submitted. These forms include:

- Nomination of Members of Final Doctoral Examination Committee (due six months before defense date) http://www.graduate.umaryland.edu/documents/doctoral_committee%20update-1.pdf
- Application for Diploma (due date changes each semester-check Graduate School calendar) <http://www.simsweb.umaryland.edu/>
- Certification of Completion of the Doctoral Dissertation (due two weeks before defense date) http://www.graduate.umaryland.edu/documents/certify_dissertation.pdf
- Announcement of Doctoral Dissertation Defense (due two weeks before defense date) <http://www.graduate.umaryland.edu/documents/announcement.pdf>
- The Procedures for Examination of the Doctoral Dissertation should also be carefully reviewed at <http://www.graduate.umaryland.edu/documents/Dissertaton%20Procedures.pdf>.

A *Report of Examining Committee* form will be sent to the Graduate School-appointed Dean's Representative on the student's committee before the defense. The completed form must be returned to the Graduate School within two working days of the oral defense, and the academic coordinator must receive a copy.

Please note that students must be registered for at least one credit during the semester in which they plan to graduate, including summer and winter sessions. All students applying for graduation must have registered for an overall total of at least 12 doctoral dissertation research credits (TOXI 899) and must have completed a successful Dissertation Defense.

6.2.3 Final Master's Thesis

Students are advised to consult the Graduate School calendar frequently during preparation for the Master's Thesis Defense. Important deadlines can be found at http://www.graduate.umaryland.edu/graduate_people/index.html.

Students should be sure to consult the Graduate School website for the thesis style guide as well: (<http://www.graduate.umaryland.edu/documents/Electronic%20Thesis%20and%20Dissertation%20Style%20Guide%202010.pdf>.) After the thesis receives final approval by the committee, the student will make an oral presentation of the work to faculty and students.

Students are responsible for submitting all necessary forms to the Graduate School in order to graduate, with copies of all forms submitted to the program coordinator. These forms include:

- Nomination of Members of Masters Examination Committee (due two months before defense date) http://www.graduate.umaryland.edu/documents/masters_committee%20update.pdf
- Application for Diploma (due date changes each semester-check Graduate School calendar) <http://www.simsweb.umaryland.edu/>
- Fulfillment of Course Requirements for Master's Degree (due date changes each semester-check Graduate School calendar) http://www.graduate.umaryland.edu/documents/masters_courses.pdf
- Certification of Completion of the Master's Thesis (due two weeks before defense date) http://www.graduate.umaryland.edu/documents/certify_thesis.pdf
- Announcement of Doctoral or Masters Defense (due two weeks before defense date) <http://www.graduate.umaryland.edu/documents/announcement.pdf>

Please note that students must be registered for at least one credit during the semester in which they plan to graduate, including summer and winter sessions. All students applying for graduation must have registered for an overall total of at least 6 master's thesis research credits (TOXI 799) and must have completed a successful Thesis Defense.

6.2.4 Final Master's Non-Thesis

Students are advised to consult the Graduate School calendar frequently during preparation for graduation. Important deadlines can be found at http://www.graduate.umaryland.edu/graduate_people/index.html.

Students are responsible for submitting all necessary forms to the Graduate School in order to graduate, with copies of all forms submitted to the program coordinator. . These forms include:

- Application for Diploma (due date changes each semester-check Graduate School calendar)
- <http://www.simsweb.umaryland.edu/>
- Fulfillment of Course Requirements for Master's Degree (due date changes each semester-check Graduate School calendar) http://www.graduate.umaryland.edu/documents/masters_courses.pdf
- Certification of Master's Degree Without Thesis (due date changes each semester-check Graduate School calendar)
- http://www.graduate.umaryland.edu/documents/certification_masters.pdf

Please note that students must be registered for at least one credit during the semester in which they plan to graduate, including summer and winter sessions.

STATUS REPORT SIGNATURE PAGE

Program in Toxicology
University of Maryland
School of Medicine

Student Name: _____ **Student ID #:** _____

Graduate Program: _____ (Are you also in the MD/PhD Program? Yes No)

<input type="checkbox"/> ADVISORY COMMITTEE IS APPOINTED The <u>ATTACHED STATUS REPORT</u> is the result of a meeting with my Advisory Committee held on: _____ STUDENT’S SIGNATURE: _____ Meeting Summary from Major Advisor OR Committee Chair

MEETING SUMMARY FROM STUDENT’S MAJOR ADVISOR OR COMMITTEE CHAIR. The summary should not be written by the student. *If permission to begin writing thesis has been granted, please include details in the summary and complete the section at the bottom:

IF MORE SPACE IS NEEDED, PLEASE USE THE BACK OF THIS FORM

SUMMARY WRITTEN BY: _____ DATE: _____

REQUIRED SIGNATURES

MAJOR ADVISOR & PROGRAM DIRECTOR	COMMITTEE MEMBERS PRESENT	COMMITTEE MEMBERS NOT PRESENT
<input type="checkbox"/> _____ Major Advisor’s Signature Date	<input type="checkbox"/> _____ Signature Date	<input type="checkbox"/> _____
<input type="checkbox"/> _____ Program Director’s Signature Date	<input type="checkbox"/> _____ Signature Date	<input type="checkbox"/> _____
	<input type="checkbox"/> _____ Signature Date	<input type="checkbox"/> _____
	<input type="checkbox"/> _____ Signature Date	<input type="checkbox"/> _____
	<input type="checkbox"/> _____ Signature Date	<input type="checkbox"/> _____

Permission to begin writing the thesis has been granted. Members who agree that this process may begin have indicated so by initialing the box by their signatures above. A majority of the committee **MUST BE PRESENT** at the meeting when permission to write is granted (exceptions may be made for remote students). The granting of permission to write **DOES NOT** imply approval of the thesis that is presented for defense.

Status Report Form – Page 2 - INSTRUCTIONS FOR THE STUDENT STATUS REPORT FORM

Submission: A meeting of the thesis advisory committee must be held twice a year. The purpose of these meetings is to allow the thesis committee to monitor the progress of thesis research and to promote regular scientific interactions between students and members of their thesis committee. Status reports are due from every student twice a year. Students not submitting a report will be given a warning and further action will be taken if necessary.

Status Report: The student should prepare a written status report for each meeting. In addition to a short statement of the overall significance and objectives of the thesis research, the report should outline the specific goals proposed at the last meeting, describe the progress toward these goals over the last six months, and set goals for the next six months. This report should be distributed to the members of the thesis committee in advance of the committee meeting and attached to the completed Student Status Report Form.

SPECIFIC INSTRUCTIONS:

Check box: Advisory Committee Appointed – Status reports for students that have not selected a thesis advisor must be signed by the program director. If a thesis advisor has been selected but the thesis committee has not yet been appointed, the thesis advisor and the program director must sign the form.

Summary Statement: The thesis advisor (or the thesis committee chairman) must write a short summary of the committee meeting. The summary should provide an evaluation of the student’s progress during the last six months and discuss any specific concerns of the committee. The student’s signature provides an acknowledgement that he/she has seen the summary statement. A notation should also be made if the purpose of the meeting is to determine if the student is ready to write his/her thesis.

Permission to Write: Before beginning to write the thesis, every student must obtain permission from each member of the thesis advisory committee. In general, a thesis committee meeting should be held at which the student presents a written outline of the thesis and makes a brief oral presentation to the committee summarizing the experimental approach, experimental results, and conclusions. Preferably, all committee members will attend this meeting, but a majority of the committee **MUST BE PRESENT** when permission to write is granted (exceptions may be made for remote students). If satisfied that the student is ready to write the thesis and that the outline is satisfactory, each committee member should indicate that permission to write has been given by initialing the box to the left of his/her signature. Initialing this box indicates agreement that the student’s research is sufficiently complete to progress to the preparation of a thesis and that the thesis outline is acceptable (specific changes to the proposed thesis outline should be indicated in the Summary Statement). Initialing the approval box does not imply acceptance of the final thesis or thesis defense.

Signatures: Each committee member, including the thesis advisor, must sign the status report. If any members of the committee were not able to attend the meeting, they should sign the form in the **NOT PRESENT** section. Only those members present at a meeting of the committee should sign in the **MEMBERS PRESENT** section.

SUMMARY CONTINUED FROM PAGE 1:

TOXICOLOGY PROGRAM

Laboratory Rotation Proposal Form

Please complete this form, have it signed by the proposed mentor and Track Leader, and forward to Linda Horne (Rm. 134, HH). *Your rotation will not be approved without this form!*

Student's Name: _____

Rotation Mentor's Name and Title: _____

Proposed Rotation Dates: _____

Expected Schedule for Laboratory Work: _____

The Goals of this Rotation Are: _____

I expect to gain experience with the following techniques:

We have discussed expectations about time commitment, schedule of work and mentor supervision.

Signatures:

Student: _____ Date: _____

Rotation Mentor: _____ Date: _____

Track Director: _____ Date: _____

TOXICOLOGY PROGRAM

Completion of Laboratory Rotation Form

NOTE: The information you provide on this form is viewed only by the Track Director

Please complete this form, have it signed by the Track Director, and forward it to Linda Horne (Rm. 134, HH).
You will not receive credits for the rotations without this form!

Student's Name: _____

Rotation Mentor's Name and Title: _____

Rotation Dates: _____

The Goals Achieved During this Rotation Were: _____

What I Learned from this Experience: _____

Did you receive adequate training and guidance? Please explain:

Would you recommend this laboratory to other students? Please explain:

Rate your overall experience in this laboratory: 1 (very poor) to 5 (very positive): _____

Signatures:

Student: _____ Date: _____

Track Director: _____ Date: _____

Toxicology Program

Frequently Used Addresses and Phone Numbers

Toxicology Program Directors:

Anil K. Jaiswal, PhD
Director, Molecular and Mechanistic Toxicology Track
Department of Pharmacology and Experimental Therapeutics
Room 404, HH
Phone: 410-706-2285
ajaiswal@som.umaryland.edu

Katherine S. Squibb, PhD
Director, Toxicology and Environmental Health Track
Department of Medicine
11 S. Paca Street, 2nd Floor
Phone: 410-706-7464
ksquibb@medicine.umaryland.edu

Toxicology Program Coordinator:

Linda Horne
Program Coordinator
Graduate Program in Life Sciences (GPILS)
Room 134, HH
Phone: 410-706-5422
Fax: 410-706-4425
lhorne@som.umaryland.edu

Toxicology Website:

<http://toxicology.umaryland.edu/Pages/Home.aspx>

Graduate Program in Life Sciences (GPILS):

GPILS Home Website: <http://lifesciences.umaryland.edu/Pages/home.aspx>
GPILS Student Resources: <http://toxicology.umaryland.edu/Pages/studentresources.aspx>

Tom McHugh, Director and Academic Programs Administrator

University of Maryland Baltimore
655 West Baltimore Street, Rm. 1-005, BRB
Baltimore, Maryland 21201
Phone: 410-706-6041
Fax: 410-706-6040
tmchugh@som.umaryland.edu

Graduate School:

620 W. Lexington Street, 5th Floor
Phone: 410-706-7132
Fax: 410-706-3473
gradinfo@umaryland.edu
<http://graduate.umaryland.edu/>

GPILS Coaching Program:

Hillary Edwards, Wellness & Academic-Life Balance Program: wellness@umaryland.edu

24-hour National Graduate Student Crisis Line:

1-800-GRAD-HLP

Office of International Services:

Amy Ramirez, Director (F-1 and J-1 student visas) or
Betsy Lane, International Scholar Advisor
SMC Campus Center, Suite 302
621 W. Lombard Street
Phone: 410-706-7488
Fax: 410-706-0265
aramirez@umaryland.edu
ejlane@umaryland.edu

Student Accounting:

(Student Bills: Tuition Remission, Health insurance, fees)
2nd Floor, HS/HSL
601 W. Lombard Street
Main Phone: 410-706-2930
Fax: 410-706-7429

Nicole Frasier (Health Insurance)
Phone: 410-706-1335

Financial Aid:

Financial Aid Office
Phone: 410-706-7347

Student Health:

Denise Mitchell
Clinical Coordinator
Phone: 410-328-6791
shealth@som.umaryland.edu

Computer Problems:

Help Desk
Phone: 410-706-HELP (4357)

Society of Toxicology (SOT):

Phone: 703-438-3115
Fax: 703-438-3113
<http://www.toxicology.org/>

National Capital Area Chapter (NCAC) of SOT
<http://www.toxicology.org/isot/rc/ncac/>

American Association for Cancer Research (AACR):

Phone: 215-440-9300
Toll Free: 1-866-423-3965
Fax: 215-440-9313
Email: aacr@aacr.org
<http://www.aacr.org/>

Graduate Student Association (GSA):

GSA website: <http://www.graduate.umaryland.edu/gsa/index.html>.
GSA President email: umb.gsa.president@gmail.com
GSA Public Affairs email: umb.gsa.pro@gmail.com