Practices and Procedures for the PhD Graduate Program in Pharmacology & Toxicology

Department of Pharmacology & Toxicology

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SOME INFORMATION IN THE PHARMACOLOGY AND TOXICOLOGY HANDBOOK HAS BEEN CITED
FROM THE FOLLOWING DOCUMENTS:


Graduate Students Rights and Responsibilities (GSRR):
http://splife.studentlife.msu.edu/right-and-responsibilities


Guidelines for Graduate Student Advising and Mentoring Relationships:
http://grad.msu.edu/publications/docs/studentadvising.pdf

Guidelines for Integrity and Research and Creative Activities:
http://grad.msu.edu/publications/docs/integrityresearch.pdf
I. PROGRAM OVERVIEW

The Department of Pharmacology and Toxicology at Michigan State University (MSU) is a biomedical science department with academic and administrative responsibility to the Colleges of Human Medicine, Osteopathic Medicine, and Veterinary Medicine. The Department provides courses that are presented to graduate students, students of the three medical colleges, nursing students and advanced undergraduates. In addition, the Department offers advanced elective courses and the integrated teaching of pharmacology and toxicology with other subjects to all medical students.

The Department of Pharmacology and Toxicology uses effective leadership, productive collaboration, and expertise in molecular, cellular and integrative pharmacology and toxicology to excel in research, graduate and professional education and service.

The Ph.D. program was initiated in 1966 coincident with the establishment of the College of Human Medicine. Since that time, the alumni of this program have been placed in academic, industrial and governmental leadership positions in pharmacology and toxicology.

The principal objective of the Ph.D. program is to prepare students for pharmacology and toxicology related careers. Training culminates with the awarding of the Doctor of Philosophy degree (Ph.D.). Pharmacology and Toxicology is administered jointly by the Colleges of Human, Osteopathic, and Veterinary Medicine. Departmental faculty have expertise in biochemical/molecular pharmacology, cardiovascular pharmacology, drug metabolism, immunopharmacology and toxicology, neuroendocrine pharmacology, neuropharmacology, gastrointestinal pharmacology, toxicology, and carcinogenesis (see departmental website for details on faculty research interests http://www.phmtox.msu.edu/research/index.html).

The Department has specific obligations to graduate student trainees, and conversely, trainees have obligations to the Department and to themselves. The most important shared obligation is to maintain an environment in which there is mutual trust, respect, personal integrity and continuous striving toward excellence in scholarship.

The Department will provide for the student:
1. An environment in which scholarly attainment and conduct of meritorious scientific research can be achieved with an expected completion time within 5 years.
2. Responsiveness to valid academic needs and goals.
3. Support and encouragement of creative and original scholarly activity.
4. A periodic evaluation of the program and a willingness to make changes as appropriate.
5. Opportunities to experience/visit different employment options.
6. Training in written and oral scientific communication.
7. Guidance and mentorship for a science career including perspectives on professions and the meaning of being a professional.

The student has the following responsibilities and goals to:
1. Demonstrate a clear aptitude for scientific research including: commitment and effort, knowledge of the literature, formulation of hypotheses, experimental tests of hypotheses, analysis of experimental data and effective communication skills.
2. Produce peer-reviewed publications.
3. Strive for superior performance in academic courses.
4. Participate in the teaching program of the department as a practical means of acquiring teaching experience and skills. This will be accomplished under the guidance of faculty mentors who provide each student with confidential feedback on his/her instructional performance. This includes preparing lecture materials, delivering a lecture, preparing and proctoring examinations and tutoring of students when requested. Students will begin teaching after completion of their written and/or oral comprehensive exam.
5. Participate in Departmental seminars both as a speaker and a member of the audience.
6. Interact with faculty and students as colleagues.
II. PROGRAM COMPONENTS/PLAN OPTIONS

A. Goal

**Doctor of Philosophy (Ph.D.)** – The Ph.D. Program in Pharmacology and Toxicology prepares students for positions in research, teaching and related endeavors in settings that include but are not limited to:
-- academe
-- industry
-- private research institutes/foundations
-- government.

**Master of Science (M.S.)** – At this time, the MS in Laboratory Research in Pharmacology and Toxicology is currently given as a terminal degree to those graduate students who did not pass the Written or Oral Qualifying Exams, or elected to terminate their study.

B. Basic Components

The basic components for a Ph.D. degree include:
-- coursework
-- responsible conduct in research requirements
-- dissertation proposal seminar and defense
-- productive research leading to peer-reviewed publications
-- service and teaching
-- dissertation seminar and defense

C. Ph.D. Program

The culmination of the Ph.D. program is a research project that forms the basis of the doctoral dissertation. Students normally take 25 credits of advanced pharmacology and toxicology and electives during their first 7 semesters. The specific course of study is decided in consultation initially with the Graduate Program Director, then later with his or her Guidance Committee which will be composed of at least 4 tenured or tenure-stream faculty members including the student’s Dissertation Advisor. Non-tenure stream (fixed term) faculty can also be members of the Guidance Committee. However, addition of non-tenure stream faculty to a Guidance Committee requires approval of the Dean of the Graduate School.

Before fall semester each year, faculty from Biochemistry, Cell and Molecular Biology, Genetics, Microbiology and Molecular Genetics, Physiology, and Pharmacology and Toxicology, present short talks on their work as part of an umbrella Biomolecular Sciences program. This will help to familiarize first year students with the types of research being performed at MSU and to help them choose a particular program and laboratories in which to rotate.

During the first two semesters, students participate in at least two 13-week research rotations in laboratories of interest before selecting a thesis advisor. A third rotation is optional. The written comprehensive examination is taken in May of the second year. The oral thesis proposal is to be done within six weeks of passing the written portion of the exam and done as an NIH research proposal which is evaluated by the student’s Guidance Committee. Except for the first year, research progress is evaluated annually by the Dissertation Advisor, and the Graduate Program Director. It usually takes an average of five years to complete the doctoral degree.

Students will participate in the departmental “boot camp” the first two weeks of Fall semester in their second year after they have chosen Pharmacology and Toxicology as their home training program. Boot Camp is designed for new Pharmacology and Toxicology Ph.D. students to get a feel for the current research being done by departmental faculty members and to engage in selected hands-on laboratory exercises. Students also tour campus-wide core research facilities to become familiar with the overall research infrastructure available to them.
III. DEGREE REQUIREMENTS

A. Admission

• University: Minimum GPA of 3.0; completion of bachelor of sciences or arts degree
• College: Same as University
• Departmental: As described below

1. Admission Requirements

Since the fields of pharmacology and toxicology encompass a wide range of research problems drawing upon the concepts and tools of biological and physical sciences, students with diverse interests and backgrounds may enter the program. Students admitted to the graduate program must have a baccalaureate degree from an accredited college or university.

Students applying for admission to the graduate program should have a 3.3 grade point average minimum in their last two years of undergraduate work. A strong background in biological and/or physical sciences is required. Applicants should have successfully completed course sequences in general chemistry, organic chemistry, and biology. Experience in biochemistry is desirable. It is strongly recommended that applicants have some laboratory research experience or other evidence of a serious commitment to a scientific career before applying to the Ph.D. program.

The Graduate Record Examination (GRE) is required for admission of all students applying to the Ph.D. program. Only the scores of the General Test (verbal, quantitative and writing assessment sections) are required. GRE scores are used as one piece of information in the selection process, and other information listed below is equally important. Foreign applicants for whom English is not the native language must submit the results of their Test of English as a Foreign Language (TOEFL) examination. A minimum score of 600 (paper-based), 250 (computer-based) and 100 (iBT-based), or 7-8 on the IELTS is required for admission.

2. Admission Procedure

Admission to the Ph.D. program requires acceptance by the Department of Pharmacology and Toxicology. Application involves:

1) Completion of a formal Michigan State University Graduate application form (http://admissions.msu.edu/apply.asp).
2) One properly authenticated transcript from each university attended (undergraduate and any graduate work).
3) Submission of an academic statement of your plans for graduate study, your career goals, and how the Pharmacology & Toxicology Doctoral Program will help you meet your career and educational objectives. This statement should also contain a brief autobiographical sketch, including intellectual background and interests, a discussion of any laboratory research experience, and a statement regarding professional objectives.
4) Submission of a separate personal statement about how your background and life experiences, including social, economic, cultural, familial, educational, or other opportunities or challenges motivated your decision to pursue a Ph.D. degree.
5) Submission of three letters of recommendation from persons who are able to judge the applicant's academic ability and accomplishments. A Michigan State University Recommendation form should be attached to each letter of recommendation.
6) (Optional) Submission of a copy of a research paper written by the applicant and a current resume.

The application is reviewed by the departmental Graduate Committee, a yearly-appointed group of four departmental faculty and a student representative. Factors that determine the applicant's acceptance are: 1) academic record; 2) GRE scores (plus TOEFL or IELTS scores for international applicants); 3) professional goals; 4) evaluations by others [i.e., letters of recommendation]; 5) research
experience; and 6) the department's ability to give personal direction to the prospective applicant's program and goals.

An applicant already holding a M.S. degree may request to be evaluated further by the Graduate Committee for advanced status in the program.

In all areas of graduate education pertaining to admission or academic rights and responsibilities, there shall be no discrimination on the basis of age, race, color, creed, ethnic origin or sex. Members of minority groups are encouraged to apply. The rights and responsibilities of graduate students as itemized in this document do not nullify the rights and responsibilities of students as stated in the publication Academic Freedom for Students at Michigan State University (http://www.vps.msu.edu/SpLife/acfree.htm).

To apply for admission to the Ph.D. Program in Pharmacology and Toxicology, an applicant should write to the Director of the Graduate Program, presenting his/her academic background and general interests in the field. All completed domestic and international applications must be received by the December 1 for consideration for admission the next Fall semester. Applications are acted upon as they are completed; therefore early application is encouraged. Students are admitted only in the Fall semester.

Direct all inquiries to:  
Director, Doctoral Graduate Program  
Department of Pharmacology and Toxicology  
Michigan State University  
B405 Life Sciences Building  
East Lansing, MI 48824-1317

or by email to:  
hummeld@msu.edu

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**B. Course Requirements**

- **University:** Determined by Department for Ph.D.
- **College:** Same as University
- **Departmental:** As described below.

1. **Course Requirements**

   This is intended to provide a general outline of course requirements; modifications to the student's required courses may be requested by the faculty mentor dependent upon the student's background. The Graduate Committee, in consultation with the Coordinator of the course in question, must approve requests for waiver of any course requirements. Should this request occur in the student's first year, then the Director of the Graduate Program will serve as the student's mentor. The final decision will be first sent to the student and a copy of this decision placed in the student's Departmental file.

   Coursework provides a solid background upon which to build an understanding of pharmacology and toxicology. Biochemistry (BCH) and Physiology (PSL) serve as this background, and thus the first year is composed of these courses. Beginning in the summer after the first year, students begin a series of pharmacology/toxicology courses (PHM). The minimum acceptable grade point average after the end of the first year is 3.0.

   a) **Students beginning with a BA or BS degree:**

<table>
<thead>
<tr>
<th>COURSE NAME AND NUMBER</th>
<th>CREDIT HRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Biochemistry and Molecular Biology: Molecular Biology (BMB 801)</td>
<td>3</td>
</tr>
<tr>
<td>2 Metabolic Regulation and Signal Transduction (BMB 802)</td>
<td>3</td>
</tr>
<tr>
<td>3 Physiology and Pharmacology of Excitable Cells (PHM 827)</td>
<td>4</td>
</tr>
<tr>
<td>Physiology: Cellular and Integrative Physiology (PSL 828)</td>
<td>4</td>
</tr>
<tr>
<td>4 Principles of drug and tissue interactions (PHM 819)</td>
<td>2</td>
</tr>
<tr>
<td>Cellular, Molecular &amp; Integratived Sysmtes Pharmacology &amp; Toxicology (PHM 820)</td>
<td>4</td>
</tr>
<tr>
<td>Experimental Design and Data Analysis (PHM 830)</td>
<td>3</td>
</tr>
<tr>
<td>Research Rotation (PHM 870)</td>
<td>1</td>
</tr>
<tr>
<td>Seminar (PHM 910)</td>
<td>1</td>
</tr>
<tr>
<td>COURSE NAME AND NUMBER</td>
<td>CREDIT HRS</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Special Problems (in conjunction with PHM 819 above) (PHM 980)</td>
<td>1</td>
</tr>
<tr>
<td>Doctoral Dissertation Research (PHM 999)</td>
<td>24 minimum</td>
</tr>
</tbody>
</table>

5 **Electives** – Students are required to take a minimum of one elective course. There is no credit minimum or maximum. Elective course selection should be made by the student following consultation with the student’s dissertation advisor and Guidance Committee.

A A minimum of one PHM 800 level course listed below is required (additional courses may be developed).

- PHM 810, Synaptic Transmission: 3 credits
- PHM 816, Integrative Toxicology: Mechanisms, Pathology and Regulation: 3 credits
- PHM 839, Systems Neuroscience: 4 credits

B A student may be required by his or her dissertation advisor to take any appropriate course(s) presented in any department relevant to his or her research program. These courses must be approved by the Guidance Committee and the Graduate Program Director, and placed in the student’s departmental file.

C If the student is enrolled through a dual degree program such as the Center for Integrative Toxicology, there are several additional courses the student will be required to take for completion of his or her program.

6 Students will be required to give at least 3 course lectures every year after passing the qualifying examinations in a departmental undergraduate course during their third and fourth years. The course instructor will provide a written evaluation of the student’s performance; the evaluation will be placed in the student’s departmental file.

### ESTIMATED TIMELINE TO GRADUATE WITH PhD

<table>
<thead>
<tr>
<th>YEAR I</th>
<th>YEAR II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fall</strong></td>
<td>Cellular, Molecular and Integrated Systems Pharmacology and Toxicology (PHM 820) Experiment Design &amp; Data Analysis (PHM 830)</td>
</tr>
<tr>
<td>Biochemistry (BMB 801)</td>
<td>Written Comprehensive Examination between the Spring and Summer semesters</td>
</tr>
<tr>
<td>Physiology &amp; Pharmacology of Excitable Cells (PHM 827)</td>
<td>Elective and/or Research credits (PHM 999)</td>
</tr>
<tr>
<td>Laboratory Research Rotation (enroll the following summer)</td>
<td></td>
</tr>
</tbody>
</table>

| **Spring** | Elective and/or Research credits (PHM 999) |
| Biochemistry (BMB 802) | |
| Cellular and Integrative Physiology (PSL 828) | |
| Laboratory Research Rotation (enroll the following summer) | |

| **Summer** | Elective, and/or Research credits (PHM 999) |
| Principles of Drug Tissue Interaction (PHM 819) | |
| Problems (PHM 980) – In-class portion is in conjunction with PHM 819 | |
| Research Rotations (PHM 870-enrolled only) | |

<table>
<thead>
<tr>
<th><strong>YEAR III</strong></th>
<th><strong>YEAR IV</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fall</strong></td>
<td>Elective, and/or Research credits (PHM 999)</td>
</tr>
<tr>
<td>Elective, and/or Research credits (PHM 999)</td>
<td></td>
</tr>
</tbody>
</table>

**Oral Comprehensive Examination (thesis proposal defense) and seminar should be completed within 6 months after passing the Written Exam.***

| **Summer** | Elective and/or Research credits (PHM 999) |
| Research credits (PHM 999) | Seminar (PHM 910) |

<table>
<thead>
<tr>
<th><strong>YEAR V</strong></th>
<th><strong>YEAR I</strong></th>
<th><strong>YEAR II</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective, and/or Research credits (PHM 999)</td>
<td>Elective, and/or Research credits (PHM 999)</td>
<td>Elective, and/or Research credits (PHM 999)</td>
</tr>
</tbody>
</table>

Sometime during Year V, the student should be defending his/her dissertation. The student will also be required to present their thesis/dissertation seminar on the same day. As per University regulations, students must be registered the semester they defend!
*If the student will not be defending his/her thesis proposal before the end of 6 months, then they must submit, in writing, a request for approval from their Guidance Committee and the Graduate Program Director. This request will go in the student’s file.

** Students are required to take a minimum of 24 dissertation research credits.

b) Department of Pharmacology and Toxicology Courses

(1) **Grading.** Course grades shall represent the instructor's professional and objective evaluation of the student's academic performance. The student shall have the right to know all course requirements, including grading criteria and procedures, at the beginning of the course.

(2) **Instruction.** Within the constraints imposed by the discipline, class size, and specific subject matter, instruction in the Department of Pharmacology and Toxicology shall encourage free and open communication and shall attempt to fulfill the needs and aspirations of individual students. Students and faculty have a responsibility to maintain at all times the kind of classroom decorum and atmosphere which ensures that the process of learning can take place.

(3) **Evaluation of the Faculty** To aid the faculty in its responsibility for the quality of graduate education, student confidential instructional rating reports shall be used in each graduate course in accordance with the stated policy of the Academic Council. Such reports shall be considered carefully when graduate course teaching assignments are made.

(4) **Pharmacology and Toxicology required courses:** See Appendices for a list of departmental courses.

c) **Students beginning with a Master of Science degree:** Course and rotation requirements are the same for students entering the Ph.D. program with a M.S. degree as they are for students entering with a Bachelors degree.

d) **Students entering with a professional doctorate (e.g., DO, MD, DVM or DDS)** The Graduate Committee in consultation with the Coordinator of the course in question and the student’s mentor must approve requests for waiver of any core courses. The student's Guidance Committee will make recommendations for appropriate elective courses.

C. **Research Requirements:**

- **University:** Uniform requirement of a minimum of 24 research credits, in addition to the course work prescribed by the Guidance Committee.

- **College:** Same as University

- **Department:** The doctoral training program culminates in the Ph.D. degree. Students are expected to devote the full twelve-month year to graduate work and are not permitted outside employment if funds administered by the program are provided for support.

The training program has two main aspects: 1) didactic instruction presenting the language and vocabulary of pharmacological sciences (e.g., biochemistry, physiology, biostatistics, pharmacology and toxicology); and 2) training in research, the scientific method and scientific communication. Training in both areas begins the first semester and is under the direction of the Graduate Program Director who will act as the student's major professor until a permanent advisor is selected. All new students will meet with the Director of the Graduate Program before the start of classes. During this meeting, each student's coursework for the first semester will be determined. The selection of courses depends on the student's background and research goals. To facilitate the tracking of each student's progress, a "Graduate Student Progress Flow Sheet" is maintained for each individual; starting from the time they begin graduate study (see Appendices for all forms). (These will be kept and updated periodically by the Graduate Secretary to the Graduate Committee and will be available for the student's or advisor's perusal at any time).
1. Student Evaluation During the First Year

A research rotation system (PHM 870, 1 credit) spans the Fall, Spring and (if necessary) Summer semesters of the first year. It provides the opportunity for each student to become familiar with research activities of the training faculty before selecting a major advisor. In the week prior to beginning the Fall semester, first-year students in the department participate in a Joint Biomedical Sciences Orientation Program. During this week, principal investigators from Biochemistry, Cell and Molecular Biology, Genetics, Microbiology, Physiology, and Pharmacology and Toxicology present short talks on their work, with the goal being to familiarize students with the breadth of research performed on this campus and to help them choose laboratories in which to rotate.

During the first three weeks of the Fall semester, incoming graduate students are introduced to the research activities of the Joint Biomolecular training program Faculty. Students will meet as a group with one or more faculty members per week during which time they will learn of the activities of each training faculty. Subsequently, students will have the opportunity to perform 13-week research rotations in up to three different laboratories. Students will select the laboratories in which they wish to study after discussing the opportunities for research with the faculty during the initial 3-week period of introduction to research.

The Joint Biomolecular training program requires the first-year students to participate in at least two research rotations. However, under exceptional conditions, a student may petition the Executive Committee for a waiver of the requirement for the second research rotation. A final decision regarding selection of a dissertation advisor will be made by the faculty prior to the start of the student's third semester, as described below.

Emphasis during the rotation period should be on: 1) active participation and intellectual engagement in laboratory research, 2) gaining a working knowledge of the field, and 3) production of sufficient experimental results that a valid evaluation of the student's potential for a career in research can be made. A high quality effort is expected.

Each faculty member with whom the student works during the rotation periods will make continuous evaluation of a student's performance. The student will meet with each faculty member during the rotation period to discuss performance. At the end of each rotation period, a written evaluation will be discussed with and signed by the student. The rotation faculty advisor will discuss the student's performance during a faculty meeting at the end of each research rotation. The written evaluation will be maintained in the student's file (see Appendices for all forms).

At the end of the second semester in the first year, the student's performance in the academic and research arena will be evaluated by the Graduate Program Director. A student is expected to maintain a minimum GPA of 3.0 (out of 4.0) and show commitment to ascribed work in the laboratory. Should lack of such success be evident, actions including dismissal or a leave of absence may be implemented after consultation with the Graduate Committee and remaining Pharmacology & Toxicology faculty.

At the end of the second semester of a student's first year, the student will present a 30-minute seminar to the Pharmacology and Toxicology Department summarizing some aspect of one of his/her research rotation experiences. Student performance during the seminar presentation and the subsequent questioning period will be evaluated on the basis of: organization, presentation and knowledge of content. The faculty will fill out a "Student Seminar Evaluation" form (see Appendices for all forms), which is given to the student and a copy maintained in the student's file. Before the beginning of the third semester of the first year, the faculty will evaluate each student on the basis of:

i) Academic achievement (course grades). A 3.0 minimum overall gradepoint average from among the coursework (including PHM 870) is required.

ii) Performance during rotations (demonstration of interest, research ability and perseverance).

D. Comprehensive Examination Requirement:

**University:** May be taken when 80% or more of the prescribed course work is completed. The examination must be passed within five years after the student's first enrollment as a doctoral student.

**College:** No statement at this time.

**Department:** This examination consists of three parts: 1) written examination; 2) written dissertation proposal; and 3) oral presentation and defense of the written dissertation research proposal.
The Doctoral Graduate Program in Pharmacology and Toxicology has as its main goal the training of students to become professional pharmacologists and toxicologists. Graduate students are to be provided the necessary core knowledge and skills to be successful researchers, teachers, and analysts of new knowledge in the fields of pharmacology and toxicology so that they can become leaders in their chosen field.

Accomplishing the above goal involves two complementary phases of learning by the students. In the first phase of training, emphasis is placed on acquisition of basic science knowledge that forms the foundation of pharmacology and toxicology, integrative thinking, and the need to be a lifelong learner. In the second phase of training, students will be trained in a specialized topic area that is the focus of their dissertation research project. Selection of areas to be taught is based on the particular interests and expertise of the faculty mentor and the dissertation advisory committee. It is expected that students will become proficient with experimental design, analysis and interpretation of biomedical research in their area of study; critical analysis of the research literature in their area of study; and preparation of grant applications and reports. It is the obligation of the Department of Pharmacology and Toxicology to evaluate, in an objective manner, the degree to which each student meets these training goals. No single test, examination, experience or method alone is sufficient for the Department of Pharmacology and Toxicology to meet its obligation to evaluate students on all of the training goals outlined above.

The Written Comprehensive Examination will be given after the first phase of training described above is complete. Accordingly, the Written Comprehensive Examination is designed to evaluate only a subset of the student competencies that the Pharmacology and Toxicology Doctoral Graduate Program is expected to produce. The Dissertation Proposal Defense is another opportunity for evaluating student knowledge and abilities.

1. **Written Comprehensive Examination**
   a) **Goals of the Written Comprehensive Examination:**
      The goals of the Written Comprehensive Examination are to test student mastery of the core knowledge in pharmacology and toxicology, and to determine the ability of students to use their core knowledge to: 1) design experiments aimed at understanding the responses of biological systems to drugs or toxicants; and 2) critically evaluate experiments others have performed to understand responses of biological systems to drugs or toxicants.

   b) **Format of the Written Comprehensive Examination:** The Written Comprehensive Examination consists of two parts administered on consecutive days.

      1) **Mastery examination** section in which students provide short answers to ~30 questions covering basic principles, definitions and concepts of pharmacology and toxicology. These questions are selected initially at random using exam-generated software from a larger pool that is updated at least once a year by the Graduate Committee (in consultation with the faculty as a whole). The Graduate Committee reviews the initial set of questions selected at random and retains the option of rejecting some while making appropriate substitutions in order to insure a reasonable degree of balance for the exam. Each question will have an “ideal” answer associated with it, allowing the items to be graded easily by Committee. Students must achieve a score of 80% or better to pass this part of the examination.

      2) **Problem-solving exam** section in which students would write detailed, essay-type responses to 5-6 questions focused on understanding the interactions of xenobiotics with biological systems. The questions require the students to either design appropriate experiments to solve a problem or interpret experimental findings of others related to xenobiotic action. Questions on this section of the examination will be submitted by faculty groups from each of the following themes:

      **Organ Systems** – topics related to structure and function of in vivo models and/or organ systems that display integrated drug, chemical or physical agent responses that result from interactions between cellular, tissue and organ responses. Key points include translational research (including safety and efficacy); connections between in vitro, organ function in situ, and in vivo studies/results with an emphasis on integrative responses; analyses across multiple levels of biological organization; design of experiments that determine integrated mechanisms of action or that would use drugs to understand the normal function of a system.
Molecular and Cellular – mechanisms of drug/chemical/biologic agent action at the cellular and/or subcellular level including aspects of metabolism, signal transduction and regulation of transcription, translation and post-translational modification.

Principles of Pharmacology and Toxicology – Processes controlling drug/chemical/biologic agent concentrations in body compartments following administration or exposure; these processes include absorption, distribution, metabolism and excretion. Interactions of drug/chemical/biologic agents with receptors and effects produced by these interactions including receptor theory and signal transduction mechanisms. Methods used to assess these processes and interactions, and how these processes and interactions may change across the lifespan, with altered health status, and by prior exposure.

Therapeutics – Predicting beneficial and adverse effects from mechanism of drug action; analysis of observed clinical effects/outcome based on mechanism of drug action.

The Graduate Committee will select from the initial set of questions submitted by faculty theme groups to insure a reasonable degree of balance for the exam. The questions should focus less on detailed understanding of very specific areas of pharmacology and toxicology and more on broad topics chosen to be representative of issues that any pharmacologist or toxicologist might face. Students must achieve a score of 70% or better to pass this part of the exam.

c) Grading: Exam questions will be graded by faculty comprising the Mastery, Organ Systems, Molecular and Cellular, Principles of Pharmacology and Toxicology, and Therapeutics theme groups. There are two (2) possible grades: Pass or Fail. If a student fails the Mastery, Problem-solving or both portions of the examination, then they may retake the failed portion of the examination the following year. The Written Comprehensive Examination may be repeated once; if failed a second time the student will be dismissed from the Doctoral Graduate Program.

2. Dissertation Proposal Defense Examination

The Dissertation Proposal Defense Examination consists of the defense of a dissertation research proposal written in the format of an Individual National Research Service Award (NRSA) predoctoral fellowship application, including a detailed first-year budget and a research plan limited to 10 pages.

a) Goal of the Dissertation Proposal Defense Examination:

The goal of the Dissertation Proposal Defense Examination is to make an in-depth evaluation of the student’s dissertation proposal, including an evaluation of the student’s knowledge of areas of pharmacology and toxicology relevant to the proposal.

b) Format of the Dissertation Proposal Defense Examination:

The student will present a seminar based on their thesis proposal that may be scheduled outside of the department’s regular seminar series. This seminar will be scheduled for one hour (to include 45 minutes for the talk plus time for questions). At the end of the seminar the student will meet with the members of the Dissertation Proposal Defense Examination Committee (see pp. 12-14) in order to provide an opportunity for the Committee to ask questions related specifically to the proposal and to evaluate the student’s knowledge of areas of pharmacology and toxicology and the underlying conceptual framework (e.g., biochemistry and physiology) related to his/her dissertation project.

c) Evaluation:

The evaluation will be made by a Dissertation Proposal Defense Examination Committee. The Committee will be comprised of the student’s Guidance Committee minus the thesis advisor. An additional faculty member in the department will be designated by the Graduate Committee to serve as Chairperson of the Dissertation Proposal Defense Committee. The roles of the Chairperson are to serve as a representative of the faculty with the responsibility of insuring that the student’s seminar and the Dissertation Proposal Defense Examination are conducted pursuant to the format outlined above and to report the student’s grade, as indicated below. After the completion of the report, the Chairperson has no further obligation.
d) Grading:
There are three (3) possible grades: 1) Pass, 2) Conditional Pass – A relatively small portion of the student’s proposal needs to be revised and re-evaluated and/or selected aspects of the student’s knowledge of pharmacology and toxicology were deemed deficient and need to be re-evaluated, or 3) Fail – The student needs to repeat the Dissertation Proposal Defense Examination. The Dissertation Proposal Defense Examination may be repeated once. If failed a second time the student will be dismissed from the Doctoral Graduate Program and given the opportunity to finish their research for an M.S. degree.

e) Reporting the Grade:
The Chair of the Dissertation Proposal Defense Examination Committee will draft a brief, written report indicating the grade, summarizing the Committee’s overall impressions, including comments on the written proposal, and, if appropriate, noting any of the student’s shortcomings. This report will become a part of the student’s file, and copies will be provided to the Guidance Committee members, the Chair of the Graduate Committee, the student’s dissertation advisor and the student.

f) Waiver of Enrollment for Summer Semester:
For students enrolled in the Spring and are presenting their Dissertation Proposal Defense Examination during the immediate Summer semester, the department can request a waiver of the requirement that the student be enrolled for at least one credit the semester of the examination. These requests are to be directed to the Graduate School but must first be endorsed by the Department and the student’s College. This applies only to the Oral Comprehensive Examination.

g) Performance in the departmental seminar (see section on Student Seminars)
Students who are recommended to continue in the Ph.D. program will select a dissertation (major) advisor and guidance committee as described below.

E. Guidance Committee Requirements:
• University: Committee of four or more regular faculty members
• College: No statement as to number or composition
• Department: Please refer to Sections V on pages 11-12

F. University and Departmental Forms Required to Graduate:
• University: See below. See copies of forms in the Appendices.
• College: None at this time.
• Department: See below. Copies of forms available in the Appendices.

- Research Rotation form (departmental—completed by research rotation faculty)
- Student Progress Flow Sheet (departmental—completed by Graduate Secretary)
- Annual Evaluation form (departmental—completed by student, dissertation advisor, and Graduate Program Director)
- Seminar Evaluation form (departmental—submitted to faculty before presentation)
- Course Lecturing Evaluation form (departmental—completed by course instructor)
- Record of Comprehensive Examinations for Doctoral Degree (university—Graduate Secretary completes)
- Report of the Guidance Committee (university—Graduate Secretary completes)
- Application for Graduation (university—student completes online thru Registrar’s website)
- Final Certification for Degree form (university—sends to Graduate Secretary who will complete form after student’s defense)
IV. SELECTION OF A DISSERTATION ADVISOR

The Director of the Joint Biomolecular Training Program will serve as the advisor for all Year I graduate students. Those students who are recommended for the Ph.D. program will select a dissertation advisor and guidance committee as described below.

The selection of a Dissertation Advisor is based on a student’s choice of laboratory work as well as the faculty member’s willingness to accept the student into his/her laboratory. During the course of rotations, a student will have experience working in two or three different laboratories. The rotations help the student and potential faculty mentor determine if the research interests and priorities of the student and potential mentor are compatible, and if the student and mentor would have a productive and mutually supportive working relationship. It is also possible for students to have two faculty serve as co-mentors. In practice, one faculty mentor must assume the administrative responsibilities of the Dissertation Advisor.

A. Changing Dissertation Advisors:

The relationship between a graduate student and dissertation advisor is critical to a student’s development. Both parties should strive to obtain a mutually productive and collegial association. Situations may develop such that this relationship deteriorates, and the ability of the student to make satisfactory academic progress is impaired. The selection of a dissertation research advisor is not irrevocable, but a request by a student for a change in dissertation advisor is a serious issue that should only be made with clear cause. A student considering this possibility should consult with the Graduate Program Director before proceeding.

V. FORMATION OF GUIDANCE COMMITTEE

A. Guidance Committee Selection

Before the start of the third semester of their first year of graduate study, a student will request one faculty member to serve as his/her advisor for dissertation research, the student’s dissertation advisor (see section IV). Graduate students in the Department of Pharmacology and Toxicology will have a member of the department serve as their dissertation advisor. This does not require, however, the student to conduct their dissertation research in the advisor's laboratory. They may work on a project jointly supervised by a faculty member in Pharmacology and Toxicology plus a member of the training faculty whose appointment is outside of the department. The Dissertation Advisor will serve as Chair of the student's Guidance Committee, which consists of at least four MSU appointed faculty. The Committee must include, in addition to the Advisor, two other members of the Department of Pharmacology and Toxicology and one individual who does not have a full-time appointment in the department. The Guidance Committee may consist of more than four members if the dissertation research advisor and the student feel this would be advantageous. The additional member(s) may be an MSU faculty member (tenure or non-tenure stream), a faculty member (tenure or non-tenure stream) at another College/University or an individual working in industry. This Committee will oversee the student's coursework, advise the student concerning dissertation research, and conduct the oral defense of the research proposal and dissertation. In some instances, students may elect to perform their dissertation research in a laboratory that is outside of the Department of Pharmacology and Toxicology. The principal investigator of this laboratory can serve as Dissertation Advisor in every day matters, but a departmental faculty member will need to be chosen as Chair of the Committee.

If the Dissertation Advisor and student choose an individual for the Committee who has a non-tenure appointment, an adjunct appointment or is not affiliated with MSU, approval must be obtained from The Graduate School for such an individual to be a member of the Guidance Committee. Please see the Department’s Academic Office for the proper procedure to obtain approval.

B. Preparation of Program of Coursework and a Dissertation Research Proposal:

Shortly after selecting their Dissertation Committee, the student, with the help of his/her dissertation advisor, will prepare a program of coursework and a dissertation research proposal. The proposal will be distributed to the other members of the Guidance Committee and will serve as the basis for an oral portion of the comprehensive examination. At all times during a student's course of study and research,
members of the Guidance Committee will be available for consultation and advice; there should be at least one meeting once a year to discuss progress. The student should take the initiative for his or her committee to meet once a year, but it is the duty of the Dissertation Advisor to verify in the student’s annual evaluation that this meeting occurred. This letter, addressed to the Graduate Secretary, will then be placed in the student’s file. Under some circumstances, replacement of Guidance Committee members will be necessary. The reason(s) for this action must be stipulated in a letter to the Dissertation Advisor and copied to the Associate Chair of the Academic Office and Chair of the Graduate Committee. Both individuals must approve this action. The letter will then be placed in the student's departmental folder.

C. Notification of Student’s Progress:
During a regularly scheduled faculty meeting sometime at the beginning of Spring semester, the Graduate Program Director will inform all members of the faculty of the Department of Pharmacology and Toxicology of the progress of each student. At the end of each Spring semester, the Dissertation Advisor will provide the student with a written evaluation of progress (Annual Evaluation form) in meeting the research goals of the student’s dissertation project and academic requirements of the program during the preceding year. The written report will also contain a plan for the coming year to address any deficiencies in the student’s progress, and will be signed by the Dissertation Advisor and the student. The student will meet with the Graduate Program Director, who will review and sign the report and place it in the student’s file (see Appendices for all forms).

VI. DISSERTATION DEFENSE AND FINAL ORAL EXAMINATION

Intent: The final doctoral examination is the culmination of a student’s graduate education and training and reflects not only on the accomplishments of the graduate student but also on the quality of the graduate program. The following policies and procedures are designed to ensure the maintenance of expected professional standards in the preparation of the written documents and in the oral defense of the dissertation. An approved dissertation that is accepted by the graduate school becomes a single-author publication and contributes to the body of knowledge of the discipline.

A. Oral Defense of Dissertation:
The student is encouraged to talk with the Graduate Administrative Assistant to set a date for their final Dissertation Seminar and defense.

1. The final oral examination for the Ph.D. degree is a defense of the Ph.D. dissertation and the student’s knowledge of related scientific areas. The Pharmacology and Toxicology Department requires the dissertation seminar to be presented on the same day as the defense.

2. Students taking the examination must previously have filed an Application for Graduation; see the University calendar for deadlines (form available online through the Registrar’s Office website, http://www.reg.msu.edu/StuForms/GradApp/GradApp.asp; you will need your MSU NetID to do this).

3. Candidates should circulate copies of the dissertation to their Guidance Committee at least two weeks prior to the examination.

4. When the Guidance Committee has reviewed and approved the thesis and the student has passed the oral defense, the student may be required to incorporate in the thesis any recommended changes before having it permanently bound. Failure to meet these criteria will delay the awarding of the degree.

B. Dissertation Requirements:
•University: Must be in accordance with “The Graduate School Guide to the Preparation of Masters Theses and Doctoral Dissertations” (http://grad.msu.edu/format.htm). A final copy of the dissertation, an abstract and an abstract title page must be
submitted to the Graduate School. Dissertations are now submitted electronically to the Graduate School.

• College: Same as University
• Department: An optional "Journal Article" format may be used. One bound copy of the dissertation is to be given to the Department.

1. Written Dissertation:
   Students must successfully complete a scholarly research project and prepare a written dissertation based upon this research. The dissertation must be organized, typed, duplicated and bound according to the regulations described in the "Michigan State University Guide to a Graduate Degree". The Guidance Committee must approve the dissertation and the student must successfully pass an oral examination involving an explanation and defense of the dissertation and knowledge of related scientific areas. The Guidance Committee will conduct the examination, but other interested faculty members may attend the dissertation seminar.

   • For the Ph.D. degree, a student must successfully complete a scholarly research project and prepare a written dissertation based upon this research.
   • For assistance in preparing the written dissertation, the Pharmacology and Toxicology Department will provide the student access to dissertations located in the departmental library that have been accepted.
   • The dissertation must be organized, typed, duplicated and bound according to the regulations described in the "Michigan State University Guide to a Graduate Degree".
   • At least six weeks before the end of the semester that the student expects to complete requirements for the Ph.D. degree and at least two weeks before a scheduled oral defense, the student must submit his/her dissertation for review by the Guidance Committee.
   • When the Guidance Committee has reviewed and approved the dissertation and the student has passed an oral examination in its defense, the student must incorporate in the dissertation any recommended changes before submitting electronically to the Graduate School and having it permanently bound. Failure to meet these criteria will delay the awarding of the degree.
   • The graduate student is required to bear the expense of preparation of the dissertation although arrangements may be made with the major advisor to share in this cost.

C. Degree Completion Sequence:
   • Deadline dates should be confirmed by the department and student.
   • Student obtains a copy of the Formatting Guide for Theses/Dissertations and Dissertation Submission Packet from the Graduate School website
   • Student completes and submits the Application for Graduation to the Registrar’s Office
   • The Final Certification form is mailed by the Registrar’s Office to the Department
   • Department verifies student’s records for completion of program requirements. Refer to the Academic Programs catalog for complete program requirements – on the web at http://www.reg.msu.edu/ucc/ucc.asp.
   • Student schedules and completes the final seminar and oral examination.
   • Student submits the final dissertation electronically to the Graduate School.
   • Upon acceptance of the dissertation, the Graduate School forwards a copy of the title page to the Registrar’s Office.
   • The Department completes the Final Certification form and returns it to the Registrar’s Office.
   • Registrar’s Office approves Final Certification form, confirms receipt of dissertation by the Graduate School and issues diploma and transcripts to student.
   • Student attends commencement.
   • Final degree list is sent to departments
D. Publishing Agreement with ProQuest:
The new publishing agreement for dissertations with ProQuest now provides an “Open Access Publishing Option” as an alternative to the traditional publishing option available to our students. The Open Access option gives ProQuest the authorization to make the electronic version of the document accessible to all via the internet, including the selling of the document by commercial retailers and the accessibility to the work via search engines. A student selecting the Open Access option will not be eligible to receive royalties. The pros and cons of selecting this new option differ significantly across disciplines, and the graduate handbook could be a way to inform students of benefits and problems associated with each option. For more information, visit: http://www.umi.com/

E. Submission of Dissertation:
• University: All doctoral dissertations are now submitted in electronic (pdf) form to the Graduate School. Go to http://grad.msu.edu/etd/ to follow the step-by-step instructions.
• College: Same as University
• Department: Same as University

VII. DEPARTMENTAL POLICIES: ACADEMIC PERFORMANCE

A. Academic Standing After the First Year:
• University: The University requires a minimum of at least a 3.0 grade point average to continue in a program.
• College: Same as the university.
• Department: Same as the university.

Students in the department are required to maintain at least a 3.0 grade point average; failure to do so will result in placement of the student on probationary status. In addition, a grade of 3.0 or better should be attained in all departmental courses as well as in all courses required by the Pharmacology and Toxicology Department. This does not mean that an occasional grade of 2.0 or 2.5 is not tolerated, but more than two such grades will result in faculty consideration of the student’s status, and possible dismissal.

B. Academic Standards:
• University: Normally a 3.0 (B) GPA is necessary to meet minimum standards. A minimum grade of 2.0 (C) is required for credit in individual courses.
• College: For retention, the major professor, Guidance Committee and Department make decisions. For graduation, a GPA of at least 3.0 in prescribed courses, exclusive of collateral courses and research, is required.
• Department: Same as College.

C. Grading Status:
• University: See below for university distinctions.
• College: Same as the university.
• Department: Same as the university.

Michigan State University employs three systems of grading: 1) a numerical system, 2) a supplemental credit-no credit system, and 3) a non-numerical pass-no pass system. The Pharmacology and Toxicology Graduate Program predominantly uses the Numerical System. In only three departmental courses does a Pass/No Pass system apply (PHM 910, PHM 899 and PHM 999). All campus 899 and 999 courses are given an automatic “DF” (Deferred) by the University until the student graduates. Once the student passes, the University applies “P” (Pass) to the course.
1. **The Numerical System:**
   The numerical system consists of the following scale:

   4.0 – 3.5 – 3.0 – 2.5 – 1.5 – 1.0 – 0.0

   Grading Procedure of the Numerical System:
   a. A minimum grade level of 2.0 for graduate student credit. However, all grades are counted in the calculation of the grade-point average (GPA).
   b. The minimum cumulative GPA required for graduation is a 3.0 for graduate students.
   c. In particular graduate programs, the number of 2.0 grades acceptable for credit may be expressly restricted and/or levels higher than the 2.0 minimum may be established for the fulfillment of degree requirements.

2. **The Credit-No Credit System:**
   Not applicable to the Pharmacology and Toxicology Doctoral Graduate Program

3. **The Pass-No Pass System:**
   This system is used only in courses specifically approved by the University Committee on Curriculum. Non-credit courses and those involving field experiences are the usual types of courses approved for P-N grading. Courses approved for P-N grading are so marked in the Schedule of Courses on the Registrar’s website.

   **Repeating a Course:**
   A graduate student who receives a grade of 2.0 or above, CR or P in a course may not repeat the course on a credit basis with the following exceptions: with the approval of the associate dean, a graduate student may repeat a course in which a grade of 2.0 or 2.5 was received. The number of credits that a graduate student may repeat is determined by the student’s academic adviser or guidance committee, in accordance with unit policies.

   Whenever a course is repeated on a credit basis, the last grade and credits earned completely replace the previous grade in the satisfaction of requirements and computation of grade-point averages. All entries remain a part of the student’s permanent academic record.

   Any course repeated for credit must be taken on the same grading system under which the course was taken the first time, except where standard requirements to the contrary must be satisfied in order to meet graduate requirements.

   Credit by examination may not be used to repeat a course in which a grade below 2.0 was received.

   A student who has taken a course as a visitor may subsequently enroll in the course for credit with the approval of his/her advisor.

4. **Deferred Grades (DF):**
   The required work must be completed and a grade reported within 6 months with the option of a single six-month extension. If the required work is not completed within the time limit, the DF will become U (unfinished) and will be changed to DF/U under the numerical and Pass-No Grade (P-N) grading systems, and to DF/NC under the Credit-No Credit (CR-NC) system. *This rule does not apply to graduate dissertation work.*

D. **Student Seminars**
   - University: At the discretion of the department.
   - College: Same as the university.
   - Department: Same as the university.

   All graduate students in the Pharmacology and Toxicology Graduate Program will present at least three seminars during their graduate career, in the following sequence:
Year | Seminar
--- | ---
1 | A 30-minute presentation on some aspect of their research rotations.
3 | A 50-minute research-in-progress seminar may be primarily a literature review and serves as a Dissertation Proposal Seminar.
4 or 5 | A 50-minute research seminar that serves as the Dissertation Defense Seminar.

Guidelines for seminar preparation:
a) The organization of a seminar is the responsibility of the student, but the student's advisor should provide assistance.
b) The amount of direct assistance provided by the advisor should diminish with increasing experience of the student. Specifically, unlimited advice (both general and specific) should be offered to the student presenting his or her first seminar. By comparison, little advice should be required for preparation of the student's last seminar, whereas some intermediate level of advice should be available for any seminars presented between the first and last years of the student's tenure. Please note that the actual interaction of student and mentor in preparing these seminars is at the discretion of the student and mentor.

E. Graduate Teaching Requirements:
• University: At the discretion of the department.
• College: At the discretion of the department.
• Department: Students are required to proctor professional school examinations and (after completion of their second year in the program) participate in teaching in undergraduate courses offered by the department.

F. Interdisciplinary Programs Associated With Pharmacology and Toxicology
• University: At the discretion of the department and program.
• College: At the discretion of the department and program.
• Department: At the discretion of the department and program.

Our Department is fortunate to be involved in a number of programs that are thematic in their scientific nature and programming. Below is a list of those programs in which our faculty are currently involved, and the faculty which our students can consider as research mentors. Their involvement extends to that of the incoming graduate students, and thus the student should look at these other programs as a way to enhance their training. Please note that enrollment/participation in one of these programs is NOT required to be a graduate student in pharmacology and toxicology; it is a student's choice. Involvement in some of these programs requires acceptance in a free-standing graduate program such as Pharmacology and Toxicology, while others are degree granting on their own (CMB, Neuroscience). (See Appendices for descriptions of the interdisciplinary programs listed below.)

- Cell and Molecular Biology (CMB)
- Center for Integrative Toxicology (CIT)
- Comparative Medicine and Integrative Biology (CMIB)
- Environmental Sciences and Policy Program (ESPP)
- Neuroscience Program (NEU)
- Quantitative Biology and Modeling Initiative (QBMI)
- Interdisciplinary Graduate Students in Biomolecular Sciences (BIOS)
- Medical Scientist Training Programs (MSTP) (associated with the Colleges of Human and Osteopathic Medicine [MD/PhD and DO/PhD programs])

G. Residency:
• University: One year of residence on the campus after first enrollment for doctoral degree credit is required to permit the student to work with and under the direction of the faculty, and to engage in independent and cooperative research utilizing University facilities. A year of residence will be made up of two consecutive
semesters, involving the completion of at least six credits of graduate work each semester.

• College: Same as University
• Department: Same as University

H. Transfer of Credits:
• University: Graduate credits may be transferred from other accredited institutions or international institutions of similar quality if they are appropriate to a student’s program and provided they were completed within the time limits approved for the earning of the degree desired at Michigan State University. The department Chairperson or Director and Dean must grant approval. Only graduate-level courses in which at least a 3.0 (B) grade was received will be considered for transfer. The University allows a combined maximum of 9 credits to be applied to a PhD program from transfer courses, Lifelong Education enrollment status, and the Graduate Certificate level.

http://www.reg.msu.edu/Read/UCC/combinedmax.pdf

• College: Same as University
• Department: Same as University

I. Work in Absentia:
• University: Officially, students are not allowed worker’s compensation or maternity leave.
• College: Same as University
• Department: Illness/Injury/Pregnancy Leave
(http://www.reg.msu.edu/academicprograms/text.asp?section=111#s405)

A graduate student unable to fulfill the duties of his or her appointment because of illness, injury or other medical condition shall notify the administrator of his/her major unit as soon as circumstances permit.

During the illness, injury, or other medical condition, the major unit shall reduce, waive, or reschedule the Graduate Assistant’s duties as circumstances reasonably dictate. If total absence from duties becomes necessary, the major unit shall maintain the stipend of the appointment, provided the Graduate Assistant is still enrolled, for a period of two months, or to the end of the appointment period or of the semester, whichever should occur first.

The Graduate Assistant shall have the right to return to the assistantship within the original term of the appointment at such time as he/she is able to reassume the duties of the position.

J. Time Limits for Requirements for Ph.D.:
• University: Comprehensive examinations must be taken within five years and all requirements completed within eight years of initial enrollment as a doctoral student. If degree is not completed within eight years, the written portion of the comprehensive examination must be passed again.

• College: Same as University
• Department: Same as University

K. Foreign Language Requirements:
There are no set requirements for the University, College or Department.

L. Responsible Conduct of Research Series (RCR Series) Requirement:
• University: This series is required by the University before graduation.
• College: Same as University.
• Department: Same as University.

The Offices of the Vice President for Research & Graduate Studies and the Dean of the Graduate School present a series of workshops throughout the academic year that highlight issues concerning the responsible conduct of research. This series provides specific information about the responsibilities of
students, faculty and research staff in conducting research, interacting with others both within and outside defined research groups, and complying with policies and regulations of sponsors and the University. The workshops are designed to stimulate discussions, complement department activities, and reinforce issues raised by the Research Integrity Newsletter in responding to these needs. (See Appendix for list of lectures for 2011-2012.)

Attendance at the full series will be recognized with a certificate of attendance. The series is designed to enable the student to comply with requirements of the National Science Foundation, and the National Institutes of Health for formal training in the responsible conduct of research as a requirement for working on research funded by the Public Health Service. The workshops will be expanded and adapted as appropriate on a yearly basis. First-year students are required to take this series starting with their Fall matriculation.

(From a memo distributed by David Gift, Vice Provost, Libraries, Computing and Technology, 10/04/2004).

“As an academic community, we value the exchange of ideas and respect the intellectual work and property of others. Consistent with these values, we do not condone plagiarism, nor do we condone the unlawful copying, distribution or use of copyrighted works in any form.

All Michigan State University students, faculty, staff, and anyone else using MSU’s computing systems and digital network (MSUnet), are expected to abide by the copyright laws of the United States. Unauthorized copying and sharing of copyrighted music, videos, movies, documents and other electronic files is illegal. Users of MSUnet bear individual responsibility for their use of the network, and personal liability for any legal or criminal action brought against them.

Various industries are quite aggressive in their detection and pursuit of individuals they believe are infringing copyright, including seeking monetary damages in lawsuits against these individuals. MSU complies with the federal Digital Millenium Copyright Act (DMCA), and cooperates with copyright owners and their agents who file complaints alleging copyright infringement against MSUnet users. MSU’s DMCA-related policies and procedures may be found at http://lct.msu.edu/guidelines.html. The University also may refer student repeat infringers to the University student judiciary system, and may refer University employee repeat infringers to their supervisors or unit managers, for further disciplinary action as appropriate.

There are an increasing number and variety of legitimate uses of peer-to-peer file sharing programs to support the scholarship and collaborative work of students, faculty and staff. The MSU community has a collective interest in protecting these legitimate uses, as well as protecting the available bandwidth and security of our shared network.”

M. Access to Departmental Student Records:

• University: Michigan State University (“the University”) maintains student education records and is responsible for their access to and release in accordance with the Family Educational Rights and Privacy Act, 20 U.S.C. § 1232g (“FERPA”). It is the policy of the University to comply with FERPA. See http://www.reg.msu.edu/AcademicPrograms/Text.asp?Section=112#s542 for complete University requirements for access to student records.

• College: Same as University.

• Department: Same as University.

1. Information Contained in Student Files:
   a. A copy of the original application materials including transcripts, GRE and/or TOEFL scores, letters of recommendation, resume (if provided).
   b. All forms required by the department and the University. These forms will include Report of the Guidance Committee, annual evaluations, seminar evaluations, course evaluations, grade reports, and certificates including the one for university RCR training.
   c. Copies of all the student’s financial appointments while at MSU.

2. Record Storage:
   Student records will be maintained in a secure location by the Graduate Program secretary.
3. **Access to Student Records:**
   Access to student records will be granted to the student (except for those records to which the student has waived the right of access), the dissertation advisor, members of the Guidance Committee, Graduate Program Director, Associate Chair of the Academic Office, or Chair of the Department. Usually, such access is obtained by request to the Graduate Secretary during normal business hours.

4. **Record Correction Requests:**
   Students must request that corrections be made to their information maintained in their departmental file by submitting a request in writing to the Graduate Program Director. This request should detail the alleged errors in the file and the corrective action requested. The decision on whether an error actually exists and the means of rectifying such errors will be the responsibility of the Graduate Program Director.

N. **Terminations and Withdrawals:**

   • **University:** See [http://www.reg.msu.edu/AcademicPrograms/Text.asp?Section=112#s498](http://www.reg.msu.edu/AcademicPrograms/Text.asp?Section=112#s498) for University procedures on withdrawing.

   • **College:** Same as University.

   • **Department:** Same as University.

   Should a decision to terminate a student be made, all information regarding the decision will be held strictly confidential between the student and the concerned faculty and be released only with the consent of the student involved, unless this decision becomes the substance for a grievance procedure in which case such information shall be released to the Grievance Committee. The same privacy will be accorded the reasons for a student's temporary or permanent withdrawal from the Department of Pharmacology and Toxicology.

   A decision to terminate may be made on the grounds of a failing academic performance, lack of sufficient definable progress (e.g. not meeting goals of yearly evaluation), or dishonest laboratory practice. The decision to terminate a student is a serious one and is not made lightly.

   Students may choose to withdraw from the department for personal or professional reasons. It is our hope that the student will talk openly and honestly with their advisor, fellow students, Graduate Program Director, Associate Chair and/or Department Chair while making this decision. Should a student choose to withdraw, a letter addressed to the Graduate Program Director must be written that details the specifics of withdrawing, including reasons for the withdrawal and the date on which this is effective. The following is from the University's policies and procedures:

1. **Voluntary Withdrawal During the Semester:**
   A student may voluntarily withdraw from the University prior to the end of the twelfth week of a semester, or within the first 6/7 of the duration of the student’s enrollment in a summer or special sessions (calculated in weekdays). Withdrawal is not permitted after these deadlines.

   After submission of the Departmental letter described above, the withdrawal procedure within the University begins in the office of the Associate Dean of the college in which the student is enrolled or in the Office of the Registrar, Room 150 Administration Building. Upon official voluntary withdrawal from the University, symbols are assigned to courses in which the student was enrolled according to the effective date of the withdrawal as follows:

   a. If withdrawal is before the middle of the semester or summer session, no symbols will be assigned to courses in which the student was enrolled.

   b. If withdrawal is after the middle of the semester or summer session, symbols will be assigned by instructors to courses in which the student was enrolled as follows: W (no grade) to indicate passing or no basis for grade regardless of the grading system under which the student is enrolled; N to indicate failing in a course authorized for P-N grading, or 0.0 to indicate failing in a course authorized for numeric grading.

   • In case of official withdrawal from the University, fees are subject to refund according to the refund policy.
• A student living in an off-campus organized living unit should consult the individual unit for policies regarding room and board refunds.

• If three or more complete semesters of school are missed subsequent to withdrawal, including the summer sessions, the student must apply for readmission online at www.reg.msu.edu.

2. **Voluntary at the Close of a Semester:**
   There is no formal procedure for withdrawal at the end of a semester with the exception of submitting the departmental letter; however, a student living in University housing should notify the manager of the appropriate unit.

3. **Unauthorized:**
   A student who leaves the University during a semester or summer session without obtaining an official withdrawal will be reported as having failed all courses.
   The withdrawal procedure will not take place automatically for the student who leaves campus because of illness, of either one’s self or family member, but must be initiated by the student. If this cannot be done in person, withdrawal may be initiated by writing the associate dean of the college in which the student is enrolled or the Office of the Registrar, 150 Administration Building.
   A student who leaves the University without withdrawing formally forfeits any fees or deposits paid to the University.

4. **Involuntary:**
   A student who is called into the Armed Forces during the semester should present orders for induction at the office of the associate dean of the college in which the student is enrolled or at the Office of the Registrar for appropriate action.

5. **Disciplinary:**
   If a student is dismissed for disciplinary reasons during a semester, courses are dropped without grades and without refund and the registration canceled.

**VIII. DEPARTMENTAL POLICIES: INTEGRITY AND SAFETY IN RESEARCH AND CREATIVE ACTIVITIES**

*Intent:* Integrity in research and creative activities is based on sound disciplinary practices as well as on a commitment to basic values such as fairness, equity, honesty and respect. Students learn to value professional integrity and high standards of ethical behavior through interaction with members of their academic unit and their faculty advisor and by emulating exemplary behavior. This section of the handbook states the Department’s expectations for the responsible conduct of research and creative activities of graduate students (GSRR 2.4.7) and defines the criteria for dismissal for reasons other than academic deficiencies, including research misconduct, dishonesty with respect to grades or academic records and scholarship, and violations of professional standards.

Conflicts can be broadly defined and include both personal and professional interactions that have reached a perceived impasse. Students who develop conflicts with laboratory personnel or with their mentors should try to resolve these within the laboratory first. Should this not be feasible, the Graduate Program Director and/or Associate Chair should be contacted to discuss the situation with both parties involved. A goal of the Department is to try and resolve difficulties in-house first and to have both student and advisor on equivalent ground when working to resolution.

The Graduate School runs a program entitled “Conflict Resolution” (http://grad.msu.edu/conflictresolution). We encourage all those involved in a situation or potential situation of conflict to investigate these programs.
A. Ethics:

Honesty in the recording, interpretation, and use of scientific observations is one of the most important characteristics of a scientist. For science to advance, its growth depends on accurate and reliable communication of observations within the scientific community and careful interpretation of the meaning of those observations. Thus, establishment of proof of a breach of honesty by a student during their course of study or research performed shall constitute grounds for dismissal from the graduate program in Pharmacology and Toxicology. Presentation of such proof subsequent to the awarding of an advanced degree shall constitute grounds for revocation of that degree. Article 2.4.9 of GSSR describes procedures for dismissal or withdrawal in cases not involving academic dishonesty.

Faculty advisors and graduate students may obtain the document Guidelines for Integrity in Research and Creative Activities (http://grad.msu.edu/researchintegrity/). The description of academic misconduct, and procedures used in such instances are described in a document available at https://www.msu.edu/~acadgov/documents/ISGACapproved2_24_09final_polished_editedversion3_3_09.pdf). Further information on the responsible conduct of science is available at https://www.msu.edu/~biomed/rcr/.

Completion of the appropriate training in the responsible conduct in research is a requirement for the advanced degree in Pharmacology and Toxicology. Partial requirement can be satisfied by attending the RCR series organized by the Vice President for Research and Graduate Studies described at the following website: http://grad.msu.edu/rcr/.

B. Use of Human Subjects in Research: http://www.humanresearch.msu.edu/

Extensive University, State and Federal regulations have been put in place to protect the rights, welfare and privacy of human subjects who participate in research conducted by students and faculty affiliated with MSU. To achieve this goal, the Institutional Review Boards (IRBs) will: (1) require all investigators to be educated in the use of human subjects, (2) review all proposed research involving human subjects prior to initiation of the research, (3) approve, modify or disapprove research according to established criteria for protection of human subjects, and (4) monitor approved research to see that human subjects are indeed protected during the performance of the research. These processes serve to ensure the safe and ethical conduct of research that will protect human subjects in an atmosphere of mutual trust and integrity in the pursuit of knowledge and human benefit.

Graduate students must be aware of these regulations and must comply with them fully in the conduct of their research. These regulations and the processes for adhering to them are administered at MSU by the University Committee on Research Involving Human Subjects (UCRIHS) and are stipulated in detail at the following website: http://www.humanresearch.msu.edu/.

C. Use of Animals in Research:

Research using animals at MSU is governed by “The Animal Use & Care Program,” developed to ensure that the highest standard of care for research animals and strict adherence to federal and state regulations. All research involving the use of animals must be approved in advance by the All-University Committee on Animal Use & Care (AUCAUC). Graduate students must be aware of these regulations and must comply with them fully in conducting their research. These regulations and the processes for adhering to them are stipulated in detail at the AUCAUC website: http://www.animalresearch.msu.edu/.

Use of animals requires interaction with the Michigan State University Laboratory Animal Resources (ULAR) (http://www.ular.msu.edu). Below is a brief description of the offerings of ULAR.

1. General:

ULAR is located at C-100 Clinical Center, telephone number 517-353-5064, provides campus-wide services for:

* Laboratory animal medicine and daily care.
* Acquisition of animals for research and teaching.

The Department office should be called prior to the time services are needed (except for clinical emergencies). To order animals, the Animal order form is available from the Department Bookkeeper. You should check with your current advisor/lab personnel on procedures for ordering animals.

Information on policies regarding animal research is available from the Office of the Vice President for Research and Graduate Studies.
2. **Facilities:**
   * Modern animal rooms meeting NIH standards.
   * Options for group-housing and for floor housing of animals, currently used for dogs, cats, rabbits, pigs, sheep and goats.
   * Special equipment
   * micro-isolator caging
   * ventilated racks and laminar flow racks
   * laminar flow hoods for box change, etc.
   * trucks for on-campus trucking
   * animal related equipment
   * surgical suites

3. **Animal Care:**
   * 365 day care of animals (specimens or colonies) on a per diem basis. This includes feed, bedding, equipment, cage washing, trucking, etc.

4. **Consulting Services:**
   University Laboratory Animal Resources offers **free of charge**, the following services:
   * Consultation on facilities, experimental procedures, and utilization of species.
   * Consultation and/or veterinary inspection regarding disease prevention, diagnosis, and treatment of laboratory species.
   * Consultation on acquisition and distribution of animals and animal supplies.

5. **Technical Services:**
   * Surgery rooms and anesthetic services
   * Technical services, injections, blood sampling, observations, etc.
   * Conduct of specific projects under Good Laboratory Practice regulations
   * Collaborate with researchers in the design and implementation of unusual projects.
   * Assist with breeding colonies

6. **Training:**
   * Seminars on animal use and care for researchers, postdoctoral fellows, technicians, and students.
   * Species-specific information and clinical techniques training sessions.
   * Continuing education training (C.E.T.) in animal use and care.

D. **Lab Safety and Security Policies:**
   The management of University laboratory safety regulations and policies is the responsibility of the Office of Radiation, Chemical and Biological Safety (ORCBS). Graduate students are expected to comply fully with the policies and procedures stipulated by ORCBS and as supplemented by the site-specific safety plans instigated by the department or by the Principal Investigator or Research Supervisor. Training will be routinely conducted as part of the orientation for new graduate students each August. Additional lab-specific training is the responsibility of the principal investigator or research supervisor. Annual refresher courses, offered through the ORCBS website ([http://www.orcbs.msu.edu/](http://www.orcbs.msu.edu/)), must be completed by all graduate students for whom those courses are relevant. Each laboratory conducting chemical, radiological or biological experiments will have on site the appropriate training and practice manuals. Go to [http://www.orcbs.msu.edu/training/training_toc.htm](http://www.orcbs.msu.edu/training/training_toc.htm) to sign up for training of a particular kind. Also available at this website are MSU Online MSDS Search.

1. **ORCBS Courses:**
   
a. **General Training Information:**
      The ORCBS provides live and on-line training classes throughout the year to educate the employees and students of Michigan State University on safe work practices. Completion of these courses by MSU personnel ensures that the university is fulfilling local, state and federal requirements in radiation, chemical, biological, hazardous waste, and environmental safety.
1) **Training Requirements:**
Your training requirements will depend on your specific job duties. Some general guidelines are listed below:

* Required for **all laboratory employees** engaging in the use of hazardous chemicals (and supervisors of the employees):
  * Chemical Hygiene & Laboratory Safety (one time course)
  * Hazardous Waste Refresher (required annually after completion of Chemical Hygiene & Laboratory Safety course)
  * Security Awareness (one time course)

* Required for **all employees working with radiation**:
  * Radiation Safety Initial (this course needs to be refreshed annually)
  * Radiation Safety Refresher (required annually after completion of Radiation Safety Initial course)

* Required for **all employees with a reasonable anticipated risk of exposure to bloodborne pathogens/human blood/bodily fluids**:
  * Bloodborne Pathogen Initial (one time course)
  * Bloodborne Pathogen Refresher (required annually following completion of the Bloodborne Pathogen Initial course)

* Required for **all researchers working with infectious agents or recombinant DNA**:
  Biological Safety (one time course)

2) **Location of Training Classes:**
The ORCBS regularly uses two training rooms -- C-30 Engineering Research Complex and 164 Giltner Hall. Special arrangements are occasionally made to hold training classes in other rooms on campus. Please take note of the location when you sign up to attend a class.

3) **Parking:**
At the Engineering Research Complex: Parking is reserved for faculty, staff, and graduate assistants with permits. Metered parking spaces are available near the Life Science building. There is also a gated lot on Service Road east of the Clinical Center. If you park in the gated lot, bring the parking slip with you and the ORCBS will validate it after class.

At Giltner Hall: Parking is reserved for faculty and staff with permits. Some metered parking spaces are available nearby. Unfortunately, the ORCBS is unable to validate parking for gated lots near Giltner Hall.

The Ombudsman is available to assist students, instructors and hearing boards through every stage of the grievance process. The office is open 8 a.m. to noon and 1 to 5 p.m. Monday - Friday throughout the year and is committed to accommodating all students.

**IX. STUDENT CONDUCT AND CONFLICT RESOLUTION**

**A. The Ombudsman of MSU:**
There may be occasions when a student believes that a conflict is not resolvable within the department. A resource for the student, then, is the MSU Ombudsman (http://www.msu.edu/unit/ombud/).

What is an Ombudsman? The Ombudsman is the "complaint" person for the students. The student should contact the Ombudsman when having real difficulty with any part of the University and when he/she doesn’t know where to turn for help. No miracles are promised, but the University Ombudsman may be able to help with the problem or concern. The student will get an **independent** point of view in an **informal** and **confidential** way. The Ombudsman’s office is the first place to contact should a Grievance need to be filed.
B. Grievance Procedures:

A grievance involves a formal hearing before a panel of students and faculty to resolve a student's allegation of a violation of his or her academic rights, as set down in the Academic Freedom Report (AFR) or the companion document for graduate students, called Graduate Rights and Responsibilities for Students at Michigan State University (GSRR; https://www.msu.edu/unit/ombud/GSRRfinal.html). The AFR and the GSRR documents require departments, schools, and colleges to develop grievance procedures consistent with these documents.

It's important to recall that the AFR and GSRR require a student in conflict with an instructor to attempt to resolve the dispute before filing a request for a grievance hearing. The student should start the process by meeting with the instructor and then with the Department Chair and/or the Ombudsman. Most of the time, the parties to a dispute settle the issues during these discussions.

However, if a student remains dissatisfied with the outcome of these conversations, the student may submit a written request for a grievance hearing to the Department Chair to whom the instructor reports. The letter must state the specific nature of the complaint and the redress, or remedy, the student seeks as an outcome of the hearing. (Note the word "request" and read on.)

Upon receiving a request for a grievance hearing, the unit administrator forwards the letter to the Chair of the department hearing board. The hearing panel for graduate students is chaired by the Department Chair or designee and is made up of an equal number of faculty and students (undergraduate or graduate, depending on the status of the student requesting the hearing). The Chair of the hearing board in cases involving undergraduate students may be a faculty member, not the Chair or Chair's designee.

After receiving the written complaint, the hearing board can request a response from the instructor and then decide if the request for a hearing has merit. If so, the Chair of the hearing board will schedule a hearing; if not, the hearing board can dismiss the case—a decision that the student can appeal to the college hearing board.

Both the student and the instructor are allowed to call on witnesses to appear at the hearing on their behalf, and they can seek an adviser to help them throughout the process. The advisers must be members of the MSU community—faculty, staff or students.

If the student prevails at the initial hearing, the hearing board asks the Department Chair to implement an appropriate redress to accommodate the student. If the instructor prevails at the hearing, the student can file a request to appeal the department hearing board's decision to the college-level hearing board.

Go to http://splife.studentlife.msu.edu/graduate-student-rights-and-responsibilities/article-5-adjudication-of-cases-involving-graduate-student-rights-and-responsibilities for more information on “Adjudication of Non-Academic Cases.” Also, for more information on “Integrity of Scholarship and Grades,” go to http://splife.studentlife.msu.edu/regulations/student-group-regulations-administrative-rulings-all-university-policies-and-selected-ordinances/integrity-of-scholarship-and-grades.

X. WORK RELATED POLICIES

A. Stipend and Benefits:

1. Stipends and Advanced Stipends:

   (The following is taken from the Academic Programs catalog of Michigan State University.)

   Financial aid for graduate students is available in several forms. A number of scholarships and fellowships are awarded each year by The Graduate School to the colleges, and there are many opportunities for graduate assistant appointments for part-time teaching or research.

   Students already admitted to regular graduate status at MSU and seeking an assistantship or other financial aid should consult the department concerned. Since graduate assistantships and fellowships are usually awarded beginning in February for the following academic year, it is essential that the applications and supporting documents be submitted in December or early in January to assure adequate consideration.

   Students in Pharmacology and Toxicology are guaranteed funding by their advisor and/or the Department until they pass their dissertation defense. This includes stipend, tuition and fees, and university-designated medical insurance.
2. **Graduate Assistantships:**

Graduate assistantship (GA) is a generic term referring to financial support of graduate students that results in a stipend and compensation and for which performance of defined duties is expected. Specific GA appointments are made in one of three categories: research assistants, teaching assistants represented by the Graduate Employees Union (GEU) and teaching assistants not represented by the GEU. For more information on the GEU Contract see their website at [http://www.geuatmsu.org/](http://www.geuatmsu.org/). (Since Pharmacology and Toxicology does not have an undergraduate program only research assistantships are available from the department.)

GAs must be actively pursuing degree programs and making satisfactory progress toward their degree. The academic year encompasses two appointment periods: August 16-December 31 and January 1-May 15. During each appointment period a GA’s responsibilities require an average of 10 hours per week for a quarter-time appointment, 20 hours per week for a half-time appointment, and 30 hours per week for a three-quarter-time appointment. Summer appointments cover the intervening period but the distribution of duties may vary. Anticipated distribution of duties over the weeks of a semester should be communicated to the GA by the appointing unit at the time of appointment.

To the extent that current policies and procedures contain provisions about wages, benefits, or other terms and conditions of employment, they are, for teaching assistants included in the collective bargaining unit, subject to negotiations with the Graduate Employees Union/American Federation of Teachers.

Checks are distributed biweekly or direct-deposited into each student’s account. GAs at any of the three levels may be appointed on a quarter-time, half time, or three-quarter-time basis with an appropriate adjustment in the stipend. Changes in level, stipend, or percentage of time become effective only at the beginning of a semester. Additional benefits, even though the graduate student does not enroll for 9 credits or more, include the following:

3. **Tuition Waiver:**
Tuition waiver in the amount of 9 credits for Fall semester, 9 credits for Spring semester, and 4 credits for summer session. The tuition waiver will be provided during the period of the assistantship, to a maximum of 22 credits per year.

4. **Exemption from Out-of-State Resident Tuition:**
This exemption applies to a summer session that precedes or follows an appointment for an entire academic year, regardless of whether the student was previously enrolled at MSU. If the student does not have a signed GA form before registering for summer session, he/she will pay out-of-state resident course fees and tuition. Upon receiving a copy of the appointment form for the entire academic year through the middle of the semester of the subsequent Fall semester, the Office of the Registrar will refund the full amount of out-of-state tuition that the student paid for the summer session.

5. **Matriculation and Support Fees:**
Matriculation and infrastructure/technology support fees are waived.

6. **Health Insurance:**
GAs (domestic and international) are automatically enrolled in a health insurance plan, the premium of which is paid by the University. The plan provides the following coverage: children (residing with the insured). For questions regarding coverage, enrollment or premium payment, contact the MSU Benefits Office at (517) 353-4434 or (800) 353-4434, or email: studentinsurance@hr.msu.edu. The Benefits Office is located at 1407 S. Harrison Road, Suite 140A (Nisbet Building), East Lansing, MI 48823, and on the web at MSU Benefits Office, [http://www.hr.msu.edu/students.htm](http://www.hr.msu.edu/students.htm), Aetna Student Health Group at [http://www.aetnastudenthealth.com/stu_conn/student_connection.aspx?groupid=711130](http://www.aetnastudenthealth.com/stu_conn/student_connection.aspx?groupid=711130).

7. **International Student Accident and Health Insurance:**
International students are required to have health and accident insurance. Students are required to purchase the MSU Student Accident and Health Insurance Plan unless they have evidence of alternative insurance equal in benefits and provisions to the MSU plan. Fees for the student’s insurance are
included with the bill for tuition and fees during registration. Waivers to allow purchase of alternative plans must be approved by the Benefits Office, Human Resources, 140 Nisbet Building.

8. Additional Benefits, Other Information:
   • Library privileges, intramural and recreational facilities privileges, and eligibility to the Michigan State University Federal Credit Union.
   • Eligibility for student discounts on football, basketball, and/or hockey season tickets for themselves and their spouses.
   • Eligibility for free admission to other regularly scheduled MSU athletic events when presenting a valid student ID card.
   • Eligibility for student discounts on series tickets to professional performing arts events at the Wharton Center for Performing Arts, including one guest ticket at the student rate.
   • Exemption from payment of the Social Security tax on the stipend. Stipends are subject to income taxes with few exceptions. The taxability of stipends is subject to review by the IRS. Please call the Payroll Office for more information (355-5010). Please note that tax laws are subject to continuing revision and students should verify their tax liability each year.

**NOTE:** If a student has outstanding student loans (even though currently on deferment), the student may have to be enrolled for a certain number of credits each semester to maintain the deferment status. It is the student’s responsibility to notify the Graduate Secretary to the of this status.

9. Fellowships:
A variety of graduate fellowships are available to Michigan State University students. Stipends and sources of support vary widely. In addition to applying for fellowships offered by the University and through the University by outside agencies, students are encouraged to consult such publications as the following, which are found in most libraries:

i) *Financial Aids for Graduate Students*, Bernard G. Maxwell, Editor.
iii) *Scholarships, Fellowships, and Loans*, Normal Feingold.

Michigan State University annually awards a number of fellowships and tuition scholarships to encourage and assist high achieving students to pursue study leading to a graduate degree. A recipient of one of these awards must be enrolled in a degree program but is not required to give formal service to the University or to the department.

For a student not currently enrolled in a graduate program at Michigan State University, the application for admission also serves as an application for these awards. A student currently enrolled may apply through the respective department or college.

a. Registration and Credit Load Requirements:
Most fellowships require full-time pursuit of a graduate program. Unless the fellowship carries specific requirements for determining eligibility, the department or school is responsible for determining and certifying the full-time status of the student. All predoctoral graduate fellows paid through the University must be registered during the period for which payment is made.

b. Graduate School Dissertation Completion Fellowships:
These fellowships allow students to devote full time to writing the doctoral dissertation. Stipend is $6,000 for the semester. This fellowship program is for students in the final months of their programs and are about to defend. About 25 fellowships are awarded each year. Application must be made directly to the Graduate Program Director who will then submit it to the College.

c. Sponsored Fellowships:
Fellowships sponsored by industries, foundations, and government agencies are available to high achieving students for graduate study in various departments or colleges at Michigan State University. These fellowships are awarded through individual departments or colleges. Information on
available fellowships and the procedure for applying may be obtained by writing to the department or college concerned. Receipt of externally funded fellowships by students who have written their own grant applications and worth at least $20,000 (direct costs), now makes the students eligible for in-state tuition rates. The in-state tuition rate applies only to the semester during which the student is supported by the fellowship. This policy applies only to grants funded through a competitive process by a US institution/agency/foundation. Funds obtained through non-competitive processes (e.g., need-based fellowship) or from international sources do not qualify the students for in-state tuition rates. For more information contact Melissa Del Rio (mdelrio@msu.edu) in 110 Linton Hall.

d.  **University Distinguished and Enrichment Fellowship Program:**
The Graduate School offers fellowship programs that provide financial support for outstanding students who plan to enroll in a doctoral or master of fine arts program. In assisting MSU to achieve its educational mission, our goal is to foster an intellectually vital and diverse educational community that will prepare graduate students to assume their professional roles in a diverse society. MSU is particularly aware of the special role that graduate education plays in training the next generation of leaders in academia, government and the private sector. To support that role, The Graduate School’s recruitment fellowships assist departments and programs in attracting a cohort of students who:

- have demonstrated academic excellence; articulate their commitment to research goals well matched to department or program doctoral emphasis areas;
- shown evidence of leadership potential or the capacity to make a distinctive professional or scholarly contribution;
- contributed to a diverse educational community, as evidenced in personal history and experience, research goals, or the promotion of understanding among persons of different backgrounds and ideas;
- have different racial, ethnic, gender and disciplinary backgrounds.

Two kinds of fellowship awards are available:

**University Distinguished Fellowships:** recognizing academic achievement, research goals, demonstrated leadership potential, and contribution to a diverse educational community.

**University Enrichment Fellowships:** recognizing academic achievement, research goals, contribution to a diverse education community, and a record of overcoming obstacles.

Fellowship recipients beginning study for the 2011-2012 school year will receive a 12-month stipend of $23,000, plus health insurance. In addition, tuition and related fees will be waived within some limits. Fellows must maintain strong academic performance and make normal progress toward their degrees.

**Doctoral students** receive five years of support. The first and fifth years are funded by the Graduate School, with no teaching or research service required of the student. During the second, third, and fourth years of fellowship support, students receive a departmental assistantship that may require them to assist in research and/or teaching.

e. **University Graduate Recruiting Fellowships and University Graduate Fellowships:**

These awards are for recruiting new master’s or doctoral students or for outstanding master’s or doctoral students who are making good progress toward their degrees. Colleges set stipend levels.

f. **Insurance:**

Some form of health insurance should cover all students. Michigan State University offers a student health insurance plan through Aetna/The Chickering Group that provides reasonable protection against sickness and accidents at an affordable cost. This information may be accessed through [http://www.hr.msu.edu/benefits/studenthealth/index.htm](http://www.hr.msu.edu/benefits/studenthealth/index.htm).
The MSU Student Health Insurance Base Plan is an illness and injury insurance plan that covers a variety of health care services including office visits at Olin Health Center, prescription drugs up to an annual maximum of $2,000, diagnostic treatment such as lab work and x-rays, hospitalization and specialty care.

The MSU Graduate Assistant Health Insurance Plan covers a variety of health care services including office visits to Olin Health Center; one of these office visits may be used for a general physical examination. The plan offers prescription drug coverage up to an annual maximum of $5,000, diagnostic treatment such as lab work and x-rays, hospitalization, specialty care and one annual gynecological examination including mammography services. MSU will contribute $1,000 annually towards the cost of a spouse* or child and $1,300 annually towards the cost of a spouse* and/or multiple dependents. For more information on Graduate Assistantships please visit the Office of Planning and Budgets website. (*Reference to spouse includes MSU recognized same-sex domestic partners of Graduate Assistants.)

1) **Student Health Subsidy Program (SHSP):**
   SHSP will provide health care support for qualifying low-income students and their spouse/MSU recognized same-sex domestic partners of graduate assistants, to provide access to care, as well as, added help with prescription drug purchases.
   SHSP offers unlimited office visits and University-recommended immunizations at Olin Health Center, and prescription drug coverage up to an annual maximum of $1,400. The program is intended for MSU students and their spouse/MSU recognized same-sex domestic partners of graduate assistants, who have no means of obtaining health insurance.

**g. Campus Parking:**
The Parking Division includes many parking related services on campus. These services include:

1) **Vehicle Office:**
Parking is very limited on our campus. All vehicles are required to be registered. Services offered at the Vehicle Office include vehicle registration (http://police.msu.edu/permits.asp), citation payments (http://www.parking.msu.edu/flexcon.asp), citation appeals, bicycle impounds and towed vehicles. GAs may now register their vehicles/bicycles online at the following address -- http://police.msu.edu.

2) **Parking Services:**
   a) **Graduate Assistant Parking Permits**
      Car Permits: Graduate Assistant parking permits are available for purchase online in order to avoid the lines and to make the most of your time. If you register your vehicle in the Parking Office you must take your student ID, your current vehicle registration, and your appointment papers. Graduate Assistant parking permits for 2011-2012 are ~$110/semester and are available after August 1, 2011.

      Fellowship recipients who receive an MSU Fellowship of $1,000 or more per semester qualify for a graduate assistant parking permit. Qualifying fellowship recipients may not register online. They must go to the Parking Office with proof of their MSU Fellowship in hand.

      Those with valid and current graduate assistant parking permits affixed to their windshield may park in faculty/staff spaces south of the Red Cedar River. Parking is not allowed north of the Red Cedar River unless at a paid meter or when the posted employee restriction is no longer in effect. Use of gate cards on north campus is restricted to accessing loading zones for 10 minutes to load or unload.

      If you change vehicles or have your windshield replaced, you must scrape off your permit and take the pieces of it to the Parking Office where a replacement permit may be issued for a $2 fee.

      Bicycle Permits: Bikes operated on campus must have a valid permit affixed and must be parked at a bike rack, locked, and in operable condition.

      To register your bicycle, you must have the serial number from the bike. This may be found in several different places on bikes depending on the make and model. The most common
location for bike serial numbers is just under the seat and underneath the bike below the pedals. Be sure to know the make of the bike, the color of the bike, and whether the style is male or female.

There is no cost for a bike permit. Bike permits must be obtained online at http://police.msu.edu/bikeinfo.asp.

10. **Service Obligations:**

   Students are expected and encouraged to participate in the academic and scientific life of the Department. This participation may include service on standing or ad hoc departmental committees, proctoring exams, or the Department’s annual alumni picnic. Such services are generally deferred until the second or third year, although some limited services may be requested during the first year.

   Other activities (such as workshops, seminars, internships, committee service, or teaching activities) may also enhance a student’s preparation for their future career. Care should be taken that participation in these legitimate activities should not hinder progress towards completion of the doctoral degree. To avoid potential conflicts that might affect progress in the student’s research, the student should discuss any such activities with, and secure the approval of, his/her major advisor prior to making a commitment to the activity. The purpose is to work out an understanding that would accommodate the additional activity while maintaining what would be judged by the major advisor as acceptable progress towards completion of the dissertation research.

11. **Vacation Policy:**

   Any student who accepts financial support from or through the Department, regardless of the particular nature of the appointment, is viewed by the Department as accepting a responsibility equivalent to that of a half-time graduate assistant. A graduate assistant is entitled to a total of one month’s annual vacation plus those University staff holidays so designated in the University calendar. Between-semester periods and Spring Break are not considered to be holidays. Any absence from the University, except those authorized for scientific meeting, etc., must be considered to be part of the one-month annual vacation. Vacations must be arranged with the major advisor or, in the first year, with the Graduate Program Director. Each student is responsible for bookkeeping with respect to vacations. A student who plans to be absent from the University area on regular weekdays should notify the Graduate Secretary or their major advisor so that emergency situations can be met.

**XI. DEPARTMENTAL ORGANIZATION**

**A. Personnel:**

1. **Chair:** Dr. Joseph R. Haywood, Professor
   In the absence of the Chair, individuals designated as official signer of University documents is Dr. James Galligan, Associate Chair and Professor.

2. **Office Staff and Responsibilities:**

   **Administrative Assistant III/S (Office Manager)** -- Manages and supervises office staff for the Department. Manages appointments/reappointments for faculty, postdoctoral fellows, and office staff.

   **Accounting Clerk II** – Completes direct pay, travel and reimbursement vouchers. Manages the student labor and temporary hires and their time submissions for pay, and assists in reconciling ledgers.

   **Executive Secretary** - Liaison for the Department Chair in internal and external organizations. Attends and prepares minutes for the faculty meetings. Coordinates new faculty orientation, interacts with Faculty Advisory Committee, manages faculty evaluation process, manages Chair’s calendar, appointments and correspondence.

   **Educational Programs Coordinator** -- Organizes ongoing activities and plans new educational projects including contracts, facilities, schedules, and budgets; coordinates publicity and
organizational procedures in order to implement conferences, workshops and programs; evaluates programs in order to enhance future programs and to increase student participation and retention; acts as resource to instructors for educational technology and pedagogical strategies.

**Administrative Assistant I (Graduate Secretary)** -- Assistant to the departmental Graduate Committee; assists the Educational Programs Coordinator. Manages the doctoral student files from entry into the program through graduation; assists Graduate Program Director with the annual Graduate Recruitment Weekend. Schedules department seminars, prepares examinations for distribution, manages syllabi, course schedules, CLIFMS, class lists and SIS. Assists with student enrollment system, providing overrides, referrals to degree program directors, assists with Angel. Provides support for marketing/communications, graphic design, alumni planning, course evaluations.

**Secretary II** – Manages the Professional Science Masters Program for Integrative Pharmacology and the Online Masters Program in Pharmacology and Toxicology. Assists with the student enrollment system, provides overrides, referrals to degree program directors, assists with Angel. Coordinates all stages of development and creation of publications and promotional materials, including departmental web site, logos, brochures, and multimedia components, produces the departmental newsletter. Duties also include: writing and editing copy for all publications, taking photographs, operating digital video cameras at special events, and assisting the Education Programs Coordinator.

3. **Faculty Committees:**

Each September, faculty gather to elect new committees that serve the Department as a whole. Central to this is election of a Faculty Advisory Committee (FAC). This committee then determines the composition of the other departmental committees, on each of which graduate students at any level of study is invited to participate. Below is a listing of our current departmental committees.

<table>
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<tr>
<th>FACULTY ADVISORY COMMITTEE</th>
<th>CORE AND BIOHAZARDS COMMITTEE</th>
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<tbody>
<tr>
<td>3 Elected Tenure Stream Faculty</td>
<td>3 Elected Tenure Stream Faculty</td>
</tr>
<tr>
<td>Departmental Associate Chair, Ex officio</td>
<td>3 Research Technicians</td>
</tr>
<tr>
<td>Student Representative</td>
<td>Academic Specialist in charge of Core Facilities</td>
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<tr>
<th>COURSE AND CURRICULUM COMMITTEE</th>
<th>SCIENTIFIC INTEGRITY (ad hoc)</th>
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<tr>
<td>4 appointed departmental faculty (Chair)</td>
<td>Appointed faculty member</td>
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<tr>
<td>Associate Chair ex-officio</td>
<td></td>
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<tr>
<td>Education Programs Coordinator ex-officio</td>
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<tr>
<td>Student Representative</td>
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<tr>
<th>GRADUATE COMMITTEE</th>
<th>AWARDS COMMITTEE (ad hoc)</th>
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<tr>
<td>4 appointed departmental faculty</td>
<td>3 departmental faculty</td>
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<tr>
<td>Associate Chair, ex officio</td>
<td>Student Representative</td>
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<td>Student Representative</td>
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<tr>
<th>DIVERSITY COMMITTEE</th>
<th>STUDENT ADVISORY COUNCIL</th>
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<tr>
<td>3 appointed departmental faculty</td>
<td>Appointed student member – Chair</td>
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<tr>
<td>Student Representative</td>
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</table>

| SEMINAR COORDINATOR | |
|---------------------| |
| Appointed faculty member | |

a) **Committee Duties:**

1. **Faculty Advisory Committee:**
The Faculty Advisory Committee advises the Departmental Chair concerning the discharge of his/her responsibilities by a direct representation of faculty opinion. The Committee can also mediate on behalf of an individual faculty member or communicate with the Department.
Chair for the entire Pharmacology and Toxicology Department. The Committee also advises the Department Chair on annual faculty evaluations.

(2) **Course and Curriculum Committee:**
The Course and Curriculum Committee is responsible for determining requirements for degrees offered by the department, reviewing and recommending courses, and evaluating course objectives, contents and presentations both in the Department and in cognate areas. The Committee is also responsible for compiling the written component of the comprehensive examination.

(3) **Graduate Committee:**
The Graduate Committee is responsible for recommending to the Chairperson candidates for admission to the Graduate Programs and advises the Chairperson in selection of departmental graduate assistants. The Committee is also responsible for recommending to the faculty required courses for graduate students (in conjunction with the Course and Curriculum Committee), administration and grading of the written comprehensive examination, and recommending nominees for fellowships, various honors and scholarships.

(4) **Diversity Committee:**
The Diversity Committee develops and implements strategies for the recruitment of under-represented minorities to faculty and staff positions. The Committee will also work with the Graduate Committee in the recruitment of under-represented minorities to the graduate program. To achieve these ends, the Committee will work with the University Office for Inclusion and Intercultural Initiatives.

(5) **Core and Biohazards Committee:**
The central mission of the Departmental Biohazard Committee is to support the guiding principles of the Office of Radiation, Chemical & Biological Safety (ORCBS) on regulatory compliance related to the use of biohazardous materials within the Department. The Committee reports directly to the Department Chair. The duties of the Committee include the ORCBS mandated biological safety laboratory and clinical inspections, autoclave inspections, scheduling of annual biological safety cabinet and laminar flow hood certifications, reporting to ORCBS of biohazard incidences, personal exposure and/or injuries, and biological spill response. The above duties will be carried out in close coordination with ORCBS.

(6) **Scientific Integrity Committee (ad hoc):**
The role of this Committee is to be an impartial body to which Departmental personnel can bring complaints regarding issues of scientific integrity. The Committee is responsible for investigating any such complaints, providing guidance to the complainant, and communicating with relevant college and university committees on professional integrity regarding all complaints made by or against departmental personnel and involving this Committee.

(7) **Awards Committee (ad hoc):**
In 2000, the Department instituted the Ken Moore Distinguished Alumnus/Alumna Award. Faculty are invited to submit names and Curriculum Vitae for individuals they believe are deserving of such an award. The Committee reviews these applications in May/June and notifies an awardee as soon as possible. A seminar in the Fall semester is then scheduled such that the awardee can present their work and meet with current graduate students and faculty.

    In 2008, the Theodore M. Brody Distinguished Lectureship was established. This award is in memory of Dr. Ted Brody, first Chair of the Department of Pharmacology and Toxicology at Michigan State University. This award is presented to individuals throughout the scientific community who have achieved distinction in the varied careers of Pharmacology and Toxicology.

(8) **Student Advisory Council:**
The Student Advisory Council is composed of student representatives from the first through fourth year classes and advises the Department Chair concerning the discharge of his/her responsibilities by a direct representation of student opinion. The Committee communicates information, queries and opinions from the student body to the faculty through the Department Chair or the Graduate Pro-
gram Director. The Student Advisory Committee assigns student representatives to the departmental committees and proctors for the departmental professional school examinations.

(9) **Secretarial Support for Faculty Meetings:**
The role of the Secretary is to record the proceedings of regular faculty meetings and of faculty retreats, and to distribute minutes of these meetings and retreats. The minutes are not considered verbatim record but should record topics of the meeting, important comments regarding discussion by faculty on each topic, and decisions made by faculty at the meeting regarding departmental activities.

4. **Graduate Student Participation in Department Academic Governance:**
Graduate Students are invited to have a participant on every committee that serves the department.

### XII. DEPARTMENT FACILITIES AND POLICIES

#### A. Facilities and Resources:

1. **Department:**
   Our Department is located on the 3rd and 4th floors of the Life Sciences Building.
   The Departmental Main Office: B440 Life Sciences, East Lansing MI 48824-1317
   ON S.E. CORNER OF SERVICE RD. & BOGUE STREET
   Building number: 183
   Building abbreviation: LS

2. **Other Facilities:**
   In addition the Department has laboratories and office space in the Food Safety and Toxicology Building off Farm Lane Road north of the Railroad tracks on the MSU campus.
   Building Number: 186
   Building abbreviation: FST

3. **Department Core Facilities and Equipment:**

   a) **Core Facilities:**

   (1) **Rodent Survival Surgery Core (Basement Life Sciences):**
   A central facility for aseptic rodent survival surgery is available for routine catheterizations, brain cannulations, and arterial blood flow measurements. Other invasive surgical techniques can be developed as needed. The facility is equipped with an ethylene oxide sterilization instrument, isoflurane gaseous anesthetic machine, dissecting microscopes, and surgical lamps.

   (2) **Telemetry Core (Basement, Life Sciences)**
   A core facility is housed in ULAR for measurement of arterial blood pressure, heart rate, and other physiological measurements that can be obtained by radiotelemetry. A DataSciences telemetry system for mice, rats and guinea pigs is presently in use.

   (3) **Microscopy and Imaging Core (B303 Life Sciences)**
   This core is available for fluorescent and contrast qualitative and quantitative imaging. It includes a Leica confocal microscope, a Nikon inverted fluorescent microscope, and a conventional fluorescent microscope.
(4) **Cell Culture Core (B407 and B300 Life Sciences)**

The Department has two centralized facilities for cell culture. Equipment includes incubators and biosafety hoods for working in clean environments. One facility (B407) is maintained for Biosafety Level 2 work.

(5) **Assay/Molecular/Microarray Core (Room B446 Life Sciences)**

This core facility is available for various biochemical and molecular assays including radioimmunoassay, radioenzymatic assays, ELISA, and other densitometric-based measurements. Instrumentation is available for measurement of mRNA. A number of laboratories are applying Western blotting technique for measurement of specific proteins. Equipment includes gamma counter, scintillation counter, real time RT-PCR instrument, plate reader, spectrophotometer, and a Licor Odyssey Infrared Scanner.

(6) **Dark Room (Room B410 Life Sciences)**

This facility houses a Kodak Film Developer (chemiluminescent, X-ray film, autoradiography), a BioRad personal Molecular phosphorimager (radioactive samples) and a BioRad Fluor-S (visualization of ethidium bromide stained gels, chemiluminescent samples).

(7) **Large Equipment Core (Rooms B400, B409 and B411 Life Sciences)**

A central facility has been set aside for the location of large equipment including -80°C freezers, centrifuges, a dry ice maker, liquid nitrogen tanks, and an ice maker. Room B409A contains the departmental autoclaves.

4. **Mail Services:**

   a) **E-mail:**

   E-mail service is provided by [http://mail.msu.edu](http://mail.msu.edu). Your NetID number will be necessary for signing you up.

   b) **Mailbox and Mail:**

   Student mailboxes are located across the hall from the main elevators on the 4th floor of the Life Sciences Bldg next to the Cold Room. Your mail and the communications within this is protected by FERPA.

   1. **Activating your MSU NetID and e-mail account:**

      Current MSU faculty, staff, students, and retirees receive centrally funded NetIDs so they can utilize various electronic resources and electronic mail. You should activate your MSU NetID and e-mail account even if you already have another e-mail account. If you are not eligible for a centrally funded account you may wish to purchase one using a valid MSU departmental account number and submitting an [ACNS MSU NetID Services Form](http://techbase.msu.edu/article.asp?id=139&service).

      By setting up your MSU NetID you can use your account to:

      * receive official communications from MSU that are sent to you via e-mail only
      * publish a personal web page
      * access dial-up services
      * access public computer labs
      * access electronic resources on campus.

      Should you choose to do so, you may forward e-mail sent to your MSU email account to your personal email account.

1. **Student Rights Under the Family Educational Rights and Privacy Act (FERPA)**

   Pursuant to the Federal Family Educational Rights and Privacy Act (FERPA), the University has established policies governing privacy and release of student records. The University has designated certain personally identifiable information as directory information, which may be
released at the discretion of the University to anyone who makes a request. Directory information has been
defined as name, local address and telephone number, MSU NetID, permanent address and telephone
number, current enrollment status or dates of attendance, program level, class, major, current term candidacy
for degree and/or teacher certification, information pertaining to awards and honors achievements, MSU
degree(s) earned and dates, recommendation to the State of Michigan for teaching certificate and effective
dates, participation in officially recognized MSU activities and sports—including weight and height of athletic
team members, recognition documents of student organizations, employment status as a graduate teaching
assistant or research assistant, office address, and office phone number.

A student may restrict the release of directory information by notifying the

(2) US and campus mail:
US and campus mail can be sent from this same locale. US mail, if not
stamped, requires access to the University Stores mailing to complete and print off the mailing slip.

(3) FedEx mailings:
FEDEX mailings can also be sent from the Departmental office. Mailers
are found in the drawers in B442 Life Sciences or they can alternatively be obtained off the.
A copy of this sheet should be made for the Bookkeeper and placed in
the box of the departmental financial advisor with notation of the appropriate account number to be charged.
Please let the office staff know when you have a FEDEX package/mailing and they will phone it in for you.

5. Supplies:
Copy paper is supplied in B440 Life Sciences; you need to sign this out with your
sponsor’s name. You are otherwise responsible for obtaining those supplies necessary for your work.

6. Copy Machines:
One departmental copy machine can be found in Room B410 Life Sciences Building, in
the alcove. You should obtain a copy number from your faculty member for use of this machine.
The Main Office copy machine in B442 may be used for the copying of class handouts,
examinations, grant proposals, transparencies, etc. The Department Staff will do the copying. Fax
documents are also done through this copier.

7. Desk and Office Space:
Faculty: Faculty have offices in either Life Sciences or Food Safety and Toxicology
Buildings. Graduate students typically have a desk/working space near or within the laboratory in which they
are performing their research.
First-year students are provided a desk by the faculty member in whose laboratory they
are rotating or who has space at the time. This should be arranged prior to the beginning of Fall semester.

8. Community Computer Usage:
In the Department of Pharmacology and Toxicology, community computers are those
that are used in most of the departmental Core Facilities. These computers are used by different labs with the
department and the Life Sciences Building. Computer games, personal information, etc., are not to be placed
on these computers. Go to http://lct.msu.edu/guidelines-policies/aup/ for information on acceptable use of the
network. To report any abuse on a community computer, go to the departmental individual in charge of the
Core Facilities first. If the situation cannot be resolved this way first, then go to http://abuse.msu.edu/
for information on reporting network abuse.

9. Outside Employment:
Our students are encouraged to NOT seek outside employment. The stipend provided
to the student is intended to enable the student to focus solely on the work at hand. It should be noted that
such activity is explicitly forbidden if a student receives a stipend from NIH in any form (grant, fellowship, etc.).
10. **Travel Procedures:**
   Whenever traveling on business for the University (locally, domestically or internationally) the following procedures apply:

   a) **University Travel Voucher:**
      Prior to your departure you **complete** a University Travel Authorization. A sample of the voucher is shown in the Appendices. Please insure that all information is provided on the form and returned as an email attachment to the departmental Main Office (B440) where it will be. Insurance coverage for the traveler will not be in effect unless there is a signed voucher on file prior to the traveler’s departure. Non-U.S. citizens must be sure to fill in their visa type. International students and postdoctoral fellows who wish to attend meetings outside the U.S. should check with the International Center on campus prior to making any travel plans.

   b) **When Traveling:**
      When traveling you must retain your airline itinerary and ticket, hotel receipt, registration receipt (if not originally covered by MSU Purchasing Card), and any other miscellaneous receipts such as taxis, airport parking, etc. You are not required to retain receipts for meals unless they are over the per diem rate. MSU reimburses for meals based on location; you will need to provide upon your return is which meals (breakfast, lunch or dinner) you had on any given day. If any meals are part of the Conference/Meeting agenda, you must provide a copy of the agenda showing this information.

   c) **Upon Returning:**
      Upon your return, you will now use this voucher to record the expenditures for which you wish reimbursement. Once completed, return it to the Department Office with all applicable receipts attached. The Department Office will then process the voucher through the EBS system. *[If you received a travel award, award for best presentation, etc, that covers part or all of your travel expenses to a meeting, please be sure and make note of the amount and type of award so the appropriate deductions may be noted on the voucher.]*

   d) **Voucher Processing:**
      Providing there are no problems with your voucher it should be processed in ten to fourteen working days. You will be reimbursed in one of two ways. If you have direct deposit you can request that your reimbursement be deposited directly into your account (students must have direct deposit). If you do not select this option, you will receive a reimbursement check from the University.

   e) **Direct Billing Air and Rail Fare**
      Direct billing of airfare is available to MSU faculty and staff employees. See the Department Bookkeeper if you wish to apply for direct billing authorization (this applies only to Faculty). Students wishing to direct bill can do so by contacting the Department Office or their Advisor to make the arrangements through Passageways Travel or Anderson Travel. Direct billing allows you to charge your airline tickets to a university account rather than carrying the charge on a personal charge card. MSU purchasing cards cannot be used for purchasing airline tickets ([http://www.ctlr.msu.edu/COTravel/Default.aspx](http://www.ctlr.msu.edu/COTravel/Default.aspx)). However, they **should** be used to pay meeting registration fees.

   f) **International Travel:**
      Students traveling abroad should visit the “Travel Smart” website before their trip ([http://www.ctlr.msu.edu/COTravel/Default.aspx](http://www.ctlr.msu.edu/COTravel/Default.aspx)). When students appointed as TAs or RAs travel outside the U.S. to conduct required thesis or dissertation research or to collaborate with investigators conducting research abroad, the department or research grant supporting the work will be required to pay for all needed vaccinations and or medications (e.g., anti-malarials) as determined by the MSU Travel Clinic. Students may include those costs in applications for funds from the Research Enhancement or Travel Grant programs administered by the Graduate School.
11. Purchase/Reimbursement:

a) Ordering Supplies/Services and Equipment
Ordering of supplies is done through the EBS system. You must provide an account number to be charged. Include units desired (i.e. 1 each, 1 box, 1 case, etc.) when placing your order. Specify the urgency of delivery (regular delivery, next day, 2nd day, etc.). After the order has been placed you will receive a copy of the completed requisition along with the request you submitted. Your order will be delivered to the location you specified on the requisition. Orders from University Stores are generally received on the next business day. Failure to follow instructions will result in your order request being returned to you unprocessed.

b) Reimbursed Expenses:
You may have occasion to be reimbursed for expenses incurred while at the University. This may include supplies purchased relating to your research or for meals purchased when entertaining prospective graduate students or other visitors to the department. When requesting reimbursement for these types of expenses follow these steps:

(1) Required Receipts:
Present the receipt(s) for reimbursable expenses to the Office Staff. If you are requesting reimbursement for supplies relating to your research you will be asked to provide the account number from which you wish to be reimbursed. If you are requesting reimbursement for meals you must provide a list of individuals in attendance. You may be reimbursed for alcohol purchased up to $8.00 per person, per meal. All alcohol purchased must be provided on a separate receipt from the meal. All receipts must show a breakdown of what was ordered or purchased for the meal and the alcohol.

(2) Reimbursement Voucher:
The Office Staff will complete a reimbursement voucher through the EBS system. Once approved by the faculty or staff individual, it will be forwarded to Voucher Processing. You should receive payment within ten to fourteen working days.

(3) Direct Deposit:
If you have direct deposit, your reimbursement will be automatically direct-deposited. After the University has processed the voucher, the reimbursement funds will be deposited into the same account to which your paycheck is deposited. Accounting/Voucher Processing will send you an orange-colored sheet verifying the direct deposit.

12. Hiring Temporary or On-Call Labor:

a) Procedures:
The following procedures apply when hiring temporary or on-call labor.

(1) Account(s) to be used:
Determine which account(s) the person will be paid from and hourly rate of compensation then provide this information to the Department Office in B440 Life Sciences by completing the Employee Form located on the Department’s website Staff Log-in Area (see Office Staff for password). Bring the person to be hired, along with the Employee form to the Secretary (currently Linda Mix) where the required documents will be completed online.

(2) Personal IDs needed:
The person being hired must be able to present a social security card and driver’s license to the Department at the time the paperwork is filled out. (A photo ID [passport or State ID] with the individual’s name, date of birth, sex, height, eye color and address may be used if the person has no driver’s license). If you are hiring a high school student a work permit must be completed before any other paperwork can be processed. The completed work permit must be presented to the Department at the time that the hiring paperwork is filled out. The student at the school they are attending can pick up work permits.
b) Changes and Pay Raises:
Changes to the account number that the individual is being paid from or their hourly rate of compensation can be made at any time. Complete the Employee Form on the Department website and give to the Department Office.

13. Worker’s Compensation: (http://www.hr.msu.edu/benefits/workerscomp)
Although graduate students and student employees are not eligible for worker’s compensation if injured on the job, there are certain steps that must be taken when seeking medical attention in order to charge the emergency treatment to the appropriate account number.

a) Employee/Student:
Those who suffer a work-related illness/injury should immediately report the injury to their supervisor.

b) Supervisor:
(1) Procedures:
(a) Supervisors are to immediately call an ambulance (9-1-1) if the illness/injury is a critical emergency. The ambulance driver will transport the individual to the nearest medical facility available for treatment.

(b) When the illness/injury is not critical, the supervisor is to complete the Authorization to Invoice MSU and direct the employee to the medical facility indicated on the Authorization (http://www.hr.msu.edu/benefits/benefits_docs/InvoiceMSU.pdf).

- The primary medical provider designated by MSU Human Resources Worker’s Compensation is Olin Health Center. Sparrow Family Medical Services (FMS) After-Hours Clinic, located at the Michigan Athletic Club (MAC), should be used between 5:00p and 10:00p, Monday-Friday, and noon to 8:00p Saturday and Sunday. Sparrow Hospital Emergency Room should be used for critical emergencies or when Olin and FMS are closed.
- If an injury or illness involves the following and/or the employee is treated at Sparrow, the employee must follow up at Olin Health Center:
  - hepatitis, AIDS, human blood, or bodily fluids exposure,
  - work with a respirator,
  - work around or with asbestos,
  - work with formaldehyde, ethylene oxide, hazardous waste,
  - work with pesticides or other chemicals, and/or
  - work with or around animals.

(2) For on-campus work-related injury cases when the illness/injury is not critical and the employee cannot drive him/herself to Olin, the Olin Courtesy Van may be called between 8:00a and 5:00p at 517-353-4700. Spartan-Yellow Cab may be called anytime after 5:00p at 517-482-1444.

(3) Within 24 hours after a reported illness/injury, the injured worker is to complete the Report of Claimed Occupational Injury or Illness. Copies must be distributed to the parties listed at the bottom of the form. Do not wait for medical reports before filling out this form. The forms can be obtained from HR’s Workers Compensation website (in Word format at http://www.hr.msu.edu/benefits/benefits_docs/AccidentReport.doc).

(5) Out-of-town supervisors should send employees with injuries to the nearest medical facility capable of treating the injury. An Authorization to Invoice MSU for employees not in the Lansing area should be completed and sent with the injured individual (http://www.hr.msu.edu/benefits/benefits_docs/InvoiceMSUnonLansing.pdf).
XIII. UNIVERSITY RESOURCES

A majority of the Graduate School requirements, and a number of helpful sites, can be found by visiting: http://grad.msu.edu

A. Publications of The Graduate School that may be of help throughout a student’s tenure at MSU are:

1. Research Integrity Newsletter:
   http://grad.msu.edu/integrity.htm
   A semi-annual newsletter devoted to bringing critical ethical issues before the community for reasoned debate and discussion. The Office of Intellectual Integrity, the Center for Ethics and Humanities in the Life Sciences, and the Graduate School, sponsors this newsletter.

2. Formatting Guide for Theses/Dissertations:
   http://grad.msu.edu/etd/docs/formattingguide.pdf
   Sets forth the dissertation formatting requirements established by MSU. Students can access it on the web.

3. Submission of the Dissertation to The Graduate School:
   Dissertations are now submitted electronically to the Graduate School along with an Approval Form signed by the students and the Major Professor (http://grad.msu.edu/etd/docs/ApprovalForm.pdf). There also two surveys at http://grad.msu.edu/etd/ that the graduating student is required to complete before submitting the dissertation to the Graduate School.
   The Graduate School forwards a copy of the dissertation title page to the Registrar’s Office upon acceptance. If the department requires a copy of the dissertation, it is the responsibility of the graduate student to provide that copy.
   The student is not required to be enrolled the semester in which the final unbound copy of the dissertation is submitted to the Graduate School if that semester is different from the semester of the oral defense.

4. Application for Graduation:
   https://www.reg.msu.edu/stuforms/gradapp/gradapp.asp
   The graduate student must submit to the Registrar’s Office an Application for Graduation early in the semester of graduation and must be completed before the semester the student expects to defend.

5. Final Certification Form:
   This form is actually the Graduate Credit Statement and Final Certification for Degree but is more commonly referred to as the “Final Cert” or “Final Certification” form. After the Application for Graduation is submitted by the graduate student to the Registrar’s Office, the Final Certification form will be mailed to the student’s department. The Department will verify the student’s records for completion of program requirements at both the Department and University levels. The Final Certification form is then forwarded to the college for approval before it is sent to the Registrar’s Office.
   The Registrar’s Office, Degree and Certification will verify approval of the Final Certification form submitted by the Department and College and will also verify the courses listed and their approved completion, including the required number of research credits. In addition, the Registrar’s Office will check for any outstanding parking tickets, holds, or fees owed to the University before approving the Final Certification form.
   Registrar’s Office, Degree and Certification, 432-5911

6. Commencement and Graduation Requirements:
   http://commencement.msu.edu/
   Links to detailed commencement information, doctoral hooding instructions, and general graduation requirements can be found on this website.
B. Other Resources for Graduate Students:

The Graduate School’s Website
http://grad.msu.edu
Online resources for faculty, staff and students relating to graduate education.

Career and Professional Development
http://grad.msu.edu/careerservices
This website contains career and professional development resources for graduate students and postdoctoral fellows. Students should check the site often for new links to career resources within and outside of academe, help with the career search process, and professional development ideas and opportunities.

The Graduate School offers a variety of Career and Professional Development Resources at MSU. Their website (www.msu.edu/user/gradschl/) features relevant workshops, activities, web links and contact people that helps graduate students organize a wealth of available information according to different phases of a doctoral program.

PREP focuses on four professional skills that are key to career and professional development: planning throughout the graduate career to identify and successfully achieve career goals; developing resilience and tenacity to thrive through personal and professional stages; practicing active engagement in making important life decisions and in acquiring the skills necessary to attain career goals; and attaining high standards of professionalism in research and teaching. Employing these skills at every stage of the graduate program helps students to maximize their opportunities for professional growth and to discover a fulfilling career path. In partnership with graduate and professional programs across campus, the Graduate School seeks to introduce students to a range of career activities and opportunities with the goal of assisting degree completion and enhancing professional success. The workshops are based on current scholarship on graduate student development and are themselves part of an ongoing research project through evaluation and assessment. See http://grad.msu.edu/prep for more detailed information on the PREP program.

STUINFO
https://stuinfo.msu.edu/AppLogin.Asp?
Website to look up your grades, account, courses, enroll, etc.

BioCareer Center for PhD Students
http://msu.biocareers.com
Ph.D. Career Services, The Graduate School, and the Office of the Vice President for Research and Graduate Studies have joined the BioCareer Center Consortium of Schools delivering expanded career options for PhDs, along with Berkeley, Caltech, Stanford, U of Pennsylvania and many others. BioCareer Center offers variety of resources, including advice from professionals working in both academic and non-academic jobs and a jobs board. The BioCareer Center Jobs Board has over 400 listings for biomedical scientists and MDs in a variety of career paths. To register go to the above noted website, post a resume, and set up an “email job agent”.

For help with any aspect of the job search or questions related to Bio Career Center, please contact:
Dr. Matt Helm, Director of Ph.D. Career Services
113 Student Services Building
884-1351
helmmatt@msu.edu

Council of Graduate Students (COGS)
http://www.msu.edu/~cogs
COGS is the all-University graduate and graduate-professional student governing body. COGS’ goals are to: promote the academic, economic and social aims for all graduate students; establish effective communication among these students and the academic/administrative units of the University; and create channels of effective communication with other student organizations.
353-9189
cogs@msu.edu
Student Health Insurance
http://www.hr.msu.edu/students.htm
A health insurance plan is available to all graduate students/assistants. Please refer to the website below for complete details.

C. Other Resource Offices:

Counseling Center
http://www.counseling.msu.edu
207 Student Services 330 Olin Student Health Center
35508270 355-2310

Fees and Scholarships
http://www.ctlr.msu.edu/COStudentAccounts/TuitionCalculator.aspx
140 Administration Building
355-5050

Ombudsman
http://www.msu.edu/unit/ombud
129 N. Kedzie
353-8830, soffin@msu.edu 252 Student Services
353-5940, finaid@msu.edu

Registrar’s Office
http://www.reg.msu.edu
150 Administration Building
355-3300
reg@msu.edu

Office of Financial Aid
http://www.finaid.msu.edu/
252 Student Services
355-2310

Ombudsman
http://www.msu.edu/unit/ombud
129 N. Kedzie
353-8830, soffin@msu.edu 252 Student Services
353-5940, finaid@msu.edu

Registrar’s Office
http://www.reg.msu.edu
150 Administration Building
355-3300
reg@msu.edu

Office of Financial Aid
http://www.finaid.msu.edu/
252 Student Services
355-2310

D. For International Students:

English Language Center
http://www.elc.msu.edu/
The English Language Center (ELC) provides English language instruction to two groups of international students: those needing to improve their English language skills before beginning academic course work and those wanting to improve their English skills but who are not seeking a degree at MSU. Such students can apply directly to the ELC or may enroll through the Eurocentres program.

A714 Wells Hall
353-0800
elc@msu.edu

Office for International Students and Scholars (OISS)
http://www.isp.msu.edu/OISS
This office supports and enhances the international students’ and scholars’ academic, cultural, and social interaction at MSU. It also aims to serve as the primary link between the international students/scholars and the university, community, federal government, and public and private agencies. OISS also desires to promote a positive and symbiotic cross-cultural environment through international education and exchange.

Peter Briggs, Director
OISS, 103 International Center
353-1720
pbriggs@msu.edu

Chris Bargerstock
Intl Students/Scholar Advisor II
353-1720
chrisb@msu.edu
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Pharmacology and Toxicology Graduate Program – Annual Student Performance Evaluation

Student: [Redacted]  Thesis Advisor: [Redacted]

Sections A-H to be completed by the student

<table>
<thead>
<tr>
<th>A) Coursework and academic requirements completed</th>
<th>Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B) Research integrity training completed during the current year</th>
<th>Date</th>
<th>Certificate (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investing in Responsibility &amp; Integrity for a Productive Career</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsible Decision-making in Academic Research: Ethical &amp; Moral Perspective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintaining a Productive &amp; Responsive Environment for Conducting Graduate Research</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Responsibility in Conducting Graduate Research &amp; Advancing Your Career</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsibility to the Subjects of Research: Animals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsibility to the Subjects of Research: Humans</td>
<td>not required</td>
<td></td>
</tr>
<tr>
<td>Objectivity &amp; Conflicting Interests in Academic Research</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C) Summary of research progress during the past year (attach publication list including abstracts)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D) Summary of research achievements during the past year (awards, fellowships, presentations -- include presentations at Graduate Student Forum and any teaching completed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E) Satisfaction with your current progress (highlight one):</th>
<th>Satisfied</th>
<th>Unsatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F) Explain why you are satisfied / unsatisfied with your progress:</th>
</tr>
</thead>
</table>
G) What are your goals for the coming year?

H) Are there things the Graduate Program could do to help you achieve your goals or improve your progress?

<table>
<thead>
<tr>
<th>Sections I-L to be Completed by the Mentor</th>
</tr>
</thead>
<tbody>
<tr>
<td>I) Evaluation of student performance (highlight one):</td>
</tr>
<tr>
<td>J) Research plans for the coming year:</td>
</tr>
<tr>
<td>K) Recommendations for improvement</td>
</tr>
<tr>
<td>K) Achievements worthy of special note</td>
</tr>
</tbody>
</table>

Student's Signature | Date | Thesis Advisor's Signature | Date |

Program Director's Signature | Date
**GRADUATE STUDENT PROGRESS FLOW SHEET**

<table>
<thead>
<tr>
<th>Rotation</th>
<th>Advisor(s) +</th>
<th>Semester/Year</th>
<th>Seminars</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/ PHM 870</td>
<td>General</td>
<td></td>
<td>Rotation Seminar</td>
<td></td>
</tr>
<tr>
<td>2/ PHM 870</td>
<td></td>
<td></td>
<td>Thesis Proposal Seminar</td>
<td></td>
</tr>
<tr>
<td>3/ PHM 870</td>
<td></td>
<td></td>
<td>Thesis Defense Seminar</td>
<td></td>
</tr>
</tbody>
</table>

**COURSES TAKEN** – In addition to 899 (min of 8 credits required) OR 999 (min of 24 credits required)

<table>
<thead>
<tr>
<th>Course</th>
<th>Sem</th>
<th>Yr</th>
<th>Cr</th>
<th>Gr</th>
<th>Course</th>
<th>Sem</th>
<th>Yr</th>
<th>Cr</th>
<th>Gr</th>
</tr>
</thead>
<tbody>
<tr>
<td>819</td>
<td>Summer 2</td>
<td>2</td>
<td>BMB 801</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>820</td>
<td>Fall 4</td>
<td>3</td>
<td>BMB 802</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>830</td>
<td>Fall 3</td>
<td>4</td>
<td>PSL 828</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>827</td>
<td>Fall 4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>980*</td>
<td>Summer 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>910</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*PHM 980, 1 cr, section 001, summer session -- This course taken in conjunction with PHM 819. 819 is the online course taken with the departmental online masters programs. 980 is the PhD in-class course meeting once a week.

**COMPREHENSIVE EXAM**

<table>
<thead>
<tr>
<th>Written Exam</th>
<th>Oral Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Chair, Graduate Committee)</td>
<td>(Chair, Guidance Committee)</td>
</tr>
</tbody>
</table>

**COURSE LECTURING** (includes tutoring PHM 430, PHM 450, Others):

<table>
<thead>
<tr>
<th>Course(s)</th>
<th>Semester Taught</th>
<th>Lecture(s) Title(s)</th>
</tr>
</thead>
</table>

**GUIDANCE COMMITTEE MEMBERS:**

1. Chairperson,  
2.  
3.  
4.  
5.  
6.  

*MS – at least 3 reg MSU Faculty; PhD – at least 4 reg MSU faculty [1 req from outside Dept]*  

**RESPONSIBLE CONDUCT IN RESEARCH (UNIVERSITY SERIES)**

<table>
<thead>
<tr>
<th>Investing in Responsibility &amp; Integrity for a Productive Career</th>
<th>Date Offered</th>
<th>Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsible Decision-making in Academic Research: Ethical &amp; Moral Perspective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintaining a Productive &amp; Responsive Environment for Conducting Graduate Research</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Responsibility in Conducting Graduate Research &amp; Advancing Your Career</td>
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<td>Responsibility to the Subjects of Research: Animals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsibility to the Subjects of Research: Humans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objectivity &amp; Conflicting Interests in Academic Research</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANNUAL EVALUATIONS RECEIVED:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GUIDANCE COMMITTEE MEETINGS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CERTIFICATION THAT ALL COURSE REQUIREMENTS HAVE BEEN MET:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Signature (Chair, Guidance Committee):</strong></td>
</tr>
<tr>
<td><strong>Date:</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Degree</th>
<th>Date Defense Passed</th>
<th>Semester Degree Awarded</th>
<th><strong>Signature (Chair, Guidance Comm)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OTHER COMMENTS:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Evaluation period:</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
</tbody>
</table>

Please evaluate the student on the basis of the following criteria: Reliability, initiative, perseverance, ability to express himself/herself, commitment, and laboratory skills. Evaluation on the basis of any additional criteria are welcome.

After signing, student must return form to Diane in B405 Life Sciences. Form will be placed in student’s file.
### Pharmacology and Toxicology Graduate Program – Course Lecturing Evaluation

<table>
<thead>
<tr>
<th>Student:</th>
<th>Course Coordinator:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation Period:</td>
<td>Fall</td>
</tr>
<tr>
<td>Course in which lecture(s) were given:</td>
<td>PHM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lecture Title(s)</th>
<th>Date(s) of Lecture(s)</th>
</tr>
</thead>
</table>

Give a brief summary of the student’s performance and recommendations for improvement (if any)
STUDENT SEMINAR EVALUATION FORM

Those faculty members who have attended this seminar are requested to use this form to give their written evaluation of the student’s presentation. This will be placed in the student’s file.

STUDENT NAME: ___________________________ DATE OF SEMINAR: ___________________________

TYPE OF SEMINAR: ___________________________

<table>
<thead>
<tr>
<th></th>
<th>ROTATION SEMINAR</th>
<th>THESIS PROPOSAL SEMINAR</th>
<th>DISSERTATION SEMINAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introductory material relevant for presentation?</td>
<td>YES</td>
<td>±</td>
<td>NO</td>
</tr>
<tr>
<td>Research objective or hypothesis stated clearly?</td>
<td>YES</td>
<td>±</td>
<td>NO</td>
</tr>
<tr>
<td>Results presented and analyzed properly?</td>
<td>YES</td>
<td>±</td>
<td>NO</td>
</tr>
<tr>
<td>Slides informative and easily read?</td>
<td>YES</td>
<td>±</td>
<td>NO</td>
</tr>
<tr>
<td>Results interpreted adequately?</td>
<td>YES</td>
<td>±</td>
<td>NO</td>
</tr>
<tr>
<td>Hypothesis adequately tested?</td>
<td>YES</td>
<td>±</td>
<td>NO</td>
</tr>
<tr>
<td>Summary logical and complete?</td>
<td>YES</td>
<td>±</td>
<td>NO</td>
</tr>
<tr>
<td>Questions answered adequately and completely?</td>
<td>YES</td>
<td>±</td>
<td>NO</td>
</tr>
</tbody>
</table>

FACULTY COMMENTS (Comments should be clear and constructive):

Please sign below and return to Diane. A copy will be made of each evaluation and given to the student.

Signature of Faculty Member: ___________________________ Date: ___________________________
RECORD OF COMPREHENSIVE EXAMINATIONS
for
DOCTORAL DEGREE AND EDUCATIONAL SPECIALIST DEGREE CANDIDATES

☐ Check if this is a re-examination because of expired time limits.

Department of ____________________________________________

Student’s Name ___________________________ Student Number __________
Last, First Middle Initial
Term and Year of First Course Counted towards this Degree __________________________

Result of Written Comprehensive Examinations:

<table>
<thead>
<tr>
<th>Field</th>
<th>Examiner(s)</th>
<th>Examination Date (MM-DD-YY)</th>
<th>Passed or Failed</th>
</tr>
</thead>
</table>

Result of Oral Comprehensive Examinations:

<table>
<thead>
<tr>
<th>Field</th>
<th>Examiner(s)</th>
<th>Examination Date (MM-DD-YY)</th>
<th>Passed or Failed</th>
</tr>
</thead>
</table>

OVERALL PASS or FAIL? __________________________

Signed __________________________ Date
Chairperson of Examination Committee

Signed __________________________ Date
Chairperson of Department

Signed __________________________ Date
Dean of College

MSU is an Affirmative Action/Equal Opportunity Employer. 08/09
REPORT OF THE GUIDANCE COMMITTEE – DOCTORAL AND OTHER PROGRAMS

See the catalog (Academic Programs) regarding composition of guidance committee and deadlines for its formation and for filing this report listing all degree requirements.

<table>
<thead>
<tr>
<th>Name</th>
<th>Student No.</th>
<th>Ph.D</th>
<th>D.M.A.</th>
<th>Ed.D</th>
<th>Ed.S.</th>
</tr>
</thead>
</table>

First Semester in Doctoral Program

<table>
<thead>
<tr>
<th>Bachelor of</th>
<th>Institution</th>
<th>Dept.</th>
<th>Year</th>
<th>Major</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Tentative Dissertation Subject</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Director</th>
<th>Languages or Course Substitutes</th>
</tr>
</thead>
</table>

Will the student's research involve the use of human subjects of human materials? __ Yes __ No

warm-blooded animals? __ Yes __ No

or hazardous substances? __ Yes __ No

I understand it is necessary to obtain institutional review and approval prior to initiating any research involving the use of human or animal subjects or hazardous materials.

(StUDENT'S SIGNATURE) Mo./Day/Yr.

DOCTORAL PROGRAM

PLEASE PRINT OR TYPE AND CLUSTER BY FIELD

<table>
<thead>
<tr>
<th>Dept.</th>
<th>Course No.</th>
<th>Semester</th>
<th>Title</th>
<th>No. CR</th>
<th>Dept.</th>
<th>Course No.</th>
<th>Semester</th>
<th>Title</th>
<th>No. CR</th>
</tr>
</thead>
</table>

Approved
(Please TYPE guidance committee member's names below signatures)

1. Chairperson: ___________________________ Mo./Day/Yr.
2. ___________________________
3. ___________________________
4. ___________________________
5. ___________________________
6. ___________________________

Course Credits (in addition to at least 24 credits of 999)

Comprehensive examination areas:

1. The candidate expects to pass the Comprehensive Examination by Semester, ______ Year.
2. ___________________________
3. ___________________________
4. ___________________________
5. ___________________________
6. ___________________________

MSU is an affirmative action/ equal opportunity employer.
RECORD OF DISSERTATION AND ORAL EXAMINATION REQUIREMENTS FOR DOCTORAL DEGREE CANDIDATE

Department of: ____________________________

Student's Name: ____________________________  Student Number: ________________

1. Dissertation Title: ____________________________

2. Dissertation has been:  □ Accepted  □ Rejected  □ Accepted subject to revisions (beyond minor editorial changes) required by the Committee.

3. Oral examination in defense of the dissertation was conducted on: ____________________________ Date
   The student:  □ Passed  □ Failed  Reason: ____________________________

4. Dissenting opinions and signatures of dissenting examiners, if any:

5. Subject to the satisfactory completion of other requirements, this student is recommended for the degree Doctor of:  □ Philosophy  □ Education  □ Musical Arts

   Signatures of Guidance Committee Members: ____________________________
   Printed names of Guidance Committee Members: ____________________________
   Chairperson of Guidance Committee: ____________________________ Date: ________________

   ____________________________ ____________________________
   ____________________________ ____________________________
   ____________________________ ____________________________
   ____________________________ ____________________________
   ____________________________ ____________________________
   ____________________________ ____________________________

6. Major revisions required: ____________________________

7. Revisions, if any, approved: ____________________________
   Chairperson of Guidance Committee: ____________________________ Date: ________________

   Approved: Department Chairperson: ____________________________
   Associate/Assistant Dean: ____________________________

   MSU is an affirmative action/ equal opportunity employer.
Pharmacology & Toxic-Envir Tox

<table>
<thead>
<tr>
<th>Degree</th>
<th>Institution Granting The Degree</th>
<th>Year</th>
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<tbody>
<tr>
<td>BS</td>
<td>Nanjing University</td>
<td>2004</td>
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STUDENT MUST BE REGISTERED:
- Master's Final Examination OR Evaluation
- Doctoral Final Defense: 10-15-10

THESIS OR DISSERTATION INFORMATION
- If a thesis or dissertation is being submitted as part of the degree requirements, please complete the following items:
- Credits and grade for thesis (899). A final dissertation grade (P or Pass) will be assigned when student graduates.

<table>
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<tr>
<th>Subject Code</th>
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<tr>
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<td></td>
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</tbody>
</table>

UNIVERSITY REQUIREMENTS MET
- Master's Degree
  - Residency requirement (6 credits on campus)...
  - 16 crs. at 800/900 level...
  - Time limitation...
- Doctoral/Educational Specialist Degree
  - Residency requirement (2 consec. sem. or full time)...
  - Time limitation...

Total semester transfer credits: 0.00
Total semester 899 credits: 0.00
Total semester 999 credits: 24.00

NOTE: DEPARTMENT - MAKE COPY PRIOR TO FORWARDING TO COLLEGE
COLLEGE - MAKE COPY PRIOR TO FORWARDING TO OFFICE OF THE REGISTRAR

Department Chairperson Date
Associate/Assistant Dean Date
TRAVEL AUTHORIZATION AND EMERGENCY CONTACT FORM

TRAVEL RELATED TO OUTSIDE WORK FOR PAY SHOULD NOT BE AUTHORIZED BY THE UNIVERSITY

SECTION A: TRAVEL AUTHORIZATION
This section must be completed prior to departure.

Name: ________________________________ (Last) ________________________________ (First) (ZPID or MSU NetID#)

Email: ________________________________ 

Department: ________________________________

Dept Addr: ________________________________

Check One: US Citizen ________________________________ Resident Alien ________________________________ NonResident Alien ________________________________ Other ________________________________

Check One: Faculty/Staff ________________________________ Graduate ________________________________ Undergraduate ________________________________ Other ________________________________

Departure Date: ________________________________ Return Date: ________________________________ Destination(s) (City, State and Country required): ________________________________

Account Number(s) to be charged: GA014113

Purpose of Travel (Check all that apply and fill out description):

Conference/Meeting ________________________________ Research ________________________________

International Programs ________________________________ Recruitment ________________________________

External Relations/Development ________________________________ Team ________________________________

Teaching/Outreach ________________________________ Other ________________________________

Account Number(s) to be charged: GA014113

Purpose of Travel (Check all that apply and fill out description):

Conference/Meeting ________________________________ Research ________________________________

International Programs ________________________________ Recruitment ________________________________

External Relations/Development ________________________________ Team ________________________________

Teaching/Outreach ________________________________ Other ________________________________

Description: ________________________________

SECTION B: ESTIMATED TRIP COSTS

Airfare ________________________________ Lodging ________________________________

Ground Transport ________________________________ Meal Per Diems / M&IE ________________________________

Program Expenses ________________________________ Student Related Expenses ________________________________

Total Estimate: $ ________________________________

SECTION C: MOTOR POOL - CAR USAGE

This section is to be filled out when authorizing traveler to use a Motor Pool Vehicle.

Primary Driver: ________________________________

Name(s) of Additional Drivers:

1) ________________________________ 3) ________________________________

2) ________________________________ 4) ________________________________

SECTION D: EMERGENCY CONTACT INFORMATION - (AS REQUIRED BY COLLEGES/MAJOR ADMINISTRATIVE UNITS (MAU))

FOR INTERNATIONAL TRAVEL: International travel data provided from this section should be keyed into the Travelers Database (excluding MSU study abroad) by personnel designated in each participating collegelunit. Enter “N/A” for missing information

FOR DOMESTIC TRAVEL: This section may be used for domestic travel. However, the information should not be entered into the Travelers Database.

1. Emergency Contact Information (spouse, etc.)

Name: ________________________________ Phone: ________________________________ Email: ________________________________

2nd Emergency Contact Information

Name: ________________________________ Phone: ________________________________ Email: ________________________________

3. Supervising Faculty Member Information (Graduate/Undergraduate Students Only)

Name: ________________________________ Phone: ________________________________ Email: ________________________________

3. Destination Information

First Travel Location: ________________________________ Second Travel Location: ________________________________

Dates: ________________________________ Dates: ________________________________

Hotel/Host: ________________________________ Hotel/Host: ________________________________

Address: ________________________________ Address: ________________________________

Phone: ________________________________ Phone: ________________________________

Host/Colleague Email: ________________________________ Host/Colleague Email: ________________________________

Third Travel Location: ________________________________ Fourth Travel Location: ________________________________

Dates: ________________________________ Dates: ________________________________

Hotel/Host: ________________________________ Hotel/Host: ________________________________

Address: ________________________________ Address: ________________________________

Phone: ________________________________ Phone: ________________________________

Host/Colleague Email: ________________________________ Host/Colleague Email: ________________________________

Will the traveler be checking email while in travel status? Yes-regularly ________________________________ Yes-periodically ________________________________ Yes-infrequently ________________________________ No ________________________________

SECTION E: AUTHORIZATION SIGNATURES

Yes No

Travel Authorization: ________________________________

Motor Pool Vehicle: ________________________________

Dean (including Assoc. & Assist. Dean), Director, Chairperson, or Organization Level Budget Officer ________________________________

Print Name: ________________________________ Date: ________________________________

Department Contact: ________________________________

Email: ________________________________ Phone #: ________________________________

MSU is an affirmative-action, equal-opportunity employer.

Please retain original travel authorization with original signatures in department.

Rev 11/10 New 9/2004
### SECTION A: TRAVEL REIMBURSEMENT

<table>
<thead>
<tr>
<th>Name:</th>
<th>Reimbursement Limited to: $ -</th>
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<tr>
<td>Dept:</td>
<td>Conference Fees Amount: $ -</td>
</tr>
<tr>
<td>Dept Addr:</td>
<td>Conference Fee Paid by ProCard: Yes ______ No ______</td>
</tr>
<tr>
<td>Check One:</td>
<td>Airfare/Rail Direct Billed: Yes ______ No ______</td>
</tr>
</tbody>
</table>

Purpose of Travel (Check all that apply and fill out description):
- Conference/Meeting
- Ext Rel/Devl
- Int'l Programs
- Research
- Recruitment
- Team
- Teaching/Outreach
- Other

### SECTION B: TRANSPORTATION REIMBURSEMENT

**DATES** | **STARTING** | **DESTINATION** | **MILEAGE** | **RATE** | **AMOUNT**
--- | --- | --- | --- | --- | ---

- ...
- ...
- ...

Transportation Sub-total: $ -

### SECTION C: NOTES (Car rental justification, shared hotel room explanation, etc.)


### SECTION D: ACCOUNTING LINE to be entered in the Disbursement Voucher e-doc (* required items)

<table>
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<th>SUB-OBJECT*</th>
<th>SUB-OBJECT CODE</th>
<th>PROJECT CODE</th>
<th>ORG. REF. ID</th>
<th>AMOUNT*</th>
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</table>

- Subsistence Sub-total Page 1: $ -
- Subsistence Sub-total Page 2: $ -
- Transportation Sub-total Page 1: $ -
- Transportation Sub-total Page 2: $ -
- **Total Claim Limit**: $ -
The Graduate School has provided a helpful set of guidelines and a Writing Center (see below) to help the Graduate Student writing their theses.  [http://writing.msu.edu/](http://writing.msu.edu/)

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**Information for Graduate Students**

**What services does the Writing Center offer graduate students?**

The Writing Center offers a variety of services for graduate students. Graduate Writing Consultants (GWCs) act as supportive readers to respond to developing drafts of:

* dissertations and theses
* conference papers
* seminar papers
* journal articles
* reports on empirical research
* cover letters
* résumés and curriculum vitae
* applications to graduate schools
* creative writing

The Writing Center also coordinates peer response writing groups for graduate students. These include special opportunities for graduate students writing in the sciences.

**How do I make an appointment?**

Call (517) 432-3610 or stop by 300 Bessey to make an appointment.

**What should I bring with me to a consulting session at the Writing Center?**

Writers are invited to schedule appointments with writing consultants to discuss any type of writing at any stage of the writing process (e.g., brainstorming, researching, drafting, editing). Dialogue at the beginning stages of the writing process is often the most fruitful, so we encourage writers to visit the center at the beginning stages of a writing project. Often it is useful to bring materials relevant to that project (e.g., assignments, project guidelines, course texts, application requirements) to consulting sessions.

**What are Graduate Student Writing Groups?**

Graduate Student Writing Groups are composed of a writing center consultant and three to six graduate students who read and respond to one another's writing over time. Often these groups support one another's writing of theses or dissertations. Graduate students from all disciplines are invited to form or join groups. Ask about our special opportunities for writing in the sciences.

**NSC 840**

**Science Writing**

**Where is the Writing Center located?**

The Writing Center is located at 300 Bessey Hall, on the west side of Farm Lane across from the Auditorium.
RESOURCE MATERIALS
A parallel effort of the Graduate School and the Vice President for Research & Graduate Studies will be to organize and make available Resource Materials Concerning Responsible Conduct of Research to facilitate communication, education and understanding of this topic. Where possible, links will be to the actual documents, or as an alternative the link may be to the source organization where the document may be requested. This site will include such things as instructional and training materials; case studies; readings; federal rules, regulations and guidelines; news; and sources for additional information.

2010-2011 PROGRAM – RESPONSIBLE CONDUCT IN RESEARCH

Why MSU Offer This Series
Colleges and Universities are made up of recognized scholars and junior scholars (students, trainees, and postdoctoral researchers) who coexist in a rich but competitive environment for the common purpose of learning, creating new knowledge, developing new insights through synthesis of existing knowledge and disseminating information and ideas for the benefit of their peers and the general public. Academic excellence comes through recognition by one's peers. Some new and innovative ideas have the potential for generating widespread professional interest and credit in the area of their scholarship for purely academic reasons. Others have the potential for generating substantial commercial interest and financial gain. Either can be motivation to stretch and even exceed acceptable standards of conduct in how scholarship is conducted. At the same time, differing academic and personal perspectives and interests can lead to interpersonal conflicts that detract from achieving common goals. Collectively, these challenges are integral to the broader paradigm of professional responsibility to one's students, senior advisors, peers, and institutions.

Responsible Conduct of Research became a public policy issue in the early 1980s with the disclosure of cases of misconduct at four major research centers (The Office of Research Integrity - History). This issue has evolved since then and is now recognized as being of national importance. Case reports and discussions have been expanded to include a range of issues from questionable practices up to and including misconduct – falsification, fabrication, and plagiarism (see MSU’s policy). A study funded by the NIH (B.C. Martinson, M.S. Anderson and R. de Vries, 2005. Scientists Behaving Badly. Nature 435(9):737-738) reported on an anonymous survey of behaviors considered as questionable. Taken as a whole, one in three responding scientists acknowledged they “had engaged in at least one of the top ten behaviors during the previous three years.” Overall, this proportion was statistically higher for mid-career than for early career respondents.

A university-wide task force provided recommendations in late 2003 concerning Research Mentoring that were unanimously endorsed by the University Graduate Council along with an additional four recommendations that were later approved by the Faculty Council. The full report of the Task Force was presented in the Spring 2004 issue of the Research Integrity Newsletter. One of the recommendations of the Task Force is that each graduate degree-granting unit be required to revise their graduate handbooks, incorporating specific “Guidelines for Graduate Student Advising and Mentoring Relationships” and “Guidelines for Integrity in Research and Creative Activities.” Implementing these recommended guidelines remains a priority.

This series responds to graduate student and postdoctoral requests for more information and discussion of ethics and responsible conduct as it impacts on research and scholarship. It will emphasize ethical analysis and problem-solving along with summaries of specific requirements that apply to all. The goal is to insure that students and postdoctoral researchers are informed to protect their personal educational and career development interests that can easily be harmed through irresponsible acts and to support their effectiveness in collaborating with more senior researchers / scholars.

Schedule of Presentations (the scheduled dates for 2011-2012 have not yet been set)
Investing in Responsibility & Integrity for a Productive Career (http://grad.msu.edu/rcr/investing.aspx)

This first program in the Responsible Conduct of Research series is intended to focus attention on the broad issues of Integrity in Research and Creative Studies that will be discussed in more detail throughout the remainder of the series and to stress the importance of conducting research with integrity and the consequences when it is not, both at MSU during graduate school and afterward within professional disciplines and in diverse employment situations.

This session will highlight issues related to:
Key Principles of Integrity
- International Policies, Guidelines and Disciplinary Options for Promoting Integrity in Research
- Graduate Handbooks
- Graduate Student Rights, Responsibilities & Obligations
- Guidelines for Integrity in Research & Creative Activities
• Important Indicators of Integrity
• Ready Sources of Information for Daily Support
• Reasons for Acting with Integrity in Your Career

Responsible Decision-making in Academic Research: Ethical & Moral Perspectives
(http://grad.msu.edu/rcr/ethics.aspx)

Dr. Fleck will set the stage for subsequent discussions of specific aspects of academic responsibility by offering lessons to be learned from his perspective as a medical ethicist. He will provide a lay summary of common perspectives on ethical and moral values, features that guide a moral point of view, types of moral inquiry, and recurring dilemmas or problems in ethical decision making. He will discuss how these relate to matters of integrity and academic freedom and raise important questions for discussion concerning decision-making in academia and the conduct of research. He will consider the ethical dimensions of such things as academic freedom in relation to professional standards of conduct (academic duty); conflicting responsibilities and duties of faculty in relation to graduate students (multiple roles, expectations, and needs of students); and institutional responsibility to oversee and promote free and objective inquiry.

Maintaining a Productive & Responsive Environment for Conducting Graduate Research
(http://grad.msu.edu/rcr/integrity.aspx)

This program will highlight issues of interest to both graduate students and faculty where expectations may differ, leading to conflicts that are ultimately unproductive to all. We will discuss what we are attempting to achieve through responsible conduct of research education with examples of mutual responsibilities by students, faculty, and staff in creating and maintaining a productive and responsive environment for achieving our collective personal goals - for students, a productive graduate experience leading to a rewarding professional career.

Personal Responsibility in Conducting Graduate Research & Advancing Your Career
(http://grad.msu.edu/rcr/career.aspx)

Academic research is based on trust in the work of others. Also, information generated may often be used just as readily for destructive purposes as for helping mankind in a constructive manner. Therefore, researchers have a great personal responsibility, both individually and collectively, to others. This workshop highlights university guidelines, policies, procedures, and regulations related to institutional and public expectations about personal responsibilities and the consequences if personal actions violate or do not meet these expectations.

Responsibility to the Subjects of Research: Humans
(http://grad.msu.edu/rcr/humans.aspx)

With emphasis on university policies and procedures for acceptable practices and procedures for conducting studies of humans (concern for vulnerable populations, obtaining informed consent, maintaining confidentiality, etc.), this session will also highlight the historical basis for human research protections and how to obtain institutional approval for the conduct of such research.

Responsibility to the Subjects of Research: Animals
(http://grad.msu.edu/rcr/animals.aspx)

Many research questions to benefit the health and welfare of humans, as well as animals, could not be answered without studying animals in laboratories and in their natural environments. It is important that individuals and institutions conducting such studies recognize the significant responsibilities that this carries with it to do all possible to treat these animals with care and respect. This workshop will highlight historical perspectives and events in the public discussions of whether or not it is ethically appropriate to use animals in research. It will also stress the key laws and policies that have been implemented by the Federal government to accomplish this. Examples and case studies will also be presented to explain how MSU's Institutional Animal Care and Use Committee reviews proposed research and teaching protocols to ensure that research animals are cared for in a humane and ethical manner to minimize pain and distress.

Objectivity & Conflicting Interests in Academic Research
(http://grad.msu.edu/rcr/conflictinginterests.aspx)

“A conflict of interest is a situation in which someone in a position of trust, such as a lawyer, insurance adjuster, a politician, executive or director of a corporation or a medical research scientist or physician, has competing professional or personal interests. Such competing interests can make it difficult
to fulfill his or her duties impartially. A conflict of interest exists even if no unethical or improper act results from it. A conflict of interest can create an appearance of impropriety that can undermine confidence in the person, profession, or court system. A conflict can be mitigated by third party verification or third party evaluation ... but it still exists.” [from Wikipedia]

“As the only land-grant institution in the state, Michigan State University is committed to providing equal educational opportunity to all qualified applicants; to extending knowledge to all people in the state; to melding professional and technical instruction with quality liberal education; to expanding knowledge as an end in itself as well as on behalf of society; to emphasizing the applications of information; and to contributing to the understanding and the solution of significant societal problems. Michigan State University’s adherence to academic freedom and open scholarly inquiry supports these essential academic functions.” [from MSU’s Mission Statement approved by the Board of Trustees on June 24-25, 1982]. Michigan State University is now advancing a strategic commitment to become recognized worldwide as the United States’ leading land-grant research university for the 21st century.

One of the foundations for earning this recognition is public trust, in Michigan and worldwide. One factor contributing to public trust is faith that university efforts are carried out as objectively as possible. The Spring 2007 issue of the Research Integrity Newsletter addresses the meaning of "objectivity" and the importance of striving to minimize bias. This workshop will highlight and discuss issues and examples from varying disciplinary perspectives, including why objectivity is important to graduate students and why graduate students themselves should strive to be objective

The above presentations were retrieved from http://grad.msu.edu/rcr. You may find more information at this site concerning the above presentations.
FACULTY INTERESTS IN PHARMACOLOGY AND TOXICOLOGY

Research Faculty

Atchison, William D., Ph.D., University of Wisconsin; Postdoctoral Fellow, Northwestern University; Professor. Neurotoxicology; effect of drugs and chemicals on neurotransmitter release.

Barman, Susan M., Ph.D., Loyola University; Postdoctoral Fellow, Michigan State University; Professor. Neural control of the cardiovascular system.

Cobbett, Peter J.R., Ph.D., St. Andrews University, Scotland; Postdoctoral Fellow, Michigan State University; Academic Fellow, AFRC Institute, England; Associate Professor. Examination of properties of and effects of drugs on isolated muscle from Schistosoma mansoni. Effects of nanoparticles on mammalian neurons.

Copple, Bryan L., Ph.D., University of Nebraska; Postdoctoral Fellow, Michigan State University; Associate Professor, University of Kansas; Associate Professor, Michigan State University. Mechanisms of inflammation and hypoxia induced liver injury.

Dorrance, Anne M., Ph.D., University of Glasgow, Scotland; Postdoctoral Fellow, University of Michigan; Associate Professor. How circulating factors and hypertension affect the outcome of ischemia, and the structure and the function of the cerebral blood vessels. How the mineralocorticoid, aldosterone, and hypertension increase an individual's risk of having a stroke and exacerbate the damage caused by stroke.

Fink, Gregory D., Ph.D., Tulane University; Postdoctoral Fellow, University of Iowa; Professor. Neural control of the cardiovascular system, body fluid homeostasis, hemodynamics, venous function and vascular capacitance, hypertension, cardiovascular disease.

Galligan, James J., Ph.D., Arizona; Postdoctoral Fellow, Flinders University, Australia; Postdoctoral Fellow, Massachusetts Institute of Technology; Senior Research Associate, Oregon Health Sciences University; Professor. Autonomic physiology and pharmacology with emphasis in the nervous regulation of gastrointestinal function.

Ganey, Patricia E., Ph.D., Michigan State University; Postdoctoral Fellow, University of North Carolina; Professor. Role of inflammation in drug-induced liver injury; interaction of environmental chemicals with inflammatory response.

Goodman, Jay I., Ph.D., University of Michigan; Postdoctoral Fellow, McArdle Laboratory for Cancer Research, University of Wisconsin; Professor. Chemical carcinogenesis; epigenetics; toxicology.

Goudreau, John L., D.O./Ph.D., Michigan State University; Associate Professor (joint with Neurology and Ophthalmology). Genetic and environmental factors involved in the pathogenesis of neurodegenerative disorders such as Parkinson’s Disease.

Haywood, Joseph R., Ph.D., University of Florida; Research Fellow, University of Iowa; Professor and Chair. Neural control of the circulation in hypertension, genetics of sodium-dependent Hypertension, regulation of central and peripheral neurotransmitter release.

Hegg, Colleen C., Ph.D., University of Wisconsin-Madison; Postdoctoral Fellow, University of Utah; Assist-ant Professor. Elucidating the mechanisms of neuroregeneration using the olfactory system as a model; confocal microscopy, live cell imaging, enzyme immunoassays, Immunohistochemistry, luminometry and electrophysiology in whole animal studies, in situ preparations and cell culture.

Jackson, William F., Ph.D., Michigan State University; Postdoctoral Fellow, University of Virginia; Professor. Microvascular physiology and pharmacology, smooth muscle and endothelial cell ion channels and electrophysiology, calcium signaling.

Kaminski, Norbert E., Ph.D., North Carolina State University; Postdoctoral Fellow, Research Instructor, Assistant Professor, Medical College of Virginia; Professor and Director of the Center for Integrative Toxicology. Role of the cannabinoid receptor in immunomodulation by cannabinoid compounds; signal transduction in T-cell
activation; immunotoxicology of cholinated hydrocarbons; interactions between the liver and the immune system.

**Lookingland, Keith J.,** Ph.D., University of Maryland; Research Associate, Michigan State University; Associate Professor. Development of neuroprotective pharmacological agents and strategies for the treatment of dopamine neurodegenerative disorders including Parkinson's Disease and Restless Legs Syndrome (RLS)

**Northcott, Carrie A.,** Ph.D., Michigan State University; Postdoctoral Fellow, Michigan State University; Assistant Professor. Neural control and intracellular signaling mechanisms involved in blood pressure regulation.

**Rockwell, Cheryl A.,** PhD., Michigan State University; Postdoctoral Fellow, University of Kansas; Michigan State University, Assistant Professor. Xenobiotic interactions with immune system function.

**Roth, Robert A., Jr.,** Ph.D., The Johns Hopkins University; Postdoctoral Fellow, Yale University; Professor and Director, Graduate Program in Environmental and Integrative Toxicological Sciences. Hepatotoxicology; role of inflammatory stress in drug-induced liver injury.

**Watts, Stephanie W.,** Ph.D., Indiana University; Postdoctoral Fellow, The University of Michigan; Professor. Role of serotonin, altered signal transduction and vascular smooth muscle in hypertension.

### Administrative and Teaching Faculty

**Moore, Kenneth E.,** Ph.D., University of Michigan; Associate Professor, Dartmouth Medical School; Professor Emeritus. Biochemical and toxicological aspects of drugs which act in the peripheral or central nervous systems; catecholamines; neuroendocrine systems.

**Thornburg, John E.,** Ph.D., Purdue University; D.O., Michigan State University; Postdoctoral Fellow, Michigan State University; Professor. Neurochemistry; receptor supersensitivity; neuropharmacology; clinical pharmacology.

### Fixed-Term Faculty

**Bian, Xiaochun,** Ph.D., University of Melbourne, Australia; Postdoctoral Fellow, Michigan State University; Assistant Professor. Postnatal development of enteric nervous system and neural control of gastrointestinal motility.

**Kaplan, Barbara L.,** Ph.D., Michigan State University; Postdoctoral Fellow, University of Chicago; Assistant Professor. T-cell signaling, regulation of interleukin-2, cannabinoid modulation of neuroimmune interactions.

**Maddox, Jane,** D.V.M., Michigan State University; Ph.D., The Pennsylvania State University; Assistant Professor. Inflammation and idiosyncratic drug-induced liver injury.

**Mohankumar, Sheba,** BVSc (DVM equiv.), Tamilmada Agricultural University, India; Ph.D., Kansas State University; Postdoctoral Fellow, Kansas State University; Assistant Professor. Mechanisms by which the immune system communicates with and regulates the neuroendocrine system to affect various body functions; cellular and molecular changes that occur in the neuroendocrine system during aging and obesity.

**Xu, Hui,** M.D., Xinjiang Medical College/China; Ph.D., Kagawa Medical University/Japan; Assistant Professor. Neurohumoral control of vasculature, intracellular signaling and ion channels in regulation of blood pressure.

**Yuan, Yukun,** Ph.D., Michigan State University; Postdoctoral Fellow, University of Michigan; Assistant Professor. Effects of environmental neurotoxicants on central synaptic function in the central nervous systems, particularly visual synaptic pathway.
LIST OF RECENT THESES

Students are required to deposit a copy of their bound thesis with the Graduate Secretary of Pharmacology & Toxicology. All bound copies are shelved in B448-9 Life Sciences Building, and can be checked out. Following is a list of titles published in the last 4 years:

**2006**


Steven Bezdecny (Advisor – P.E. Ganey). Signal transduction pathways involved in the upregulation of cyclooxygenase-2 by 2,2’,4,4’-tetrachlorobiphenyl

Wei Ni (Advisor – S.W. Watts). The presence of a local serotonergic system in peripheral arteries

Keshari Thakali (Advisor – S.W. Watts). Endothelin A (ET_A) and ET_B receptor interaction in arteries and veins.

**2007**

John Buchweitz (Advisor – N.E. Kaminski). Characterization of delta-9-tetrahydrocannabinol-mediated alterations in leukocyte and airway epithelial cell responses to a primary challenge with influenza A/PR/8/34 in C57BL/6 wild type and CB1/CB2 receptor-null mice

**2008**

Dina Schneider (Advisor – N.E. Kaminski). The role of PAXS, BLIMP-1 and AP1 in the suppression of B cell differentiation by TCDD

Andrew King (Advisor – G.D. Fink). Neurogenic mechanisms of salt-sensitive hypertension

Alexandra Hlavacova (Advisor – J.J. Galligan). Enhanced adrenergic sensitivity of mesenteric veins compared to arteries and its relation to calcium utilization and handling

Wei “Melissa” Li (Advisor – G.D. Fink). Blood pressure, venomotor tone, neurohumoral activity, and oxidative stress

Patrick Shaw (Advisor – R.A. Roth). Inflammation and idiosyncratic drug reactions: Inflammatory mechanisms and interactions in a murine model of trovafloxacin hepatotoxicity

**2009**

Colin North (Advisor – N.E. Kaminski). In vivo and in vitro mechanisms for disruption of the toll-like receptor activated primary immunoglobulin M response by 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

**2010 (to date)**

Sachin Kandlikar (Advisor – G.D. Fink). Sympathetic nervous system in the development of mild DOCA-salt hypertension
Haitian Lu (Advisor – N.E. Kaminski). Mechanisms for 2,3,7,8-tetrachlorodibenzo-p-dioxin effects on CD40 ligand-induced activation and effector function of primary human and mouse B cells

Erika Boerman Westcott (Advisor – W.F. Jackson). Regulation of subsarcolemmal Ca$^{2+}$ oscillations and myogenic tone in the microcirculation
GRADUATE COURSES
Following are the Graduate Courses offered within the Department of Pharmacology and Toxicology.

**Required Courses:**

**PHM 819 - Principles of Drug Tissue Interactions.** Summer semester every year. Variable 1 to 2 credits [PHM/TOX students required to take the full 2 credit course]. General principles relevant to the interaction of chemicals with biological systems. Topics include pharmacokinetics and pharmacodynamics. *(This is an online course taken in conjunction with PHM 980 (see below; PHM doctoral students only).*

**PHM 820 - Cellular, Molecular and Integrated Systems Pharmacology and Toxicology.** Fall semester every year. 4 credits, 4(4-0). Comprehensive overview of the cellular and molecular mechanisms of drug and chemical actions on the major organ systems of humans and other mammals.

**PHM 827 - Physiology and Pharmacology of Excitable Cells.** Fall semester every year. 4 credits, 4(4-0). [Interdepartmental with the Departments of Physiology, Zoology, and the Neuroscience Program. Administered by Pharmacology and Toxicology] Function of neurons and muscles at the cellular level: membrane biophysics and potentials, synaptic transmission, sensory nervous system function.

**PHM 830 – Experimental Design and Data Analysis.** Fall and Summer sessions. 3 credits, 3(3-0). Practical application of statistical principles to the design of experiments and analysis of experimental data in pharmacology, toxicology, and related biomedical sciences. This course is offered online.

**PHM 870 – Research Rotations.** Fall and Spring, and/or Summer session. Variable from 1 to 4 credits. Limited amounts of work on selected research problems performed in a laboratory situation.

**PHM 910 – Seminar.** Fall and Spring semesters. 1 credit. [A student may earn a maximum of 3 credits in all enrollments of this course.] A series of seminars by members of the Department and invited speakers on current research.

**PHM 980 – Problems (section 001).** Fall and Spring semesters, Summer session. Variable credit from 1 to 5. [A student may earn a maximum of 20 credits in all enrollments of this course.] Limited amount of individual work on selected problems. *(Section 001 is also 1 credit for PHM doctoral students and is taken in conjunction with PHM 819 noted above during the full Summer session.)*

**PHM 999 - Doctoral Dissertation Research.** Fall and Spring semesters, Summer session. Variable credit. [A student may earn a maximum of 50 credits in all enrollments of this course.]

**Pharmacology/Toxicology Elective Courses:**

**PHM 810 - Synaptic Transmission.** Spring semester, odd-numbered years. 3 credits, 3(3-0). Chemical and electrical aspects of nerve impulse transmission at synaptic neuroeffector junctions. Influence of drugs.

**PHM 816 – Integrative Toxicology: Mechanisms, Pathology and Regulation.** Fall semester, odd-numbered years. 3 credits, 3(3-0). Biochemical, molecular and physiological mechanisms of toxicology. Functional and pathological responses of major organ systems to chemical insult. Mechanisms of mutagenesis, carcinogenesis, and reproductive toxicology. Concepts in risk and safety assessment.

**PHM 839 - Systems Neuroscience.** Spring semester every year. 4 credits, 4(4-0). [Interdepartmental with the Departments of Neuroscience, Human Anatomy and Physiology, Psychology, and Zoology. Administered by the Neuroscience Program.] Anatomy, pharmacology and physiology of multicellular neural systems. Sensory motor, autonomic, and chemo-regulatory systems in vertebrate brains.
Courses Required from Outside the Department:

Biochemistry (BMB) 801 - Molecular Biology. Fall semester. 3 credits. Organization of genes. Regulation of gene expression, replication, and recombination.


Physiology (PSL) 828 -- Cellular and Integrative Physiology. Spring semester. 4 credits. Cellular physiology as basis for understanding integrative functions of various body systems, including nervous, cardiovascular, respiratory, urinary, gastrointestinal, endocrine, reproductive, and immune.

Undergraduate Courses:


PHM 431 – Pharmacology of Drug Addiction. Fall of every year. 3 credits [3(3-0)]. Introduction to pharmacology and neuropharmacology. Understanding of the biological basis for drug abuse and addiction.

PHM 450 – Introduction to Chemical Toxicology. Spring every year. 3 credits [3(3-0)]. Mammalian toxicology. Disposition of chemicals in the body, detoxication, elimination, and mechanisms of toxicity in major organ systems. Selected toxic agents. [Not open to freshman or sophomores]

PHM 480 – Special Problems. Fall and Spring semesters; Summer session. 1-3 credits. Individual work on selected research problems. A student may earn a maximum of 9 credits in all enrollments for this course. Approval of Department.

PHM 486 – Pharmacology Laboratory. Spring semesters. 3 credits. Students will learn research techniques and understand core pharmacology principles and mechanisms of drug modulation of activity of select physiology systems. Grades will be based on the student's performance in lab class sessions, grading of written reports in select lab exercises.

Medical Courses:

PHM 552 – Veterinary Pharmacology I: Principles and Neuropharmacology. Spring every year. 2 credits, 2(2-0) (Open to Veterinary Medical Students only). Basic principles of pharmacology and mechanisms of action of drugs used to affect nervous system function.

PHM 553 – Veterinary Pharmacology II: Systems and Infectious Diseases. Fall every year. 3 credits, 3(3-0) (Open to Veterinary Medical Students only). Principles of pharmacology of infectious disease and specific organ systems, including mechanisms of action and adverse effects of drugs.

PHM 557 – Veterinary Toxicology. Fall every year. 2 credits, 2(2-0) (Open to Veterinary Medical Students only). Determinants of toxic responses, analytical toxicology, genetic toxicology, and toxin management. Diagnosis, prevention, and treatment of common toxicoses.
PHM 563 – Medical Pharmacology. Spring of every year. 3 credits [3(3-0)] (Human and Osteopathic Medical Students only). General principles of pharmacology and selected drugs. Rational drug therapy.

PHM 590 – Case Studies in Clinical Pharmacology. Spring of every year. 2 credits 2(2-0) (Human and Osteopathic Medical Students only). Selected case studies emphasizing clinical applications of pharmacological principles. Evaluation of new drugs, drug advertising, and adverse drug reactions.

PHM 658 – Research Problems in Pharmacology or Toxicology. Fall and Spring semesters; Summer session. Variable from 1 to 3 credits. (Completion of Semester 4 Veterinary Medical Students only). Selected research problems.
Our Department is fortunate to be involved in a number of programs that are thematic in their scientific nature and programming. Below are listed those programs in which our faculty are currently involved and the faculty which our students can consider as research mentors. Their involvement extends to that of the incoming graduate students, and thus the student should look at the non-degree programs as a way to enhance their training. Please note that enrollment/participation in one of these programs is NOT required to be a graduate student in this department; it is a student’s choice. Involvement in some of these programs requires acceptance in a free-standing graduate program such as Pharmacology and Toxicology, while others are degree granting on their own (CMB, Neuroscience).

1. **Cell and Molecular Biology (CMB)**
   - **Director:** Susan Conrad (Microbiology and Molecular Genetics, conrad@msu.edu)
   - **Web site:** [http://cmb.msu.edu/index.php](http://cmb.msu.edu/index.php)
   The CMB Program at MSU is an interdepartmental Ph.D. program with participating faculty from many different departments and administrative units. The research programs address a wide variety of biological questions with an equally diverse array of organisms. However, they are all related in that they depend upon the ideas and approaches unite the research programs of the participating faculty whether they are interested in herbicide resistance in crop plants, DNA replication in bacteria, or tumor development in humans.

   The CMB training program is designed to be flexible so that the student may focus on a particular area of research experiences in cellular and molecular biology as he/she desires. The primary requirement for the Ph.D. is the completion of original research and the publication of a Ph.D. thesis describing that research. The CMB program emphasizes the importance of high quality research, and is designed to assist students in fulfilling their potential as research scientists. During the first academic year at MSU, most students complete three rotations (ten weeks each) in the laboratories of three different faculty members. This provides the student with in-depth exposure to several different research programs, and assists him/her in choosing a major professor with whom they will do their Ph.D. research. From that point on, students are advised by both their major professor and their Graduate Advisory Committee which is made up of four or five other CMB faculty. Generally, about four years beyond the rotation period are required to complete the Ph.D. program in CMB.

2. **Center for Integrative Toxicology (CIT)**
   - **Director:** Dr. Norbert Kaminski (Pharmacology and Toxicology, kamins11@msu.edu)
   - **Ast Director:** Dr. Robert Roth (Pharmacology and Toxicology, rothr@msu.edu)
   - **Web Site:** [http://cit.msu.edu/](http://cit.msu.edu/)
   CIT enjoys the support and participation of outstanding faculty members who represent thirty departments, institutes, and centers within seven colleges. Their knowledge makes possible innovative solutions to environmental problems that cross college and disciplinary boundaries.

   The goal of the Environmental and Integrative Toxicological Sciences Training Program (EITS) is to train future scientists with specific research expertise in biomedical science developed in one of the department-based Ph.D. programs and with an additional working knowledge in the broad, interdisciplinary area of environmental toxicology. This approach overlays a high quality, department-based (i.e., disciplinary) Ph.D. program in the basic sciences with a broad-based, interactive education in the toxicology of chemicals found in the environment. Implicit in this approach is the recognition that environmental toxicology is a multidisciplinary effort requiring well trained scientists from a variety of disciplines to contribute to the solution of complex problems associated with environmental contamination and toxic responses. The EITS program brings together faculty and students in diverse disciplines such as biochemistry/molecular biology, zoology, pharmacology and food science and human nutrition, all of whom are interested in environmental toxicology. The active participation in toxicology-related workshops and seminars and the interactions of the students in EITS-required courses provide a setting conducive to learning the broad base of information necessary for excellence in the discipline of toxicology. Interests of individual trainees are also met through research in laboratories of department-based faculty members who have affiliations with the CIT. Successful completion of this program allows students to be knowledgeable
and competitive in their chosen, basic science discipline and in a position to make significant scientific contributions to the field of environmental toxicology.

3. **Comparative Medicine and Integrative Biology (CMIB)**
   **Director:** Dr. Vilma Yuzbasiyan-Gurkan (Microbiology and Molecular Genetics)
yuzbasiyan@cvm.msu.edu
   **Web Site:** http://cvm.msu.edu/Education/cmib/
   The graduate program in CMIB offers graduate students the understanding of how molecular and cellular events integrate into whole-animal systems, knowledge of how appropriate animal models can be used to study human and animal disease, and the understanding of how species differences and similarities can be used to investigate basic biology and disease.
   Graduates of the masters and/or the doctoral program in CMIB will find employment opportunities in academia, governmental research and regulatory agencies, and in pharmaceutical industry research. They will become leaders in discovery and problem-solving research in medical science and will play an instrumental role in the translation of new knowledge to address current issues in human and animal health and clinical, cellular, and molecular problems in CMIB. It emphasizes development of a firm scientific background in clinical and basic biomedical sciences and the conduct of original research.

4. **Environmental Sciences and Policy Program**
   **Director:** Dr. Tom Dietz (ESPP Program; tdietz@msu.edu, espp@msu.edu)
   **Web Site:** http://www.environment.msu.edu/specialization/index.html
   Doctoral students pursue a Ph.D. in one of MSU's many existing doctoral programs that have an environmental focus. In addition, they complete the coursework for the ESP Program. The Specialization provides students with an understanding of diverse disciplines brought to bear on contemporary environmental problems. Each course is designed to provide an understanding of how various disciplines conceptualize environmental issues and how scientific information can be brought to bear on environmental decision-making and environmental policy.

5. **Neuroscience Program (NEU)**
   **Director:** Dr. Cheryl Sisk (Psychology; sisk@msu.edu)
   **Web Site:** http://neuroscience.msu.edu/
   The Neuroscience Program is an interdepartmental graduate program that awards a Ph.D. degree in neuroscience. This is a broad-based, integrated curriculum that is complemented by research training in specialized areas of neuroscience. Faculty research interests span the molecular to behavioral levels of analysis. The combination of classroom, research and professional skills training equips students with an excellent understanding and appreciation of the richness and diversity of approaches to study of the nervous system, and prepares them for successful careers in either the public or private sector.

6. **Quantitative Biology and Modeling Initiative (QBMI)**
   **Contact:** Claire Vieille (Biochemistry and Molecular Biology; vieille@msu.edu)
   **Web Site:** http://biomodel.msu.edu/grad_research.php
   This dual-major program trains Ph.D. students in the quantitative, computational, and biological aspects of structural biology or systems biology. The QB program features an interdisciplinary research project with two faculty mentors, one each from biological and non-biological disciplines, coursework apportioned between three QB courses and the primary department's courses, and teaching responsibilities and comprehensive exams centered in the primary department. While very similar in organization and requirements to the other dual-major Ph.D. programs, the QB program includes specially designed courses that offer more flexibility for the students who can belong to one of many primary departments (e.g., Biochemistry and Molecular Biology, Chemical Engineering and Materials Science, Chemistry, Civil and Environmental Engineering, Computer Science and Engineering, Mathematics, Microbiology and Molecular Genetics, Pharmacology and Toxicology, Physics and Astronomy, Physiology, Plant Biology, or Statistics and Probability) in addition to the QB program. A large emphasis is placed on interdisciplinary training through interdisciplinary teamwork, crossing-training from student to student, laboratory rotations, and the QB interdisciplinary student community and activities. Receiving a dual-major
degree in a traditional discipline plus QB indicates proficiency in that discipline (as fundamental training to ensure future job prospects) as well as expertise in the rapidly growing area of quantitative biology.

7. **Interdisciplinary Graduate Studies in Biomolecular Sciences (BIOS)**  
   **Contact:** Dr. Richard Schwartz (College of Natural Science; schwart9@msu.edu)  
   **Web Site:** [http://biomolecular.msu.edu/](http://biomolecular.msu.edu/)  
   Students have access to training in over 150 research laboratories connected with many different departments. This interdisciplinary approach provides students the flexibility to develop their education to fit their career goals. Program fields include Biochemistry, Bioinformatics, Cancer, Cell biology, Genomics, Genetics, Immunology, Microbiology, Molecular biology, Pharmacology and toxicology, Physiology, Plant molecular biology, Structural biology, Systems biology, Virology.

8. **Other Programs Which Currently have Students Training with Pharmacology and Toxicology Faculty:**  
   Biochemistry and Molecular Biology  
   Chemistry  
   Microbiology and Molecular Genetics  
   Physiology