

Michigan State University  
Center for Integrative Toxicology  
Environmental and Integrative Toxicological Sciences  
Graduate Training Program  
Handbook  
2013

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## I. PROGRAM OVERVIEW

The **Center for Integrative Toxicology (CIT)** serves to foster and coordinate a wide spectrum of toxicology-related activities associated with health risks resulting from exposure to chemicals. The origin of CIT dates back to 1978 with the creation of the Center for Environmental Toxicology after the polybrominated biphenyl (PBB) contamination incident in Michigan. The purpose of the Center for Environmental Toxicology was to take leadership of the MSU response to environmental contamination issues, to conduct research, educate students and provide outreach to the public. In the early 1980s, the Center for Environmental Toxicology was renamed to the Institute for Environmental Toxicology (IET). The mission remained similar with the major emphases being on research, graduate training and outreach in environmental toxicology. In 2003, the IET was renamed to the CIT. Although still possessing a strong emphasis and major strengths in environmental toxicology, the MSU toxicology community during the previous decade had evolved primarily through new faculty recruitment--expanding expertise employing biochemical, molecular and "omic" technologies applied to cellular and organismal models to study mechanisms of toxicology. The addition of new expertise and expansion of existing strengths was one of the driving forces for renaming the IET to the CIT.

The CIT coordinates toxicology training activities on campus by setting uniform standards and requirements for toxicology training and coordinating a graduate program widely respected in the discipline of environmental toxicology. MSU's **Environmental and Integrative Toxicological Sciences (EITS)** Training Program requires rigorous training in a basic science provided through enrollment in one of several partnering Ph.D. programs on campus coupled with training in toxicology provided by CIT-affiliated faculty. The result is a graduate well equipped with the expertise to be a leader in toxicology-related research. Thus, the EITS program provides environmental toxicology training and education to graduate scientists who are not solely toxicologists, but individuals who have completed in a rigorous departmental Ph.D. program in the basic sciences while also benefiting from a formal didactic and research training program in toxicology.

The goal of the EITS program is to train scientists with specific research expertise in biomedical science developed in one of the department-based or interdisciplinary Ph.D. programs and with an additional working knowledge in the broad, interdisciplinary area of toxicology. This approach overlays a high quality, department-based (or interdisciplinary) Ph.D. program in the basic sciences with a broad-based, interactive education in the toxicology of drugs and 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 and Molecular Biology, Zoology, Pharmacology and Toxicology and Food Science and Human Nutrition, all of whom are interested in some aspect of toxicology. The active participation in toxicology-related workshops and seminars and the interactions of the students in EITS 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 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.

In addition to the EITS doctoral program, the CIT offers, a specialization in environmental toxicology to students earning a master's degree. To earn the specialization, students must meet the MS requirements of their disciplinary departments and those of the CIT Multidisciplinary Masters Specialization.

There are currently 53 faculty affiliated with the CIT, most of whom participate in the EITS training program. Participating departmental and cross-disciplinary graduate programs currently include Animal Science; Biochemistry and Molecular Biology; Cell and Molecular Biology; Chemistry; Comparative Medicine & Integrative Biology; Crop and Soil Sciences; Fisheries and Wildlife; Food Science and Human Nutrition;

Forestry, Genetics, Geological Sciences, Microbiology and Molecular Genetics; Neuroscience, Pathobiology and Diagnostic Investigation; Pharmacology and Toxicology; and Zoology. Graduate programs continue to be added in accordance with student's interests. See Appendix A for a list of affiliated faculty and their research interests.

The Ph.D. degree awarded represents a cooperative Department-Center approach to graduate education in toxicology. Graduates receive a dual degree designation on their diplomas, i.e., name of their departmental (or multidisciplinary) graduate program and Environmental Toxicology. For example, a graduate student whose home departmental program is Biochemistry & Molecular Biology receives a Ph.D. degree designated on his or her diploma as "Biochemistry & Molecular Biology-Environmental Toxicology."

Each graduating student will have met all the requirements of the departmental disciplinary doctoral program as well as those of the EITS training program. The former entails in-depth training in a fundamental basic science discipline, whereas the requirements of the latter include a series of toxicology-related courses, attendance at seminars and workshops emphasizing current problems in toxicology, association with CIT programs and faculty, and a research project that relates to toxicology. The premise driving the program is that toxicology research requires well trained scientists from a variety of traditional disciplines. Importantly, these individuals should possess a fundamental knowledge of the principles of toxicology and of exposures of humans and wildlife to hazardous chemicals in air, water, soil, pharmaceuticals and food and the potential health consequences of these exposures. This dual training result's in laboratory research investigators, who are prepared to apply excellent, basic scientific training, to problems in toxicology and to become leaders in the discipline.

At this time there have been over 200 graduate students who have successfully completed this multidisciplinary Ph.D. program, and 37 graduate students are currently enrolled. Evidence for the multidisciplinary nature of the program includes the fact that, to date, students and faculty from 16 different academic units have been involved. Graduate students in the overall EITS program participate in three general areas of toxicology: human health (biomedical), ecological/wildlife and hazardous substance management.

Graduate fellowships are available to cover tuition, health insurance and living expenses. Some of this doctoral and postdoctoral stipend support is provided by a training grant from the National Institute of Environmental Health Sciences, of the National Institutes of Health. Other support and fellowships are available for EITS trainees through departments, faculty research grants, the CIT and the University.

## **II. PROGRAM COMPONENTS/PLAN OPTIONS**

The CIT's EITS training program provides masters, doctoral and postdoctoral students with extensive research training in a specific basic scientific discipline as well as toxicology. Trainees acquire a broad base of knowledge through an interactive program of courses, seminars, workshops and scientific meetings as well as by becoming an active member of a research laboratory and the general scientific community. Each student's curriculum is customized to coordinate with the requirements of his or her departmental (or multidisciplinary) graduate program and with the trainee's interests, resulting in the dual degree.

Doctoral students may choose either the Biomedical Toxicology or the Environmental Track for required course work. The Biomedical Toxicology Track is designed for those students with an entering background in mammalian biology and enrolled in graduate programs in the biological sciences, whereas the Environmental Track is meant for students with less background in mammalian biology (e.g., typically students in Chemistry, Environmental Law, Engineering, Crop & Soil Science, etc.). A student may elect either track with approval of his or her thesis advisor. The degree requirements for the two tracks are explained in greater detail under "Degree Requirements". Comprehensive exams and polices for the completion of a dissertation or thesis are set within the student's chosen departmental (or multidisciplinary) graduate program. Students interested in doctoral training in toxicology enroll first in a cooperating departmental program then enter the EITS program during their first year in graduate school.

### III. DEGREE REQUIREMENTS

All EITS doctoral students are first enrolled in graduate study toward the Ph.D. degree in one of the cooperating training programs. Through a brief, additional application to the EITS training program, students also indicate interest and willingness to meet the requirements of the dual degree program, i.e., those of the departmental (or multidisciplinary) graduate program, as well as the additional requirements of the EITS program. (See Appendix B: EITS Application Form). Typically, students have completed most of their first year of graduate study before they are admitted into the EITS program. The EITS application includes identification of a thesis advisor, a tentative thesis topic as well as a plan of study for the toxicology courses (required and elective) to be completed. A letter of support from the thesis advisor is also required. The EITS Graduate Committee reviews each application to assure that students have proposed a plan of study and research that will meet program requirements and requirements for graduation. A recommendation for acceptance to the Director is then made. It is important to emphasize that a student can only enter the EITS Ph.D. program after gaining acceptance into a partnering departmental (or multidisciplinary) doctoral program.

To earn the joint Ph.D. degree, students must meet the requirements of their disciplinary departments and those of the EITS program. Where course requirements overlap, a given course may be counted toward both the departmental and EITS program requirements.

Predocutorial trainees will take courses that can be placed into three categories: those required by their department, those required by the EITS and those required by their guidance committee. The EITS requirements provide a unifying knowledge base in toxicology for all students in the Program, whereas a degree of flexibility in toxicology instruction is present in the requirements of the partnering programs. This permits the student to take advantage of the wide range of elective courses offered by various departments, which can be used to broaden the scope of knowledge in toxicology or to focus on a particular topic highly relevant to the student's thesis research.

#### **EITS Program requirements include:**

1. Completion of a Ph.D. thesis/dissertation, the topic of which must relate to toxicology. For this requirement, the EITS Program defines toxicology broadly.
2. Attendance at a minimum of twelve toxicology related seminars approved by the EITS Director. These are identified in the weekly Toxicology Track newsletter.
3. Completion (with a grade point average of at least 3.0) of the course requirements (see Appendix B/Attachment B for a more detailed description of the core courses for the biomedical toxicology and environmental tracks.)
4. Formal training in ethical conduct of research (see section VIII for details).

#### **Biomedical Toxicology Track:**

- PHM 830 Experimental Design and Data Analysis (3 credits, Fall and Summer, every year);
- PHM 801 Module 1, Principles of Drug-Tissue Interactions (1 credit, Fall, Spring, Summer, every year)
- PHM 816 Integrative Toxicology: Mechanisms, Pathology and Regulation; co-listed as PTH 816, ANS 816, BMB 816 (3 credits, Fall, odd years)
- TBD Special Topics in Toxicology (1 credit)
- BMB 961 Selected Topics in Biochemistry II Genomics (or comparable course) (1-2 credits, Fall & Spring)

Plus one course from among the courses listed in the Elective Course list.

Total number of required credits: 9-10, plus credits from elective course.

**Environmental Track:**

- CSS 865 Environmental Fate of Organic Contaminants in Soil (3 credits, Spring, even years)
- BE 891 Advanced Topics in Biosystems Engineering (Section 003 – Human and Environmental Risk Analysis, 3 credits, Fall)  
OR
- ESP 803 Human and Ecological Health Assessment and Management (3 credits, Fall, every year)
- PHM 450 Introduction to Chemical Toxicology (3 credits, Spring)  
OR
- PHM 816 Integrative Toxicology: Mechanisms, Pathology and Regulation; co-listed as PTH 816, ANS 816, BMB 816 (3 credits, Fall, odd years)
- ACR 846 Law of Environmental Regulation (3 credits, Fall, every year)

Plus two courses from the Elective Courses List (see Appendix B/Attachment C) in at least two interest groups; i.e., one course from each of three different interest groups or one course from one group and two courses from another group.

**Master's Specialization:**

To earn the master's specialization, students must meet the requirements of their disciplinary departments and those of the CIT Multidisciplinary Masters Specialization. Where course requirements overlap, approval of the student's departmental disciplinary graduate program and college are needed for using a given course to satisfy the specialization as well as the departmental requirements.

The Multidisciplinary Masters Specialization Program requirements include:

1. Attendance at a minimum of six EITS-approved seminars;
2. Completion of the courses used to satisfy the specialization requirements, with a grade point average of at least 3.0;
3. Completion of the following courses: (for course descriptions, see Appendix C)
  - ACR 846 Law of Environmental Regulation (3 credits, Fall);
  - ZOL 814 Environmental Chemodynamics (4 credits, Spring, even years)  
OR
  - ANS 827 Integrated Risk Assessment of Environmental Hazards (3 credits, Spring, odd years);
  - PHM 450 Introduction to Chemical Toxicology (3 credits, Spring, odd years)  
OR
  - PHM 816 Integrative Toxicology: Mechanism, Pathology & Regulation (3 credits, Fall, odd years);
  - Plus one course from the Elective Courses List (see Appendix D)

**Ph.D. students should follow these guidelines by the times indicated:**

1. Student must be accepted into a partnering department (or multidisciplinary) graduate program and have chosen a thesis advisor. Application for admission to the EITS Training Program is usually made near the end of or shortly after the first year of graduate school. A copy of the application form is included in Appendix B.
2. Students must submit a completed application form to the CIT along with a letter of recommendation from his/her Ph.D. thesis advisor attesting to the student's motivation for training in toxicology. Application for admission to the EITS Training Program should be made at least two years prior to graduation and must be approved by members of the EITS Graduate Committee. A letter notifying acceptance will be sent to the student by the EITS Director. The EITS Graduate Committee meets three times each year (February 3, June 3 and October 3) to examine the information in each application to assure that students have proposed a plan of study and research that will meet all program requirements and requirements for graduation.
3. The Ph.D. Guidance Committee must contain two CIT-affiliated faculty (usually but not necessarily the Ph.D. thesis advisor and one other CIT affiliate). Students should notify the CIT of the names of the faculty on the Guidance Committee soon after its formation.
4. Student must complete the course requirements of the EITS Training Program (see Appendix B/Attachment B) in addition to all requirements of the partnering doctoral program. The CIT requires 3.0 GPA average in EITS required courses.
5. You must request in writing to the EITS Program Director and obtain approval for any intended changes in courses or major changes in dissertation research topic. All courses must be taken for a numerical grade. Credit/no credit designations are not acceptable unless approved by the EITS Graduate Committee.
6. At least six months before graduation, the student must complete the EITS "Application for Candidacy" form. The completed form should be returned to the CIT for approval by the EITS Graduate Committee. The student should send photocopies of the University forms entitled "Report of Guidance Committee" and "Record of Comprehensive Examinations" in support of his/her candidacy application. These forms should be signed by the thesis committee.
7. A letter will be sent by the Graduate Program Director of the EITS notifying the student of acceptance into Candidacy. This indicates the student has completed all EITS requirements.
8. There is a specific code for each department that indicates that the student is enrolled in a joint Ph.D. degree in his/her major program and the EITS Program. The student should not assume that he/she is already correctly coded. The student must fill out the section of the "Application for Graduation" regarding degree coding correctly so that the degree reflects the joint status (i.e., Major Department/Environmental Toxicology). See Appendix B/Attachment C for appropriate codes and consult the CIT Office if help is needed.
9. Upon successful defense of thesis, the student must submit to the CIT photocopies of University forms entitled "Record of Completion of Requirements" and "Graduate Credit Statement and Final Certification for Degree".
10. The student should notify the CIT of graduation and give a forwarding address for future correspondence. Also, please keep the CIT notified of newly acquired positions so the CIT can keep an up-to-date record of positions attained by graduates.

11. Questions regarding the Program should be addressed to Dr. Robert A. Roth (or Kasey Baldwin) at the Center for Integrative Toxicology, 165C Food Safety and Toxicology Building, (517.353-6469 or kbaldwin@msu.edu).

#### **IV. SELECTION OF THESIS/DISSERTATION ADVISOR**

Students are encouraged to choose their major advisor before application to the CIT. All other requirements and timelines are set by the student's departmental/multidisciplinary graduate program. To change advisors, EITS students should follow his/her departmental graduate program's process for changing advisors.

#### **V. FORMATION OF THE GUIDANCE COMMITTEE**

The Ph.D. Guidance Committee must contain two CIT-affiliated faculty (typically the Ph.D. thesis advisor and one other CIT affiliate). Students should notify the CIT of the names of the faculty on the Guidance Committee immediately upon its formation. All other requirements and timelines are set by the student's departmental disciplinary graduate program. To change committee members, EITS students should follow his/her departmental/multidisciplinary graduate program's process.

#### **VI. THESIS DISSERTATION AND FINAL ORAL DEFENSE**

The thesis or dissertation must be written in accordance with The Graduate School's formatting guide. Tutorials for the preparation of master's theses and doctoral dissertations can be found at <http://grad.msu.edu/etd/>. Final copy of the dissertation is due in the major professor's office in a time determined by the department in the semester in which graduation is expected.

MSU only accepts electronic theses and dissertations submitted via ProQuest. The instructions for electronic submissions are available from <http://grad.msu.edu/etd/>.

The target date for the FINAL APPROVAL of an electronic Thesis or Dissertation to the Graduate School for graduating the semester of that submission is five working days prior to the first day of classes for the next semester. Be aware that a submission via ProQuest does not mean that the document has been ACCEPTED. The review process is interactive and final approval can take anywhere from a few hours to weeks, depending upon the extent of the necessary revisions and how diligent the author is when making the necessary revisions. Graduation in the semester of the electronic submission is only guaranteed if the document is APPROVED on or before the target date for that semester

Comprehensive examinations must be taken within five years and all EITS requirements completed within eight years of initial enrollment as a doctoral student. If a degree is not completed within eight years, the written portion of the comprehensive exam must be passed again.

All other requirements and timelines are set by the student's departmental disciplinary graduate program.

#### **VII. EVALUATION OF ACADEMIC PERFORMANCE**

The progress of a graduate student at MSU is monitored by his/her Guidance Committee as stipulated by University Regulations. This Committee of at least four faculty members is selected by the student in consultation with an appointed (or student-selected) faculty advisor. It is usually formed at the end of the first year of graduate study. The Guidance Committee plans and supervises the program, making modifications, if necessary, until the degree is completed. The two CIT faculty on the Ph.D. Guidance Committee have the

responsibility to ensure that the student is adequately evaluated with regard to knowledge of the principles and concepts involved in toxicology.

The Guidance Committee is required to meet within one academic term (3 months) of its formation and file a report to the Dean of the appropriate college listing all degree requirements that must be fulfilled by the student. The report must be signed by the department chairperson, the dean, and the student. The report also includes a timetable and a dissertation topic. The Committee has the responsibility to meet periodically (typically every 6 months) to oversee graduate student progress.

As mentioned above, the progress of the student related to knowledge of toxicology is monitored by the two CIT faculty on the Ph.D. Guidance Committee. Another level of student evaluation exists in the multidisciplinary program. The EITS Graduate Committee consisting of CIT-affiliated faculty (Dr. Robert Roth, Chair) from the partnering doctoral programs reviews the performance of each student upon application for admission to and candidacy in the EITS doctoral program. Candidacy occurs upon completion of coursework and when the student is within approximately six months of completing the dissertation research. The EITS Graduate Committee determines whether the requirements of the EITS training program have been met and, if so, makes a recommendation of advancement to Degree Candidacy to the Program Director. To graduate, the student must have met the requirements in total described above. Finally, the student is evaluated by the Guidance Committee during the thesis defense.

All other requirements and timelines are set by the student's partnering graduate program.

## **VIII. INTEGRITY AND SAFETY IN RESEARCH**

The importance of ethics, values, and responsible conduct is recognized and valued by Michigan State University faculty. Formal courses and/or enrichment training are available in a number of departments. Noteworthy examples include: KIN 895 – Research Ethics; NSC 830 – The Nature and Practice of Science; and PSY 926 – Scientific and Professional Ethics. These courses are used as requirements for graduate students in some of the doctoral programs that partner with the EITS program. For example, the Biochemistry & Molecular Biology Department's doctoral program requires NSC830, in which responsible conduct of research is a major theme.

The office of the Assistant Vice President for Research Ethics & Standards and the University Intellectual Integrity supports, jointly with the Graduate School, a Research Ethics Education Coordinator for both regulatory and educational purposes campus wide.

The Graduate School has assumed a leadership role in offering educational and professional development resources and programs for graduate students and postdoctoral trainees under the guidance of Dean Karen Klomparens. The Graduate School hosts nationally recognized experts and offers formal programs to facilitate a university-wide dialogue in dissertation writing, conflict resolution, and the responsible conduct of research.

The Graduate School has also supported since 1998 a six-workshop series on the Responsible Conduct of Research that is “intended to provide 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.” It is designed to stimulate local discussions, complement department activities, and reinforce issues. The 2012-2013 series included sessions devoted to:

- Investing in Responsibility & Integrity for a Productive Career
- Responsible Decision-making in Academic Research: Ethical & Moral Perspectives
- Maintaining a Productive & Responsive Environment for Conducting Research
- Personal Responsibility in Conducting Research & Advancing Your Career

- Responsibility to the Subjects of Research: Animals
- Responsibility to the Subjects of Research: Humans
- Objectivity & Conflicting Interests in Academic Research

The series addresses each of the core instructional areas specified by the proposed policy for education in the responsible conduct of research. Attendance is monitored to assist graduate programs that elect to require this program as compliance with specific requirements. This program is a requirement for all trainees in each partnering doctoral program as well as the EITS program.

Finally, at the request of its graduate students, the MSU Department of Pharmacology & Toxicology has instituted an “Enrichment Program” consisting of evening sessions (noncredit) devoted to various topics about which the students indicated a desire for additional information. Woven throughout the various topics are discussions of ethics in research (mentoring, animal use, peer review, human subjects and clinical trials, professional relationship building, etc.). This series of more than two dozen sessions has been organized by the Graduate Program Director in the Department, who has enthusiastically agreed to open the sessions to all students in the EITS program. Attendance at this new series is voluntary, but it is expected to provide a student-initiated venue for discussions of research ethics and other issues of concern and interest to the trainees. It can be used to supplement the Graduate School training programs described above.

The MSU Office of Radiation, Chemical and Biological Safety provides training in laboratory safety. Each laboratory should have specific training in protocols relevant to the ongoing research. To work in a University laboratory, individuals must attend the ORCBS courses. Go to [www.orcbs.msu.edu/training/training\\_toc.htm](http://www.orcbs.msu.edu/training/training_toc.htm) for more information. Use of animals requires interaction with the MSU University Laboratory Animal Resources (ULAR) at [www.ular.msu.edu/](http://www.ular.msu.edu/) and approval by the MSU Institutional Animal Care and Use Committee (IACUC).

### **COPYRIGHT INFRINGEMENT AND THE USE OF MSUNET**

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 students, faculty, staff, and anyone else using MSU’s computing systems and digital network, 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 civil 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 Millennium 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-policies/index.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.

## **IX. STUDENT CONDUCT AND CONFLICT RESOLUTION**

Attempts should first be made to resolve conflicts between laboratory personnel or between graduate student and mentor within the laboratory. Should this not be feasible, the Graduate Chair and/or Department Chair of the partnering graduate program in which the student is enrolled should be contacted to discuss the situation with both parties involved. In addition, the Graduate School runs a Program entitled "Conflict Resolution" (<http://grad.msu.edu/conflictresolution/>). Those involved in a situation or potential situation of conflict are encouraged to consult with the Graduate School and investigate these programs.

There may be occasions when a student believes that a conflict is not resolvable within his/her program. In this case a resource for the student is the MSU Ombudsman ([www.msu.edu/unit/ombud](http://www.msu.edu/unit/ombud)). The Ombudsman is the "complaint" person for the students. A student should contact the Ombudsman when he/she has a problem with any facet of the University and doesn't know where to turn for help. The University Ombudsman will provide an independent point of view in an informal and confidential way. The Ombudsman's office is the first place to contact should a student need to file a Grievance. The EITS program does not have its own grievance/hearing procedure; rather, students are referred to his/her partnering graduate program. Additional information regarding the grievance process and requesting a hearing may be found at [www.msu.edu/unit/ombud/grievprocedures.html](http://www.msu.edu/unit/ombud/grievprocedures.html).

### **TERMINATION AND WITHDRAWALS**

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 his/her advisor, fellow students, Graduate Director and/or Chairperson while making this decision. Should a student choose to withdraw, a letter addressed to the Graduate Director must be written that details the specifics of withdrawing, including reasons for the withdrawal and the date on which this is effective. With the approval of his/her partnering graduate program, a student might elect to complete a Ph.D. without the environmental toxicology dual degree component. A predoctoral student might also elect to complete a master's degree with or without the environmental toxicology component, again with the approval of his/her partnering graduate program.

The following is from the University's policies and procedures:

#### **A. 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.

The withdrawal procedure 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:

1. 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.
2. 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 a residence hall should consult the manager regarding the policy on the refund of room and board fees. 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 through the Office of the Registrar.

**B. Voluntary Withdrawal at the Close of a Semester:**

There is no formal procedure for withdrawal at the end of a semester; however, a student living in University housing should notify the manager of the appropriate unit.

**C. Unauthorized Withdrawal:**

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 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.

**D. Involuntary Withdrawal:**

A student who is called in 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.

**E. Disciplinary Withdrawal:**

If a student is dismissed for disciplinary reasons during a semester, grades are assigned as described in the as under Voluntary Withdrawal during the Semester.

**ACADEMIC RECORDS**

Academic files are kept for each student in the CIT administrative office. A student may receive copies of his/her records upon request to the CIT graduate program secretary. All academic information in the CIT student files comes from the student's partnering graduate program. Therefore, inaccuracies should be challenged within his/her partnering graduate program. The partnering graduate program would then forward any changes to the CIT.

**X. WORK RELATED POLICIES**

Students are encouraged not to seek outside employment. The stipends provided through fellowship opportunities are intended to enable the student to focus solely on the graduate training program.

Students are to inform their mentors ahead of their vacation time. This is typically a two week period during the year and is at the discretion of the thesis advisor. Travel should not, ideally, be done during a time in which class occurs.

Graduate students and student employees are not eligible for worker's compensation if injured on the job. Those who suffer a work-related illness/injury should immediately report the injury to the supervisor. If the illness/injury is an emergency, 911 should be called.

### **Stipends:**

The following is modified 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 Michigan State University 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.

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.
- ii) The Foundation Directory, Marianna O. Lewis, 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.

#### (1) 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.

#### (2) Graduate School Dissertation Completion Fellowships:

Twenty fellowships are available annually to allow students to devote full time to writing the dissertation with the goal that the dissertation will be completed during the tenure of the fellowship. Other MSU financial support, held simultaneously with the fellowship, cannot exceed a one-quarter time assistantship or the equivalent.

Selection of fellowship winners will be made by a student's college. The colleges will set the conditions and application procedures for the Graduate School Dissertation Fellowships and will notify the Graduate School of the winners. The Fellowship awards will be dispensed by the Graduate School. Students should contact the associate dean's office of their college to find out their college's procedure. For more information, contact the Graduate School or visit the web site: [www.grad.msu.edu](http://www.grad.msu.edu).

#### (3) Sponsored Fellowships:

Fellowships sponsored by industries, foundations, and government agencies are available to high achieving students for graduate study in various departments or college as 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. The EITS program has been supported in part through a training grant from the National Institute of Environmental Health Sciences (NIEHS). This grant provides a limited number of fellowships for predoctoral students and postdoctoral fellows in the EITS program. Trainees must be U.S. citizens or permanent residents to be eligible for support from this source. In addition, the CIT has limited funds available for EITS student stipend support. EITS students interested in the NIEHS training grant fellowships and Graduate School fellowships available through the CIT should contact Amy Swagart ([swagart@msu.edu](mailto:swagart@msu.edu)) in the CIT office.

#### 4) University Distinguished and University Enrichment Fellowship Program:

The Graduate School offers fellowship programs that provide financial support for outstanding students who plan to enroll in a doctoral 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; show evidence of leadership potential or the capacity to make a distinctive professional or scholarly contribution; contribute 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, each of which carries the same stipend, benefits, and period of award:

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 in 2013-2014 received a 12-month stipend of \$25,000, plus health insurance. In addition, tuition and related fees will be waived within some limits. 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. For more information, contact the Graduate School or visit the web site: [www.grad.msu.edu](http://www.grad.msu.edu).

#### **Student Health Insurance:**

Graduate assistants (domestic and international) are automatically enrolled in a GA health insurance plan, the premium of which is paid by the University. The plan provides the following coverage:

- (i) Fall appointment only: coverage from August 15 to February 14 of the following year.
- (ii) Fall and Spring appointments: coverage from August 15 to August 14 of the following year.
- (iii) Spring appointment only; coverage from January 1 to August 14.
- (iv) Summer appointment only: coverage from May 15 to August 14.

Enrolled students may also insure their eligible spouse and/or dependent children (residing with the insured). MSU will contribute \$2300 annually toward the cost of a spouse or child and \$2200 annually toward the cost of a spouse and/or multiple dependents. For questions regarding coverage under this plan, enrollment or premium payment, contact Aetna directly at 800.859.8452.

Additional information regarding assistantships and specific fellowship policies are available through the CIT or the student's partnering graduate program.

## **XI. UNIVERSITY RESOURCES**

On-line links to University Policies Related to Graduate Students:

- *Academic Programs*  
[www.reg.msu.edu/ucc/ucc.asp](http://www.reg.msu.edu/ucc/ucc.asp)
- *Graduate Students Rights and Responsibilities (GSRR)*  
[www.grad.msu.edu/gsrr/](http://www.grad.msu.edu/gsrr/)
- *MSU/GEU Contract*  
[www.hr.msu.edu/documents/contracts/GEU\\_2008-2011.pdf](http://www.hr.msu.edu/documents/contracts/GEU_2008-2011.pdf)
- *Guidelines for Graduate Student Advising and Mentoring Relationships*  
[www.grad.msu.edu/publications/docs/studentadvising.pdf](http://www.grad.msu.edu/publications/docs/studentadvising.pdf)
- *Guidelines for Integrity in Research and Creative Activities*  
[www.grad.msu.edu/publications/docs/integrityresearch.pdf](http://www.grad.msu.edu/publications/docs/integrityresearch.pdf)

Many of the Graduate School requirements, and a number of helpful sites, can be found by visiting:  
[www.grad.msu.edu](http://www.grad.msu.edu)

### (1.) Deadline Dates

Verify deadline dates for each semester through one of the following:

Registrar's Office: Academic Calendar – [www.reg.msu.edu/roinfo/calendar/academic.asp](http://www.reg.msu.edu/roinfo/calendar/academic.asp)

The Graduate School: Important Dates Pertaining to Graduation - <http://grad.msu.edu/etd/dates.aspx>

The Graduate School: Electronic Thesis and Dissertation Important Dates – <http://grad.msu.edu/etd/dates.aspx>

### (2.) Thesis and Dissertation Formatting and Electronic Submission Information - <http://grad.msu.edu/etd/>

If the department requires a copy of the thesis/dissertation, it is the responsibility of the graduate student to provide that copy. This information should be made available to the graduate student by the department.

The student is not required to be enrolled the semester in which the final unbound copy of the thesis/dissertation is submitted to the Graduate School if that semester is different from the semester of the oral defense.

### (3.) 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.

(4.) Application for Graduation - <https://www.reg.msu.edu/stuforms/gradapp/gradapp.asp>

Submit this application on or before the end of the first week of the semester you expect to complete your degree requirements. This will assure the listing of your name in the commencement program. If you expect to complete your degree requirements during Summer semester, submit this application on or before the end of the first week of Spring semester. This will assure your name will be listed in the Spring/Summer commencement program.

(5.) Commencement Information - [www.commencement.msu.edu](http://www.commencement.msu.edu)

Links to detailed commencement information, doctoral hooding instructions, and general graduation requirements can be found on this website.

(6.) Other Resources for Graduate Students:

**The Graduate School** - On-line resources for faculty, staff and students relating to graduate education

<http://grad.msu.edu>.

Cathie Allison, Webmaster

110 Linton Hall

353-3220

allisonc@msu.edu

**Career and Professional Development** - [www.grad.msu.edu/career.htm](http://www.grad.msu.edu/career.htm)

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.

**Council of Graduate Students (COGS)** - [www.msu.edu/~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. They also provide a copy service for students completing a thesis/dissertation as part of their degree requirements.

COGS

313-316 Student Services

353-9189

cogs@msu.edu

**Student Health Insurance** - A health insurance plan is available to all graduate students/assistants. Please refer to the website below for complete details.

**The MSU Benefits Office**

353-4434

<http://www.hr.msu.edu/benefits/studenthealth/index.htm>

**Counseling Center**

<http://www.couns.msu.edu>

207 Student Services or 330 Olin Student Health Center

355-8270 or 355-2310

**Fees and Scholarships**

<http://www.ctrl.msu.edu/COStudentAccounts/Default.aspx>

140 Administration Building  
355-5050

**Office of Financial Aid**

<http://www.finaid.msu.edu/>

252 Student Services  
353-5940, [finaid@msu.edu](mailto:finaid@msu.edu)

**Ombudsman**

<http://www.msu.edu/unit/ombud>

129 N. Kedzie  
353-8830, [soffin@msu.edu](mailto:soffin@msu.edu)

**Payroll Office**

<http://www.ctrl.msu.edu/COPayroll/>

355-5010, [payroll@ctrl.msu.edu](mailto:payroll@ctrl.msu.edu)

**Registrar's Office**

<http://www.reg.msu.edu>

150 Administration Building  
355-3300, [reg@msu.edu](mailto:reg@msu.edu)

**Resource Center for Persons with Disabilities**

<http://www.rcpd.msu.edu>

120 Bessey Hall  
353-9642, 355-1293 (TTY)  
[rcpd@msu.edu](mailto:rcpd@msu.edu)

**English Language Center: (For International Students)**

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.

B-230 Wells Hall  
353-0800, [elc@msu.edu](mailto:elc@msu.edu)  
<http://elc.msu.edu/>

**Office for International Students and Scholars (OISS) - <http://oiss.isp.msu.edu/>**

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.

**OISS**

Peter Briggs, Director  
105 International Center  
353-1720

# **Appendix A**

## **CIT-Affiliated Faculty**

# CIT AFFILIATED FACULTY

The Michigan State University Center for Integrative Toxicology (CIT) is a multidisciplinary academic unit that supports and coordinates research and graduate education activities for faculty interested in various aspects of toxicology. The Center is a successor to the Institute for Environmental Toxicology and the Center for Environmental Toxicology, the latter founded in 1978. While the name of the unit has changed over the years to denote changes in the leadership and academic position, the mission of the unit has been the same. For 30 years, toxicology at Michigan State has provided excellence in training graduate students, facilitating research, and providing service to the State of Michigan when needed. The successes generated in these endeavors have resulted in recognition of Michigan State as a leader in academic toxicology.

The CIT is proud to be affiliated with 62 individual faculty members. To learn more about each faculty member's individual research interests, please visit <http://cit.msu.edu/faculty>.

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Andrea Amalfitano, Professor, Microbiology and Molecular Genetics, and Pediatrics

Eran R. Andrechek, Assistant Professor, Physiology

William D. Atchison, Professor, Pharmacology and Toxicology

Leslie D. Bourquin, Professor, Food Science and Human Nutrition

Stephen A. Boyd, University Distinguished Professor, Crop and Soil Sciences

Daniel A. Bronstein, Professor, Community, Agriculture, Recreation and Resource Studies

Steven J. Bursian, Professor, Animal Science

John P. Buchweitz, Assistant Professor, Pathobiology and Diagnostic Investigation

Stephen A. Carey, Assistant Professor, Small Animal Clinical Sciences

Karen Chou, Associate Professor, Animal Science

Bryan L. Copple, Associate Professor, Pharmacology and Toxicology

Susan L. Ewart, Professor, Large Animal Clinical Sciences

Patricia E. Ganey, Professor, Pharmacology and Toxicology

Jay I. Goodman, Professor, Pharmacology and Toxicology

John L. Goudreau, Associate Professor, Pharmacology and Toxicology, and Neurology

Brian D. Gulbransen, Assistant Professor, Physiology, Neuroscience Program

Jack R. Harkema, University Distinguished Professor, Pathobiology and Diagnostic Investigation

Syed A. Hashsham, Edwin Willits Associate Professor, Civil and Environmental Engineering;

Adjunct Associate Professor, Crop and Soil Sciences, and the Microbial Ecology Center

Colleen C. Hegg, Associate Professor, Pharmacology and Toxicology

Robert M. Hollingworth, Professor, Entomology

A. Daniel Jones, Professor, Biochemistry and Molecular Biology, and Chemistry

Norbert E. Kaminski, Director, Center for Integrative Toxicology; Professor, Pharmacology and Toxicology, and Cell and Molecular Biology Program

John B. Kaneene, University Distinguished Professor and Director, Large Animal Clinical Sciences

John J. LaPres, Associate Professor, Biochemistry and Molecular Biology

Gina M. Leininger, Assistant Professor, Physiology, Neuroscience Program

Hui Li, Associate Professor, Crop and Soil Sciences

Ning Li, Assistant Professor, Pathobiology and Diagnostic Investigation

John E. Linz, Professor, Food Science and Human Nutrition, and Microbiology and Molecular Genetics

Center for  
**INTEGRATIVE  
TOXICOLOGY**

Michigan State University  
Food Safety & Toxicology  
Bldg.  
1129 Farm Lane, Rm 165  
East Lansing, MI  
48824-1625

517.353.6469  
FAX: 517.355.4603

[www.cit.msu.edu](http://www.cit.msu.edu)



Michigan State University's Center for Integrative Toxicology builds upon recognized research strength on the health and environmental effects of pollutants. With over 50 affiliated faculty who are distinguished in a wide range of scientific disciplines, the center offers an innovative and highly integrative environment for research, teaching, and graduate school education in toxicology.



David T. Long, Professor, Geological Sciences  
Keith J. Lookingland, Associate Professor, Pharmacology and Toxicology  
James Luyendyk, Associate Professor, Pathobiology and Diagnostic Investigation  
Jane F. Maddox, Assistant Professor, Pharmacology and Toxicology  
Burra V. Madhukar, Associate Professor, Pediatrics and Human Development  
Linda S. Mansfield, Professor, Large Animal Clinical Sciences, Microbiology and Molecular Genetics  
Michelle Mazei-Robison, Assistant Professor, Physiology, Neuroscience Program  
Laura R. McCabe, Professor, Physiology  
J. Justin McCormick, University Distinguished Professor, Microbiology and Molecular Genetics, and Biochemistry and Molecular Biology  
Thomas P. Mullaney, Professor, Pathobiology and Diagnostic Investigation  
Cheryl A. Murphy, Assistant Professor, Fisheries and Wildlife  
Lawrence Karl Olson, Associate Professor, Physiology  
Nigel Paneth, University Distinguished Professor, Epidemiology, and Pediatrics  
James J. Pestka, Professor, Food Science and Human Nutrition  
Thomas J. Pinnavaia, University Distinguished Professor, Chemistry  
N. Edward Robinson, Professor, Physiology; Matilda R. Wilson Professor, Large Animal Clinical Sciences  
A.J. Robison, Assistant Professor, Physiology, Neuroscience Program  
Cheryl E. Rockwell, Assistant Professor, Pharmacology and Toxicology  
Kenneth D. Rosenman, Professor, Medicine  
Robert A. Roth, Professor, Pharmacology and Toxicology; Graduate Program Director, Center for Integrative Toxicology  
J. Craig Rowlands, Adjunct Professor, Center for Integrative Toxicology  
James G. Sikarskie, Associate Professor, Small Animal Clinical Sciences  
Greg M. Swain, Professor, Chemistry  
Brian J. Teppen, Professor, Crop and Soil Sciences  
James M. Tiedje, University Distinguished Professor, Crop and Soil Sciences, and Microbiology and Molecular Genetics  
James E. Trosko, Professor, Pediatrics and Human Development  
Bruce D. Uhal, Professor, Physiology  
Brad L. Upham, Associate Professor, Pediatrics and Human Development  
Thomas C. Voice, Professor, Civil and Environmental Engineering  
James G. Wagner, Associate Professor, Pathobiology and Diagnostic Investigation  
Michael R. Woolhiser, Adjunct Professor, Center for Integrative Toxicology  
Felicia Wu, John A. Hannah Distinguished Professor, Department of Food Science and Human Nutrition, Department of Agricultural, Food, and Resource Economics  
Chengfeng Yang, Assistant Professor, Center for Integrative Toxicology, and Physiology  
Timothy R. Zacharewski, Professor, Biochemistry and Molecular Biology

# **Appendix B**

## **EITS Program Application Form**

**ATTACHMENT A – Guidelines**

**ATTACHMENT B – Curriculum**

**ATTACHMENT C – Major Curriculum Codes**

**ATTACHMENT D – Cooperating PhD Programs**



# APPLICATION FOR ADMISSION

Training Program in Environmental and  
Integrative Toxicological Sciences (EITS)

Date: \_\_\_\_\_

Student No: \_\_\_\_\_

Last 4 Digits of Social Security #: \_\_\_\_\_

E-mail: \_\_\_\_\_

Program Track:  Environmental  
 Biomedical

Applicant's Name: \_\_\_\_\_ Gender: M  F   
(Last) (First) (Middle) Birthday: \_\_\_\_\_

Campus Address: \_\_\_\_\_

Campus Phone: \_\_\_\_\_ Home Phone: \_\_\_\_\_

Home Address: \_\_\_\_\_

Legal Michigan Resident?  Yes  No U.S. Citizen?  Yes  No Permanent Resident Alien?  Yes  No

## Undergraduate Education

University Attended: \_\_\_\_\_ GPA: \_\_\_\_\_  
Degree Received/Major: \_\_\_\_\_ Date of Graduation: \_\_\_\_\_

## Graduate Education

In which cooperating (e.g. department) doctoral program are you enrolled? \_\_\_\_\_ GPA: \_\_\_\_\_  
Date of entry into cooperating PhD Program: \_\_\_\_\_ Major Professor: \_\_\_\_\_  
Major Curriculum Code (See Attachment C) \_\_\_\_\_

List the courses you intend to use to fulfill the Environmental and Integrative Toxicological Sciences (EITS) requirements (see Attachment B). (For those courses you have already completed, please include the term/year completed and your grade (0.0 - 4.0). Future changes in this list should be brought immediately to the attention of the EITS Graduate Committee.

EITS Required Course Number and Name	Year Completed or Scheduled	Grade Received
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____



I affirm that the above information is correct and understand that to participate in this program and receive the Doctor of Philosophy Degree in Environmental Toxicology, I must meet the requirements of my cooperating doctoral program and the Program in Environmental and Integrative Toxicological Sciences.

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Applicant's Signature

Date

As the department chairperson of the applicant's affiliated department, I will recommend the candidate for the degree, in conjunction with the Graduate Director of the Program in Environmental and Integrative Toxicological Sciences, when the necessary requirements have been fulfilled.

---

Department Chairperson

Date

**Support for Application:**

**The completed application and a letter of recommendation from your major thesis advisor in support of your application (see Attachment A, Item No. 2) should be sent to:**

**EITS Graduate Committee  
Center for Integrative Toxicology  
Food Safety Toxicology Building  
1129 Farm Lane, 165C  
Michigan State University  
East Lansing, MI 48824**

Questions regarding this form should be directed to:  
Kasey Baldwin, Graduate Secretary  
517-353-6469/kbaldwin@msu.edu

Questions about the EITS doctoral program should be directed to:  
Robert A. Roth, PhD  
Director, Graduate Program in EITS  
517-353-9841/rothr@msu.edu

(Retain Attachments for your files.)

## ATTACHMENT A

### Guidelines for Students in the Training Program in Environmental and Integrative Toxicological Sciences (EITS)

1. Student must be accepted into a cooperating department or doctoral program and have chosen a PhD thesis advisor. Application for admission to the Training Program in Environmental and Integrative Toxicological Sciences is usually made during the first year of graduate school. Application forms can be obtained from the Center for Integrative Toxicology (CIT).
2. Return the completed application form to the CIT along with a letter of recommendation from your PhD thesis advisor attesting to your motivation toward Toxicology and/or Environmental Science. Application for admission to the Program in Environmental and Integrative Toxicological Sciences should be made at least two years prior to graduation and must be approved by members of the EITS Graduate Committee. A letter notifying you of acceptance will be sent to you by the Graduate Program Director of the CIT.
3. The EITS Graduate Committee meets three times each year (January 1, May 1 and September 1) to examine the information in each application to assure that students have proposed a plan of study and research that will meet all program requirements and requirements for graduation. A recommendation to the Director is then made.
4. The PhD Guidance Committee must contain at least two CIT-affiliated faculty (usually the PhD thesis advisor and one other CIT affiliate). Students should notify the CIT of the names of the faculty on the Guidance Committee soon after its formation. Please visit [www.cit.msu.edu](http://www.cit.msu.edu) for a list of affiliated faculty.
5. You must complete the course requirements of the Training Program in Environmental and Integrative Toxicological Sciences (see Attachment B) in addition to all requirements of the major department/cooperating PhD program. The CIT requires a 3.0 GPA in program courses.
6. You must notify the Graduate Director of any intended changes in courses or in dissertation research topic.
7. All courses must be taken for a numerical grade. Credit/no credit designations are not acceptable unless approved by the EITS Graduate Committee.
8. At least six months prior to graduation, you must complete the "Application for Candidacy" form. The completed form should be returned to the CIT for approval by the EITS Graduate Policy Committee. You should send photocopies of the University forms entitled "Report of Guidance Committee" and "Record of Comprehensive Examinations" in support of your candidacy application. (These forms should be signed by the doctoral guidance committee.)
9. A letter will be sent by the Graduate Program Director of the CIT notifying you of acceptance into Candidacy. This indicates you have completed all CIT requirements except for defense of thesis.
10. There is a specific code for each department that indicates that you are getting a joint PhD degree in your Departmental Major and in Environmental Toxicology. Please do not assume that you are already correctly coded. You must fill out the section of the Application for Graduation regarding degree correctly so that the degree reflects joint status (i.e., Major Department-Environmental Toxicology). See attachment C for appropriate codes.
11. Upon successful completion of your thesis defense, you must submit to the CIT photocopies of University forms entitled "Record of Completion of Requirements" and "Graduate Credit Statement and Final Certification for Degree".
12. You should notify the CIT of graduation and give a forwarding address for future correspondence. Also, please keep the CIT notified of newly acquired positions so the CIT can keep an up-to-date record of positions attained by graduates.
13. Questions regarding the Program should be addressed to Dr. Robert A. Roth (or Kasey Baldwin) at the Center for Integrative Toxicology, Food Safety and Toxicology Building, 1129 Farm Lane, 165C, 517-353-6469.

## ATTACHMENT B

### Training Program in Environmental and Integrative Toxicological Sciences (EITS)

To complete the degree program, the student shall meet the requirements of the department of affiliation (major department) and those of the Program in Environmental and Integrative Toxicological Sciences. Where course requirements overlap, a given course may be counted toward both major department and EITS requirements.

#### Requirements

1. The topic of the PhD thesis must be in the broad area of environmental toxicology and must be accepted by the EITS Graduate Committee.
2. The student must attend at least 12 seminars approved by the Center for Integrative Toxicology. In addition, students must complete the course requirements for either the biomedical or environmental track listed below with a grade point average of at least 3.0.

#### Required Courses

##### **Biomedical Track: designed for doctoral students in biomedical disciplines**

PHM 830	Experimental Design and Data Analysis	3 credits	Fall & Summer
PHM 801	Module 1, Principles of Drug-Tissue Interactions	1 credit	Fall, Spring, & Summer
PHM 816	Integrative Toxicology: Mechanisms, Pathology and Regulation	3 credits	Fall (odd years)
TBD	Topics in Toxicology	1 credit	
BMB 961	Selected Topics in Biochemistry II- Genomics (or comparable course)	1-2 credits	Fall & Spring

plus one course chosen from among the courses in the elective course list

##### **Environmental Track: designed for students with less mammalian biology background (e.g., chemistry, engineering, environmental law, etc.).**

CSS 865	Environmental Fate of Organic Contaminants in Soils	3 credits	Spring (even years)
BE 891, Sec 003	Advanced Topics in Biosystems Engineering - Human and Environmental Risk Analysis	3 credits	Fall
	<b>OR</b>		
ESP 803	Human and Ecological Health Assessment and Management	3 credits	Fall
PHM 450	Introduction to Chemical Toxicology	3 credits	Spring
	<b>OR</b>		
PHM 816	Integrative Toxicology: Mechanisms, Pathology and Regulation	3 credits	Fall (odd years)
ACR 846	Law of Environmental Regulation	3 credits	Fall

plus two courses selected from among approved elective courses in two interest groups

## Elective Courses

### Environmental Dynamics

BE 891, Sec 003	Advanced Topics in Biosystems Engineering - Human and Environmental Risk Analysis	3 credits	Fall
CE 481	Environmental Chemistry: Equilibrium Concepts	3 credits	Fall
CE 821	Groundwater Hydraulics	3 credits	Fall
CE 822	Groundwater Modeling	3 credits	Spring (even years)
CSS 455	Pollutants in the Soil Environment	3 credits	Fall
ENE 801	Dynamics of Environmental Systems	3 credits	Spring
GLG 421	Environmental Geochemistry	4 credits	Spring
GLG 821	Aqueous Geochemistry	3 credits	Fall (odd years)
MMG 425	Microbial Ecology	3 credits	Spring
ZOL 897	Ecosystem Ecology and Global Change	4 credits	Spring (odd years)

### Economics, Policy and Law

AEC 810	Institutional and Behavioral Economics	3 credits	Fall
AEC 829	The Economics of Environmental Resources	3 credits	Spring
PPL 808	Policy Development and Administration	3 credits	Spring
ACR 846	Law of Environmental Regulation	3 credits	Fall

### Waste Management

CE 483	Water and Wastewater Engineering	3 credits	Fall
CE 485	Landfill Design	3 credits	Spring
CE 487	Microbiology for Environmental Science and Engineering	3 credits	Spring
ENE 804	Biological Processes in Environmental Engineering	3 credits	Fall

### Analytical Chemistry

CEM 834	Advanced Analytical Chemistry I	3 credits	Fall
CEM 835	Advanced Analytical Chemistry II	3 credits	Fall
CEM 836	Separation Science	3 credits	Spring (odd years)
CEM 845	Structure and Spectroscopy of Organic Compounds	3 credits	Fall

### Mechanisms of Toxicity

ANS 407	Food and Animal Toxicology	3 credits	Fall
EPI 810	Introductory Epidemiology	3 credits	Fall
FSC 807	Advanced Food Toxicology	3 credits	Fall (even years)

## **ATTACHMENT C**

### **Training Program in Environmental and Integrative Toxicological Sciences (EITS)**

#### **Major Curriculum Codes**

- 0472 Animal Science-Environmental Toxicology - CANR
- 7029 Biochemistry and Molecular Biology-Environmental Toxicology - CNS
- 7071 Cell and Molecular Biology-Environmental Toxicology - CNS
- 3938 Chemistry-Environmental Toxicology - CNS
- 4916 Comparative Medicine and Integrative Biology-Environmental Toxicology - CVM
- 0473 Crop & Soil Sciences-Environmental Toxicology - CANR
- 3968 Environmental Geosciences-Environmental Toxicology - CNS
- 0477 Fisheries and Wildlife-Environmental Toxicology - CANR
- 0474 Food Science-Environmental Toxicology - CANR
- 7087 Genetics-Environmental Toxicology - CNS
- 5274 Human Nutrition-Environmental Toxicology - CANR
- 7052 Human Nutrition-Environmental Toxicology - CNS
- 0475 Forestry-Environmental Toxicology - CANR
- 4901 Microbiology and Molecular Genetics-Environmental Toxicology - CVM
- 7098 Neuroscience-Environmental Toxicology - CNS
- 4920 Pathobiology and Diagnostic Investigation-Environmental Toxicology - CVM
- 4902 Pharmacology & Toxicology-Environmental Toxicology - CVM
- 3941 Zoology-Environmental Toxicology - CNS

## ATTACHMENT D

### Training Program in Environmental and Integrative Toxicological Sciences (EITS)

#### Cooperating PhD Contacts

<b>Department Chairperson</b>	<b>Graduate Secretary</b>	<b>Graduate Program Directors</b>
<b>Animal Science</b>		<b><a href="http://www.canr.msu.edu/dept/ans">www.canr.msu.edu/dept/ans</a></b>
<p>Janice Swanson Animal Science Anthony Hall 474 S. Shaw Lane, Room 1290F East Lansing, Michigan 48824</p> <p>Phone: 517.432.4134 Email: swansoj@msu.edu</p>	<p>Kathy Tatro Animal Science Anthony Hall 474 S. Shaw Lane, Room 1290 East Lansing, Michigan 48824</p> <p>Phone: 517.355.8417 Email: tatro@msu.edu</p>	<p>Steven Bursian Animal Science Anthony Hall 474 S. Shaw Lane, Room 2209C East Lansing, Michigan 48824</p> <p>Phone: 517.355.8415 Email: bursian@msu.edu</p>
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# **Appendix C**

## **EITS Application for Candidacy**



**APPLICATION FOR CANDIDACY**  
Training Program in Environmental and Integrative  
Toxicological Sciences (EITS)  
Robert A. Roth, Graduate Program Director

Date: \_\_\_\_\_

Track: Biomedical      Environmental

Applicant's Name: \_\_\_\_\_ Student No: \_\_\_\_\_

Department: \_\_\_\_\_

Major Professor: \_\_\_\_\_ GPA: \_\_\_\_\_

**At Time of Preliminary Comprehensive Examination:**

**Courses completed and grad received:**

Course Number and Name	Grade Received
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**Courses remaining and estimated date of completion:**

Course Number and Name	Estimated Completion
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**Environmental Toxicology Requirements: (Core Courses and Electives)**

Course Number and Name	Grade Received
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**Record of Participation in Seminars, Symposia & Colloquium:**

Seminar Topic (List 12 seminars)	Speaker
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**Dissertation Topic:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Ph.D. Guidance Committee:\***

**Chair:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*Two members of the committee must be members of the Institute for Environmental Toxicology faculty.