Toxicology Program Coursework

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

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

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

Mechanistic Toxicology Track Course Work  (30 credits total)

Required Courses
- 8 credits of GPLS 601 Mechanisms in Biomedical Science (Core Course) (Fall/8 cr)
- 3 credits of GPLS 623 Molecular Toxicology (Fall/3 cr)
- 3 credits of PATH 603 General Pathology (Fall/3 cr)
- 3 credits of PREV 621 Biostatistical Methods (Fall/3 cr)
- 3 credits of TOXI 618 Seminar in Toxicology (Spring & Fall/1 cr)
- 2 credits of TOXI 609 Methods in Toxicology (Lab Rotation) (Spring & Fall/variable 1-3 cr)
- 2 credits of Pharmacology (choose from the following):
  - GPLS 607 Fundamentals of Pharmacology (Spring/2 cr)
  - PHAR 600 Principles of Drug Discovery (Fall/3 cr)
  - PHAR 601 Principles of Drug Development (Spring/3 cr)
  - PHAR 602 Pharmacokinetics (Fall/3 cr)
- 6 credits of General Electives (May be selected from “Suggested Electives” list below)
- CIPP 907 Research Ethics (Academic year starting Fall/1 cr or may be audited informally)

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

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

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

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<th>Credits</th>
<th>1st Spring Semester</th>
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<td>PATH 603 General Pathology</td>
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**Toxicology and Environmental Health Track (30 credits total)**

**Required Courses**

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

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

**Suggested Electives**

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

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

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