

MS Graduate Program in Toxicology: Course and Credit Requirements

Course No.	Course Title	Option 1 (Thesis): Research in the Environmental Health Sciences	Option 2 (non- Thesis): Applied Toxicology	Option 3 (non- Thesis): Risk Analysis	Meets graduate level stand- alone requirement
Tox 512	Target Organ Toxicology	3	3	3	yes
Tox 513	Environmental Toxicology and Risk Assessment	3	3	3	no
Tox 530	Chemical Behavior in the Environment	3	3	3	no
Tox 507 ⁷	Toxicology Seminar Series	3	3	3	yes
GRAD 520 ¹	Responsible Conduct of Research ¹	1	1	1	yes
ST 511 ¹	Methods of Data Analysis ¹	4	4	4	no
	Subtotal core credits	17	17	17	
TOX 505 ⁸	Reading and Conference	n/a	n/a	1 (min)	yes
Restricted Electives	Graduate level toxicology electives – selected from current TOX courses ³	6 (min)	6 (min)	6 (min)	See list below ³
Restricted Electives	Graduate level electives – selected from restricted list of Applied Economics and Public Health courses ⁴	n/a	n/a	6 (min)	See list below ⁴
Unrestricted Electives	Determined by Thesis/Dissertation Committee ²	12 (min)	16 (min)	9 (min)	
Tox 503	Thesis	9 (min)			yes
Tox 501 ⁶	Research		6 (min)	6 (min)	yes
TOTAL (min req'd)		45 (min)	45 (min)	45 (min)	50% of total program credits

MS Program in Toxicology: Course Requirements Table Footnotes and Additional Program Requirements:

¹Substitutions allowed

- GRAD 520 may be substituted with MCB 557 Scientific Skills and Ethics (3 cr.)
- ST 511 may be substituted with H 524 Introduction to Biostatistics (4 cr.)

²Strongly recommended depending on student background:

- GRAD 511 Designing a Path for Success (Graduate Orientation)
- GRAD 521 Research Data Management
- BB 590-592 or BB 550-551 Biochemistry
- Z 531-532 Vertebrate Physiology

³Current list of available TOX graduate electives (4XX/5XX indicates a slash-listed course that can be included on the program, but that cannot count towards the 50% non-slash requirement); any combination to reach a minimum of 6 credits is acceptable..

- **4XX/5XX Electives:** **TOX 411/511** Fundamentals of Toxicology (3 cr. Williams), **TOX 429/529** Toxic Substances in Food (3 cr. Buermeyer), **TOX 435/535** Genes and Chemical in Agriculture: Value and Risk (3 cr. Strauss & Stone), **TOX 455/555** Ecotoxicology: Aquatic Systems (3 cr. Stubblefield), **TOX 490/590** Environmental Forensic Chemistry (3 cr. Anderson), **TOX 611** Testing for Genotoxicity (3 cr. Buermeyer/Iverson),
- **Stand-alone Graduate Electives:** **TOX 554** Genome Organization, Structure and Function (4 cr. Chang, Freitag, Denver), **TOX 575** Advanced Xenobiotic Metabolism (3 cr. Marcus), **TOX 699** Molecular Therapeutics (3 cr. Kolluri), **TOX 699** Special Topics (1-3 cr. Various Faculty), **TOX 505/605** Reading and Conference

⁴Current list of available approved Applied Economics and Public Health and other graduate electives (4XX/5XX indicates a slash-listed course that can be included on the program, but that cannot count towards the 50% non-slash requirement); any combination to reach a minimum of 6 credits is acceptable.

- **Environmental Economics and Policy Electives:** **AREC 432/532** Environmental Law (4 cr.), **AREC 534** Environmental and Resource Economics (3 cr.), **AREC 545/554** Rural Development Economics and Policy (3 cr.), **AREC 535 (proposed)** Economic Analysis of Environmental Risk and Policy (3 cr.), **AREC 452/552** Marine Economics (3 cr.), **FOR 362/562** Natural Resource Policy and Law (3 cr.)
- **Public Health Electives:** **H 429/529** International Health (3 cr.), **H 445/545** Occupational Health (3 cr.), **H 448/548** Environmental and Occupational Toxicology and Risk Assessment (3 cr.), **H 585** Environment, Safety and Health Policy and Law (3 cr.), **H 589** Emergency and Disaster Management (3 cr.)

⁶No more than 9 credits, other than thesis (or research-in-lieu-of-thesis for non-thesis programs), may be included in the minimum 45-credit masters program of study.

Other programmatic requirements for MS Programs in Toxicology

o **Requirements for all options:**

- ⁷Students will participate in TOX 507 seminar in each term they are enrolled in graduate program in Toxicology; 3 credits count towards the Program of Study
- All proposed research and laboratory training must meet university requirements for compliance.
- Experiential and Non-Traditional Learning

- Students will develop (with input from their mentor and Thesis Committee) an Individual Professional Development Plan, including elements representing professional development, experiential and outreach activities.
 - Students will participate in experiential, outreach and professional development training activities.
 - Experiential learning activities will be designated as fulfilling 1 – 3 units depending on the time commitment and expectations of the activity; each unit will count towards 1 credit of TOX 699 Special Topics, and will appear on student transcripts with the title of the training activity.
 - MS students will complete Required Training Activities and 3 units of Elective Training Activities.
- **Option 1: Research in the Environmental Health Sciences**
 - Thesis MS students must enroll full time (min. 12 credits) for all academic terms (fall, winter, spring) in residence.
 - Thesis MS students will schedule and conduct annual meetings with their thesis committees to provide updates on research, academic and professional development progress and to encourage mentoring from the committee.
- **Option 2: Applied Toxicology**
 - Non-Thesis MS students must meet minimum enrollment requirements of the Graduate School (continuous enrollment of a minimum of 3 credits).
 - Final capstone project (TOX 501 Research, 6 cr. minimum) for students pursuing the Option in Applied Toxicology is strongly encouraged to be an interdisciplinary and collaborative project working with other students in the program and/or with stakeholders (e.g. industry, state or local government, community organizations, etc.) from outside the university.
- **Option 3: Risk Analysis**
 - Non-Thesis MS students must meet minimum enrollment requirements of the Graduate School (continuous enrollment of a minimum of 3 credits).
 - ⁸Students will participate in a faculty-led group study (TOX 505 Reading and Conference, 1 cr. minimum) focused on current case studies in Environmental Health and Economic Risk Analysis.
 - Final capstone project (TOX 501 Research, 6 cr. minimum) for students pursuing the Option in Risk Analysis is strongly encouraged to be an interdisciplinary and collaborative project working with other students in the program and/or in Applied Economics and with stakeholders (e.g. industry, state or local government, community organizations, etc.) from outside the university.