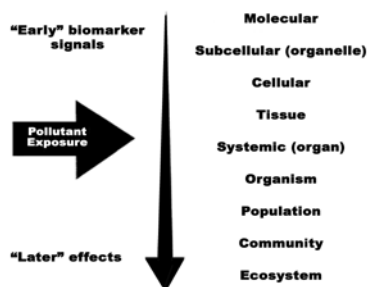


# ECOTOXICOLOGY, BIOL 5334-001

## Spring 2025



**Instructor:** Riqing Yu, Ph.D. ([ryu@uttyler.edu](mailto:ryu@uttyler.edu))  
Associate Professor, Department of Biology  
Office: HPR 105; Tel: (903) 566-7257  
Office Hour: Mon/Wed 4:00 -5:00 pm, or by appointment.

**Lecture** (Time & location): Tue 5:00 PM–7:50 PM. **Classroom:** Ratliff Building North 02011.  
**Instruction Mode:** Face to Face.

**Textbooks:** Michael C. Newman. 2020. Fundamentals of Ecotoxicology: The Science of Pollution, 5th Edition. CRC Press. ISBN-13: 978-0815354024.

**Reading references:** C.H. Walker R.M. Sibly S.P. Hopkin D.B. Peakall. 2016. Principles of Ecotoxicology, Fourth Edition. CRC Press.

**Course Description:** This course will present graduate students with an interdisciplinary field that studies the effects of toxic chemical or biological agents on biological organisms at the molecular, cell, population, and community or ecosystem level. It will cover broad ecotoxicology topics including the major classes of contaminants; uptake, biotransformation, detoxification, elimination and accumulation; bioaccumulation from food and trophic transfer; molecular effects and biomarkers; acute, sub-lethal and chronic lethal effects to individuals; effects on populations, communities and ecosystems; landscape to global effects; and risk assessment of contaminants.

**Objectives:** The course is to provide students with a solid understanding of the ecological and toxicological problems associated with pervasive environmental pollutants, to offer hand-on appreciation in toxicity testing and analysis, to explain biological processes which modulate the toxicokinetics of chemical agents of public health importance and the perspective of toxicology in the environmental risk assessment. This course will rely on lectures by the instructor, and journal paper presentation led by individual students.

*Improve your CV in finding job opportunities* including private environmental consulting, government and regulatory work, environmental field research, academia, biotechnology research and development, and pharmaceuticals.

**Prerequisites:** Prior exposure to General Biology, Ecology, and Biochemistry will be beneficial, but is not required.

**Canvas:** All course PPT slides, announcements, assignments and grades will be posted online using Canvas (<http://www.uttyler.edu/canvas/index.php>). Updates to this syllabus will be posted; please check periodically. Homework assignments will be forwarded to students, and completed assignments should be submitted online via Canvas. Please refer to the “assignments” section on Canvas for detailed instructions on how to view and submit homework assignments. Letter grades which are combined from all grades will not be assigned until the end of the semester.

**Artificial intelligence language use in BIOL 4300:** During some class assignments, we may leverage AI tools to support your learning, allow you to explore how AI tools can be used, and/or better understand their benefits and limitations. Learning how to use AI is an emerging skill, and we will work through the limitations of these evolving systems together. However, AI will be limited to assignments where AI is a critical component of the learning activity. The TA and I will indicate when and where the use of AI tools for the course assignments is appropriate.

**Academic Integrity:** Students are reminded of their pledge to uphold the University of Texas at Tyler Honor Code. Please refer to <http://www.uttyler.edu/educpsych/files/HonorCode.pdf> for guidelines covering academic fraud as they may apply to the course assignments and exams.

**Grading:** Each assignment will be 100 points-based. Final grades will be calculated as follows.

BIOL 5380-002

Term paper	35%
Paper presentation (2 times)	35%
Final exam	20%
Class discussion and participation	10%

<b>Final grade scale</b>			
<b>A:</b> 90-100%	<b>B:</b> 80-89%	<b>C:</b> 60-79%	<b>F:</b> <60%

**Disability/Accessibility services:** In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA), the University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including non-visible a diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler> and fill out the New Student application. The **Student Accessibility and Resources (SAR)** office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <http://www.uttyler.edu/disabilityservices>, the SAR office located in the University Center, # 3150 or call 903.566.7079.

## Course Schedule<sup>1</sup>

Class	Date		Topic	Reading
1	Tue	Jan 14	Introduction	Ch 1, Newman
2	Tue	Jan 21	Major classes of contaminants	Ch 2, Newman
3	Tue	Jan 28	Major classes of contaminants	Ch 2, Newman
4	Tue	Feb 04	Uptake, biotransformation, detoxification, elimination...	Ch 3, Newman
5	Tue	Feb 11	Factors influencing bioaccumulation	Ch 4, Newman
6	Tue	Feb 18	Bioaccumulation from food and trophic transfer	Ch 5, Newman
7	Tue	Feb 25	Molecular effects and biomarkers	Ch 6, Newman
8	Tue	Mar 04	Cells, tissues, and organs	Ch 7, Newman
9	Tue	Mar 11	Sub-lethal effects to individuals	Ch 8, Newman
10	Tue	Mar 18	Spring break from Mar 17-21	
11	Tue	Mar 25	Acute and chronic lethal effects to individuals	Ch 9, Newman
12	Tue	Apr 01	Effects on populations	Ch 10, Newman
13	Tue	Apr 08	Effects to communities and ecosystems	Ch 11, Newman
	Tue	Apr 15	Landscape to global effects	Ch 12, Newman
14	Tue	Apr 22	Risk assessment of contaminants	Ch 13, Newman
	Tue	Apr 29	Final Exam	

<sup>1</sup>Schedule is subject to change.