

## Aquatic Toxicology (BIOL 646/EVSS 746), Fall 2020

**Instructor:** Dr. Marie DeLorenzo

**Contact Information:** [marie.delorenzo@noaa.gov](mailto:marie.delorenzo@noaa.gov), 843-494-7326

**Class time:** Tuesday and Thursday 6:30-8:00 pm, via Google Meet or Grice Classroom 101\*

**Office hours:** By appointment

\*All classes will be on-line until September 14 and for the week after Thanksgiving. We **may** move into the classroom after Sept. 14, depending on CofC policy, Grice Laboratory policy, etc. By on-line, it is meant that we will meet together as a group at the assigned class time via Google Meet. We will use our computer cameras and microphones to have discussions and the lecture slides will be shared in advance and presented live. Quizzes and exams will be taken during class.

**Course Prerequisites:** Must be enrolled as a graduate student, organic chemistry recommended

**Recommended Texts:** *Fundamentals of Aquatic Toxicology*, 1995, Gary M. Rand (Ed.), 2<sup>nd</sup> ed, Taylor & Francis;

*An Introduction to Aquatic Toxicology*, 1st Edition, 2014, M. Nikinmaa;

*Aquatic Toxicology (Molecular, Biochemical, and Cellular Perspectives)*, 1994, Malins, D.C. and Ostrander, G.K (Eds.) CRC Press.;

\*Supplemental reading will be provided

**Grading Policy (3 credit course):** Class participation, quizzes, assignments – 1/3, Midterm exam – 1/3, Final exam – 1/3

**Scale:** ≥90 A, 89–87 B+, 86–80 B, 79–77 C+, 76–70 C, ≤69 F

**Attendance Policy:** Attendance is considered part of the class participation grade. It is the student's responsibility to inform the instructor if he/she will be absent and to make-up the work missed.

**Electronic Device Policy:** Students may use their laptop computers to attend class, for notetaking, and referring to files in the shared documents folder. Students may not use their cell phones or other electronic devices during class.

### **Instructional Objectives and Student Learning Outcomes:**

This course will explore acute and chronic adverse effects of chemicals and other anthropogenic materials on aquatic organisms. Students will become familiar with the history and legal mandates related to aquatic toxicology. Students will be able to demonstrate knowledge of legacy contaminants and chemicals of emerging concern, along with the transport, distribution, transformation, and ultimate fate of chemicals in the aquatic environment. Students will gain an understanding of the basic principles of toxicology, including factors affecting toxicity, appropriate testing methodology, experimental design and analysis, use of bioindicator organisms, biomarkers of exposure and effects, environmental modeling and ecological risk assessment.

### **Academic Integrity Statement**

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when suspected, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student's actions are related more to misunderstanding and confusion will be handled by the instructor. The instructor designs an intervention or assigns a grade reduction to help prevent the student from repeating the error. The response is recorded on a form and signed both by the instructor and the student. It is forwarded to the Office of the Dean of Students and placed in the student's file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This status indicator will appear on the student's transcript for two years after which the student may petition for the XX to be expunged. The F is permanent.

Students can find the complete Honor Code and all related processes in the Student Handbook at: <http://deanofstudents.cofc.edu/honor-system/studenthandbook/>."

### **Accommodations for Students with Disabilities**

Any student eligible for and needing accommodations because of a disability is requested to speak with the professor during the first two weeks of class or as soon as the student has been approved for services so that reasonable accommodations can be arranged. [Center for Disability Services/SNAP](#).

### **OAKS** (3.10, for all instructional modalities)

OAKS, including Gradebook, will be used for this course throughout the semester to provide the syllabus and class materials and grades for each assignment, which will be regularly posted.

### **Inclement Weather, Pandemic or Substantial Interruption of Instruction**

If in-person classes are suspended, faculty will announce to their students a detailed plan for a change in modality to ensure the continuity of learning. All students must have access to a computer equipped with a web camera, microphone, and Internet access. Resources are available to provide students with these essential tools.

## Class Schedule

T Aug 25	Introduction to Aquatic Toxicology
R Aug 27	Environmental Legislation
T Sept 1	<b>Quiz 1</b> , Contaminants in the Environment, Principles of Measurement
R Sept 3	Acute Toxicity Testing I
T Sept 8	<b>Quiz 2</b> , Acute Toxicity Testing II
R Sept 10	Chronic Toxicity Testing
T Sept 15	<b>Class presentations I</b>
R Sept 17	<b>Class presentations I, cont.</b>
T Sept 22	Early Life Stage Testing
R Sept 24	<b>Quiz 3</b> , Sediment Tox, Exper. Design and Analysis
T Sept 29	Community Level Testing, Mesocosms
R Oct 1	<b>Quiz 4</b> , Ecosystem Dynamics, Ecosystem Effects
T Oct 6	Biomonitoring Approaches, Field Assessments
R Oct 8	<b>Quiz 5</b> , Toxicogenomics
<b>T Oct 13</b>	<b>Midterm Exam</b>
R Oct 15	Environmental Fate of Organic Contaminants
T Oct 20	<b>Quiz 6</b> , Metals Fate and Transport
R Oct 22	Bioaccumulation
T Oct 27	<b>Quiz 7</b> , Biotransformation and Biomarkers
R Oct 29	Endocrine Disruption and Environmental Immunotoxicity
<b>T Nov 3</b>	<b>Election Day, No Classes</b>
R Nov 5	<b>Class presentations II</b>
T Nov 10	<b>Class presentations II, cont.</b>
R Nov 12	<b>Quiz 8</b> , Emerging Contaminants, Nanotoxicology, Microplastics,
T Nov 17	<b>Guest Lecture:</b> Emerging Contaminants, PPCPs, WWTP Technology
R Nov 19	Oil and oil spill remediation chemicals, Mixture Toxicity
T Nov 24	<b>Quiz 9</b> , Interactions between Chemicals, Climate/ Natural Factors (HABs, pathogens)
<b>R Nov 26</b>	<b>Thanksgiving Break, No Class</b>
T Dec 1	Environmental Modeling
R Dec 3	<b>Quiz 10</b> , Ecological Risk Assessment
<b>T Dec 8</b>	<b>Final Exam, Evaluations</b>