



Department of Public Health

Environmental and Occupational Health Science

EOHS 577 – Environmental Toxicology Hybrid Course (Face-to-Face and Online)

Professor:

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Department of Public Health

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Website: Course Website on Blackboard

Office Hours, Appointments, and Class Meetings:

- ☐ Dr. Taylor maintains office hours each semester.
- ☐ Arrange an appointment at a class session, by Email or call Dr. Taylor to set up an appointment or conference call.
- ☐ **Class meetings will be face to face through Zoom video conference.**
- ☐ This is a Hybrid Course. Class meetings will occur throughout the semester as shown in Topnet. Make sure you are aware of the course meeting day and time.
- ☐ A link to the Zoom meetings will be provided on the course Blackboard site.
- ☐ Additional non-mandatory meetings may be provided to assist students with course material, research, and assignments.

Course Description: Toxicological principles and environmental risk assessment with emphasis on routes of exposure, biokinetics, and response to chemical stressors.

Course Purpose:

The purpose of this course is to provide students with a background to apply principles of environmental toxicology. Students will explain how human and ecosystem health may be impacted through routes of exposure to environmental contaminants. As such, the emphasis will be on evaluating environmental toxicants in relation to human and ecosystem health, analysis of environmental toxicant data, and techniques used in assessing and managing the risk of environmental toxicants. We will begin the course by with an Introduction, transition into the Principles of Environmental Toxicology, and end with the Practice of Environmental Toxicology. Throughout the course student will develop an Environmental Toxicology Portfolio that will be completed in lieu of a Final Examination. This

portfolio will guide the student through the exploration of Environmental Toxicology. Within the portfolio students will analyze, critique, develop, and investigate specific readings, scenarios, information, and processes related to Environmental Toxicology and the broader field of Environmental and Occupational Health Science. The goal of the portfolio is to encourage students to dig deeper into the art and science of the Environmental and Occupational Health fields and broaden their perspectives on possible careers and career goals. Course

Objectives:

Students will:

1. Explain principles of environmental toxicology when required.
2. Summarize the effects of major environmental agents when given exposure scenarios.
3. Statistically analyze environmental toxicant data and summarize results in comparison to regulatory limits, when given a database of environmental concentration data.
4. Evaluate environmental toxicant risks to human and ecosystem health when given or required to produce results of statistical analyses of environmental toxicant data.
5. Develop environmental and occupational management strategies when given concentration data for toxicants in the natural or built environment.
6. Describe and explain laws, regulations, and policies that govern the use and levels of environmental toxicants.
7. Design a project to assess an environmental toxicant that occurs locally and is a global concern by applying the principles of environmental risk assessment.
8. Critique methodologies, results, and conclusions presented in environmental toxicology research studies based on principles presented in the textbook and course materials.

Course Credit:

Three (3) hours of college credit on the graduate level.

Course Format:

- ◆ Hybrid: Both web (online) and face to face (via Zoom or in class meetings)
- ◆ Lecture: Lecture Videos, Zoom meetings, etc.
- ◆ Exercises
- ◆ Experiential learning: Environmental Toxicology Portfolio
- ◆ Web enhanced through Blackboard
- ◆ Review of Environmental Toxicology literature
- ◆ Research methods, processes and approaches
- ◆ Face to face discussions on Zoom or in class and Blackboard Discussion Board participation
- ◆ Quizzes
- ◆ Student presentations, leadership, and career development

Course Calendar:

- Review the course outline below for in class meetings.
- The list of tasks for each section on Blackboard will serve as the calendar for the course and the list of tasks you need to complete. When a section is posted the list of tasks can be found under the Section folder in Blackboard.
- Complete each task by the due date given.
- Each section will be completed before another is posted on Blackboard.

Course Outline:

- Introduction
 - Introduction
 - Discussion
 - Exercises
 - EOHS 577 Portfolio
- Section 1: Toxicology and Environmental Toxicology –through Blackboard
 - Chapter 1
 - Exercise
 - Portfolio
- Section 2: Chemical Properties and Toxicity –through Blackboard
 - Chapters 2 and 3
 - Discussion
 - Quiz
 - Portfolio
- Section 3: Biological Poisons, Environmental Pollutants and Their Fate
 - Chapters 4 and 5
 - Exercise
 - Portfolio
- Section 4: Dose and Response, and Absorption of Toxicants
 - Chapters 6 and 7
 - Discussion
 - Portfolio
 - Quiz
- Section 5: Distribution, Storage, Elimination, and Biotransformation of Toxicants
 - Chapters 8 and 9
 - Exercise
 - Portfolio
- Section 6: Chemicals: Mutagenesis and Cancer
 - Chapters 10 and 11
 - Discussion
 - Quiz
- Section 7: Systemic Toxicology: Immune System, Skin, Liver, and Kidneys
 - Chapters 12, 13, and 14
 - Discussion
 - Quiz
 - Portfolio
- Section 8: Systemic Toxicology: Cardiovascular, Respiratory System, Nervous System, and Endocrine System
 - Chapters 15, 16, 17, and 18

- Portfolio
- Quiz
- Section 8: Practice, Regulatory Considerations, and Toxicity Testing
 - Chapters 19, 20, and 21
 - Exercise
 - Portfolio
- Section 9: Public Safety, Management, Risk Assessment, and Decision Making
 - Chapters 22, 23, 24, 25
 - Portfolio

Required Texts and Materials:

- Richards, I.S. and M. Bourgeois. 2014. Principles and Practice of Toxicology in Public Health. Jones and Bartlett Publishers. Sudbury, Massachusetts. 522 pp.
- IBM SPSS 27 or later version. Statistical software available through the WKU Software Center.
 - Price as of Spring 2022 \$60 for students and faculty.
<https://www.wku.edu/its/sms/>

Additional Readings and References:

Carson, R. 1962. Silent Spring. Houghton Mifflin Company, New York, NY. 368 pp.

Choudhry, H, L.K. Teuschler et al. Supplementary guidance for conducting health risk assessment of chemical mixtures. Office of Research and Development: EPA/630/R-00/002. August 2000.
<http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=20533#Download>

Colborn, T., D. Dumanoski, and J.P. Meyers. 1997. Our Stolen Future. Penguin Books, New York, NY. 336 pp.

Steingraber, S. 2010. Living Downstream. Da Capo Press, Cambridge, MA. 440 pp.

U.S. Department of Health and Human Services. 2004. ATSDR's Guidance Manual for the Assessment of Joint Toxic Action of Chemical Mixtures.
<http://www.atsdr.cdc.gov/interactionprofiles/ipga.html>

U.S. Department of Health and Human Services, National Library of Medicine. 2014. Toxicology Tutorials. <https://www.toxmsdt.com/0-toxtutor-home.html>.

U.S. EPA's Framework for Cumulative Risk Assessment May 2003
http://oaspub.epa.gov/eims/eimscomm.getfile?p_download_id=36941

U.S. EPA's Concepts, Methods and Data Sources for Cumulative Health Risk Assessment of Multiple Chemicals, Exposures and Effects: A Resource Document.
<http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=190187>

U.S. EPA's Supplementary Guidance for Conducting Health Risk Assessment of Chemical Mixtures 2000. <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=20533>

*****Other texts and readings will be provided through the course.*****

Online Resources:

- ☐ Course Web Site: use the WKU blackboard website to access course tasks, materials, discussions, quizzes, assignments, and information.
- ☐ You will need access to the WKU Blackboard course site via an internet connection – student labs are available on campus.
- ☐ Please check the course Blackboard site and your WKU email for messages. Additional course materials will be provided through Blackboard and in class.

Expectations and Important Information:

- Please review the course outline and check the tasks for each section to determine what needs to be completed for each section. The task list for each section can be found under "Course Documents" and then select the Section that is under study.
- All tasks to be completed will be posted under the task list in each section on Blackboard. This will allow you to determine what tasks you have and have not completed.
- Assignments for a Section will be posted under the "Assignments" folder for that section. All quizzes and tests will be posted under the "Test" folder for that section. The final project will be posted under "Course Documents" in the "Final Project" folder. Discussion questions will be posted under the "Discussion Board".

- You must complete all assignments, quizzes/tests, and the final project by the due date and time.
- Do not wait until the last minute to ask a question or upload a file pertaining to an assignment or the final project. If you have problems please post a question to the discussion board or call me on my cell phone.
- Access to course assignments, tests, activities, and projects will be through Blackboard.
- All assignments will have a due date and you will be expected to submit these through Blackboard.
 1. For each assignment there will be a link under the Assignments folder for that section.
 2. You will need to download the assignment document, complete your work, and then submit your completed assignment through the link for that assignment.
 3. Always save your work on your computer or storage media. Also, save a backup on a disc or thumb drive. Additionally, you can save a copy to Blackboard.
 4. Please note, once you submit an assignment you will not be able to go back and work on that assignment. You can save your work under each assignment by selecting the "Save" button under the link for a particular assignment. However, you must select the "Submit" button to turn in your work. If you accidentally select "Submit" before your assignment is completed you must post that you have done this on the Course Questions discussion and Dr. Taylor will clear the attempt. Just remember that this will delete your work that was saved on Blackboard. So you must have a backup on your computer or elsewhere.
 5. Alternatively, you can save your document on blackboard and access it until complete, then submit when you are finished.
- All Quizzes will be on-line. Quizzes and tests may be T/F, multiple choice, matching, essay and other formats. Quizzes and tests will be graded through the Blackboard system.
 1. Some quizzes and tests may allow multiple attempts (up to three).
 2. All quizzes and tests will be for a specified time period.
 3. All quizzes and tests are open note and open book.
 4. All quizzes and tests are expected to be completed by the student enrolled in the class. If it is determined that a student has cheated on an exam, a failing grade will be given at a minimum.
- Required assignments and projects will be completed and submitted through the Blackboard system.
- Plagiarism will not be tolerated. You are expected to do your own work and cite all references. All papers will be evaluated for plagiarism using a computer tool. Do not copy the work of another student. If you are found to be plagiarizing there will be serious consequences, such as a failing grade in the course. University policy will be followed. Copying a paper of another student or directly from a source will result in a failing grade.

Course Requirements and Points:

- Quizzes – 25% of final grade – 250 points possible
- Class exercises – 25% of final grade – 250 points possible
- Discussions – 25% of final grade – 250 points possible
- Environmental Toxicology Portfolio – 250 points possible – Required portfolio entries throughout the semester - Analysis, critiques, evaluations, and assessments
- 1000 points total

Notes:

- Environmental Toxicology Portfolio will be a series of components that will be submitted separately throughout the semester.
- Course outline above shows the anticipated schedule, the List of Tasks for each section will be the official outline.

Course Grading:

- ★ All assignments will be given a due date.
- ★ Late assignments will not be accepted.
- ★ Assignments can be submitted prior to the class meeting via email or turned in on the due date.
- ★ Assignments will be graded within one week of completion
- ★ Grade Scheme
 - a. A = 1,074 points or greater
 - b. B = 1,073 to 954
 - c. C = 953 to 834
 - d. D = 833 to 714
 - e. F = 713 and below

Environmental Toxicology Portfolio:

- To be completed in lieu of a mid-term and final exam.
- See the blackboard site for instructions.
- All required portfolio entries will be given a due date in the list of tasks for specific sections on Blackboard.
- The List of Tasks in the Sections will be the outline for the Portfolio.

WKU Policies and Statements

COVID-19 and Face Coverings in the Classroom

Out of respect for the health and safety of the WKU community and in adherence with the [CDC guidelines](#), the University requires that a cloth face covering (reusable or disposable) that covers both the nose and mouth must be worn at all times when in public areas within all buildings. Students must properly wear face coverings while in class regardless of the room size or the nature of the classroom activities. Students who fail to wear a face covering as required will be in violation of the WKU Student Code of Conduct and will be asked to comply or will face disciplinary action, including possible dismissal from the University. Accommodations to face coverings must be determined by the Student Accessibility Resource Center and documented before a student may attend class.

ADA Accommodation

In compliance with University policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Student Accessibility Resource Center located in Downing Student Union, Room 1074. The SARC can be reached by phone number at 270-745-5004 [270-745-3030 TTY] or via email at sarc.connect@wku.edu. Please do not request accommodations directly from the professor or instructor without a faculty notification letter (FNL) from The Student Accessibility Resource Center.

Title IX: Discrimination and Harassment

Western Kentucky University (WKU) is committed to supporting faculty, staff and students by upholding WKU's [Title IX Sexual Misconduct/Assault Policy](#) (#0.2070) and [Discrimination and Harassment Policy](#) (#0.2040). Under these policies, discrimination, harassment and/or sexual misconduct based on sex/gender are prohibited. If you experience an incident of sex/genderbased discrimination, harassment and/or sexual misconduct, you are encouraged to report it to the Title IX Coordinator, Andrea Anderson, 270-745-5398 or Title IX Investigators, Michael Crowe, 270-745-5429 or Joshua Hayes, 270-745-5121. Please note that while you may report an incident of sex/gender based discrimination, harassment and/or sexual misconduct to a faculty member, WKU faculty are "Responsible Employees" of the University and MUST report what you share to WKU's Title IX Coordinator or Title IX Investigator. If you would like to speak with someone who may be able to afford you confidentiality, you may contact WKU's [Counseling and Testing Center](#) at 270-745-3159.

Academic Dishonesty

This course will adhere to the WKU policies regarding Academic Dishonesty. This information may be reviewed at <https://www.wku.edu/handbook/academicdishonesty.php/>.

Plagiarism and Academic Integrity

Plagiarism/Academic Fraud occurs when a student knowingly or unknowingly submits another person's published or unpublished (print or web) writing as his/her own, has another person dictate what should be written, or has another person write an assignment and submits that work as his/her own. Students must complete their own work in this course, and they should not ask for or receive inappropriate assistance on their work from another student or source. Students who violate this policy should understand that they are making a decision that may result in an automatic failure in this course or on the specific assignment, at the discretion of the professor. On the other hand, students who adhere to this policy make the decision to challenge themselves intellectually; these students decide to abide by ethical principles that illustrate they value the educational opportunities presented to them and that they believe the quality of their contributions should be given a fair evaluation. In this course, we trust each other to adhere to the principles of academic integrity discussed in this section of the course syllabus. My assumption is that you will submit work that is your own because you wish to be evaluated on the quality of your own work rather than the quality of someone else's and that you understand that doing otherwise is unethical. However, if I begin to question the integrity of your work, I will submit your work to Turnitin.com or another assessment tool, which will generate a report that will help me determine whether your work is original or not.

Plagiarism or academic dishonesty on any single assignment, including quizzes, exams, short papers, and discussions, will result in a course penalty up to course failure. Length or nature of the assignment will not be factors affecting the course penalty. In other words, plagiarism in a one-page assignment might result in course failure just like plagiarism in a six-page paper might; or cheating on a quiz might result in course failure just like cheating on the final project might.