

Syllabus ESP 803, 2023
Human and Ecological Health Assessments and Management

Dr. Karen Chou

Lecture: Mondays: 1:50 – 4:40 PM, with a 20-min break

Location: Baker Hall 255

Final Exam: 5:45-7:45 PM, Wednesday, 12/13/2023

Office Hours: By appointment

Unit		Activities	References
Overall course project	SLO	<ul style="list-style-type: none"> • Apply the components in the <u>Framework for Environmental Health Risk Management</u> in each student’s professional domain • Toxicity Assessment and Uncertainties: <ul style="list-style-type: none"> ○ Apply toxicological data and toxicity assessment tools for regulatory decisions ○ Apply scientific uncertainties in constructing and interpreting the weight-of-evidence classification and scripters for carcinogenicity ○ Effectively communicating the risk and policy decisions and of an environmental issue with • Develop and use Tier 1, Tier 2, and Tier 3 toxicity values • Develop a risk assessment & risk management project • Apply available resources to RARM • Practice and develop risk assessment methodologies • Communicate • Provide independent and constructive feedback 	
1		<ul style="list-style-type: none"> • Course objectives • Syllabus, assignments, and grading • Background survey • Teaching and learning approaches • Peer Evaluation • Scope and goals of environmental management • Assumptions of Dose-response relationships 	Books by National Academies Press: <ol style="list-style-type: none"> 1. The Red Book: Risk Assessment in the federal government: Managing the Progress, 1983 2. The Blue Book: Science

		<ul style="list-style-type: none"> • Basic terms and concepts (I) • Homework 1 assignment: Individual background, research project/interest presentation preparation, course project proposal • Homework 2 self-introduction 	<p>and Judgment in Risk Assessment, 1994</p> <ol style="list-style-type: none"> 3. The Baby Book: Scientific Frontiers in Developmental Toxicology and Risk Assessment, 2000 4. The Silver Book: Science and Decisions, 2008 5. The Face Book: Environmental Decisions in the Face of Uncertainty, 2013
	SLO	<ul style="list-style-type: none"> • Use precise language for risk communication 	
9/1/2023 at 11:59PM	Homework 1 and Homework 2 due	<ul style="list-style-type: none"> • Homework 1 and Homework 2; Upload Homework 1 Background Survey and Self-Intro PowerPoint Presentation to D2L under “Assignments” 	
	SLO	<ul style="list-style-type: none"> • Create material for team building and cross-disciplinary communication 	
2	9/11/2023	<ul style="list-style-type: none"> • Student presentations: Research projects and/or research interests • Basic terms and concepts (II) • Stakeholder involvement 	
	SLO	<ul style="list-style-type: none"> • Cross disciplinary communication • Team Building • Course project development: Develop a course project in RARM • Present course project proposal next week 	

9/15/2023 at 11:59 PM	Homework 3 due	<ul style="list-style-type: none"> • Homework 3, IRIS Due 	
	SLO	<ul style="list-style-type: none"> • Pre-lecture learning on toxicity assessments 	
3	9/18/2023	<ul style="list-style-type: none"> • Basic concepts in RARM • Scope and goals of environmental management • Framework of environmental health risk management • Four components in RARM <ul style="list-style-type: none"> ○ Hazard identification ○ Assumptions of dose-response relationships and toxicity information considered in toxicity assessment • Self-study on dose calculation 	Glossary uploaded in D2L as reference for self-study dose calculation
	SLO	<ul style="list-style-type: none"> • Identify stakeholders for various RARM scenarios • Demonstrate risk management approaches • Construct database for toxicity and exposure assessment • Teamwork for course projects • Perform information collection • Integrate information and identify hazards 	
4	9/25/2023	<ul style="list-style-type: none"> • Concepts and Practices in RARM (I): • Human health risk assessment of non-carcinogenic effects (I) • The concept of dose-response relationships • Course project discussion 	<ol style="list-style-type: none"> 1. Tier 3 Toxicity Value White Paper: https://www.epa.gov/sites/production/files/2015-11/documents/tier3-toxicityvalue-whitepaper.pdf 2. USEPA (2004) Office of the Science Advisor Staff Paper: Q&A Risk Assessment Principles & Practices, EPA/100/B-04?001

5	10/2/2023	<ul style="list-style-type: none"> • Concepts and Practices in RARM (II): <ul style="list-style-type: none"> ○ Stress, Stressors, receptors, etc. ○ Toxicants, toxins, etc. ○ Toxicity values (quantitative values derived from toxicity assessment) ○ Acute, sub-chronic, and chronic ○ Exposure pathways and routes of exposure ○ Efficacy and potency ○ Additive or synergistic effects ○ Aggregated and cumulative exposure or risk ○ Bioaccumulation and bioconcentration ○ Biomagnification ○ Hierarchy for selecting toxicity ○ Sustainability ○ Effective communication • Human health risk assessment of non-carcinogenic effects (II) • Distributing Examples of Toxicity Assessment Homework 4 • Course project discussion 	
10/6/2023 at 11:59 PM	Homework 4 due	<ul style="list-style-type: none"> • Homework 4 due 	
6	10/9/2023	<ul style="list-style-type: none"> • Quiz 1 • Project progress reports I • Nature of scientific data, strength, and limitations • Study design and data limitations • Approach and basic assumptions in toxicity and risk assessments • Human health risk assessment of carcinogenic effects (I) • Course project discussion • Distributing Peer Review 	
	SLO	<ul style="list-style-type: none"> • Apply quantitative data in cancer toxicity assessment 	

7	10/16/2023	<ul style="list-style-type: none"> • Human health risk assessment of carcinogenic effects (II) • Benchmark Dose Methods for toxicity assessment • Course project discussion 	
	SLO	<ul style="list-style-type: none"> • Apply Weight of Classification and Scripters for carcinogenicity • Use MBDM for non-cancer and carcinogenicity assessment 	
	10/20/2023 Peer Evaluation (confidential)	<ul style="list-style-type: none"> • Peer Evaluation Due on Friday 10/20/2023 	
	Break Day		
8	10/30/2023	<ul style="list-style-type: none"> • Course project progress presentation • Hierarchy for selecting human health toxicity values Assumptions, uncertainties, and limitations in toxicity assessment • Course project discussion 	
	SLO	<ul style="list-style-type: none"> • Apply strength, tolerate limitations, and manage uncertainties in risk assessment 	
10/27/2023 at 12:59 PM	Course Project Progress report due	Course Project Progress report due, in Word file and in ppt, submitting in two different folders in D2L	
9	11/6/2023	<ul style="list-style-type: none"> • Course project progress report II • Exposure assessment (I) 	
	SLO	Identify methods and information for exposure assessment	
10	11/13/2023	<ul style="list-style-type: none"> • Quiz 2 • Exposure Assessment (II) and Aggregate Exposure (1) • Course project progress presentation IV • Course project discussion 	
11/13/2023 at 5 PM		<ul style="list-style-type: none"> • Written draft of Course Project due at 5 PM 	
11	11/20/2023	<ul style="list-style-type: none"> • Risk Characterization • Risk management <ul style="list-style-type: none"> ○ Options & Decisions 	

		<ul style="list-style-type: none"> ○ Added risk and extra risk ○ Margin of Safety ○ MCLG and MCL ○ Acceptable risk ○ Fraction assignment: when a hazardous substance is present in multiple environmental media, i.e., milk and meat, water and food, etc. ○ Method/Analytical-based risk management vs. outcome-based risk management ● Action and data collection plans ● UFs applied by European Food Safety Authority (EFSA) 	
12	11/27/2023	<ul style="list-style-type: none"> ● Environmental management systems <ul style="list-style-type: none"> ○ ISO 14000 Series ● 2:00 - 3:00 PM, Environmental Justice (Williams, Keisha (EGLE Air Quality Division)) ● Course project discussion 	
	SLO	<ul style="list-style-type: none"> ● Apply Environmental Management System in Business plans ● Setting objectives for third party certificate for commodity and profession associations ● Identify high burden subpopulations ● Identify socioeconomically vulnerable subpopulations 	
	SLO	<ul style="list-style-type: none"> ● Apply exposure factors for exposure assessment 	
		<ul style="list-style-type: none"> ● Final Course Project PPT; prepare for presentation 	
13	12/4/2023	<ul style="list-style-type: none"> ● Final Course Project Presentation ● Course Evaluation 	
	SLO	<ul style="list-style-type: none"> ● 	
		<ul style="list-style-type: none"> ● Peer evaluation due ● Final Course Project Final Written Report due 	
		<ul style="list-style-type: none"> ● Final Exam 	

I. Course Objectives:

Course Project: Each student will propose one or more course project(s), based on his/her research area or professional interests, taking into consideration instructor and classmates' input. After presenting the proposal and discussing it with the instructor and classmates, one project will be selected for each student. The individual-specific course project will emphasize at least two of the following components: (1) hazard identification, (2) qualitative and quantitative toxicity assessment, (3) exposure assessment, (4) risk characterization, (5) remedial options, (6) decision making, (7) risk management strategy, for an environmental hazard. The course project will also include identifying stakeholders and susceptible sub-populations. Each project is a group effort, and it shall result in a final written report and an oral presentation at the end of the semester, with multiple written draft reports and progress reports to be discussed with and evaluated by the instructor and other classmates throughout the semester. The course project begins immediately during the first week of the semester, runs parallel with the material delivered in lectures, and ends in the final-exam week.

Student Learning Objectives (SLO):

After completing this course, students will be able to (1) apply methods for identifying hazards, (2) conduct the basic steps in risk assessment and risk management, and (3) apply risk information for risk-based decision-making,

II. Office Hours:

By appointment only.

III. Contact Information:

Email: chouk@msu.edu (include course number in the subject line, i.e., ESP 803)

Office address: 2209E Anthony Hall

Office phone: 517/432-1392

IT Help & Support: The [MSU IT Service Desk](#) supports the learning, research, and information needs of students, including using D2L at MSU.

IV. Communications: The main communication of this course takes place during the zoom lectures, which are often supplemented with references available online. Use email (chouk@msu.edu) for out-of-lecture communications. When sending an email, include “ESP 803” in the subject line. Emails with the subject “ESP 803” will be answered in the order they are received, usually between 9-5 PM. When immediate attention is necessary, you may call instructor’s cell phone #, which will be provided to you during the first lecture of the semester.

V. Grading and Attendance Policy:

Attendance is expected and recorded. Excessive absences will be considered in the final grade. Students are responsible for informing the instructor and teammates in advance for an excused absence. For flu-like illness or illness lasting less than one week, no physician’s note is required. While excused absence does not result in penalty, there will be no make-up attendance or Lecture Feedbacks for bonus points.

Persons with contagious illness should stay away from in-person classes. Infectious diseases do not necessarily cause fever or apparent signs of symptoms in pathogen carriers. All members of this course are enraged to practice self-isolation during transmissible pathogen caused epidemics, epidemics, or pandemics. For definitions of infectious disease and occurrence, visit the U.S. CDC website: <https://www.cdc.gov/index.htm>

Grading Policy:

Students in this course will be evaluated by three criteria: (i) learning from the lecture material presented during the lectures, (ii) learning through the discussions with the instructor and classmates and (iii) impacts on the learning environment for the subject of this course. The uploaded material in the D2L course website is provided as a study guide, which does not necessarily include all the information provided in the Zoom lectures.

D2L help: <https://help.d2l.msu.edu/>

Grade points will be given at instructor’s discretion. On the average, a satisfactory answer and report with acceptable justifications will receive 80-89% of the possible full points, a complete and outstanding one may receive 90% and above, while apparent errors and lack of conceptual understanding of the subject matter may receive no points.

Late assignments will not be accepted without prior approval of the instructor. Approved late submissions can be penalized 20% of the original score per day late.

Team activities, Quizzes, and Exam:

Students will lose points if he/she fails to participate in teammate-agreed course project meetings. Unless a prior arrangement has been made in writing with the instructor, students must take the quizzes and the final exam during the scheduled time. The final exam is cumulative. Except

for emergency situations (e.g., medical reasons supported by appropriate documentation), make-up **exams or quizzes** will not be given, and zero credit will be awarded. See MSU Final Examination Policy:

“Students unable to take the final examination because of illness or other reason over which they have no control should notify the associate deans of their colleges immediately. A student absent from a final examination without a satisfactory explanation will receive a grade of 0.0.” –at <https://reg.msu.edu/ROInfo/Calendar/FinalExam.aspx>.

Make-up quizzes: If a student is unable to take an exam during the scheduled time for reasons beyond his/her control, the student may petition the instructor for an opportunity to take a make-up exam. The petition must be made before the events in question have occurred. The granting or denial of any petition is within the discretion of the instructor. The condition upon which a make-up exam is to be taken and graded, and the deadline to take the exam, including time, date, and alternative grading method and grading scale, are within the discretion of the instructor.

Behavior norms: Every student is expected to support the learning environment.

Examples of positive impacts on the learning environment:

- Initiating and participating in constructive discussions
- Respecting members from different backgrounds and cultures, with different abilities and points of view

Examples of unacceptable disruptive behavior:

- Making distracting noises or movements in the classroom or Zoom lectures
- Explicit or implicit disrespect or threats, in action, language, or writing

Grade Points:

Lecture:

Attendance (13, 2 points each) -----	26 points
Participation in Discussion (13, 2 points each) -----	26 points
Lecture feedbacks (13, 2 points each) -----	26 points
	<u>Total bonus points: 78 points</u>

Four Homework assignments (5 points each) -----	20 points
Quizzes/Final Exam (25 points each) -----	75 points
	<u>Sub-total of homework and exams: 95 points</u>

Course Project:

Two Progress presentations (Q&A, 10 points each) -----	20 points
Draft of project report -----	10 points

Final project presentation (Q&A) -----	10 points
Two peer reviews (10 points each) -----	20 points
Final written project product -----	50 points
	<u>Sub-total of course project: 110 points</u>
	<u>TOTAL Grading Points: 283 points</u>

Grading Scale:

- 85% and above = 4.0
- 80-84% = 3.5
- 75-79% = 3.0
- 65-74% = 2.5
- 55-64% = 2.0
- 45-54% = 1.5
- Less than 45% = 0

VI. Lecture Feedbacks:

Objectives of Lecture Feedbacks:

Lecture Feedback questions are designed for interactive exercise and assessment of the learning experience, to identify learning needs and adjust teaching appropriately. The objectives of immediate feedback after the lectures are:

- To provide an opportunity to review the course material and strengthen the learning experience
- To evaluate the results of teaching and individual learning experience
- To provide constructive criticism and suggestions to improve the teaching and learning experience

Contents of Lecture Feedbacks:

1. Learning outcome (A brief outline of material learned. This is not a written recording of the lecture.)
2. Self-reflection (Knowledge gained -- individual-specific. Thoughts and ideas generated, which may be a synthesis of related matters or issues beyond the lecture material.)
3. Lecture evaluation (both positive and negative aspects) and suggestions

VII. Requesting individualized services and accommodations:

Michigan State University is committed to providing equal opportunity for participation in all programs, services, and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or on the web at rcpd.msu.edu. Once your eligibility for an accommodation has been determined, you will be issued a verified individual services accommodation (“VISA”) form. Please present this form to the instructor at the start of the term or two weeks prior to the accommodation date (test, project, etc.). Requests received after this date may be honored when possible.

VIII. Requesting grief absence:

Students seeking a grief absence are directed to the Grief Absence Request Form found on the RO home page (<https://reg.msu.edu/>) under 'Student Services - Grief Absence Request Form' OR go to StuInfo (<https://stuinfo.msu.edu/>) under 'Academics - Enrollment Information and Services - Grief Absence Request Form.'

IX. Academic Intellectual Property:

As members of a learning community, students are expected to respect the intellectual property of course instructors. All course materials presented to students are the copyrighted property of the course instructor and are subject to the following conditions of use: 1) students may record lectures and use the recordings only for their own course-related purposes; 2) students may share the recordings only with other students enrolled in the class (sharing is limited to using the recordings only for their own course-related purposes); 3) students may not post the recordings or other course materials online, including quiz, exam and bonus questions, or distribute them to anyone not enrolled in the class without the advance written permission of the course instructor and, if applicable, any students whose voice or image is included in the recordings; 4) any student violating the conditions described above may face academic disciplinary sanctions.

X. Limits to confidentiality:

Essays, journals, and other materials submitted for this class are generally considered confidential pursuant to the University's student record policies. However, students should be aware that University employees, including instructors, may not be able to maintain confidentiality when it conflicts with their responsibility to report certain issues to protect the health and safety of MSU community members and others. As the instructor, I must report the following information to other University offices (including the Department of Police and Public Safety) if you share it with me:

- Suspected child abuse/neglect, even if this maltreatment happened when you were a child;
- Allegations of sexual assault, relationship violence, stalking, or sexual harassment; and
- Credible threats of harm to oneself or to others.

These reports may trigger contact from a campus official who will want to talk with you about the incident that you have shared. In almost all cases, it will be your decision whether you wish to speak with that individual. If you would like to talk about these events in a more confidential setting, you are encouraged to make an appointment with the MSU Counseling and Psychiatric Services.

XI. Mandatory Reporting:

Michigan State University is committed to fostering a culture of care and respect that is free of relationship violence and sexual misconduct, and to ensure that all affected individuals have access to services. For information on reporting options, confidential advocacy and support resources, university policies and procedures, or how to make a difference on campus, visit the Title IX website at titleix.msu.edu.

XII. Domestic Violence, Sexual Assault and Stalking Resources:

See MSU website: <http://www.msuapa.org/wp-content/uploads/2018/02/Area-Resources-Campus-focus-1.pdf>

XIII. Spartan Code of Honor:

“As a Spartan, I will strive to uphold values of the highest ethical standard. I will practice honesty in my work, foster honesty in my peers, and take pride in knowing that honor is worth more than grades. I will carry these values beyond my time as a student at Michigan State University, continuing the endeavor to build personal integrity in all that I do.”