Rocky Mountain Center for
Occupational & Environmental Health
391 Chipeta Way, Suite C
Salt Lake City, UT 84108

Quantitative Exposure Assessment
OEHS 6730

Tues/Thurs • 1:00-2:15pm
RMCOEH Classroom
https://utah.instructure.com/courses/600737

Instructor(s): Darrah K. Sleeth, PhD, MPH, CIH
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Office Hours: By Appt.
Office Location: 391 Chipeta Way, Suite C

Course Description
The course will provide instruction in exposure assessment methods, especially the evaluation of exposure data. The course focuses on the principles of exposure science for both occupational and environmental settings.

Credit Hours: 3

Course Objectives
By the end of this course, you will be able to:
- Apply different exposure assessment strategies to given situations
- Analyze exposure assessment data for a given scenario
- Understand exposure distributions, variability and uncertainty
- Compare exposure data to relevant metrics
- Understand exposure assessment in the context of exposure control and risk assessment

Required Text or Materials
Quantitative Exposure Assessment, 2008, Stephen M. Rappaport and Lawrence L. Kupper

Additional Resources
- *A Strategy for Assessing and Managing Occupational Exposures*, 2006, AIHA
- *Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs)*, 2016, ACGIH;
- *Exposure Assessment Guidelines*, 1992, EPA

Teaching and Learning Methods
This course will be taught using in-class lectures, discussion, and analysis of case studies.

Course Schedule

Week	Date	Topic	Primary Readings*
1	1-7	Introduction/Overview	Chapter 1 of "Exposure Science for the 21st Century"
	1-9	Qualitative Exposure Assessment	LeBouf et al (2019) article
2	1-14	Exposure Modeling	"Modeling Inhalation Exposure"
	1-16	Exposure Modeling	Arnold et al (2017) article
3	1-21	*CASE STUDY #1*	
	1-23	Sampling Strategies	Chapter 3 (Rappaport & Kupper)
4	1-28	Inhalation Exposure	
	1-30	*CASE STUDY #2*	
5	2-4	Ingestion Exposure Dermal Exposure	Tibaldi et al (2014)
	2-6	*CASE STUDY #3*	
6	2-11	Exposure Distributions	Chapter 4 (Rappaport & Kupper)
	2-13	Exposure Variability	Chapter 5 (Rappaport & Kupper)
7	2-18	Exposure Uncertainty	Chapter 10 (Rappaport & Kupper)
	2-20	*CASE STUDY #4*	
8	2-25	Common Analysis of Exposure Data	
	2-27	*CASE STUDY #5*	
9	3-3	Real-Time Exposure Data	
	3-5	**MIDTERM EXAM**	
SPRING BREAK – NO CLASS			
10	3-17	*CASE STUDY #6*	
	3-19	Comparison to Exposure Metrics	Chapters 2 & 8 (Rappaport & Kupper); Rappaport Article
11	3-24	*CASE STUDY #7*	
	3-26	Biological Exposure Indices	BEI Chapter of TLV booklet; Chapter 12 (Rappaport & Kupper)
12	3-31	*CASE STUDY #8*	
	4-2	Exposure Assessment for Control	Chapter 9 (Rappaport & Kupper)
13	4-7	*CASE STUDY #9*	
	4-9	Exposure Assessment for Risk Assessment	Libby Asbestos Risk Assessment
14	4-14	*CASE STUDY #10*	
	4-16	**Final Project Presentations**	
15	**4-21**	**Final Project Presentations**	
	4-27	**FINAL EXAM (1:00 PM)**	

*Additional readings may be posted on Canvas as needed.
+ Instructor TBD

Grading

Grades will be assigned according to the following weighting:

Case Studies	25%
Midterm Exam	25%
Final Exam	25%
Project Presentation	25%

Late Policy

Case study assignments can generally be completed during scheduled class time. If students need to finish work after class, they have 1 week after that case study class period to turn in the assignment for full credit. Assignments turned in more than 1 week after the case study class period will be deducted 1 point for each week it is late.

Determination of Grades

A	93-100%
A-	90-92.9%
B+	87-89.9%
B	83-86.9%
B-	80-82.9%

Course Policies

Attendance: Students are expected to come to class and participate. There will be 10 case study class periods where assignments will be worked on with the instructor present. It is highly recommended that these class periods are not missed, but if a student is absent, they have 1 week to turn in the completed assignment for full credit (see Late Policy).

Materials in Class: For case study class periods please be prepared with a laptop computer capable of operating Microsoft Excel.

Canvas: All course materials (syllabus, lectures, assignments, datasets, notifications and other information) will be provided on the course website. Please ensure that you are able to access this site. It is recommended that you enable important information be forwarded to an email address that you regularly check. The following Canvas Support page may be helpful as you utilize that system: http://guides.instructure.com

Assignments

Tasks/Projects	Due Dates	Points
Case Study #1: Exposure Modeling	1-30	10
Case Study #2: Inhalation Exposure	2-6	10
Case Study #3: Ingestion/Dermal Exposure	2-13	10
Case Study #4: Exposure Distributions/Variability/Uncertainty	2-27	10
Case Study #5: Analysis of Exposure Data	3-5	10
Midterm	3-5	100
Case Study #6: Real Time Exposure Data	3-24	10
Case Study #7: Exposure Metrics	3-31	10
Case Study #8: Biological Exposure Indices	4-7	10
Case Study #9: Exposure Assessment for Control	4-14	10
Case Study #10: Risk Assessment	4-21	10
Project Presentation	4-21	100
Final Exam	4-27	100

University Policies

ADA Statement
The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, (801) 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.

University Safety Statement. The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit https://safeu.utah.edu/

Addressing Sexual Misconduct. Title IX makes it clear that violence and harassment based on sex and gender (which Includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135

Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

Wellness Statement. Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural difference, etc. can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at www.wellness.utah.edu or 801-581-7776.

For Drop/Withdrawal dates and any other helpful University related information, please contact your Academic Advisor.

Please Note: This syllabus is meant to serve as an outline and guide for this course. As your instructor I may modify it with reasonable notice to you. I may also modify the course schedule to accommodate the needs of our class. Any changes will be announced in class and or posted on Canvas under Announcements.