

Syllabus
Environmental Monitoring and Analysis
Fall 2017

Time: Tuesday 9:00-11:00 and Thursday 9:00-Noon

Location: Class Location: Drachman Hall, Room A122
Lab Location: MRB 130
BRL Room B-111/F-108

Instructor: Jonathan Sexton, PhD
MEZCOPH/CEP - EHS

Office: MRB 113

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Office Hours: By appointment – communication by email is best.

Teaching Assistant: Daniel Troup

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TA Office Hours: By appointment- communication by email is best.

Catalog Description: Environmental Monitoring and Analysis

Course Description: Introduction to multi-media sampling techniques and analytical methods for evaluation outdoor/indoor air, soil/surfaces, and water. The course will cover environmental science and industrial hygiene approaches for anticipating, recognizing, evaluating, and controlling hazards, with the primary focus on recognition and evaluation of contaminants, including data interpretation for risk reduction and regulatory compliance. The course will also emphasize environmental investigative techniques, instrument selection, and quality control, including documentation, calibration, and sample management.

Course Prerequisites: CPH 584 concurrently, or permission of the instructor.

Course Learning Objectives: Monitoring is critical to the assessment of environmental hazards, whether those environments are outdoors, indoors, at work, or at home. Standard sampling and analytical techniques have been developed to assess contaminant levels for a variety of media, including water, air, and living systems (bio-markers and microbiology). While techniques for sampling are, in general, fairly standard, new analytical methods are also developed when existing methods are insufficient to quantify contaminant levels. This course will provide an introduction to multi-media sampling techniques and analytical methods for evaluation outdoor/indoor air, soil/surfaces, and water.

MPH/Section Competencies Covered: Analytical skills, including defining a problem, determining appropriate uses and limitations of data, selecting and defining variables relevant to the problem, evaluating the integrity and comparability of data, and identifying gaps, understanding how data illuminates ethical, political, scientific, economic, and overall public health issues, understanding basic research designs, and making relevant inferences from data; communication skills, communicating effectively both in writing and orally, interpreting and presenting accurately and effectively scientific information, soliciting input from stakeholders, leading and participating in groups, and using multi-media methods to communicate; policy and development, identifying public health laws, regulations, and policies, developing mechanisms to monitor and evaluate programs; cultural skills interacting competently, respectfully, and professionally with persons from diverse backgrounds, developing and adapting approaches to public health problems that consider cultural differences; basic public health science skills, defining, assessing, and understanding the health status of population and determinants of health and illness, and understanding EOH research methods; financial planning and management skills, developing strategies for determining priorities, and monitoring programs.

Class Materials: All materials will be provided on the D2L site at www.d2l.arizona.edu. You are required to be prepared and participate fully in all classes and labs. Assignments should be read prior to respective lecture and lab times. Pre-lab preparations should include practicing the posted calculations and reviewing lab procedures, otherwise it is very unlikely that you will complete the laboratory activities in the time allotted.

Recommended Texts/Readings: No text book is required. All required materials will be made available on D2L. However, the following books are recommended, depending on your discipline and career goals:

- Occupational Health and Air Pollution – “Air sampling instruments for evaluation of atmospheric contaminants” (ISBN-13:978-1 88241 7087) Amazon \$120.
- Water Quality – “Standard Methods for the Examination of Water and Wastewater” 21st Ed. 2005 APHA, AWA, WE \$185 (purchase through instructor to get discount).
- Microbiology – “Manual of Environmental Microbiology” 3rd Ed. Hurst 2007, \$160.

Class Attendance/Participation: When in class, you are expected to participate fully. You are expected to submit assignments on time. Late assignments will be deducted 10% per day. After 3 days late assignments will no longer be accepted. All assignments are due at the beginning of class. If you are unable to attend a lecture it is your responsibility to get notes from a fellow student. All labs must be attended as no make-up labs will be given.

All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion. Absences pre-approved by the UA Dean of Students (or Dean’s designee will also be honored.)

Lab Safety: For your safety and the safety of those around you, you will be expected to follow the general lab rules. For all labs closed toe shoes must be worn. If you show up in sandals you will be asked to leave and return with the appropriate shoes. No food or drink will be allowed in the lab areas. There will be designated areas where your food and drink can be stored for the

class period. We will be working in active labs for many of the labs so be mindful of things going on around you. Some of the labs will be held outside so dress appropriately for the weather and be sure to bring water on these days.

Grading/Student Evaluation: Student evaluations will be made based on accumulation of points as follows:

Assignment	Points
Pre Labs (9)	90
Post Labs (9)	180
Results Presentation	25
Debates (2)	50
Final Project	150
Final Exam	100
Total	595

Grades	Points
A	≥ 535.5
B	476
C	416.5
D	357
E	< 356

Tentative Course Schedule: CPH 502

Date	Location	Instructor	Topic	Prelabs Due	Postlabs Due	Presentations
22-Aug	Drachman A122	Sexton	Introduction			
24-Aug	MRB 130	Sexton	Calibration: Air and Water	Prelab 1		
29-Aug	Drachman A122	Sexton	Indoor Air Quality			
31-Aug	BRL F-108	Sexton	Lab: Indoor Air Quality	Prelab 2		
5-Sep	Drachman A122	TBA	Statistical Considerations		Postlab 1	
7-Sep	Drachman A122	Troup	Air: Particulates/Indoor Mold			
12-Sep	Drachman A122	TBA	Air: Gas and Vapor			
14-Sep	MRB 130	Sexton	Lab: Air Gas/Vapor/Particulates	Prelab 3		Mold Debate
19-Sep	Drachman A122	Sexton	Water Chemical			
21-Sep	MRB 130	Sexton	Lab: Water Chemical	Prelab 4		Results 2
26-Sep	Drachman A122	Sexton	Soil		Postlab 2	Results 3 (2x)
28-Sep	MRB 130	Sexton	Lab: soil	Prelab 5	Postlab 3	Results 4
3-Oct	Drachman A122	Sexton	Methods of Detection/Fomites		Postlab 4	
5-Oct	MRB 130	Sexton	Lab: Fomites & PCR	Prelab 6		Results 5
10-Oct	Drachman A122	Littau	Biomarkers		Postlab 5	
12-Oct	MRB 130	Sexton	Lab: Biomarkers, PCR and Fomites	Prelab 7		Results 6
17-Oct	Drachman A122	Sexton	Anticipate/Recognize		Postlab 6	
19-Oct	MRB 130	Sexton	Equipment Stations			Results 7 (2x)
24-Oct	Drachman A122	Sexton	Evaluate/Controls		Postlab 7	
26-Oct	ALEC	Abreil	Lab: Soil			
31-Oct	Drachman A122	Sexton	Water Biological			
2-Nov	MRB 130	Sexton	Lab: Water Biological	Prelab 8		
7-Nov	MRB 130	Sexton	Lab: Water Biological			
9-Nov	WEST	Pearce-Walker	WEST Center Tour			
14-Nov	Drachman A122	Reiss	Air: Real Time			
16-Nov	MRB 130	Sexton	Lab: Air Real Time	Prelab 9		Results 8
21-Nov	MRB 130	Sexton	Equipment Stations		Postlab 8	Water Debate
23-Nov	No Class		No Class			
28-Nov	SX Mine	TBA	SX Mine Tour			
30-Nov	Drachman A122	TBA	IH		Postlab 9	
5-Dec	MRB 130	Sexton	Final Report/SOP			
12-Dec	MRB 130	Sexton	Final Exam			

Required Statements:

Communications: You are responsible for reading emails sent to your UA account from your instructor and the announcements that are placed on the course web site. Information about readings, news events, your grades, assignments and other course related topics will be communicated to you with these electronic methods. The official policy can be found at:

<https://www.registrar.arizona.edu/personal-information/official-student-email-policy-use-email-official-correspondence-students>

Disability Accommodations:

It is the University's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately, so that we can discuss options. You are also welcome to contact the Disability Resources (520-621-3268) to establish reasonable accommodations (as it is very important that you be registered with the DRC). For additional information on Disability Resources and reasonable accommodations, please visit <http://drc.arizona.edu/students>

Code of Academic Integrity

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercise must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity, available through the office of the UA Dean Students: <http://deanofstudents.arizona.edu/policies-and-codes/code-academic-integrity>

Plagiarism: What counts as plagiarism?

- Copying and pasting information from a web site or another source, and then revising it so that it sounds like your original idea.
- Doing an assignment/essay/take home test with a friend and then handing in separate assignments that contain the same ideas, language, phrases, etc.
- Quoting a passage without quotation marks or citations, so that it looks like your own.
- Paraphrasing a passage without citing it, so that it looks like your own.
- Hiring another person to do your work for you, or purchasing a paper through any of the on- or off-line sources.

Classroom Behavior: (Statement of expected behavior and respectful exchange of ideas:

Present policies to foster a positive learning environment, including use of cell phones, mobile devices, etc.).

Students are expected to be familiar with the UA Policy on Disruptive Student Behavior in an Instructional Setting found at: <http://policy.arizona.edu/education-and-student-affairs/disruptive-behavior-instructional-setting>

Threatening Behavior Policy: The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to one's self, <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>

Nondiscrimination and Anti-harassment Policy:

The University of Arizona is committed to creating and maintaining an environment free of discrimination, <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

UA Smoking and Tobacco Policy:

The purpose of this Policy is to establish the University of Arizona's (University) commitment to protect the health of University faculty, staff, students, and visitors on its campuses and in its vehicles, <http://policy.arizona.edu/ethics-and-conduct/smoking-and-tobacco-policy>

Syllabus Changes: Information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.
