

**Environmental Toxicology
Fall**

Instructor: Lawrence K. Duffy, 246 WRRB, lkduffy@alaska.edu, 474-7525

Office Hours: Tuesday and Thursday following lectures. However students are encouraged to contact the instructor by phone or email at any time

Lecture: Tuesdays and Thursdays, 11:30 am – 1:00 pm.

Textbook: Fundamentals of Ecotoxicology 4th Edition (ISBN 978-14-666-58-2293) by Michael C Newman, CRC Press, Taylor and Francis Group. No supplementary reading required for purchase. Primary literature will be provided by instructor.

Course Description: This 3 credit course will discuss the basic components of environmental and ecotoxicology, and explores exposure of toxic chemicals to animals and plants and their impact on health and the ecosystem, using a One Health model. Environmental Toxicology will focus on the general properties and principles of persistent and/or toxic chemicals commonly encountered in air, water, fish and wildlife. Numerous natural and synthetic chemicals in the environment will be discussed from a global perspective with some bias towards arctic and subarctic regions. This toxicology course combines aspects of environmental science, vertebrate biochemistry and physiology and environmental chemistry in a manner to understand how systems are impacted and function.

Student Learning Outcomes:

- increase understanding of biochemistry with respect to environmental contaminants
- increase understanding of the chemical-biotic interactions
- gain an understanding of how biota alters the structure and dynamics of contaminants in the diverse ecosystems of the North

Course Goals:

This course will provide the basic foundations for Environmental Toxicology
The class will focus on specific aspects of Environmental Toxicology that interest the student
Develop an appreciation of the complex system of contaminant interactions in high latitude systems

Instructional Methods:

The teaching methods employed in this course will consist of lectures and “chalk talk” by the instructor. It is absolutely crucial that reading (see schedule) of sections is done in advance. Student essays and presentations on specific topics will also be used.

Grading:

Exams: There will be four term exams (50 points each); one for each major section of the course.
Oral class participation in the form of discussions will be included in the final grade (100 points). This entails an active involvement into the regular lecture materials discussed. **Quiz/Class participation** (100 points).

Four examinations that will focus on the three major sections

Each exam is 50 points (4*50 points = 200 points for exams) and will be multiple choice, true or false, and/or short essay format.

Orals:

The oral presentations (O, 15 minutes each = 10 points to present + 5 minutes for questions) will count as 100 or 200 points each. Each student will have 2 O assignments (mandated by the university for full O and full W). Topics must be presented to the instructor for approval. During oral presentations we will have the entire class present and invite other students and faculty with the expectation to have > than 12 members in the audience (minimum of 5). Part of the grade for students will be participation during the Q and A session; they must be engaged for credit. Presentations must have a clear "introduction-body-conclusion" organization, appropriate to Environmental Toxicology and all will include visual aids. All presentations will receive evaluation by the instructor on oral communication including responsiveness to audience questions and subject mastery.

Course Policies

Attendance: Regular student attendance is expected to ensure consistent group activities and discussions.

Exams: 4 exams will be given. These exams will be a combination of multiple choice/short answer and essay questions (take home or in class). Makeup exams will only be allowed with pre-approval of the instructor or with an acceptable, documented reason such as unexpected illness, family emergencies or other unavoidable events.

Participation: Class participation entails an active interest aside from paper discussion/presentations. This includes but is not limited to answering questions during lectures, asking for clarifications, or contributing to ad hoc discussions.

Ethical Considerations: The Chemistry "Department Policy on Cheating" is as follows: *"Any student caught cheating will be assigned a course grade of F. The student's academic advisor will be notified of this failing grade and the student will not be allowed to drop the course."*

Plagiarism Policy

Plagiarism is defined as the use of "other" intellectual property without proper reference to the original author. Intellectual property includes all electronic (Internet), spoken or print media. Students are expected to cite all sources used in oral and written presentations. Cases of plagiarism will be taken seriously with a grade 0 for the particular assignment. Severe cases may be referred to the Department Chair or Dean or class failing considered.

Support Services

Support services will be provided by the University of Alaska Library system, online resources and the instructor. Additional services are available through Student Support Services (<http://www.uaf.edu/sssp/>) at UAF.

Disabilities Services

Students with a physical or learning disability are required to identify themselves to Mary Matthews in the Office of Disabilities Services (203 WHIT, 474-7043) located in the Center for Health and Counseling in order to receive special accommodations. The student must provide documentation of the disability. Disability Services will then notify me of special arrangements for taking tests, working homework assignments, and doing lab work.

NOTES ON SYLLABUS AND UNIVERSITY POLICIES

1. UAF is an AA/EO employer and educational institution and prohibits illegal discrimination against any individual.

2. This course follows the UAF policy Incomplete Grade Policy.

The letter " I " is a temporary grade used to indicate that the student has satisfactorily completed (C or better) the majority of the courses work, but for personal reasons beyond the student's control has not been to complete the course during the regular semester.

Negligence or indifference are not acceptable reasons for an " I " grade

3. UAF " C " grade policy.

" C- " grade is not the same as a C for this course.

4. Speaking Center is available (907-474-5470)

5. Writing Center is available (907-474 -5314)

6. Developmental MATH lab is available in the Gruening BLDG.

7. UAF has information and resources on the ACADEMIC ADVISING RESOURCES LIST.

8. EMERGENCY NOTIFICATION PLAN. (see student handbook)

a. in class by instructor as a relay

b. via phone and email

9. Extended Absence Policy (see Student Handbook)

a. Personal illness or injury

b. bereavement

c. military obligations

d. Jury service

e. Serious illness of family or friend

f. other emergencies

8. Technical Requirements

a. Access to textbook

b. Access to internet

c. access to a computer

d. access to a phone

Students need a computer for online course material and the ability to upload or download material.

COURSE OUTLINE

LECTURE	CHAPTER	TOPIC
1	1	SYLLABUS
2	1.1	HISTORY OF ECOTOXICITY
3	1.2	CURRENT PRACTICE
4	1.3/1.4	PRECAUTIONARY PRINCIPLE
5	2.1/2.2	TYPES OF CONTAMINANTS
6		" " "
7	3	UPTAKE
8	3	METALS/METALLOIDS
9	3	BIOTRANSFORMATION
10	3	ELIMINATION
11	3	ACCUMULATION
EXAM 1	CHAPTERS 1&2	
12	4	BIOAVAILABILITY
13	4	CHEMICAL INFLUENCES
14	4	BIOLOGICAL INFLUENCES
15	4	" "
16	4	OTHER FACTORS
17	5	ASSIMILATION FROM FOOD
18	5	TROPIC TRANSFER
EXAM 2	CHAPTERS 3, 4 & 5	
19	6	MOLECULAR EFFECTS
20	6	PHASE 1
21	6	PHASE 2
22	6	BIOMARKERS
23	6	ENZYME DYSFUNCTION
24	7	NECROSIS/APOPTOSIS
25	7	INFLAMMATION
EXAM 3	CHAPTERS 6&7	
26	8	SUBLETHAL EFFECTS
27	8	SELYEAN STRESS
28	11	EFFECTS ON COMMUNITIES
29	12	LANDSCAPES
30	13	RISK ASSESSMENT
EXAM 4 (FINAL)	CHAPTERS 8,11&12	

UAF POLICIES.

HONOR CODE: Students are expected to read, understand and adhere to the UAF academic honor code as detailed in the UAF Catalog.

DISABILITIES: The instructor will work with the Office of Disabilities Services (ODS) to provide reasonable accommodation to students with disabilities. Students with a physical or learning disability need to identify themselves to ODS in order to request special accommodations. Documentation needs to be provided by the student to ODS, which will notify the instructor of special requirements required for completing the course.

CHEATING: ANY STUDENT CAUGHT CHEATING WILL BE ASSIGNED A GRADE OF "F". The student's academic advisor will be notified of the failing grade.

COVID-19 POLICY: Students should keep up-to-date on the University's policies, practices and mandates related to COVID-19 by regularly checking this UAF website:

<https://sites.google.com/alaska.edu/coronavirus/uaf/uaf-students?authuser=0>

Students are expected to adhere to the university's policies, practices and mandates. Students are subject to disciplinary actions if they do not comply.

STUDENT PROTECTIONS POLICY: UAF EMBRACES A CULTURE OF RESPECT, DIVERSITY, INCLUSION AND CARING.

Students at UAF are protected against sexual harassment and discrimination (Title IX). Faculty members are designated as responsible employees which means they are required to report sexual misconduct. Graduate teaching assistants do NOT share the same reporting obligations. As a student, UAF provides resources available to you.

For more information on your rights go to the following site:

<https://catalog.uaf.edu/academics-regulations/students-rights-responsibilities/>.

ATTENDANCE POLICY:

You are responsible for conferring with your instructor concerning absences and the possibility of arranging to make up missed work.

If you are required to participate in (a) military, (b) UAF-sponsored activity or (c) health or family emergency notify your instructor as soon as possible of your absence.

Your instructor will make a good faith effort to make suitable arrangements to help you make up classes. You will not be penalized for excused absences. You will have the potential to withdraw from the course without academic penalty depending on the situation and timing.

Your instructor is under no obligation to allow you to make up missed work for unexcused absences. Students are encouraged to read the UAF catalog for policy details and procedures.

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