

Submit originals (including syllabus) and one copy and electronic copy to the **Faculty Senate Office**  
 See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/> for a complete description of the rules governing curriculum & course changes.

**CHANGE COURSE (MAJOR) and DROP COURSE PROPOSAL**  
 Attach a syllabus, except if dropping a course.

**SUBMITTED BY:**

Department	Veterinary Medicine <i>Biology</i>	College/School	CNSM
Prepared by	O'Hara	Phone	474 1838
Email Contact	tmohara@alaska.edu	Faculty Contact	O'Hara

**1. COURSE IDENTIFICATION: As the course now exists.**

Dept	See below	Course #	See below	No. of Credits	3
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**COURSE TITLE**

**Environmental Toxicology CHEM 455/655, BIOL 455/656**

**2. ACTION DESIRED:  Check the changes to be made to the existing course.**

Change Course	<input checked="" type="checkbox"/>	If Change, indicate below what is changing.	Drop Course	<input type="checkbox"/>
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NUMBER	<input type="checkbox"/> NA	TITLE	<input type="checkbox"/> NA	DESCRIPTION	Keep O, remove W
PREREQUISITES*	<input type="checkbox"/>	FREQUENCY OF OFFERING	<input type="checkbox"/> NA		

\*Prerequisites will be required before a student is allowed to enroll in the course.

CREDITS (including credit distribution)	<input type="checkbox"/> No change	COURSE CLASSIFICATION	Keep O, remove W
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ADD A STACKED LEVEL (400/600) Include syllabi.	<input type="checkbox"/> No change	Dept.	<input type="checkbox"/> No change	Course #	<input type="checkbox"/> No change
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How will the two course levels differ from each other? How will each be taught at the appropriate level?:  No change

Stacked course applications are reviewed by the (Undergraduate) Curricular Review Committee and by the Graduate Academic and Advising Committee. Creating two different syllabi—undergraduate and graduate versions—will help emphasize the different qualities of what are supposed to be two different courses. The committees will determine: 1) whether the two versions are sufficiently different (i.e. is there undergraduate and graduate level content being offered); 2) are undergraduates being overtaxed?; 3) are graduate students being undertaxed? In this context, the committees are looking out for the interests of the students taking the course. Typically, if either committee has qualms, they both do. More info online - see URL at top of this page.

ADD NEW CROSS-LISTING	<input type="checkbox"/> No change	Dept. & No.	<input type="checkbox"/> No change	Requires approval of both departments and deans involved. Add lines at end of form for additional signatures.
STOP EXISTING CROSS-LISTING	<input type="checkbox"/> No change	Dept. & No.	<input type="checkbox"/> No change	Requires notification of other department(s) and mutual agreement. Attach copy of email or memo.
OTHER (specify)	<input type="checkbox"/> No change			

**3. COURSE FORMAT**

NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council and the appropriate Faculty Senate curriculum committee. Furthermore, any core course compressed to less than six weeks must be approved by the Core Review Committee.

COURSE FORMAT: (check all that apply)  1  2  3  4  5  6 weeks to full semester

OTHER FORMAT (specify all that apply)  Keep O, remove W

Mode of delivery (specify lecture, field trips, labs, etc.)  Keep O, remove W

**RECEIVED**

**DEC 17 2015**

**Dean's Office  
College of Natural Science & Mathematics**

**RECEIVED**

**NOV 12 2015**

**Dean's Office  
College of Natural Science & Mathematics**

Governance  
12/18/15 M6

4. **COURSE CLASSIFICATIONS:** (undergraduate courses only. Use approved criteria found in Chapter 12 of the curriculum manual. If justification is needed, attach separate sheet.)

H = Humanities

S = Social Sciences

Will this course be used to fulfill a requirement for the baccalaureate core?

YES

NO

x

IF YES\*, check which core requirements it could be used to fulfill:

O = Oral Intensive,  
\*Format 6 also submitted

W = Writing Intensive,  
\*Format 7 submitted

No longer

X =   
Baccalaureate  
Core

- 4.A *Is course content related to northern, arctic or circumpolar studies? If yes, a "snowflake" symbol will be added in the printed Catalog, and flagged in Banner.*

YES  NO  X

5. **COURSE REPEATABILITY:**

Is this course repeatable for credit?

YES

NO

x

Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).

How many times may the course be repeated for credit?

TIMES

If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course?

CREDITS

6. **COMPLETE CATALOG DESCRIPTION** including dept., number, title, credits, credit distribution, cross-listings and/or stacking, clearly showing the changes you want made. (Underline new wording strike-through-old wording and use complete catalog format including dept., number, title, credits and cross-listed and stacked.)

Example of a complete description:

PS F450 Comparative Aboriginal Indigenous Rights and Policies (s)

3 Credits

Offered As Demand Warrants

Case-study Comparative approach in ~~assessing~~ analyzing Indigenous rights and policies in different nation-state systems. ~~Seven Aboriginal situations~~ Multiple countries and specific policy developments examined for factors promoting or limiting self-determination. Prerequisites: Upper division standing or permission of instructor. (Cross-listed with ANS F450.) (3+0)

**BIOL F455 W,O Environmental Toxicology**

3 Credits

Offered Fall Even-numbered Years

Environmental toxicology will focus on the general properties and principles of persistent and/or poisonous (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. Special fees apply. Prerequisites: CHEM F451; BIOL F303; or one semester each of organic chemistry and cell or molecular biology; or permission of instructor; ENGL F111X; ENGL F211X or F213X; COMM F131X or COMM F141X. Cross-listed with CHEM F455. (3+0)

7. **COMPLETE CATALOG DESCRIPTION AS IT SHOULD APPEAR AFTER ALL CHANGES ARE MADE:**

**BIOL F455 W,O Environmental Toxicology**

3 Credits

Offered Fall Even-numbered Years

Environmental toxicology will focus on the general properties and principles of persistent and/or poisonous (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. Special fees apply. Prerequisites: CHEM F451; BIOL F303; or one semester each of organic chemistry and cell or molecular biology; or permission of instructor; ENGL F111X; ENGL F211X or F213X; COMM F131X or COMM F141X. Cross-listed with CHEM F455. (3+0)

8. GRADING SYSTEM: Specify only one.

LETTER:

PASS/FAIL:

9. ESTIMATED IMPACT

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

None.

10. LIBRARY COLLECTIONS

Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No  Yes

11. IMPACTS ON PROGRAMS/DEPTS:

What programs/departments will be affected by this proposed action? Include information on the Programs/Departments contacted (e.g., email, memo)

Both Chemistry and Biochemistry and Wildlife and Biology will lose a course offering the W (written) option. However, if students are withdrawing from the course then they are not getting this benefit anyway.

12. POSITIVE AND NEGATIVE IMPACTS

Please specify positive and negative impacts on other courses, programs and departments resulting from the proposed action.

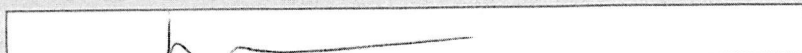
Students will remain in a class that offers the O (oral) requirement and an upper level biomedical course for pre-med and pre-vet; and retains one of the required courses for the Environmental Chemistry graduate program. The only negative impact is the loss of a W course.

13. JUSTIFICATION FOR ACTION REQUESTED

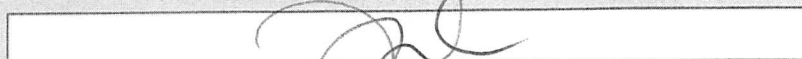
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. If you ask for a change in # of credits, explain why; are you increasing the amount of material covered in the class? If you drop a prerequisite, is it because the material is covered elsewhere? If course is changing to stacked (400/600), explain higher level of effort and performance required on part of students earning graduate credit. Use as much space as needed to fully justify the proposed change and explain what has been done to ensure that the quality of the course is not compromised as a result.

The workload associated with having both O and W combined with a cross listed and stacked course has become a burden on students causing them to drop the course or take a withdraw (W) on their transcripts. This year, I needed to do a faculty initiated W (student was getting 0s on multiple assignments). Based on student feedback and some comments from colleagues it appears this intensive subject matter (toxicology) would best be served by an O or W. I have selected the O. The O and W efforts are not requirements for the graduate students (about 50% of the class) so are not needed for that cohort. **I can no longer justify the W requirement for this course** and need to reduce the number of students withdrawing because of the workload (O+W). Students do lose the benefit of a combined O/W course but this seems to be only a minority that may need that. This change does not impact Environmental Chemistry students using this course as one of their degree requirements.


**APPROVALS:** (Forms with missing signatures will be returned. Additional signature blocks may be added as necessary.)

 Date 11/5/2014

Signature, Chair, Program/Department of: Biology + Wildlife

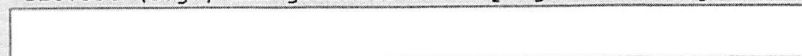
 Date 12-16-15

Signature, Chair, College/School Curriculum Council for: CNSM

 Date 12/17/15


Signature, Dean, College/School of:

Offerings above the level of approved programs must be approved in advance by the Provost (e.g., non-graduate level program offering of a 600-level course):

 Date

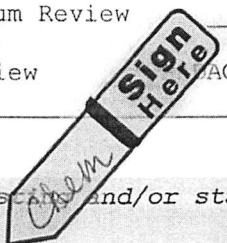
Signature of Provost (if applicable)

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE.

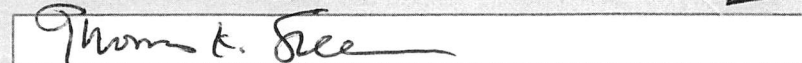
 Date

Signature, Chair Faculty Senate Review Committee:  Curriculum Review  GAAC

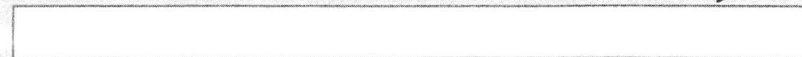
Core Review  AC




**ADDITIONAL SIGNATURES:** (As needed for cross-listing and/or stacking; add more blocks as necessary.)

 Date 11-12-15

Signature, Chair, Program/Department of: Chemistry + Biochem

 Date

Signature, Chair, College/School Curriculum Council for:

 Date

Signature, Dean, College/School of:

Note: If removing a cross-listing, you may attach copy of email or memo to indicate mutual agreement of this action by the affected department(s).

If degree programs are affected, a Format 5 program change form must also be submitted.

**Environmental Toxicology, 3 credit hours (lecture only)**  
**Fall 2016 (alternating years)**  
**Dates/time, location TBD**

Revision to remove W from course. Submitted for approval.

**CHEM 455/655, BIOL F 455 and BIOL F 656\***

\*note difference in number for graduate level course for BIOL F.

**BIOL F455 CRN: TBD & F656 CRN: TBD. CHEM F655 CRN: TBD & 455 CRN: TBD**

Prerequisites: CHEM F451; or BIOL F303; or one semester each of organic chemistry and cell or molecular biology; or permission of instructor.

Instructor: Todd O'Hara. [tmohara@alaska.edu](mailto:tmohara@alaska.edu). 907 474 1838.

Office: Arctic Health Research Building (AHRB) 184; **Office Hours TBD.**

Reading required (required text): *Fundamentals of Ecotoxicology* (3<sup>rd</sup> Edition, ISBN: 978-1-4200-6704-0) by Michael C. Newman, CRC Press, Taylor and Francis Group; 541 pages. No Supplementary reading required for purchase, primary literature will be provided by instructor (electronic files).

Course Description:

*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 is **not** a course in environmental chemistry.

Numerous graduate students study environmental contaminants across many Departments and require a basic course to better understand the principles that underlie their research and for the more specialized courses they may take. This **toxicology** course combines aspects of environmental science, vertebrate physiology and environmental chemistry in a manner to understand how systems are **impacted and function**.

Student Learning Outcomes:

Biology students will have a better understanding of chemistry with respect to environmental contaminants that helps them better assess biotic interactions with chemical components.

Chemistry students will acquire a better understanding of the chemical-biotic interactions and how biota alters the structure and dynamics of contaminants in the diverse ecosystems of the North.

Course Goals (more general):

We will break down the barriers and mystery of chemistry for the biologists and biology for the chemists giving them the **opportunity to interact and learn from each other.**

- 1) This course will provide the basic foundations for Environmental Toxicology
- 2) The essays, discussions, & O exercises will allow students to focus on specific aspects of Environmental Toxicology that interests them with intensive feedback from the instructor and others (e.g., guest reviewers, classmates).
- 3) A better appreciation of the complexity of contaminant interactions in high latitude systems.

Origin and mission: This course is taught via the Department of Veterinary Medicine (Dr. O'Hara's academic home) and encouraged and sponsored by the Department of Chemistry and Biochemistry, and the Department of Biology and Wildlife to fill an important niche for addressing "contaminants in the environment and related biota."

Grading: Course is taken for a letter grade (no + and – grades), and possibly audit. This course is targeting undergraduate and graduate students with an interest or research projects in "Toxicology", but anyone (agency biologists, managers, industry representatives, etc.) is eligible. Please contact Todd O'Hara for more information ([tmohara@alaska.edu](mailto:tmohara@alaska.edu)).

The ideal class size will be 10 to 12 students so we can accommodate the class with respect to constructive discussion groups, and to allow oral exercises (O course) to be conducted during class time.

### Exams:

Three examinations that will focus on the 3 major sections.

Each exam is 100 points (3 \* 100 points = 300 points for exams) and will be multiple choice, true or false, and/or short essay format.

The oral presentations (O, 15 minutes each = 10 minutes to present + 5 minutes for questions) will count as 100 or 200 points each (points total based on graduate or undergraduate status). Each student will have two O assignments (mandated by University for full O). 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 > 12 members in the audience (minimum of 5). Part of the grade for students will be participation during the Q&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 competency (including responsiveness to audience questions), as well as on subject mastery. This can be done since students receive information/instruction in this course on effective speaking, effective responding, organization of material for effective presentation, and on development and use of media and visual aids.

Essay/Discussion and essay-like assignments will be an additional 100 points and are mostly based on discussion activities and will typically cover the past week of lectures/presentations to highlight major points, involve specific questions (current events), and/or reading assignments (journal articles) the students will be expected to discuss as well as turn in reviews (essays). For example, we distribute a controversial paper on mercury in fish and ask students to choose a position on whether they should allow human consumption, or not. They must then defend their decision. It is not the decision they make that is graded but how they can articulate their perspective and defense of the decision. This has replaced what former students considered unpopular and less educational (homework and quizzes).

### Undergraduate Students

Exams	300 points
O assignments	100 points
<u>Discussions/Short Essays</u>	100 points [4 essays and 4 discussions, 25 pts each essay/discussion package]
<b>Undergraduate Total</b>	<b>500 points</b>

Graduate level credit will be earned via tests, oral presentations, and essays/discussions as for the undergraduates. However, graduate student expectations include **hypothesis driven** oral presentations (O, 15 minutes each = 10 minutes + 5 minutes for questions), these O products will be **double the point value** as compared to the undergraduates and **intensively scrutinized** by 2-3 faculty/staff members (guest reviewers). For written examinations, there will be an **additional in-depth essay question** for the graduate students (in addition to undergraduate exam but within same time frame for testing). Graduate students must perform very well with respect to written and oral assignments.

### Graduate Students

Exams	300 points
O assignments	<b>200 points</b>
<u>Discussions/Short Essays</u>	100 points [4 essays and 4 discussions, 25 pts each essay/discussion package]
<b>Graduate Total</b>	<b>600 points</b>

**Audit:** attend approximately 80% of course and take all exams (no minimum score required). We are very flexible on this. All students must be registered to attend.

100-90% = A, 89-80% = B; 79-70% = C; 69-55% = D; <55% fails. No plus or minus grades. "Curving" will be considered but not likely needed based on past offerings of this course.

### Class schedule:

Since participation is important a part of the evaluation (grade) via essays/discussions, written and oral assignments **clearly requires attendance**. Excused absences will certainly be honored as compared to absence with no prior warning. Make up or remote examinations are possible with permission of the Instructor, but **not guaranteed**. Not attending class during discussions and presentations are not something that can be "made up" and if a student anticipates significant absences during these dates outlined below they should consider **not taking this course for a grade** (consider audit). Missing these days will result in a lack of participation and thus a lower overall score.

**Plagiarism is not tolerated.** When in doubt, properly cite the source. If plagiarism is highly suspected or obvious the product will be presented to the Dean of Students at the UAF for consideration and any action needed implemented (e.g., withdraw from the course, dismissed from UAF). Please recognize computer software is available to “search for” plagiarized text.

Student Support Services include:

**Disabilities Services:** The Office of Disability Services (<http://www.uaf.edu/disability/>) implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. This course works with the Office of Disabilities Services to provide reasonable accommodation to students with disabilities. However, I am not notified about these disabilities and it is the responsibility of the student to make me aware of this and any special considerations that UAF has suggested.

**UAF Office of Disability Services**, Whitaker Building, Room 208, 612 N. Chandalar, PO Box 755590, University of Alaska Fairbanks, Fairbanks, Alaska 99775-5590 **Phone:** (907) 474-5655 **E-mail:** [uaf-disabilityservices@alaska.edu](mailto:uaf-disabilityservices@alaska.edu)

## Env. Toxicology Course Outline Fall 2014

[To be modified for next relevant academic calendar depending on MWF or TuTh offering.]

**Section 1:** Nuts and Bolts of Environmental Toxicology. Chapter 1.

**First day of instruction; Thursday, Sept. 4 (will be a full period lecture)**

**Sept 4 (Th), 9 (Tu):**

Lectures 1 (A and B) and 2: Introductions to Environmental Toxicology;

Two lectures on Basic Toxicology that integrate C&D with Chapter 1. Chapter 3 pages 81-86.

*Purpose is for leveling: to bring students to a certain level of basic toxicology understanding. In other words, get the chemistry students thinking biologically; and get the biology students thinking chemically!*

**Sept 11, 16, 18:**

Lectures 3, 4, 5, and 6; Chapter 2 and 3. Definitions and Basic Principles of Env Tox (foundation of the course)

Sept 11, 16 (50%): Lecture 3 and 4, Major Classes of Contaminants and their sources

Sept 16 (50%), 18: Lectures 5 and 6: ADME of ethanol and acetaminophen – chemicals of day to day personal use and social responsibility/concern **used to explain ADME.**

Sept 23, 25\*; Lecture 7 & 8 Chapters 4 & 5. Bioaccumulation (Hg example toxicant, w/ other metals)

Sept 30, \**Essays/Discussion (2 essays (W)/student)* – Students will provide written essays (hard copy) on the topic of “bioaccumulation” for Dr. O’Hara to grade at the beginning of class (before discussion).

**Oct. 9 (Th) Exam 1 (Lectures 1-8)** Based on student review of syllabus exam 1 is a week later. Maggie Castellini will proctor the exam.

**Section 2** “Mechanisms” of Environmental Toxicants [October 2 to Nov 6; Nov 4 is section 3]

**Oct 2 (Tu), 7 [Oct 9, 1<sup>st</sup> exam];** Lectures 9, 10 and 11. Ch. 6. Mechanisms of Toxicity: Molecular Effects & Biomarkers

[Oct. 7 will be remote lecture from Ohio]

**October 7<sup>th</sup> – draft of paper #1 due for optional review (but not graded); Date is FIRM no exceptions.**

Oct 14 (Tu), 16; Lectures 12 and 13 Chapter 7: Cells, Tissues and Organs

**October 16<sup>th</sup> (Th) – final of paper #1 due** (to be graded); submit both **electronically (email) and in writing**

**Oct 21, 23, and 28** oral presentations UAF (5 per day; total 3 day event, anticipate 15 students).

[18 minutes per student (90 minutes/5 students), **total presentation is to be 15 minutes (10 minutes + 5 minutes for questions)** with 3 minutes for transition to next speaker). Going over time will be penalized since this disrupts the schedule; just as would occur at a conference.]

**Oct 30.** Essays/Discussions (**2 essays per student**). Class consensus on 2 topics based on Section 2.

**Nov. 6: Exam 2** (Lectures 9-13, **plus student presentations**) [Please note lecture on Nov 4 is NOT on this exam but for section 3]

**Section 3** Interpreting/ Understanding/ Managing Environmental Toxicants

Nov. 4 and 11; Sublethal effects, Lecture 17-18, Chapter 8

**Nov. 5<sup>th</sup>** – draft of paper #2 last day for **mandatory review (to be graded)**

Nov. 13; Lethal Effects to Individuals, Lecture 19-20; Chapter 9



**Nov 18**; Effects of oil spills on wildlife [requested by previous students]

**Nov 20** Lecture 23: Effects on Communities and Ecosystems, Chapter 11

**Nov 25** Lecture 24: Landscape to Global Effects

**Thanksgiving holiday** Nov. 27–30 [No class Nov. 27]

**Dec. 2** –

**Final of paper #2 due** (to be graded); submit electronically and in writing  
**Discussion Group** (Climate Change and Contaminants)

**Dec 4, 9 and 11** oral presentations UAF (5 per day = 15 students!)

**FINAL EXAM 3** (lectures 17-28): FINAL EXAM DAY.

Tuesday, Thursday 9:45-11:15 a.m. **8-10 a.m., Thursday, Dec. 18**