

40-day

5 Trial

RECEIVED JAN 28

FORMAT 1

Submit original with signatures + 1 copy + electronic copy to Faculty Senate (Box 7500). See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/> for a complete description of the rules governing curriculum & course changes.

TRIAL COURSE OR NEW COURSE PROPOSAL

SUBMITTED BY:

Department	Chemistry and Biochemistry	College/School	CNSM
Prepared by	Sarah Hayes	Phone	907-474-7118
Email Contact	s.hayes@alaska.edu	Faculty Contact	Sarah Hayes

1. ACTION DESIRED (CHECK ONE):

Trial Course	<input checked="" type="checkbox"/>	New Course	<input type="checkbox"/>
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2. COURSE IDENTIFICATION:

Dept	CHEM	Course #	414494	No. of Credits	2
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Justify upper/lower division status & number of credits: This would be an upper division class surveying instrumentation used to analyze environmental samples. Meeting once per week for 2 hours.

3. PROPOSED COURSE TITLE: Analysis of Environmental Samples

4. To be CROSS LISTED? YES/NO

<input type="checkbox"/> no	If yes, Dept:	<input type="checkbox"/>	Course #	<input type="checkbox"/>
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(Requires approval of both departments and deans involved. Add lines at end of form for additional required signatures.)

5. To be STACKED? YES/NO

<input type="checkbox"/> no	If yes, Dept:	<input type="checkbox"/>	Course #	<input type="checkbox"/>
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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.

6. FREQUENCY OF OFFERING:

<input type="checkbox"/> Fall odd years
<input type="checkbox"/> Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) — or As Demand Warrants

7. SEMESTER & YEAR OF FIRST OFFERING (AY2013-14 if approved by 3/1/2013; otherwise AY2014-15)

<input type="checkbox"/> Fall AY 2013-14
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8. COURSE FORMAT: Dean's Office
College of Natural Science & Mathematics

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. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.

COURSE FORMAT: (check all that apply)

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input checked="" type="checkbox"/> 6 weeks to full semester
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OTHER FORMAT (specify) _____

Mode of delivery (specify lecture, field trips, labs, etc) Lecture

9. CONTACT HOURS PER WEEK:

<input type="checkbox"/> 2 LECTURE hours/weeks	<input type="checkbox"/> 0 LAB hours/week	<input type="checkbox"/> 0 PRACTICUM hours/week
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Note: # of credits are based on contact hours. 800 minutes of lecture=1 credit. 2400 minutes of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800 minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with the syllabus. See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/guidelines-for-computing-/> for more information on number of credits.

OTHER HOURS (specify type) _____

10. COMPLETE CATALOG DESCRIPTION including dept., number, title, credits, credit distribution, cross-listings and/or stacking (50 words or less if possible):

Example of a complete description:

Leah Berman
1/14/13
TBP

FISH F487 W, O Fisheries Management

3 Credits Offered Spring

Theory and practice of fisheries management, with an emphasis on strategies utilized for the management of freshwater and marine fisheries. Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; ENGL F414; FISH F425; or permission of instructor. Cross-listed with NRM F487. (3+0)

CHEM 414 Analysis of Environmental Samples
2 Credits, Offered Fall Odd Years
 A seminar course providing a survey of methods available for analyzing the wide variety of environmental samples. Students will learn about the relative strengths and limitations of available techniques and apply knowledge in developing analysis schemes to address relevant environmental problems. Prerequisites: CHEM 212 or instructor permission.

11. COURSE CLASSIFICATIONS: Undergraduate courses only. Consult with CLA Curriculum Council to apply S or H classification appropriately; otherwise leave fields blank.

H = Humanities S = Social Sciences

Will this course be used to fulfill a requirement for the baccalaureate core? **If YES, attach form.**

YES:	<input type="checkbox"/>	NO:	<input checked="" type="checkbox"/>
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IF YES, check which core requirements it could be used to fulfill:

O = Oral Intensive, **Format 6** W = Writing Intensive, **Format 7** Natural Science, ("X" for Core) **Format 8**

11.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**

12. COURSE REPEATABILITY:

Is this course repeatable for credit? **YES** **NO**

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?	1	TIMES
If the course can be repeated for credit, what is the maximum number of credit hours that may be earned for this course?	<input type="checkbox"/>	CREDITS
If the course can be repeated with <u>variable</u> credit, what is the maximum number of credit hours that may be earned for this course?	<input type="checkbox"/>	CREDITS

13. GRADING SYSTEM: Specify only one. Note: Later changing the grading system for a course constitutes a Major Course Change.

LETTER: **PASS/FAIL:**

RESTRICTIONS ON ENROLLMENT (if any)

14. PREREQUISITES

CHEM 212 or instructor permission.

These will be *required* before the student is allowed to enroll in the course.

15. SPECIAL RESTRICTIONS, CONDITIONS

16. PROPOSED COURSE FEES

\$

Has a memo been submitted through your dean to the Provost for fee approval?

Yes/No

17. PREVIOUS HISTORY

Has the course been offered as special topics or trial course previously?

Yes/No

No

If yes, give semester, year, course #, etc.:

18. ESTIMATED IMPACT

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

This course would principally impact chemistry majors with an emphasis in environmental science and forensics. However, we would also advertise the course in the Geology department and the School of Engineering.

19. 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

X

Current collections are adequate for the course

20. 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)

This course would be of potential benefit to students in the geology department as well as students in several departments in the School of Engineering.

Contacts: Rainer Newberry (Geology); David Barnes (Civil and Environmental Engineering)

21. POSITIVE AND NEGATIVE IMPACTS

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


The addition of the proposed class would significantly enhance the readiness of our graduates for graduate school and careers in environmental science, forensics, and other fields where analysis of environmental samples is required.

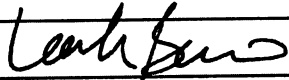
JUSTIFICATION FOR ACTION REQUESTED

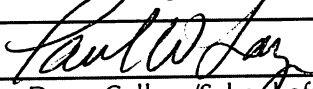
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.

The proposed course is a program enhancement, providing students going into careers in environmental science, forensics, geology, and some branches of engineering an opportunity to survey the array of techniques available for analysis of environmental samples (dust, soil, water and rock). This course would serve to review some instrumentation covered in earlier courses within the context of analyzing environmental samples as well as introducing new techniques common in environmental science that students may not have been exposed to in other courses. The quizzes in this course would be to design a sampling scheme to address a particular environmental problem. These are the same sort of problems they will likely face in the workforce and will give our graduates valuable experience.

APPROVALS: Add additional signature lines as needed.

 (William Simpson)	Date	10 Jan 2013
Signature, Chair, Program/Department of: Chemistry + Biochemistry		

	Date	1/25/2013
Signature, Chair, College/School Curriculum Council for: CNSM		

	Date	1/28/13
Signature, Dean, College/School of: CNSH		

Offerings above the level of approved programs must be approved in advance by the Provost.

	Date	
Signature of Provost (if above level of approved programs)		

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

	Date	
Signature, Chair Faculty Senate Review Committee: <input type="checkbox"/> Curriculum Review <input type="checkbox"/> GAAC <input type="checkbox"/> Core Review <input type="checkbox"/> SADAC		

ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking)

	Date	
Signature, Chair, Program/Department of:		

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

	Date	
Signature, Dean, College/School of:		

Analysis of Environmental Samples

CHEM 414; Fall 2013

Course Name: CHEM 414, 2 credits, seminar style
Prerequisites: CHEM 212 or instructor permission
Location: Reichardt XXX
Meeting Time: 2 hours, one meeting per week



Instructor: Sarah Hayes
Office: Reichardt 188
Phone: 907-474-7118
Email: s.hayes@alaska.edu
Office Hours: MW 10:30-12

Blackboard Link: <http://classes.uaf.edu>

Recommended Materials:

Zhang, C. Fundamentals of Environmental Sampling and Analysis. New Jersey: John Wiley and Sons, Inc., 2007.

Course Description: A seminar course providing a survey of methods available for analyzing the wide variety of environmental samples. Students will learn about the relative strengths and limitations of available techniques and apply knowledge in developing analysis schemes to address relevant environmental problems. Pre-requisites: CHEM 212 or instructor permission.

Instructional Methods: This class will consist principally of vignettes on a variety of techniques and their application to analysis of a variety of environmental samples. This seminar-style format will enable an overview of many techniques throughout the semester. UAF-based experts will teach several of the topics and, when available, a tour of facilities and examination of actual instruments will also be provided.

Course Goals: Students will learn to select appropriate analytical techniques for analysis of environmental samples. They will then apply this knowledge in developing a protocol for addressing a realistic environmental research problem. They will then apply this knowledge in developing a protocol for their thesis project, or other relevant environmental research problem.

Student Learning Outcomes:

- Students will be able to select a problem-appropriate analytical technique for the analysis of environmental samples.
- Students will become aware of a variety of techniques for environmental analysis.

Analysis of Environmental Samples

CHEM 414; Fall 2013

Course Evaluation:

There are **1000 total points available** in this class. Grades are assigned as follows: 1000-900 A, 900-800 B, 800-700 C, etc.



Assignment	Points
Quiz (5 x 100)	500
Term paper and presentation	500
Total	1000

Quiz- Five quizzes will be given through the semester after each topic (see schedule below).

Term paper and Presentation- (12 pages; 15 minutes) Students will develop an analytical regime to address a realistic environmental research problem.

Course Policies:

Attendance and Tardiness- Students are expected to attend class and not compromise the experience of other students. Disrespect of the classroom learning environment, instructors, and fellow students is not tolerated!

Honor code and Academic integrity- Students are expected to conduct themselves in accordance with the UAF Honor code. The Chemistry Department policy states: *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.*

Late work- Late work is not accepted. This is in an effort to keep us all moving through the material efficiently.

Disability Services- I will work with the Office of Disabilities Services (208 Whitaker Bldg, 474-5655) to provide reasonable accommodation to students with disabilities. It is the student's responsibility to make an appointment with me to discuss appropriate accommodations. A letter from disabilities services must be provided.

Topics:

1. Analysis of Environmental samples

Types of samples- rock, soil, dust, water

Sample preparation- cutting, crushing, extractions, dissolution, size, and density separations

2. Analysis of metals

Analysis: XRF, AA, ICP-MS, ICP-OES, isotopes

3. Electron microscopy and scattering

Microprobe, SEM, TEM, XRD

4. Analysis of organics

FT-IR, Fluorescence, NMR, Raman, mass spectrometry

5. Separations

GC, HPLC, CE, IC