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FORMAT 5

PROGRAM/DEGREE REQUIREMENT CHANGE (MAJOR/MINOR)

SUBMITTED BY:

Department	Chemistry and Biochemistry	College/School	CNSM
Prepared by	William Simpson	Phone	907 474 7235
Email Contact	wrsimpson@alaska.edu	Faculty Contact	William Simpson

See <http://www.uaf.edu/uafgov/faculty/cd> for a complete description of the rules governing curriculum & course changes.

PROGRAM IDENTIFICATION:

DEGREE PROGRAM	Environmental Chemistry
Degree Level: (i.e., Certificate, A.A., A.A.S., B.A., B.S., M.A., M.S., Ph.D.)	BS

A. CHANGE IN DEGREE REQUIREMENTS: (Brief statement of program/degree changes and objectives)

We have been changing the way laboratory sections in physical and analytical chemistry are taught, generally integrating the laboratory into an appropriate lecture class so as to have lecture and lab reinforce each other. However, we also maintain senior-level writing-intensive "capstone" experiences for majors. These changes have been submitted for the last three years in a graded fashion so that most students have graduated under the old system or will now be under the new system. The current change is planned to be the last change. As a part of those changes, we added two credits of lab to the junior-level Physical Chemistry sequence (CHEM F331 and CHEM F332). Thus, we wanted to reduce credits somewhere so that we would not overload students. In looking over our course offerings and also due to a recent re-accreditation by the American Chemical Society (our external specialized accreditation), we realized that we didn't need to offer as much analytical chemistry as we had been doing. Thus we are proposing to eliminate CHEM F312 from the requirements. Students are still exposed to a large amount of analytical chemistry.

We are also changing the way parts I and II of two semester course sequences are listed to be consistent and adding two possible elective courses.

B. CURRENT REQUIREMENTS AS IT APPEARS IN THE CATALOG:

Environmental Chemistry

1. Complete the general university requirements. (As part of the core curriculum requirements, complete: MATH F200X; PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)

2. Complete the B.S. degree requirements. (As part of the B.S. degree, complete: MATH F201X. Chemistry foundation courses may be used toward partial fulfillment of the natural science requirement.)

3. Complete the following:*

CHEM F105X--General Chemistry--4 credits

CHEM F106X--General Chemistry--4 credits

CHEM F202--Basic Inorganic Chemistry--3 credits

CHEM F212--Chemical Equilibrium and Analysis--4 credits

CHEM F312--Instrumental Analysis--4 credits

CHEM F321, F322--Organic Chemistry--6 credits

CHEM F324W--Organic Laboratory--4 credits

CHEM F331, F332--Physical Chemistry--8 credits

CHEM F413W--Analytical Instrumental Laboratory--3 credits

CHEM F434W--Instrumental Methods in Physical Chemistry--3 credits

CHEM F450--General Biochemistry Macromolecules (3)

or CHEM F451--General Biochemistry Metabolism--3 credits

CHEM F481--Seminar--1 credit

CHEM F482O--Seminar--2 credits

CHEM F488--Undergraduate Chemistry and Biochemistry Research (Environmental Topic)--2 credits

4. Complete the following:

MATH F202X--Calculus III--4 credits

STAT F300--Statistics--3 credits

5. Complete two of the following courses:*

BIOL F115X--Fundamentals of Biology I--4 credits

BIOL F116X--Fundamentals of Biology II--4 credits

GEOS F101X--The Dynamic Earth--4 credits
GEOS F125X--Humans, Earth, and the Environment--4 credits
ATM F101X--Weather and Climate of Alaska--4 credits

6. Complete one of the following advanced courses:*

BIOL F271--Principles of Ecology--4 credits
BIOL F342--Microbiology--4 credits
BIOL F443W--Microbial Ecology--3 credits
BIOL F483--Stream Ecology--3 credits
ENVE F458--Energy and the Environment--3 credits
NRM F380W--Soils and the Environment--3 credits
ATM F401--Introduction to Atmospheric Science--3 credits
CHEM F402--Advanced Inorganic Chemistry--3 credits

7. Complete one of the following advanced courses:*

CHEM F406--Atmospheric Chemistry--3 credits
CE F341--Environmental Engineering--4 credits
GEOS F417--Introduction to Geochemistry--3 credits

8. Minimum credits required--130 credits

* Student must earn a C grade or better in each course.

C. PROPOSED REQUIREMENTS AS IT WILL APPEAR IN THE CATALOG WITH THESE CHANGES:
(Underline new wording ~~strike through old wording~~ and use complete catalog format)

Environmental Chemistry

1. Complete the general university requirements. (As part of the core curriculum requirements, complete: MATH F200X; PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)

2. Complete the B.S. degree requirements. (As part of the B.S. degree, complete: MATH F201X. Chemistry foundation courses may be used toward partial fulfillment of the natural science requirement.)

3. Complete the following:*

CHEM F105X--General Chemistry I--4 credits

CHEM F106X--General Chemistry II--4 credits

CHEM F202--Basic Inorganic Chemistry--3 credits

CHEM F212--Chemical Equilibrium and Analysis--4 credits

~~CHEM F312--Instrumental Analysis--4 credits~~

~~CHEM F321, F322--Organic Chemistry--6 credits~~

CHEM F321--Organic Chemistry I--3 credits

CHEM F322--Organic Chemistry II--3 credits

CHEM F324W--Organic Laboratory--4 credits

~~CHEM F331, F332--Physical Chemistry--8 credits~~

CHEM F331--Physical Chemistry I--4 credits

CHEM F332--Physical Chemistry II--4 credits

CHEM F413W--Analytical Instrumental Laboratory--3 credits

CHEM F434W--Instrumental Methods in Physical Chemistry--3 credits

CHEM F450--General Biochemistry Macromolecules (3)

or CHEM F451--General Biochemistry Metabolism--3 credits

CHEM F481--Seminar--1 credit

CHEM F482O--Seminar--2 credits

CHEM F488--Undergraduate Chemistry and Biochemistry Research** (~~Environmental Topic~~)--2 credits

4. Complete the following:

MATH F202X--Calculus III--4 credits

STAT F300--Statistics--3 credits

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BIOL F116X--Fundamentals of Biology II--4 credits

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NRM F380W--Soils and the Environment--3 credits

ATM F401--Introduction to Atmospheric Science--3 credits

CHEM F402--Advanced Inorganic Chemistry--3 credits

7. Complete one of the following advanced courses:*

~~BIOL F494--Environmental Microbiology--3 credits~~

~~CHEM F455--Environmental Toxicology--3 credits~~

CHEM F406--Atmospheric Chemistry--3 credits

CE F341--Environmental Engineering--4 credits

GEOS F417--Introduction to Geochemistry--3 credits

8. Minimum credits required--130 credits

(2.C)

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** Research topic should study environmental chemistry

Mary Beth Leigh at Biology is submitting a
Format I to make this a new (permanent)
course. If approved, add it. If not
approved, strike this reference, as
trial courses aren't listed in the Catalog
update: Mary Beth L. will probably submit
new course in Spr 2011. Remove from
this form in meantime. 1/4/2011

D. ESTIMATED IMPACT

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

Very little impact. Although we are eliminating a required course, most of its materials are integrated into other courses. Because of the increased work in those other courses, we don't expect either a decrease in student learning nor a decrease in faculty workload.

E. 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)

The programs inside the Department of Chemistry and Biochemistry are affected by this action. To our knowledge no other majors required this upper-division chemistry course. The content in the course is being integrated into other courses, so students needing this information can get it by taking other courses.

F. IF MAJOR CHANGE - ASSESSMENT OF THE PROGRAM:

Description of the student learning outcomes assessment process.)

We consider this change as minor because it only reorganizes where students learn certain concepts. It does not change our student learning outcomes assessment process.

JUSTIFICATION FOR ACTION REQUESTED *Updated Statement:*

The purpose of the department and campus-wide curriculum committees is to scrutinize program/degree change 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 drop a course, is it because the material is covered elsewhere? 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 program is not compromised as a result.

The Department of Chemistry and Biochemistry is requesting to drop CHEM312 (Instrumental Analysis) from its required courses for Environmental Chemistry. We are also changing the same requirement for the Chemistry BA, so this change affects essentially all Chemistry and Biochemistry majors. This change is one of the last changes in a sequence that we have been carrying out over the past three years. The goal of these changes is to integrate laboratory sections into lecture courses so that students' hands-on experiences reinforce lecture concepts and vice versa. As a part of these changes, laboratory sections were added to CHEM F212 (Chemical Equilibrium and Analysis), CHEM F331 (Physical Chemistry), and CHEM F332 (Physical Chemistry II). To balance these increases in laboratories (and addition of credits to those courses), we are proposing to eliminate CHEM F312 from the requirements. The material from that course is already partially integrated into the Junior-level Physical Chemistry sequence and some material will also be integrated into the senior-level physical and analytical chemistry capstone laboratory courses (CHEM F434W Instrumental Methods in Physical Chemistry) and (CHEM F413W Analytical Instrumental Laboratory). Therefore, students will gain a large degree of exposure to "Instrumental Analytical Methods". In addition to our internal considerations in the department, our programs are externally accredited by the American Chemical Society (ACS). Through a recent re-accreditation, we realized that we have significantly more analytical chemistry coursework and laboratory time than is required. After the proposed change, we will still exceed the guidelines from ACS and thus should retain our specialized accreditation.

APPROVALS:

See attached signatures.

Signature, Chair, Program/Department of: _____ Date _____

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

Signature, Dean, College/School of: _____ Date _____

Signature, Dean, College/School of: _____

Signature, Dean, College/School of: _____ Date _____

Signature, Dean, College/School of: _____

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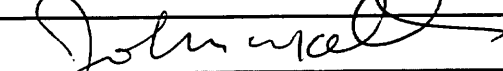
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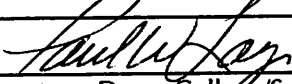
The purpose of the department and campus-wide curriculum committees is to scrutinize program/degree change applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. If you drop a course, is it because the material is covered elsewhere? 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 program is not compromised as a result. *See Updated Statement*

The Department of Chemistry and Biochemistry is requesting to drop CHEM412 (Instrumental Analytical Methods) from its required courses for Environmental Chemistry. We are also changing the same requirement for the Chemistry BA, so this change affects essentially all Chemistry and Biochemistry majors. This change is one of the last changes in a sequence that we have been carrying out over the past three years. The goal of these changes is to integrate laboratory sections into lecture courses so that students' hands-on experiences reinforce lecture concepts and vice versa. As a part of these changes, laboratory sections were added to CHEM F212 (Chemical Equilibrium and Analysis), CHEM F331 (Physical Chemistry), and CHEM F332 (Physical Chemistry II). To balance these increases in laboratories (and addition of credits to those courses), we are proposing to eliminate CHEM F412 from the requirements. The material from that course is already partially integrated into the Junior-level Physical Chemistry sequence and some material will also be integrated into the senior-level physical and analytical chemistry capstone laboratory courses (CHEM F434W Instrumental Methods in Physical Chemistry) and (CHEM F413W Analytical Instrumental Laboratory). Therefore, students will gain a large degree of exposure to "Instrumental Analytical Methods". In addition to our internal considerations in the department, our programs are externally accredited by the American Chemical Society (ACS). Through a recent re-accreditation, we realized that we have significantly more analytical chemistry coursework and laboratory time than is required. After the proposed change, we will still exceed the guidelines from ACS and thus should retain our specialized accreditation.

APPROVALS:


Signature, Chair, Program/Department of: _____ Date 5-6-10


Signature, Chair, College/School Curriculum Council for: _____ Date 5/12/10
CNSM


Signature, Dean, College/School of: _____ Date 5/13/10
CNSM

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

Date

Signature, Chair, UAF Faculty Senate Curriculum Review Committee