FORMAT 5

Submit originals and one copy and electronic copy to Governance/Faculty Senate Office (email electronic copy to jbharvie@alaska.edu)

PROGRAM/DEGREE REQUIREMENT CHANGE (MAJOR)

SUBMITTED BY:

Department	Chemistry & Biochemistry	College/School	CNSM
Prepared by	Tom Green	Phone	474-1559
Email Contact	tkgreen@alaska.edu	Faculty Contact	Tom Green

See http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/ for a complete description of the rules governing curriculum & course changes.

PROGRAM IDENTIFICATION:

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

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

We have developed a new course Chem F288, Introduction to Chemical Research, which we want to incorporate into the chemistry major, in addition to our existing course Chem F488 Undergraduate Chemistry and Biochemistry Research. Our proposal is to either require (1) 3 credits of Chem F488 (as it now exists) or (2) 2 credits of Chem F288 and 2 credits of Chem F488. Our motivation is to encourage our majors to enter the research environment at an earlier stage in their studies.

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 F251X; 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 F252X. Chemistry foundation courses may be used toward partial fulfillment of the natural science requirement.)
3. Complete the following program (major) requirements:*
   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 F314W--Analytical Instrumental Laboratory--3 credits
   CHEM F321--Organic Chemistry I--4 credits
   CHEM F325--Organic Chemistry II--4 credits
   CHEM F331--Physical Chemistry I--4 credits
   CHEM F332--Physical Chemistry II--4 credits
   CHEM F434W--Chemistry Capstone Laboratory--3 credits
   CHEM F481--Seminar--1 credit
   CHEM F482O--Seminar--2 credits
   CHEM F488--Undergraduate Chemistry and Biochemistry Research--3 credits
   MATH F253X--Calculus III--3 credits
4. Complete two of the following:*
   ATM F101X--Weather and Climate of Alaska--4 credits
   BIOL F115X--Fundamentals of Biology I--4 credits
   BIOL F116X--Fundamentals of Biology II--4 credits
   GEOS F101X--The Dynamic Earth--4 credits
   GEOS F262--Rocks and Minerals--3 credits

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2/4/16 MG emailed Jessica Larsen

5. Complete two of the following:*
   ATM F401--Introduction to Atmospheric Science--3 credits
   BIOL F342--Microbiology--4 credits
   CHEM F406--Atmospheric Chemistry --3 credits
   CHEM F455O--Environmental Toxicology--3 credits
   GEOS F417--Introduction to Geochemistry --3 credits
   NRM F380W--Soils and the Environment--3 credits
6. Minimum credits required--120 credits

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 F251X; 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 F252X. Chemistry foundation courses may be used toward partial fulfillment of the natural science requirement.)
3. Complete the following program (major) requirements:*
   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 F314W--Analytical Instrumental Laboratory--3 credits
   CHEM F321--Organic Chemistry I--4 credits
   CHEM F325--Organic Chemistry II--4 credits
   CHEM F331--Physical Chemistry I--4 credits
   CHEM F332--Physical Chemistry II--4 credits
   CHEM F434W--Chemistry Capstone Laboratory--3 credits
   CHEM F481--Seminar--1 credit
   CHEM F482O--Seminar--2 credits
   CHEM F488--Undergraduate Chemistry and Biochemistry Research--3 credits
   or Chem F288 Introduction to Chemical Research—2 credits and
   Chem F488—2 credits
   MATH F253X--Calculus III--3 credits
4. Complete two of the following:*
   ATM F101X--Weather and Climate of Alaska--4 credits
   BIOL F115X--Fundamentals of Biology I--4 credits
   BIOL F116X--Fundamentals of Biology II--4 credits
   GEOS F101X--The Dynamic Earth--4 credits
   GEOS F262--Rocks and Minerals--3 credits
5. Complete two of the following:*
   ATM F401--Introduction to Atmospheric Science--3 credits
   BIOL F342--Microbiology--4 credits
   CHEM F406--Atmospheric Chemistry --3 credits
   CHEM F455O--Environmental Toxicology--3 credits
   GEOS F417--Introduction to Geochemistry --3 credits
   NRM F380W--Soils and the Environment--3 credits
6. Minimum credits required--120 credits

D. *ESTIMATED IMPACT*

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

No impact. Chem F288 is already being taught currently as a trial course. The course was recently approved for inclusion into the UAF catalog.

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 change will give students an option of taking 2 credits Chem F288, Introduction to Chemical Research, in lieu of 1 credit of Chem F488 Undergraduate Research. This change will not affect American Chemical Society accreditation.

F. *IF MAJOR CHANGE - ASSESSMENT OF THE PROGRAM:*

Description of the student learning outcomes assessment process.)

Students who elect to take Chem F288 will be introduced to the process of planning and executing a research project at earlier stage in their undergraduate program. The focus of the course is on building the skills (literature review and experiment design) that students need to move from an idea to a successful experiment. After this course, students will likely be much better prepared for the experiment-focused CHEM 488 Research. They will also be more competitive for Undergraduate Research funding through URSA.

JUSTIFICATION FOR ACTION REQUESTED

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.

This change provides the opportunity for mid-level chemistry majors to participate in chemical research earlier in their academic career, and at the same time, receive credit toward their major. Trial offerings of CHEM 288 have supported multiple undergraduates in successfully obtaining funding for continuing the research projects conceived and developed in this course. Students in both CHEM 288 report high levels of satisfaction with this course, that it was extremely useful to their professional preparation, and that they would recommend this course to their peers.

Students also report feeling more prepared for CHEM 488 after taking this course, and several of the mentoring relationships nucleated in the course and the associated projects have continued beyond the course and these students are currently enrolled in CHEM 488.

APPROVALS: SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

Thomas K. Seo	Date	2-3-16	
Signature, Chair, Program/Department of:			
Dean	Date	2-18-16	
Signature, Chair, College/School Curriculum Council for:		CNSM	
Paul W. Layer	Date	2/18/16	
Signature, Dean, College/School of:		CNSM	

CHAIR SIGNATURE OBTAINED FOLLOWING APPROVAL BY FACULTY SENATE COMMITTEE

	Date	

Signature, Chair, UAF Faculty Senate
___Curriculum Review Committee

___Graduate Academic and Advisory Committee