

RECEIVED FEB 26
FORM 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

☐ X

☐ New Course

2. COURSE IDENTIFICATION:

Dept	CHEM	Course #	686694	No. of Credits	2
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Justify UPPER/LOWER DIVISION
STATUS & NUMBER OF CREDITS:

This is a course designed to grow graduate student mentoring skills through the introduction of mid-level undergraduates to research. The course will consist of 1 hour lecture and 3 hours lab per week.

3. PROPOSED COURSE TITLE:

Chemical Research Mentoring

4. To be CROSS LISTED?

YES/NO

no

If yes, Dept:

Course #

NOTE: Cross-listing requires approval of BOTH departments and deans involved. Add lines at end of form for additional required signatures.

5. To be STACKED?

YES/NO

no

If yes, Dept:

Course #

How will the two course levels differ from each other? How
will each be taught at the appropriate level?:

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:

Every spring

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)

AY 2014-15

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8. 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. 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

6 weeks to full semester

OTHER FORMAT (specify)

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

1 hour lecture, 3 hours lab per week

9. CONTACT HOURS PER WEEK

1

LECTURE
hours/weeks

3

LAB
hours/week

PRACICUM
hours/week

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:

FISH F487 N, 0 Fisheries Management

Governance
2/25/14 TJP

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:* *CONUM F131X or CONUM F141X; ENGL F111X; ENGL F211X or ENGL F213X; ENGL F414; FISH F425; or PERMISSION OF INSTRUCTOR. CROSS-LISTED WITH NRM F487. (3+0)*

CHEM 686 Research Mentoring

2 Credits Offered Spring

This course provides graduate students the opportunity to mentor undergraduates in chemical research within a structured environment, from developing a research idea to executing a small research project. The focus of this course is to refine mentoring skills that contribute to the professional development of maturing chemical professionals.

11. COURSE CLASSIFICATIONS: Undergraduate courses only. Consult with CLA CURRICULUM COUNCIL to apply S or X classification appropriately; otherwise leave fields blank.

X = Humanities

S = Social Sciences

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

YES:

NO:

X

If YES, check which core requirements it could be used to fulfill:

O = Oral Intensive, Form 6

W = Writing Intensive, Form 7

X = Baccalaureate Core

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

X

NO

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

Mentees would vary from semester to semester, so mentors would be offered a different mentoring experience.

How many times may the course be repeated for credit?

3

times

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

6

CREDITS

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

13. GRADING SYSTEM: Specify only one. Note: Changing the grading system for a course later on constitutes a Major Course Change - Form 2 form.

Letter:

X

PASS/FAIL:

RESTRICTIONS ON ENROLLMENT (if any)

14. Prerequisites

Graduate Standing

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

15. SPECIAL RESTRICTIONS, CONDITIONS

16. PROPOSED COURSE FEES

\$0

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

no

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 requires 1-2 credits of workload for the instructing faculty (shared with proposed Chem 288).

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

☐

Current library collection is adequate for the course. This course will rely heavily on electronic subscriptions to primary literature.

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)***21. POSITIVE AND NEGATIVE IMPACTS***Please specify positive and negative impacts on other courses, programs and departments resulting from the proposed action.*

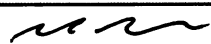
Graduate students in this course will formally mentor mid-level undergraduate students (enrolled in CHEM 288) through planning and executing a research project. Graduate students will refine and articulate their understanding of the research process through teaching research-planning related lectures as well as mentoring a few (1-3, depending on enrollment) undergraduate students throughout the course.

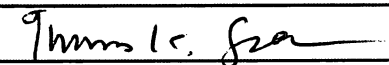
JUSTIFICATION FOR ACTION REQUESTED


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.

CHEM 686 will focus on formally building mentoring skills in graduate students as part of their professional development.

APPROVALS: Add additional signature lines as needed.

 Date 20 Feb 2014
Signature, Chair, Program/Department of: Chem Prsident

 Date 2-21-14
Signature, Chair, College/School Curriculum Council for: CN S gra

 Date 2/21/14
Signature, Dean, College/School of: CN S gra

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	
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Signature, Chair

Faculty Senate Review Committee: ☐ Curriculum Review ☐ GRAC

☐ Core Review ☐ SADAC

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

	Date	
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Signature, Chair, Program/Department of:

	Date	2-17-14
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Signature, Chair, College/School Curriculum Council for:

CSM

	Date	
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Signature, Dean, College/School of:

ATTACH COMPLETE SYLLABUS (as part of this application). This list is online at:
<http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/uaf-syllabus-requirements/>
The Faculty Senate Curriculum Committees will review the syllabus to ensure that each of the items listed below are included. If items are missing or unclear, the proposed course (or changes to it) may be denied.

SYLLABUS CHECKLIST FOR ALL UAF COURSES

During the first week of class, instructors will distribute a course syllabus. Although modifications may be made throughout the semester, this document will contain the following information (as applicable to the discipline):

1. Course information:

☐ title, ☐ number, ☐ credits, ☐ prerequisites, ☐ location, ☐ meeting time
(make sure that contact hours are in line with credits).

2. Instructor (and if applicable, teaching assistant) information:

☐ Name, ☐ office location, ☐ office hours, ☐ telephone, ☐ email address.

3. Course readings/materials:

☐ Course textbook title, ☐ author, ☐ edition/publisher.
☐ Supplementary readings (indicate whether ☐ required or ☐ recommended) and
☐ any supplies required.

4. Course description:

☐ Content of the course and how it fits into the broader curriculum;
☐ Expected proficiencies required to undertake the course, if applicable.
☐ Inclusion of catalog description is *strongly* recommended, and
☐ Description in syllabus must be consistent with catalog course description.

5. ☐ Course Goals (general), and (see #6)

6. ☐ Student Learning Outcomes (more specific)

7. Instructional methods:

☐ Describe the teaching techniques (eg: lecture, case study, small group discussion, private instruction, studio instruction, values clarification, games, journal writing, use of Blackboard, audio/video conferencing, etc.).

8. Course calendar:

☐ A schedule of class topics and assignments must be included. Be specific so that it is clear that the instructor has thought this through and will not be making it up on the fly (e.g. it is not adequate to say "lab". Instead, give each lab a title that describes its content). You may call the outline tentative or Work in Progress to allow for modifications during the semester.

9. Course policies:

☐ Specify course rules, including your policies on attendance, tardiness, class participation, make-up exams, and plagiarism/academic integrity.

10. Evaluation:

☐ Specify how students will be evaluated, ☐ what factors will be included, ☐ their relative value, and ☐ how they will be tabulated into grades (on a curve, absolute scores, etc.) ☐ Publicize UAF regulations with regard to the grades of "C" and below as applicable to this course. (Not required in the syllabus, but is a convenient way to publicize this.) Link to PDF summary of grading policy for "C":

http://www.uaf.edu/files/uafgov/Info-to-Publicize-C_Grading-Policy-UPDATED-May-2013.pdf

11. Support Services:

☐ Describe the student support services such as tutoring (local and/or regional) appropriate for the course.

12. Disabilities Services: Note that the phone# and location have been updated. <http://www.uaf.edu/disability/> The Office of Disability Services implements the Americans with Disabilities Act (ADA), and ensures that UAF students have equal access to the campus and course materials.

☐ State that you will work with the Office of Disabilities Services (208 WHITAKER BLDG, 474-5655) to provide reasonable accommodation to students with disabilities.

5/21/2013

**Chemical Research Mentoring
CHEM 686; Spring 2015**



Course Name: CHEM 686: Chemical Research Mentoring
Prerequisites: Graduate standing
Location:
Meeting Time: 1 hr lecture, 3 hrs lab per week

Instructor: Dr. Sarah Hayes
Office: Reichardt 188
Phone: 907-474-7118
Email: s.hayes@alaska.edu
Office Hours: By appointment, or drop by when my door is open

Blackboard Link: <http://classes.uaf.edu>
Course website: <http://chemresearch.community.uaf.edu> **Now Active, but Developing**
Required Materials: J. Nakamura, D.J. Shernoff, C.H. Hooker. Good Mentoring: Fostering Excellent Practices in Higher Education. Wiley. ISBN: 978-0470189634.

Catalogue Course Description: This course provides graduate students the opportunity to mentor undergraduates in chemical research within a structured environment, from developing a research idea to executing a small research project. The focus of this course is to refine mentoring skills that contribute to the professional development of maturing chemical professionals.

Expanded Course Description: This course provides graduate students the opportunity to mentor undergraduates in chemical research within a structured environment. Graduate students mentor mid-level undergraduate students (enrolled in CHEM 288) in all phases of planning and executing an independent research project. Students in this course will mentor undergraduates in developing a research idea, reviewing topical primary literature, posing a testable hypothesis, planning an experiment, and executing a small research project. The focus of this course is to refine mentoring skills that contribute to the professional development of maturing colleagues.

Instructional Methods: Students will each be assigned 1-3 undergraduate students (depending on enrollment in CHEM 288 and student interests) to mentor in developing and executing a research project. The emphasis of this course is on planning a research project and students will also be responsible for presenting lectures to CHEM 288 students providing information on topics relevant to project planning.

Course Goals: Students will mentor undergraduate students in developing and testing a hypothesis to develop mentoring skills. Through teaching research relevant skills, students will refine their own understanding of the research process.

Student Learning Outcomes:

- Students will improve mentoring skills and be ready to mentor junior students in their own research groups.
- Students will have a refined understanding of the research process that can be applied to their own research project.

Chemical Research Mentoring

CHEM 686; Spring 2015

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
Research introduction	100
Completion of mentoring training	50
Lab rotation plan, execution, and reflection	250
Feedback on mentee assignments	200
Lectures	250
Mentee and instructor evaluation, Self-reflection	150
Total	1000

Research introduction- Prepare and deliver a 10-minute presentation on your research area and project.

Mentoring training- Students will perform a 3-hour mentoring training session. This will either be performed by the URSA director (who has volunteered a presentation on this topic) or will be based on material covered at the Howard Hughes Medical Institute short course entitled "Entering Mentoring".

Lab rotation activity- Students will design and execute an informative and engaging overview of research and lab-based activity for students to participate in their research project. Students are encouraged to select an experiment that involves using an interesting instrument (fluorescence microscope, GC-MS, etc) to engage students in their research. Afterwards, students will write a self-reflection on what they learned during this exercise.

Lecture- Students will use materials provided to design two lectures on a research topics to be delivered to the class.

Feedback on Mentee writing- Students will review undergraduate assignments and provide substantive comments, both positive and negative, and concrete suggestions for improvement. Assignments include: literature review, project plan, proposal reviews (both their mentees and the rest of the class).

Mentee and instructor evaluations, and self-reflection- Students will submit a written self-reflection, then meet with the instructor to go over written comments from mentees at the end of the semester.

Points associated with the Lab Rotation, Lecture, and Mentoring Evaluations will be assigned by the instructor, with based on of student preparation for the activity (based on materials submitted by CHEM 686 students), delivery of activity either based on instructor judgment or directed evaluations from undergraduates in CHEM 288, and on the basis of student self-evaluations. Additional assignment-specific rubrics are available on the website.

Course Policies:

Classroom Behavior and Late work - Students are expected to conduct themselves in a professional manner at all times. Disrespect of the classroom learning environment, instructors or mentees, and fellow students will not be tolerated! Late work is not accepted in an effort to keep the entire class moving though the projects efficiently. Continued attendance to class indicates each student agrees to the policies set forth in this syllabus.

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 students' academic advisor will be notified of this failing grade and the student will not be allowed to drop the course.*

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 within the first two weeks of the first class meeting. A letter from disabilities services must be provided for discussion at that time.

**Analysis of Environmental Samples
CHEM 288/686; Spring 2015**

Tentative Schedule

Week of	Lecture	Items due 288	Items due 686
1-15	Introduction to course, Research interests		Lecture signup
	Graduate student overviews 288- Safety training, 686- Mentor training	All safety trainings complete	Research introduction Mentoring Training
1-19	The process of planning research	Research area- general	Lab rotation plan
	Safety in a research lab		
1-26	Funding your project		
	Lab rotations		
2-2	Keeping Records	Proposal format	
	Lab rotations		
2-9	Surveying Primary Literature	Rotations summaries	Rotation self reflection
	Literature review		
2-16	Stating a testable hypothesis		
	Literature review		
2-23	Experimental design and statistics	Project ideas	
	Brainstorming project ideas		
3-2	IRB and compliance	Literature review	Brainstorming notes
	Project planning		
3-9	Writing an SOP	Project plan	Literature review reviews
	288: Write SOP; 686: review project plans		Project plan reviews, mentee evaluations
3-16	Spring Break		
3-23	TBD	Revised project plans	
	Reviewing project plans w faculty		
3-30	TBD	Research Proposal Draft 1	
	Research Project		
4-6	How to make a poster	Research Proposal Peer Reviews	Research Proposal Reviews (mentees)
	Research Project		
4-13	TBD	Revised Proposals Draft 2, Poster	
	Research project		
4-20	TBD	Revised Proposals Draft 2, Poster	
	Research project		
4-27	TBD		Proposal Reviews (non-mentees)
	Exit Interviews, poster practice	Mentor evaluations	Mentee evaluations, self evaluations
4-30	Students present at department potluck		
Finals		Final research proposal (due 5-8)	

CNSM Review

Tom Green, Chair

Reviewer 1

Chem 686

This course is for graduate students to learn how to mentor undergrads in research. Should it be a stacked 486-686, rather than just 686? The listing is confusing that way. Oh I see. The grad students will be mentoring undergrads in the Chem 288 class. Does this work? I guess?

I agree the use of the word “fun” in the syllabus does not actually belong there. It's too vague.

I like the idea here but from the syllabus I don't get a really good sense for the types of projects the grad students will be mentoring (ie what exactly will the undergrads be doing that they will be mentored on?).

I would like to see a brief description of the types of research the undergrads would be doing. Perhaps an example of one of the lab projects?

The schedule needs approximate dates. Just breaking it up into weeks omits things like Spring Break, etc. What day/time will lecture versus lab be held?

How will “mentoring” be evaluated? It is not a quantitative thing. How will successful mentorship outcomes be evaluated? For example, you could have an excellent undergrad who needs little mentorship and does very well, versus a poor undergrad who does not do well. The excellent undergrad will probably reflect well on the grad student mentor and the poor undergrad will reflect poorly on their mentor. So how will undergrad student abilities be factored in or out of how the grad students are evaluated?

Chem 288

I can't evaluate this one without an attached syllabus.

Reviewer 2

CHEM 288:

1. "ideas" is misspelled in the Catalog Description (#10.)
2. In Course Classifications (#11), there are no entries -- presumably both are "NO".
3. Then there's the "Instructor permission" situation -- I'm still not sure which direction the prevailing wind is going, but seem to recall that the campus committee wants them removed (#10; #14.)
4. NO SYLLABUS IS ATTACHED.
5. The memo for the associated fee is not attached.

CHEM 686:

1. Description in Course Identification (#2) refers to *under*graduates, and thus is at odds with the course numbering. I suggest a rewording, e.g. an appropriate synopsis from the Catalog Description (#10.)
2. In Course Classifications (#11), there are no entries -- presumably both are "NO".
3. The decision to award a grade for a course which is presumably based on mentoring seems unwise, for a number of reasons, and I suggest that the Chemistry Department reconsider changing the Grading System to Pass/Fail.
4. There is a disconnect between the Estimated Impacts (#18) given for CHEM 288 and for CHEM 686 -- in the proposal for the former, it states that there will be faculty workload impact, to be shared with the latter, while in the proposal for the latter, there is no "substantial" impact at all. These two sections need to be reconciled.
5. This is trivial, but noted in passing: the third page of the syllabus is numbered "1".

Final comments. I am unhappy to see the use, once in each proposal, of the adjective "fun." This is not an appropriate official metric for any meaningful collegiate course. It may or may not come to pass, for better or for worse, but it is an unnecessary quality for successful instruction at this level.