

Submit originals and one copy and electronic copy to **Governance/Faculty Senate Office**
 See <http://www.uaf.edu/uafgov/faculty/cd> for a complete description of the rules governing curriculum & course changes.

CHANGE COURSE (MAJOR) and DROP COURSE PROPOSAL

SUBMITTED BY:

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

1. COURSE IDENTIFICATION:

Dept Course # No. of Credits

COURSE TITLE

2. ACTION DESIRED:

Change Course If Change, indicate below what change. Drop Course

NUMBER	TITLE	DESCRIPTION	FREQUENCY OF OFFERING
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
PREQUISITES	<input type="text"/>	<input type="text"/>	<input type="text"/>
CREDITS (including credit distribution)	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>
CROSS-LISTED	Dept. <input type="text"/>	(Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)	
	Dept. <input type="text"/>		
STACKED (400/600) <i>include syllabi.</i>	<input type="text"/>	Course # <input type="text"/>	<input type="text"/>
OTHER (please specify) <input style="width: 100%;" type="text"/>			

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

COURSE FORMAT: 1 2 3 4 5 6 weeks to full semester

OTHER FORMAT (specify all that apply)

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

4. COURSE CLASSIFICATIONS: (undergraduate courses only. Use approved criteria found on Page 10 & 17 of the manual. If justification is needed, attach on separate sheet.)

H = Humanities S = Social Sciences

Will this course be used to fulfill a requirement for the baccalaureate core? YES NO

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 Natural Science, Format 8 submitted

5. 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).

This is a research course; each time students take it they would perform new research

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

RECEIVED

JAN 21 2011

Dean's Office

College of Natural Science & Mathematics

Governance 2/11/11 KD

6. CURRENT CATALOG DESCRIPTION AS IT APPEARS IN THE CATALOG: including dept., number, title and credits

CHEM F488 Undergraduate Chemistry and Biochemistry Research

1-6 Credits

Advanced research topics from outside the usual undergraduate laboratory offerings. The student will be required to make presentations and turn in a final report. Research areas range from atmospheric chemistry to molecular biology. A substantial level of chemistry or biochemistry background is assumed. Special fees apply. (0+1-6)

7. COMPLETE CATALOG DESCRIPTION AS IT WILL APPEAR WITH THESE CHANGES: (Underline new wording strike through old wording and use complete catalog format including dept., number, title, credits and cross-listed and stacked.) PLEASE SUBMIT NEW COURSE SYLLABUS. For stacked courses the syllabus must clearly indicate differences in required work and evaluation for students at different levels.

CHEM F488 Undergraduate Chemistry and Biochemistry Research

~~1-6~~ 2-3 Credits

Advanced research topics from outside the usual undergraduate laboratory offerings. The student will be required to make presentations and turn in a final report. Research areas range from atmospheric chemistry to molecular biology. A substantial level of chemistry or biochemistry background is assumed. Special fees apply. (0+6-9~~1-6~~)

8. IS THIS COURSE CURRENTLY CROSS-LISTED?

YES/NO No

If Yes, DEPT

NUMBER

(Requires written notification of each department and dean involved. Attach a copy of written notification.)

9. GRADING SYSTEM: Specify only one

LETTER: XX

PASS/FAIL:

10. ESTIMATED IMPACT

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

No real impact; we are simply changing the number of credits that can be taken during each semester. The course is already taught every semester, and will continue that way.

11. 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 No Yes

The library provides chemical search tools, which are sufficient for this course.

12. 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)

Only our department (Chemistry and Biochemistry) is affected. By making this change, we will prevent students from taking too much research for a given semester and also prevent student from taking too little to make meaningful progress.

13. POSITIVE AND NEGATIVE IMPACTS

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

Positive: Students will be required to take a meaningful (more than one credit) but not overwhelming (less than four credits) of research.

Negative: Although I don't see it as negative, our majors are required to take a total of 4 credits of CHEM F488 (3 credits for Biochemistry concentration). With this change, they will need to take two semesters instead of one. However, I believe that the outcome will be better with this new model.

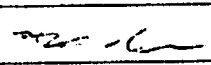
JUSTIFICATION FOR ACTION REQUESTED

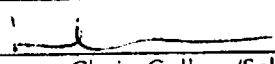
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory.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

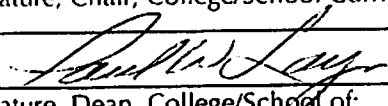
This course has allowed 1-6 credits, with the guidance that each credit equals a minimum of 3 productive hours in lab plus 1-2 hours of planning, notebook, writing, and reading outside of laboratory. Thus, we have approximately 5 hours per credit. With the new guidance of either 2-3 credits, students would be expending between 10-15 hours per week on the course, which we feel is reasonable to get significant work done, but not overwhelming for junior/senior students who have a busy schedule. Without this change, students could take 6 credits, equivalent to 30 hours per week, which is too difficult to fit into their schedule. Also, if they take one credit, the amount of commitment is so small that students don't get much done. The catalog description should also indicate the number of hours in laboratory, which we have now formalized as 3 hours per credit. The former description seemed to list the number of research credits.

See the attached syllabus for more details.

APPROVALS:

 Date
Signature, Chair, Program/Department of:

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

 Date
Signature, Dean, College/School of:

Date
Signature of Provost (if applicable)

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

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

Date
Signature, Chair, UAF Faculty Senate Curriculum Review Committee

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:

ATTACH COMPLETE SYLLABUS (as part of this application).

Note: The guidelines are online: <http://www.uaf.edu/uafgov/faculty/cd/syllabus.html>

The department and campus wide 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 change will 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.)

11. Support Services:

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

12. Disabilities Services:

The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials.

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

Chem 488 Undergraduate Research 2010-2011

Instructor: William Simpson
Office: 186 Reichardt Bldg
Contact: 474-7235, wrsimpson@alaska.edu

Safety Officer: Emily Reiter
Office: 194A Reichardt Bldg
Contact: 474-6748, e.reiter@alaska.edu

Catalog description. "Advanced research topics from outside the usual undergraduate laboratory offerings. The student will be required to make a presentation and turn in a final report. Research areas range from atmospheric chemistry to molecular biology. *A substantial level of chemistry or biochemistry background is assumed*".

(This usually means the student should at least have taken some lab course(s) past the 100-level, although ultimately it up to the individual professor whether a student is sufficiently qualified to do a research project in his or her lab. Research projects for freshmen and sophomores can also be done as Special Project 197/297/397 etc.)

Students! Before you begin working in a research lab you must complete lab safety training. Contact Emily Reiter (e.reiter@alaska.edu or 474-6748) for more information.

To do:

1. Attend organization meeting -- will be scheduled via emails, probably on 26 Jan 2011
2. Visit three profs and discuss their possible projects
3. Choose one project with the approval of the professor.
4. Write up a half-page description of the project and a description of potential hazards.
5. Get signatures from your new research mentor, and Emily Reiter
6. Make copies for yourself, and hand in the two pages in Simpson's mailbox, room 194
7. Pick up a lab book from 194, and start to work!
8. Participate in the weekly research group meetings.

General. Involvement in research can be an important ingredient in a successful and satisfying undergraduate program in chemistry or biochemistry. This course was established to give undergraduates a chance to participate in ongoing research projects in departmental laboratories, to discuss possible projects with department faculty, carry out the research, write a research report, and present a poster.

Expected Student Learning Outcomes. Students learn how current chemistry and biochemistry studies are conducted through direct research experience. In addition to conducting the research, students present their research and write a comprehensive report of the quality expected of by ACS for a graduating chemistry or biochemistry major.

American Chemical Society Definition of Undergraduate Research: The ACS Committee on Professional Training (CPT) approves our programs and defines undergraduate research in their guidelines (<http://www.uaf.edu/files/chem/CPT-BS-Guidelines2008.pdf>) as:

The research project should be envisioned as a component of a publication in a peer-reviewed journal. It should be well-defined, stand a reasonable chance of completion in the available time, apply and develop an understanding of in-depth concepts, use a variety of instrumentation, promote awareness of advanced safety practices, and be grounded in the primary chemical literature.

Research can satisfy up to four semester credit hours or six quarter credit hours of the in-depth course requirement for student certification and can account for up to 180 of the required 400 laboratory hours. A student using research to meet the ACS certification requirements must prepare a well-written, comprehensive, and well-documented research report including safety considerations. Although oral presentations, poster presentations, and journal article coauthorship are valuable, they do not substitute for the student writing a comprehensive report.

Number of credits. Credits are assigned at the beginning of the semester when students enroll, but may be subject to change as the result of consultation between the student and professor. One credit of 488 is reserved generally for library or small computational projects. In general, 2 credits provides an absolute minimum amount of time to accomplish a laboratory project; the usual lab-based project will require about 3 credits per semester. More than 3 credits per semester generally will not be approved. Each credit of 488 corresponds to an average weekly minimum of 3 hours working productively in the lab, plus one to two hours planning, interpretation, notebook writing, and reading outside of lab.

Finding a project. New 488 students, or those working with a different professor, must meet with at least three faculty members (see last page) to discuss possible projects, and select a research mentor. The signatures of the three faculty members must be obtained on the attached form. Also, write up a half-page statement outlining the proposed research project, including one reference, and a description of possible hazards associated with the project. This should be submitted by 5 PM of the 3rd Friday of the semester as a hard copy in the department chair's mailbox, or by email a PDF file to wrsimpson@alaska.edu. Please also send a copy to your mentor. This statement should be written in consultation with your research mentor. For more information about faculty and their research areas, visit the faculty web pages at <http://www.uaf.edu/chem/faculty>

Continuing students. *Each semester* 488 students must hand in a half-page statement outlining that semester's proposed research. If the procedures or materials of your ongoing project are different this semester than last, also note that at the bottom of the page, and get the signatures of your research professor and Emily Reiter. We need continuous documentation that you and your research professor are aware of the potential hazards of carrying out this research project in his or her lab.

Weekly meetings. Each week, our class will meet to discuss progress in research. The time of this meeting will be scheduled based upon your schedules, but I hope it can be on Fridays, starting with the 3rd Friday of the semester. Depending upon when we can schedule, there will be at least ten such weekly meetings. You need to present significant research progress (background literature research, things you have tried, whether successful or not) at these meetings. To allow for illness, travel, or other problems, you will be allowed to "pass" during approximately three weeks. However, you must present results during at least seven of these meetings to get full credit on your research participation aspect of the course. The amount of research you present must be judged by the professor (Simpson) to be appropriate for the number of credits you are signed up for (*e.g.* we expect more for somebody taking the course for three credits than from somebody taking two credits). Each presentation will be graded promptly as "acceptable" or "insufficient", with acceptable being 10 points, and insufficient as 0 points. Because seven such reports are required, you can get 70 points for this grading component.

Required semester report. *Each semester* a final written report in journal format is required. The report should follow the format of a manuscript to be submitted to a research journal. Early in the semester discuss the appropriate journal format with your mentor. Midway through the semester is not too early to begin writing the report using data obtained to date, describing the research background, and methods. Copies of the report are to be handed in to both your mentor and the instructor (Simpson) no later than 5 PM on the last day of final exams for that semester. **Your report is a public document, and we plan on showing it as examples of the work done in the class. We plan to post the reports on the department's web server.**

Poster. *Each semester,* research students must present a poster at the end-of-the-semester departmental potluck/poster session. If you are a continuing student, a poster describing your most recent results is required. The usual size is 36" x 36", which will be printed with departmental funds. A larger size may be appropriate if the student will be presenting a poster at a regional or national conference.

Grades. Your grade in the course is assigned by the instructor (Simpson) in consultation with your research mentor. The grade is based on the amount and quality of the research done, and the quality of the report and poster. Discuss grading with your research mentor early in the semester

to find out how he or she defines satisfactory progress on, or completion of, a research project. The components of the grade are described in the table below.

Grade component	Points
Progress Presentations (10 pts each, 7 required)	70
Poster	15
Semester Research Paper	40
Total	125

The grading scale is straight letter grades with no +/- . The cutoffs between the A, B, C, D, and F grades are 90%, 80%, 70%, and 60%.

Attendance. Establish a regular schedule of attendance in the lab in consultation with your mentor. You may also be asked to attend a regular research discussion with your mentor, and/or group meetings, which are informal research or literature discussion sessions held every so often during the semester. In addition to our class's weekly meetings (described above), regular attendance in the research lab, and at research meetings or group meetings, is *required*.

Notebook. Research-style notebooks must be obtained from the Department of Chemistry and Biochemistry. Do not purchase your own. Keep complete notes of data, procedures, and results using neat handwriting. The lab notebook may be taken home for report writing, but must ultimately remain in the lab or be turned in to the research mentor.

New-Digital data. Collections of other forms of data such as NMR spectra should contain cross-references to pages in the notebook. The digital data itself (IR spectra files, NMR spectra files, Gaussian log and checkpoint files, HyperChem .hin files, Excel spreadsheets, the report in .doc format, etc) should be burned on a CD, labeled, and handed in at the end of each semester.

Safety. All research students must complete laboratory safety training. This will involve several powerpoint training presentations (with quizzes that you must pass), the "Lab Safety and You" presentation given at the beginning of the semester, and one-on-one training session tailored to your project and the lab(s) in which you will be working. Contact Emily Reiter, the department's Laboratory Safety Coordinator in 194A Reichardt or e.reiter@alaska.edu or 474-6748, to arrange for training *before* beginning your project. Emily will require that you give her a brief written statement describing your project, especially emphasizing the safety and environmental aspects of the project.

Safety tips. While Emily will provide a thorough review of safety issues, and you will hopefully have gained safety knowledge in previous lab courses, here we emphasize several important points. Lab work must be carried out with all due caution. Do not work alone. Wear safety glasses at all times in the lab, even if you are not actually performing an experiment (someone else may be doing so!). Do not eat or drink in the lab. Do not rush. Do not attempt a procedure without the necessary training. Familiarize yourself with the potential hazards of materials you are using. Use common sense. This is a learning experience, so do not be bashful about asking for assistance.

Students with disabilities. For students with documented disabilities, we will work with the Office of Disabilities Services (*208 WHIT, 474-5655) to provide reasonable accommodation. If this situation applies, you must discuss accommodation plans with the course instructor (Simpson) and your chosen mentor by 5 PM of the 3rd Friday of the semester.

End of semester Lab Inspection Checklist. At the end of each semester, all students must complete Lab Inspection Checklist with the research mentor or Emily Reiter. The checklist will emphasize checking that all chemicals are properly stored, glassware has been washed and put away, and the lab space is generally neat.

University of Alaska Fairbanks
Department of Chemistry & Biochemistry

Undergraduate Research, Chemistry 488

Student Name _____
UAF email address _____@alaska.edu

Return this page with three or more signatures to Simpson's mailbox in Reichardt 194 no later than the 3rd Friday of the semester. Include a half-page description of the proposed research project.

Cathy Cahill	_____	Date: _____
Thomas Clausen .	_____	Date: _____
Kelly Drew	_____	Date: _____
Lawrence Duffy ..	_____	Date: _____
Brian Edmonds ...	_____	Date: _____
Thomas Green	_____	Date: _____
William Howard ..	_____	Date: _____
John Keller	_____	Date: _____
Thomas Kuhn	_____	Date: _____
Brian Rasley	_____	Date: _____
Marvin Schulte	_____	Date: _____
William Simpson	_____	Date: _____
Thomas Trainor ..	_____	Date: _____

I have agreed to serve as research mentor for the above student. A brief description of the proposed research, along with a statement of possible laboratory hazards associated with the project, is attached.

_____ Date: _____
Mentor Signature

_____ Number of Credit hours _____
Mentor Print name

The above student has completed his or her safety training and is approved for working on this project

_____ Date _____
Emily Reiter

Write neatly on this, or
type up your own.

University of Alaska Fairbanks
Department of Chemistry & Biochemistry
Undergraduate Research. Chemistry 488

Name _____ Semester _____
Mentor _____

Description of proposed research:

Lead-in literature reference:

Overview of planned laboratory procedures and materials, including descriptions of potentially hazardous procedures or materials.

488 LABORATORY CHECK-OUT LIST

Name _____

Advisor _____

Lab Space(s) Used

Check out performed by _____ on ___/___/___

Approved by PI? _____ on ___/___/___

	Checked
Desk/office area cleared: books, files, personal materials <small>Comments:</small>	
Turned in your lab notebook/copies of data/data files	
Benchtop/work area cleared <small>Comments:</small>	
Chemicals or solutions remaining—clearly labeled <small>Comments:</small>	
Samples or items in refrigerator or freezer in lab and/or in department <small>Comments:</small>	
Waste bottles remaining <small>Comments:</small>	
Dishes cleaned and returned. <small>Comments:</small>	
Fume hoods empty and clean <small>Comments:</small>	
Equipment borrowed from stockroom or other labs? Returned? <small>Comments:</small>	
Chemicals borrowed or used up from stockroom or other labs? <small>Comments:</small>	
Gas cylinders returned stockroom? <small>Comments:</small>	
Instruments cleaned and in good working order, no samples or waste remaining. <small>Comments:</small>	
Notice any damaged/defective/non-working equipment? List below.	
Notice any potential problems? Do you have comments or concerns? List below.	