

Submit original with signatures + 1 copy + electronic copy to UAF Governance.  
See <http://www.uaf.edu/uafgov/faculty/cd> 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	William Simpson	Phone	474-7235
Email Contact	wrsimpson@alaska.edu	Faculty Contact	Thomas Kuhn <tbkuhn@alaska.edu>

**1. ACTION DESIRED**

(CHECK ONE):

Trial Course

New Course

NEW

**2. COURSE IDENTIFICATION:**

Dept

CHEM

Course #

F675

No. of Credits

3

Justify upper/lower division status & number of credits:

This is a graduate-level course that consists of 3h or lecture/week.

**3. PROPOSED COURSE TITLE:**

Cellular Signaling

**4. To be CROSS LISTED?**  
YES/NO

No

If yes, Dept:

Course #

(Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)

**5. To be STACKED?**  
YES/NO

No

If yes, Dept.

Course #

**6. FREQUENCY OF OFFERING:**

Fall Even-numbered Years

Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) — or As Demand Warrants

**RECEIVED**

**7. SEMESTER & YEAR OF FIRST OFFERING (if approved)**

Fall 2012

**FEB 10 2011**

**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

XX

6 weeks to full semester

OTHER FORMAT (specify)

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

Lecture

**9. CONTACT HOURS PER WEEK:**

3

LECTURE  
hours/weeks

0

LAB  
hours/week

0

PRACTICUM  
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/cd/credits.html> for more information on number of credits.

OTHER HOURS (specify type)

**10. COMPLETE CATALOG DESCRIPTION including dept., number, title and credits (50 words or less, if possible):**

CHEM F675 Cellular Signaling  
Offered Fall Even-numbered Years  
3 credits

Cellular signaling is of vital importance in complex biomolecular systems, development, physiology, and pathology and thus, constitutes a major topic in modern medical and pharmacological research. This course concentrates on cellular signal transduction and regulation in higher animal and humans. Major topics include G-proteins, Protein kinases, Ca<sup>2+</sup> CAMK, lipid mediators, adaptor proteins and signal recognition domains. Prerequisites: Upper division of graduate biochemistry or neurochemistry course or permission of instructor.

**RECEIVED**

**FEB 25 2011**

Dean's Office  
College of Natural Science & Mathematics

**11. 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 ☐

W = Writing Intensive, Format 7 ☐

Natural Science, Format 8 ☐

**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).

N/A

How many times may the course be repeated for credit?

1

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?

3

CREDITS

**13. GRADING SYSTEM:** Specify only one.

LETTER: ☒ XX

PASS/FAIL: ☐

**RESTRICTIONS ON ENROLLMENT (if any).**

**14. PREREQUISITES**

Upper division or graduate biochemistry or neurochemistry course or permission of instructor.

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

**15. SPECIAL RESTRICTIONS, CONDITIONS**

N/A

**16. PROPOSED COURSE FEES**

\$ 0

Has a memo been submitted through your dean to the Provost & VCAS for fee approval?  
Yes/No

N/A

**17. PREVIOUS HISTORY**

Has the course been offered as special topics or trial course previously?  
Yes/No

Yes

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

Chem F693 Cellular Signaling, Spring 2010

**18. ESTIMATED IMPACT:**

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

The need for this course was identified by the graduate faculty of the Biochemistry and Molecular Biology Program. It was offered as a special topics in Spring 2010. We are now applying to make this an alternate-year graduate course. The BMB program educates students from several departments with interest in the biomedical field.

**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 ☐

No ☐

Yes ☐

Original articles available online or via e-mail requests will suffice

**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)

Students from Biology and Wildlife could take this course to enhance their knowledge, so there is positive impact there. We will advertise the course so as to get as many students as possible.

**21. POSITIVE AND NEGATIVE IMPACTS**

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

Positive: This expands the offerings available to students interested in biomedical and biochemical fields.

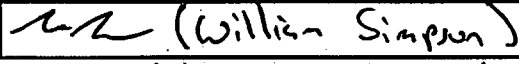
**Negative:** The offering of this course will restrict what other graduate courses we can offer; however, the need for teaching it outweighs the negative impact on other courses.

**JUSTIFICATION FOR ACTION REQUESTED**

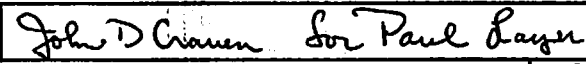
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory.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



Recent curricular planning in the Biochemistry and Molecular Biology program has found a lack of skills among the students in the field of cellular signaling. Comprehensive Examination of previous PhD candidates, thesis defenses (PhD and MS), as well as in-class exams in various undergraduate and graduate biochemistry courses demonstrated that our students suffered from a lack of understanding in the area of cellular signaling. In addition, cellular communication represents one of the fundamental biological processes, which our program lacked coverage to the disadvantage of our students. To enhance their education in a critical field of biochemistry and ultimately increase student's competitiveness in their future endeavor, BMB opted to provide this course. Therefore, this course was developed and offered once as a special topics course. With this change, we put the course in the catalog and plan to offer it every other year.

**APPROVALS:**

 (William Simpson) Date 9 Feb 2011  
Signature, Chair, Program/Department of: Chemistry and Biochemistry

 Date 24 Feb 2011  
Signature, Chair, College/School Curriculum Council for: CNSM

 Date 25 Feb 2011  
Signature, Dean, College/School of: CNSM

 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 F675**  
**Cellular Signaling**  
**“Biochemistry of Signal Transduction and Regulation”**

**Instructor:** Thomas Kuhn, 474-5752, [tbkuhn@alaska.edu](mailto:tbkuhn@alaska.edu)  
Department of Chemistry and Biochemistry  
Natural Science Facility, Annex I

**Office Hours:** please contact instructor via email or phone

**Lecture:** Tuesdays, Thursdays, 2:00 pm – 3:30 pm, REIC 165

**Text:** *Signal Transduction*  
Gomperts BD, Kramer IM, Tatham PER  
2<sup>nd</sup> Edition, Academic Press 2009  
ISBN 978-0-12-369441-6

**Course:**

This 3 credit course will concentrate on cellular signal transduction and regulation in higher animal and humans only. Cellular signaling is of vital importance in complex biomolecular systems, development, physiology, and pathology and thus, constitutes a major topic in modern medical and pharmacological research. Major topics include G-proteins, Protein kinases,  $\text{Ca}^{2+}$ , cAMP, lipid mediators, adaptor proteins and signal recognition domains. The suggested textbook serves as a basic reference. Course material is exclusively composed of review articles and primary research literature pertinent to the topics. All material will be distributed on a timely basis. Individual assignments will be distributed throughout the course of the semester.

**Course Goals:**

This course provides an understanding of the basic principles of intra- and intercellular signaling and the molecular level strongly emphasizing structure-function relationships. The aim is to concentrate on the best-studied components of signaling processes rather than to attempt a comprehensive overview of distinct signaling pathways.

**Learning Outcomes**

- Understand specificity of signals and amplification
- Integrate the structure/function relations in signal transduction
- Apply concepts to interpret experimental data, propose meaningful experimental approaches, and formulate hypotheses.
- Critical understanding of current research areas and problems

**Instructional Methods:**

The course is composed of lectures (approx. 15%), group discussion (approx. 70%), and individual oral presentations (approx 15%) depending on topic. Some course topic will be introduced through lectures by the Instructor and further explored in detail through discussions of primary literature and/or individual oral presentation from students. One aspect of discussions is to identify "missing knowledge" in our understanding of the molecular regulation of gene expression.

Blackboard will be utilized as a central communication platform for announcements, posting of lectures and reading material, and distribution/collection of exams.

**Grading:**

Students will be evaluated on the basis of their class *participation*, presentations, and exams.

Exams I (Midterm):	20%
Exam II (Final):	20%
Participation:	40%
Presentations:	20%

- Participation is extracted for each students and lecture topic. Active involvement in discussions are scored based on material read (15%), understanding of methodology (15%), ability to answer questions directly to text (45%), ability to answer questions extending the scope of text (25%)
- Presentations are scored as follows:

Content:	30%
Organization:	30%
Presentation:	25%
Quality of Discussion:	15%

**Course Policies:**

**Attendance:** Regular student attendance is expected to ensure consistent discussion activities and. Active student participation is vital and will account for a large part (60%) of the final grade.

**Exams:** Two exams will be given, one midterm and one final exam. These exams will be a combination of essay questions related to topics discussed and application of knowledge to research data. Makeup exams will only be allowed with pre-approval of the instructor or with an acceptable, documented reason such as unexpected illness, family emergencies or other unavoidable events.

**Presentations:** Students will receive adequate preparation time for all assignments. Content and organization of topics are the primary concern, however presentation and discussion are also subject to score (scoring sheet).

**Ethical Considerations:**

The Chemistry Department's policy of cheating is as follows: *"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"*.

**Plagiarism Policy:**

Plagiarism is defined as the use of "other" intellectual property without proper reference to the original author. Intellectual property includes all electronic, spoken or print media *thus any*

***information taken of the web is included under this statement.*** Students are expected to cite all sources used in oral and written presentations. Cases of plagiarism will be taken seriously with a grade 0 for the particular assignment. Severe cases may be referred to the Department Chair or Dean or class failing considered.

**Services –Support, Disabilities:**

Support services will be provided by the University of Alaska Library system, online resources and the instructor. Additional services are available through Student Support Services (<http://www.uaf.edu/sssp/>) at UAF. We will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide accommodations for students with disabilities.