

FORMAT 2

Submit originals (including syllabus) and one copy and electronic copy to the **Faculty Senate Office**
 See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/> for a complete description of the rules governing curriculum & course changes.

CHANGE COURSE (MAJOR) and DROP COURSE PROPOSAL

Attach a syllabus, except if dropping a course.

SUBMITTED BY:

Department	Biology & Wildlife	College/ School	CNSM
Prepared by	Kristin O'Brien	Phone	5311
Email Contact	kmobrien@alaska.edu	Faculty Contact	Kristin O'Brien

1. COURSE IDENTIFICATION: As the course now exists.

Dept	BIOL	Course #	F261	No. of Credits	4
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COURSE TITLE	Introduction to Cellular and Molecular Biology
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2. ACTION DESIRED: Changes to be made to the existing course.

CHANGE COURSE		X
DROP COURSE		
NUMBER		X
TITLE		X
DESCRIPTION		X
PREREQUISITES		X
FREQUENCY OF OFFERING		X
CREDITS (including credit distribution)		X
COURSE CLASSIFICATION		
CROSS LISTED		X
Dept. (Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)	CHEM F 261	X
STACKED (400/600) Include syllabi.		
Dept. and Course #		
OTHER (please specify)		

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 and the appropriate Faculty Senate curriculum committee. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.

Governance
9/27/12 TLP

COURSE FORMAT: (check <u>all</u> that apply)						1	2	3	4	5x	6 weeks to full semester
OTHER FORMAT (specify all that apply)											
Mode of delivery (specify lecture, field trips, labs, etc)										lecture	

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
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Will this course be used to fulfill a requirement for the baccalaureate core?	YES	NO	x
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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
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5. COURSE REPEATABILITY:

Is this course repeatable for credit?	YES	NO	x
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Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).

How many times may the course be repeated for credit?	TIMES
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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
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6. CURRENT CATALOG DESCRIPTION AS IT APPEARS IN THE CATALOG: including dept., number, title and credits

BIOL F261 Introduction to Cell and Molecular Biology (n)
4 Credits
 An introduction to the structure and function of cells. Topics include: the structure and function of cellular components, including proteins, membranes and organelles; understanding how cells communicate; and how information is processed in the cell via DNA replication, transcription and translation. Special fees apply. **Prerequisites: BIOL F115X; BIOL F116X; CHEM F105X; CHEM F106X or concurrent enrollment.** Crosslisted with CHEM F261. (3+3)

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.

F360 is the new approved course number.

**BIOL F2613XX Introduction to Cell and Molecular Biology-(n)
4 3 Credits Offered Fall or Spring**

An introduction to the structure and function of cells. Topics include: the structure and function of cellular components, including proteins, membranes and organelles; understanding how cells communicate; and how information is processed in the cell via DNA replication, transcription and translation. Special fees apply. **Prerequisites: BIOL F115X, BIOL F116X, BIOL F2XX; CHEM F105X; CHEM F106X or concurrent enrollment.** Crosslisted with CHEM F2613XX. (3+30)

F360 is the new course number.

Note to Registrar: the prerequisite BIOL F2XX refers to the revised Principles of Genetics course, currently BIOL F362.

8. IS THIS COURSE CURRENTLY CROSS-LISTED?

YES/NO	Yes	If Yes, DEPT	CHEM	NUMBER	F261
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(Requires written notification of each department and dean involved. Attach a copy of written notification.)

9. GRADING SYSTEM: Specify only one

LETTER:	<input checked="" type="checkbox"/>	PASS/FAIL:	<input type="checkbox"/>
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10. ESTIMATED IMPACT

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

Dropping the laboratory will allow the department to offer the course one semester per year. The change in frequency will free up faculty to teach other courses, notably new, exploratory lab courses that satisfy the new "capstone" requirement in biological sciences.

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	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No change to library needs
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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)

BIOL/CHEM F261 is one of a list of courses that satisfy a requirement for the B.S. in Chemistry (Biochemistry concentration). The chair of chemistry, William Simpson, has been contacted about the proposed change to BIOL F261 and did not object.

13. POSITIVE AND NEGATIVE IMPACTS

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

This change is part of larger set of changes to the Biological Sciences B.A. and B.S. curricula. The change in course level from 200 to 300 level will have a positive impact on biological sciences

students by improving the sequencing of courses. The revised course will require students to first take Principles of Genetics (now BIOL 362 but changing to 2XX), reducing the current overlap in content with that course and allowing the cell biology instructor to cover more sophisticated and detailed content. The revised 300-level cell and molecular biology course will, in turn, serve as a foundational course for the new B.S. concentration in cell and molecular biology, and as a prerequisite for 400 level cell and molecular biology courses in review and in development. Student interest in cellular and molecular biology has grown in recent years, and we anticipate that student interest in such courses will be high.

Dropping the laboratory from the course will help students to complete the degree requirements in a timely manner. One of the factors that slows student progress through the current Biological Sciences programs is the large number of required courses with labs, which time-intensive and particularly difficult for non-traditional students to schedule. The revised curriculum ensures that students have quality, hands-on experiences in biology by requiring that students complete one or more capstone projects. The revised Cell and Molecular Biology lecture course will prepare interested students for further courses or projects that satisfy the capstone requirement.

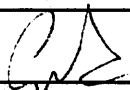
The change to the prerequisites will potentially impact chemistry majors, who may choose to take the course as part of the Biochemistry concentration requirements. Instead of being able to choose between Principles of Genetics and Intro to Cell and Molecular Biology, these students will need to take the Genetics course at the 200 level in order to take the Cell and Molecular Biology course.

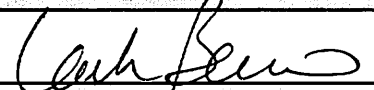
JUSTIFICATION FOR ACTION REQUESTED

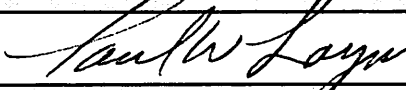
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory.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

Changes to the prerequisites, course level, and mode of delivery of the Cell and Molecular Biology course are part of a major revision of the biological science B.A. and B.S. curricula designed to improve both the quality of the educational experience and the efficiency with which students move through the program. The new prerequisite of Principles of Genetics (BIOL 2XX) will improve student preparation and reduce redundancy between the two courses. The upper division credit is justified by the more sophisticated and detailed treatment of the material that will be possible by building on the content of Principles of Genetics. The loss of the lab will help students to schedule, and the instructors think that they can offer a high-quality course without the lab. Interested students will have the option to build on what they learn in the revised Cell and Molecular Biology lecture course by advancing to a new, optional, 400-level capstone lab course that features research methods.

APPROVALS: (Additional signature blocks may be added as necessary.)

	Date
Signature, Chair, Program/Department of: <i>Biology and Wildlife</i>	<i>20 Sep 2012</i>

	Date
Signature, Chair, College/School Curriculum Council for: <i>CNSM</i>	<i>9/26/2012</i>

	Date
Signature, Dean, College/School of: <i>CNSM</i>	<i>9/26/12</i>

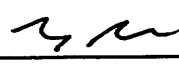
Signature of Provost (if applicable)	Date
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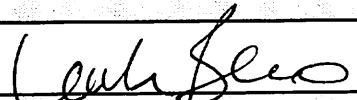
Offerings above the level of approved programs must be approved in advance by the Provost.

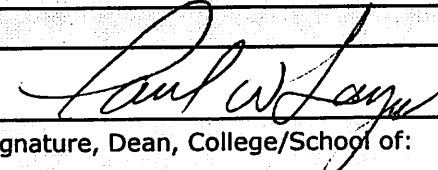
ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE.

Signature, Chair, UAF Faculty Senate Curriculum Review Committee	Date
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ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking)

	Date
Signature, Chair, Program/Department of: <i>Chem + Biochem</i>	<i>26 Sep 2012</i>

	Date
Signature, Chair, College/School Curriculum Council for: <i>CNSM</i>	<i>9/26/2012</i>

	Date
Signature, Dean, College/School of: <i>CNSM</i>	<i>9/26/12</i>

BIOL/CHEM 3XX Cell and Molecular Biology

3 Credits

Prerequisites: BIOL 2XX and CHEM 105
and CHEM 106 (or concurrent enrollment)

Professor: Dr. Kristin O'Brien
kmobrien@alaska.edu; 474-5311

Required items: *Molecular Cell Biology* (7th edition) by Lodish et al. (Freeman Publishing).

Course description: This course will provide an introduction to cell biology and will cover the following topics: cell chemistry, transcription, translation, cell architecture, metabolism, signal transduction pathways, cell division, and the cell cycle.

Course goals: Students will gain knowledge of cell structure and function, learn techniques commonly used in cell biology, gain insight into the cellular and molecular basis of disease, sharpen critical thinking skills, develop effective oral and written communication skills, and practice working with others to solve problems.

Instructional methods: This course will be taught through a combination of lectures, problem solving, and in-class oral and written exercises.

Policies: Students are expected to attend class and read the chapter listed in the syllabus prior to coming to class in preparation for group discussions and/or activities.

Exams: If you anticipate missing an exam for family or work commitments, please let me know in advance so that we can make other arrangements. If you must miss an exam because of unexpected, extenuating circumstances (ie; family death, medical excuse) then you must contact me as soon as possible.

Blackboard: Slides used in lecture will be posted on Blackboard prior to the lecture. Please do not use these as a substitute for taking notes. The slides will contain mostly figures, illustrating many of the complex processes we will be discussing during class. I use minimal text on slides and strongly encourage you take notes to enhance your understanding and learning of the material. Note taking is a skill that requires practice to master, and is essential for learning.

I also use Blackboard to post announcements, exam and homework keys, and any other interesting tidbits. Please check out the BB site on a regular basis. I also use the UAF email accounts to contact students. Please check your UAF account on a regular basis. If you use an alternate account, please have your UAF mail forwarded to that account.

Email etiquette: I will do my best to respond to your email inquiries within 24 hr. Please be considerate in your letters and use proper English grammar. Think before you send and please don't write anything that you would feel uncomfortable saying to me in person. Please sign your letter; addresses don't always reveal the identity of the writer.

Disabilities: I will work with the Office of Disabilities Service (203 WHIT, 474-7043) to provide accommodations in both the classroom and laboratory to provide equal access to all materials in this course to all students.

Grading: Your final grades will be based on the following:

- 1. Exams (400 pts):** There will be four exams during the semester, each worth 100 points. The final exam will cover the last section of material in the course and will NOT be cumulative. All exams will have a take-home portion worth 30 points that will be distributed 1 week prior to the in-class exam and will be due at the start of the in-class exam. NO LATE EXAMS WILL BE ACCEPTED, nor will any exams (or homework) be accepted via email. The purpose of these exams is to assess your understanding of the material and to develop your written communication skills and critical thinking skills.
- 2. Class participation and homework assignments (130 pts):** At the end of nearly every lecture, I will distribute 2-4 questions, worth a total of 5 points (110 points total), for you to work on as a homework assignment. At the start of the next lecture, you will spend ~ 5 min, working in groups to discuss the problems and finalize your answers. We will then go over the answers together. The purpose of these assignments is to assess your understanding of the material, enhance critical thinking skills, develop written and oral communication skills and practice working with others to solve problems. If you must miss class for a legitimate reason (ie; illness with a doctor's note or a University-sanctioned athletic event) then you will be provided with an assignment to complete during your absence, on your own. Your two lowest grades will be dropped. We will also be reading and discussing at least one scientific paper this semester. There will be a written assignment in preparation for the discussion, worth 20 points.
- 3. Research paper on the molecular biology of a disease (100 pts).** You will write a 5 page (single-spaced) research paper that describes the molecular basis of a disease of your choice. You must include at least three references from the scientific literature. The first draft will be due Nov. 20 and will be worth 50 points. This will be returned with corrections Nov. 29 and the second draft, worth 50 points will be due at the time of the final exam.

In summary your grade will be based on the following:

Exams:	4 X 100 =	400
Homework assignments		130
<u>Research paper</u>		<u>100</u>
		630 points

Tips for succeeding in cell biology: We will cover a large amount of material during this semester. Some of it may be familiar to you, but many topics will be new. Here are some suggestions for doing well in this course.

(1). Read the book before coming to lecture. This will allow you to familiarize yourself with the material before we cover it in lecture. Also, if you have questions about what you read, you can ask during the lecture. Please, never hesitate to ask a question! Undoubtedly there is someone else in the room wondering the same thing, and it will help everyone if I have an opportunity to explain something in a slightly different way or clarify a concept.

(2). Take notes during class. This is an excellent way to reinforce your learning of the material. Although I will post slides on Blackboard before the lecture, I will discuss the material in much more detail than is on each slide and you will be responsible for this material on the exam.

(3). Review your notes shortly after lecture, and ask me again if something is unclear, and/or fill in gaps with information from the text.

(4). Quiz yourself**.** Use the questions at the end of each chapter to test your understanding of the material. These questions are a GREAT way to study.

(5). Ask questions. Please feel free to visit me or your TA during office hours or as you need. Ask questions before, during, or after lecture. My job is to ensure that you ALL succeed in this class.

(6). Keep up with the material. You will not do well on exams if you postpone all of your studying until the night before the exam; there is simply too much material to review in one night. I encourage you to form study groups that meet each week to review the material (and do homework). The material you will learn in this course will form a foundation for much of your advanced course work in biology. If you put in the effort now, you will do much better in your future courses and they will be more enjoyable.

LECTURE SCHEDULE

Number	TOPIC	READING IN TEXT (Lodish et al.)
1	Introduction to cell biology I	Ch.1
2	Introduction and cell chemistry	Ch 1 &2
3	Proteins I	Ch 3
4	Proteins II	Ch 3
5	DNA and chromosomes	Ch 6
6	EXAM I	
7	DNA replication & repair	Ch 4
8	**Meselson and Stahl, 1958	
9	Gene expression I	Ch 7
10	Gene expression II	Ch 7
11	Post-transcriptional gene control I	Ch 8
12	Post-transcriptional gene control I II	Ch 8
13	EXAM II	
14	Cell membranes	Ch 10
15	Membrane transport	Ch 11
16	Protein sorting I	Ch 13
17	Protein sorting II	Ch 13
18	Cell communication I	Ch 15
19	Cell communication II	Ch 16
20	EXAM III	
21	Cytoskeleton I	Ch 17
22	Cytoskeleton II	Ch 17
23	Cell Division I	Ch 18
24	Cell Division II	Ch 18
25	THANKSGIVING: NO CLASS	
26	Cancer	Ch 24

27	Metabolism	Ch 12
28	Oxidative phosphorylation/ photosynthesis	Ch 12
29	Catch up	
30	FINAL EXAM 8-10 am	