Eastern Illinois University

New/Revised Course Proposal Format

(Approved by CAA on 4/3/14 and CGS on 4/15/14, Effective Fall 2014)

Banner/Catalog Information (Coversheet)

1. **__X__New Course or ____Revision of Existing Course**
2. **Course prefix and number:** ___BIO 5450_____
3. **Short title:** ____ Cell and Molecular Physiology_____
4. **Long title:** ____ Cell and Molecular Physiology_____
5. **Hours per week:** __3_ Class _0__ Lab _3__ Credit
6. **Terms:** ___ Fall ___ Spring ___ Summer __X_ On demand
7. **Initial term**: __ Fall ___ Spring _X_ Summer Year: __2022___
8. **Catalog course description:**

   An examination of the molecular and biochemical mechanisms responsible for animal development and homeostasis, as well as cellular repair and immunity.

9. **Course attributes:** N/A

   General education component: _____

   ___ Cultural diversity ___ Honors ___ Writing centered ___ Writing intensive ___Writing active

10. **Instructional delivery**
    Type of Course:

    _X__ Lecture ___ Lab ___ Lecture/lab combined ___ Independent study/research

    ___ Internship ___ Performance ___ Practicum/clinical ___ Other, specify: _____

    Mode(s) of Delivery:

    _X__ Face to Face ___ Online ___ Study Abroad

    ___ Hybrid, specify approximate amount of on-line and face-to-face instruction_____

11. **Course(s) to be deleted from the catalog once this course is approved.** N/A
12. **Equivalent course(s):** ___N/A_____

    a. Are students allowed to take equivalent course(s) for credit? ___ Yes ___ No

13. **Prerequisite(s): ____**BIO 3120 (Molecular and Cellular Biology) or equivalent course**_____**

    a. Can prerequisite be taken concurrently? ___ Yes _X_ No

    b. Minimum grade required for the prerequisite course(s)? _C_

    c. Use Banner coding to enforce prerequisite course(s)? ___ Yes _X_ No

d. Who may waive prerequisite(s)?

___ No one _X_ Chair _X_ Instructor ___ Advisor ___ Other (specify)

14. Co-requisite(s): ___N/A_____

15. Enrollment restrictions

a. Degrees, colleges, majors, levels, classes which <u>may</u> take the course: Graduate students in the Department of Biological Sciences or Department of Chemistry and Biochemistry.

b. Degrees, colleges, majors, levels, classes which may <u>not</u> take the course: all others

16. Repeat status: _X__ May not be repeated ___ May be repeated once with credit

17. Enter the limit, if any, on hours which may be applied to a major or minor: _3__

18. Grading methods: _X__ Standard ___ CR/NC __ Audit ___ ABC/NC

19. Special grading provisions:

___ Grade for course will <u>not</u> count in a student's grade point average.

___ Grade for course will <u>not</u> count in hours toward graduation.

___ Grade for course will be removed from GPA if student already has credit for or is registered in: _____

__X_ Credit hours for course will be removed from student's hours toward graduation if student already has credit for or is registered in:

BIO 5400 (Cell Physiology), or BIO 5460K (Special Topics: Cell Physiology) with CRNs of 94913 (2018), 60330 (2019), 60130 (2020), 96550 (2020), 60285 (2021), or 96550 (2021)

20. Additional costs to students:
Supplemental Materials or Software____N/A_____

Course Fee _X__No ___Yes, Explain if yes_____

21. Community college transfer:

___ A community college course may be judged equivalent.

_X__ A community college may <u>not</u> be judged equivalent.

Note: Upper division credit (3000+) will <u>not</u> be granted for a community college course, even if the content is judged to be equivalent.

Rationale, Justifications, and Assurances (Part I)

1. ___Course is required for the major(s) of _____
   ___Course is required for the minor(s) of _____
   ___Course is required for the certificate program(s) of _____
   _X__ Course is used as an elective
2. **Rationale for proposal**:
   The existing course that covers some of the proposed content (BIO 5400: Cell Physiology; 3-3-4) has limited focus on the biochemical mechanisms involved in the physiology of cells. The advancements in molecular biology (*e.g.* genomics and proteomics) have allowed for a deeper understanding of the processes that govern cell physiology. The proposed course is particularly relevant for graduate students engaged in thesis-based research in molecular and cellular biology, as well as non-thesis graduate students with health career aspirations.
3. **Justifications for (answer N/A if not applicable)**
   Similarity to other courses: The proposed course has some similarities to BIO 5400 (Cell Physiology; 3-3-4), although that course tends to focus on prokaryotic life and has a substantial laboratory component.
   Prerequisites: This course requires foundational knowledge of molecular and cellular biology at the undergraduate level.
   Co-requisites: N/A
   Enrollment restrictions: This course requires a thorough background in molecular biology and biochemistry, which is typical of M.S. students in the Department of Biological Sciences and the Department of Chemistry and Biochemistry.
   Writing active, intensive, centered: N/A
4. **General education assurances (answer N/A if not applicable)**
   General education component: N/A
   Curriculum: N/A
   Instruction: N/A
   Assessment: N/A
5. **Online/Hybrid delivery justification & assurances (answer N/A if not applicable)**
   Online or hybrid delivery justification: N/A
   Instruction: N/A
   Integrity: N/A
   Interaction: N/A

Model Syllabus (Part II)

Please include the following information:

1. **Course number and title:** BIO 5450 (Cell and Molecular Physiology)

2. **Catalog description:**

   An examination of the molecular and biochemical mechanisms responsible for animal development and homeostasis, as well as cellular repair and immunity.

3. **Learning objectives:**

   - Apply existing knowledge of molecular biology and genetics to eukaryotic development and immunity (GLG-1, GLG-2)
   - Understand the biochemical interactions between prokaryotes and eukaryotes at a systems level (GLG-1, GLG-2)
   - Identify the molecular and biochemical mechanisms involved with cellular damage and repair (GLG-1, GLG-2)
   - Develop effective communication strategies for advanced physiological processes (GLG-1, GLG -2, GLG -3, GLG -4, GLG-5)

   Graduate Learning Goals
   1. Depth of content knowledge, 2. Effective critical thinking and problem solving, 3. Effective oral and written communication, 4. Advanced scholarship through research or creative activity, and 5. Ethical and professional responsibility (effective Spring 2021)

4. **Course materials:**

   Molecular Biology of the Cell, 6th ed., Alberts et al., 2014. W.W. Norton & Co. ISBN: 0815344325.

5. **Weekly outline of content:**

Week	Topic
1	Cells and Genomes/Overview of Development
2	Mechanisms of Pattern Formation
3	Developmental Timing
4	Morphogenesis and Growth
5	Neural Development
6	Stem Cells and Renewal
7	Fibroblasts/Skeletal Muscle
8	Blood Cell Formation
9	Regeneration and Repair
10	Cell Programming
11	Pathogens and the Human Microbiota
12	Cell Biology of Infection
13	Cancer-Critical Genes/Cancer Prevention and Treatment
14	Innate Immune System
15	Adaptive Immune System
16	Final Exam

6. Assignments and evaluation, including weights for final course grade.

Exam I	17.5%
Exam II	17.5%
Exam III	17.5%
Exam IV	17.5%
Essay (Infectious Disease)	20%
Class Discussions	10%

7. Grading scale:

90-100% (A), 80-89% (B), 70-79% (C), 60-69% (D), <60% (F)

8. Correlation of learning objectives to assignments and evaluation.

	Exams (70%)	Essay (20%)	Class Discussions (10%)
Apply existing knowledge of molecular biology and genetics to eukaryotic development and immunity (GLG-1, GLG-2)	X	X	X
Understand the biochemical interactions between prokaryotes and eukaryotes at a systems level (GLG-1, GLG-2)	X	X	X
Identify the molecular and biochemical mechanisms involved with cellular damage and repair (GLG-1, GLG-2)	X	X	X
Develop effective communication strategies for advanced physiological processes (GLG-1, GLG -2, GLG -3, GLG -4, GLG-5)	X	X	X

Date approved by the department or school: September 17, 2021
Date approved by the college curriculum committee: November 17, 2021
Date approved by the Honors Council ***(if this is an honors course):***
Date approved by CAA: **CGS:**