

BIO 280: ADVANCED MOLECULAR BIOLOGY

In Workflow

1. BIO Committee Chair (kneitel@csus.edu)
2. BIO Chair (kneitel@csus.edu)
3. NSM College Committee Chair (tsk@csus.edu)
4. NSM Dean (datwyler@csus.edu)
5. Academic Services (torsetj@csus.edu; cnewsome@skymail.csus.edu)
6. Senate Curriculum Subcommittee Chair (curriculum@csus.edu)
7. Dean of Undergraduate (james.german@csus.edu; celena.showers@csus.edu)
8. Dean of Graduate (cnewsome@skymail.csus.edu)
9. Catalog Editor (torsetj@csus.edu)
10. Registrar's Office (w lindsey@csus.edu)
11. PeopleSoft (PeopleSoft@csus.edu)

Approval Path

1. Tue, 13 Apr 2021 19:59:21 GMT
Jamie Kneitel (kneitel): Rollback to Initiator
2. Tue, 20 Apr 2021 01:44:11 GMT
Jamie Kneitel (kneitel): Rollback to Initiator
3. Tue, 20 Apr 2021 14:50:12 GMT
Jamie Kneitel (kneitel): Approved for BIO Committee Chair
4. Tue, 20 Apr 2021 14:50:55 GMT
Jamie Kneitel (kneitel): Approved for BIO Chair
5. Thu, 22 Apr 2021 17:01:25 GMT
Thomas Krabacher (tsk): Rollback to BIO Chair for NSM College Committee Chair
6. Thu, 22 Apr 2021 17:17:31 GMT
Jamie Kneitel (kneitel): Rollback to BIO Committee Chair for BIO Chair
7. Fri, 23 Apr 2021 02:10:38 GMT
Jamie Kneitel (kneitel): Rollback to Initiator
8. Fri, 30 Apr 2021 23:41:47 GMT
Jamie Kneitel (kneitel): Approved for BIO Committee Chair
9. Fri, 30 Apr 2021 23:42:14 GMT
Jamie Kneitel (kneitel): Approved for BIO Chair
10. Wed, 05 May 2021 22:12:46 GMT
Thomas Krabacher (tsk): Approved for NSM College Committee Chair
11. Wed, 05 May 2021 22:13:45 GMT
Shannon Datwyler (datwyler): Approved for NSM Dean

New Course Proposal

Date Submitted: Fri, 23 Apr 2021 04:22:43 GMT

Viewing: BIO 280 : Advanced Molecular Biology

Last edit: Fri, 23 Apr 2021 04:22:41 GMT

Changes proposed by: Andrew Reams (214603026)

Contact(s):

| Name (First Last) | Email | Phone 999-999-9999 |
|-------------------|-----------------------|--------------------|
| Andrew Reams | andrew.reams@csus.edu | 916-278-7678 |

Catalog Title:

Advanced Molecular Biology

Class Schedule Title:

Advanced Molecular Biology

Academic Group: (College)

NSM - Natural Sciences & Mathematics

Academic Organization: (Department)

Biological Sciences

Will this course be offered through the College of Continuing Education (CCE)?

No

Catalog Year Effective:

Spring 2022 (2022/2023 Catalog)

Subject Area: (prefix)

BIO - Biological Sciences

Catalog Number: (course number)

280

Course ID: (For administrative use only.)

TBD

Units:

4.0

In what term(s) will this course typically be offered?

Fall, Spring

Does this course require a room for its final exam?

Yes, final exam requires a room

Does this course replace an existing experimental course?

No

This course complies with the credit hour policy:

Yes

Justification for course proposal:

The Biological Sciences Graduate Committee wishes to create a new graduate level elective course, called Bio 280, to be paired with the undergraduate class Bio 180 (Advanced Molecular Biology) to better serve both our undergraduate and graduate students. Bio 180 is an existing advanced upper division course taken almost entirely by seniors. It consists of both a lab and lecture and is required by three concentrations within the Biological Sciences major: Cell and Molecular Biology, Microbiology, and Forensic Biology concentrations. Prior to Spring 2019, this advanced level course was offered during Fall semesters only. However, since Spring 2019 semester, this course is now being offered during both Fall and Spring semesters, thereby increasing its capacity.

Bio 180 can be easily modified to be paired with a new graduate level Bio 280 course. The rigor will be increased for graduate students by requiring a greater depth of explanations and quality of work that meets the expectations for assignments, labs, presentations, and research project. Bio 280 will place a greater emphasis and point value on the development of scientific presentation skills. In addition to the normal assignments for Bio 180, graduate students will lead a class paper discussion and complete a more in-depth written report on their research projects.

This proposed new course would help us better serve both our undergraduate and graduate students. In particular, this change would double our course offerings for our MS students in the Cell and Molecular Biology concentration, as we currently only offer one graduate elective molecular biology course (lecture only) during Spring semester and none during Fall semester. In addition, we expect this change would improve the learning experiences of both student populations. We expect the graduate students would improve the quality of interactions and class discussions for undergraduates and possibly encourage them to pursue graduate school. Graduate students would benefit from the addition of a lab section, which would provide more hands-on training in lab techniques commonly using in molecular and genetic careers and more opportunities to develop scientific presentation skills.

To cover the additional costs for consumable molecular lab materials we are requesting a fee associated with this course. The fee will be the same as the undergraduate version (Bio 180) that already has a lab fee.

Course Description: (Not to exceed 80 words and language should conform to catalog copy.)

Advanced examination of the structure of genes and genomes, the mechanisms by which they change, and the laboratory tools used to study and understand gene function. Analysis of the molecular mechanisms of gene expression, their regulation, phenotypes, and the tools used to study these processes. Application of molecular tools in medicine and biotechnology and the ethics of these approaches. Emphasis on the critical evaluation, review, and presentation of molecular biology research literature. Paired with Bio 180. Fee course.

Are one or more field trips required with this course?

No

Fee Course?

No

Is this course designated as Service Learning?

No

Does this course require safety training?

No

Does this course require personal protective equipment (PPE)?

Yes

Course Note: (Note must be a single sentence; do not include field trip or fee course notations.)

Lecture two hours, laboratory six hours.

Does this course have prerequisites?

No

Does this course have corequisites?

No

Graded:

Letter

Approval required for enrollment?

No Approval Required

Course Component(s) and Classification(s):Laboratory
Lecture**Laboratory Classification**

CS#16 - Science Laboratory (K-factor=2 WTU per unit)

Laboratory Units

2

Lecture Classification

CS#04 - Lecture /Recitation (K-factor=1 WTU per unit)

Lecture Units

2

Is this a paired course?

Yes

Please confirm that it complies with the Paired Courses Policy and enter the course with which it is paired:

BIO 180

Is this course crosslisted?

No

Can this course be repeated for credit?

No

Can the course be taken for credit more than once during the same term?

No

Description of the Expected Learning Outcomes: Describe outcomes using the following format: "Students will be able to: 1), 2), etc."

Students will:

1. Use bioinformatic tools to identify and compare key genomic features in model organisms to reveal evolutionary patterns that provide insight into biological function.
2. Apply molecular biology tools to design, construct, and verify site-specific mutant strains for addressing unanswered research questions.

3. Produce and analyze novel experimental data to test and identify the unknown functions of gene products and investigate their molecular pathways.
4. Predict and evaluate the effects of regulating gene expression by its translation into phenotypes under different conditions.
5. Use oral and written communication to present and critique molecular biology literature and novel experimental data.
6. Analyze how molecular biology tools are being applied in medicine and biotechnology, evaluate their limitations, and debate some of the ethical questions that surround them.

Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above.

Assessment Strategies:

Exams and Quizzes: Expected Learning Outcomes (ELO) 1-6

Oral Presentation and Leading Class Discussion: ELO 4-5

Lab Research: ELO 1-6

Written Research Report: ELO 1-5

For whom is this course being developed?

Majors in the Dept

Is this course required in a degree program (major, minor, graduate degree, certificate?)

No

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?

No

Will there be any departments affected by this proposed course?

Yes

Indicate which department(s) will be affected by the proposed course:

Department(s)

Biological Sciences

I/we as the author(s) of this course proposal agree to provide a new or updated accessibility checklist to the Dean's office prior to the semester when this course is taught utilizing the changes proposed here.

I/we agree

University Learning Goals

Graduate (Masters) Learning Goals:

Critical thinking/analysis

Communication

Information literacy

Professionalism

Research (optional)

Is this course required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?

No

Is this a Graduate Writing Intensive (GWI) course?

No

Please attach any additional files not requested above:

BIO 280 Syllabus - Spring 2022.pdf

BIO 180 Syllabus - Spring 2022.pdf

Reviewer Comments:

Jamie Kneitel (kneitel) (Tue, 13 Apr 2021 19:59:21 GMT): Rollback: Fee course

Jamie Kneitel (kneitel) (Tue, 20 Apr 2021 01:44:11 GMT): Rollback: Lab fees

Thomas Krabacher (tsk) (Thu, 22 Apr 2021 17:01:25 GMT): Rollback: the NSM is rolling back the BIO 280 proposal for two reasons: First: as a graduate course, the learning outcome expectations should be at a higher than those for UG courses. They should expected student performance to be at the level of "apply" or above (see Bloom's Taxonomy for details) University levelwreview will likely roll the course back if they are not. [Prof. Ballerine, a CRC member, can provide details]. Second: You need to change the Catalog year.

it is too late for Fall 2021, the earliest it can be included in Spring 2022. CRC suggests the department resubmit the proposal at the beginning of Fall 2021. (Note: you should check whether the university level committee will want to see BIO 180 in connection with this proposal, as well)

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Key: 14472