

BIO 121: MOLECULAR CELL BIOLOGY

In Workflow

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Approval Path

1. Tue, 18 Mar 2025 19:45:05 GMT
Susanne Lindgren (lindgren): Approved for BIO Committee Chair
2. Tue, 18 Mar 2025 20:11:12 GMT
Susanne Lindgren (lindgren): Approved for BIO Chair
3. Wed, 19 Mar 2025 23:30:28 GMT
Mikkel Jensen (mikkel.jensen): Approved for NSM College Committee Chair
4. Fri, 21 Mar 2025 15:54:09 GMT
Chris Taylor (ctaylor): Approved for NSM Dean

Date Submitted: Tue, 18 Mar 2025 01:21:55 GMT

Viewing: BIO 121 : Molecular Cell Biology

Last edit: Tue, 18 Mar 2025 20:11:06 GMT

Changes proposed by: Jonathan Gilkerson (223010359)

Contact(s):

| Name (First Last) | Email | Phone 999-999-9999 |
|--------------------|--------------------|--------------------|
| Jonathan Gilkerson | gilkerson@csus.edu | 916-278-4452 |

Catalog Title:

Molecular Cell Biology

Class Schedule Title:

Molecular Cell 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 2026 (2026/2027 Catalog)

Subject Area: (prefix)

BIO - Biological Sciences

Catalog Number: (course number)

121

Course ID: (For administrative use only.)

105891

Units:

3

Is the ONLY purpose of this change to update the term typically offered or the enforcement of existing requisites at registration?

No

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

This course complies with the credit hour policy:

Yes

Justification for course proposal:

We are adding CHEM 1B as prerequisite to BIO 121. This change was approved by the BioSci department, and should not affect CHEM 1B enrollment as CHEM 1B is already required by all majors in BioSci. The addition of this prerequisite is meant to serve two purposes:

Purpose 1- To better prepare students for BIO 121 content: BIO 121 covers cell biology at the molecular level, which requires a good foundation of chemistry knowledge. Adding this prerequisite will ensure that students are set-up for success in BIO 121, which we hope reduces the DFW rate in the course.

Purpose 2 - To help students stay on track with both BIO and CHEM requirements for BioSci degrees: The BioSci degrees require several additional CHEM courses for which CHEM 1B is a prerequisite (e.g., CHEM 20/CHEM 24, CHEM 161) and several BIO upper division courses require these more advanced CHEM courses. Adding CHEM 1B as a prerequisite for BIO 121 will help ensure that BioSci students remain on track with the required chemistry courses and upper division BIO courses required for many of the BioSci degree concentrations. Without CHEM 1B as a prerequisite to BIO 121, students can continuously enroll in upper division BIO electives that do not require chemistry, but that do not actually help the students reach BioSci degree requirements, allowing students to accumulate units without actually progressing toward graduation (i.e., students continue to take electives past degree unit requirements for electives in lieu of taking required courses that require higher level chemistry).

Course Description: (Not to exceed 90 words and language should conform to catalog copy.)

Comparison of the cellular and molecular biology of prokaryotic and eukaryotic cells. Emphasis will be placed on membrane structures, transport phenomena, cell to cell communication, cellular reproduction, genetic architecture, gene expression and metabolism, as well as the eukaryotic endomembrane, cytoskeleton and extracellular matrix systems. Lecture three hours.

Are one or more field trips required with this course?

No

Fee Course?

No

Is this course designated as Service Learning?

No

Is this course designated as Curricular Community Engaged Learning?

No

Does this course require safety training?

No

Does this course require personal protective equipment (PPE)?

No

Does this course have prerequisites?

Yes

Prerequisite:

BIO 184 and CHEM 1B

Prerequisites Enforced at Registration?

Yes

Does this course have corequisites?

No

Graded:

Letter

Approval required for enrollment?

No Approval Required

Course Component(s) and Classification(s):

Lecture

Lecture Classification

CS#02 - Lecture/Discussion (K-factor=1WTU per unit)

Lecture Units

3

Is this a paired course?

No

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 and Assessment Strategies:

List the Expected Learning Outcomes and their accompanying Assessment Strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers). Click the plus sign to add a new row.

| | Expected Learning Outcome | Assessment Strategies |
|----|--|---|
| 1 | Explain and compare the regulatory mechanisms of gene and protein expression. | Exams, quizzes, and in-class activities |
| 2 | Compare and contrast different cell signaling pathways. | Exams, quizzes, and in-class activities, online discussions |
| 3 | Explain and illustrate cellular proliferation, differentiation, and death mechanisms. | Exams, quizzes, in-class activities, online discussions |
| 4 | Compare and contrast major cell types and tissue types of multicellular organisms; identify how cell and tissue structure influences function. | Exams, quizzes, and in-class activities |
| 5 | Evaluate and make predictions about cellular and molecular phenotypes resulting from genetic mutations. | Exams, quizzes, and in-class activities |
| 6 | Interpret sets of quantitative and qualitative data using models and use models to predict changes to cellular physiology. | Exams, quizzes, and in-class activities |
| 7 | Formulate questions and hypotheses using methods of cell and molecular biology. | Exams, quizzes, in-class activities, Online discussions |
| 8 | Evaluate reliable indicators of species complexity. | Exams, quizzes, and in-class activities |
| 9 | Explain the mechanisms and regulation of intracellular protein transport. | Exams, quizzes, and in-class activities |
| 10 | Explain and compare the functions cellular structures including membranes, organelles, extracellular matrix, and the cytoskeleton. | Exams, quizzes, and in-class activities |

| | | |
|----|---|---|
| 11 | Create drawings and diagrams of the cellular/molecular processes. | Exams, quizzes, in-class activities, Online discussions |
|----|---|---|

Attach a list of the required/recommended course readings and activities:

Biology 121 Syllabus Spring26 Gilkerson Updated LOs.pdf

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

Yes

Has a corresponding Program Change been submitted to Workflow?

No

Identify the program(s) in which this course is required:**Programs:**

BA in Biological Science

BS in Biological Science (Biomedical Sciences)

BS in Biological Science (Cell and Molecular Biology)

BS in Biological Science (Clinical Laboratory Sciences)

BS in Biological Science (General Biology)

BS in Biological Science (Microbiology)

BS in Biological Science (Forensic Biology)

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)**

Chemistry

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**Undergraduate Learning Goals:**

Competence in the disciplines

Knowledge of human cultures and the physical and natural world

Intellectual and practical skills

Integrative learning

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

GE Course and GE Goal(s)**Is this a General Education (GE) course or is it being considered for GE?**

No

Please attach any additional files not requested above:

review of changes in CHEM prereq for 3 BioSci courses.pdf

Key: 425