

## Programmatic Assessment

Term: Spring 2024

Department: Biology

Course: BIOL 270 Intermediate Cell and Molecular Biology

PLO #1 (Knowledge): Demonstrate mastery of core concepts in Cell and Molecular Biology (biochemistry and cell organelle processes, macromolecules, enzyme activity and regulation, cell-cell communication, molecular genetics, including DNA replication and mutation, gene structure, regulation of gene expression, bacteriophages and viruses, and genetic engineering)— embedded tests

Level of Skill: Developing

Course CLOs:

- Understand and describe the structures and purposes of basic components of cells, especially macromolecules, membranes, and organelles.
- Understand how various cellular components are used to generate and utilize energy in cells.
- Apply knowledge of cell biology to various examples of changes or losses in cell functions.
- Explore and describe core concepts of genetics and signal transduction in cells.

Artifact: Exam 5 (last exam of the course)

Exam question (area of content):

Q1: principles of electrophysiology

Q2: how different neurons can use diverse transmitters to activate different receptors

Q3: amplification through intracellular molecular cascades

Q4: molecular cascades and pathology

Q5: intracellular calcium concentrations

Q6: mitosis

Q7: human chromosomes

Q8: mitosis versus meiosis

Q9: retinoblastoma and cell regulation

Q10: sporadic and hereditary forms of retinoblastoma

The following scale was used by the instructor of the course to evaluate answers for all ten questions:

Full correct answer: 4 points

Partial correct answer: 2 points

Completely incorrect answer: 0

Data:

Student	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
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1	4	4	4	4	4	4	4	4	4	4
2	4	4	4	4	4	4	4	4	4	4
3	4	4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	4	4	4	4	4
5	4	4	4	4	4	4	4	4	4	4
6	4	4	4	4	4	4	4	4	4	4
7	4	4	4	4	4	4	4	4	4	4
8	4	4	4	4	4	4	4	4	4	4
9	4	4	4	4	4	4	4	4	4	4
10	4	4	4	4	4	4	4	4	4	4
11	4	4	4	4	4	4	4	4	4	4
12	4	4	4	4	4	4	4	4	0	0
13	4	4	4	4	4	4	4	4	4	4
14	4	4	4	4	4	4	4	4	4	4
15	4	4	4	4	4	4	4	4	4	4
16	4	4	4	4	4	4	4	4	4	4
17	4	4	4	4	4	4	4	4	4	4
18	4	4	4	4	4	4	4	4	4	4
19	4	4	4	4	4	4	4	4	4	4
20	4	4	4	4	4	4	4	4	4	4
21	4	4	4	4	4	4	4	4	4	4
22	4	4	4	4	4	4	4	4	4	4
23	4	4	4	4	4	4	4	4	4	4
24	4	4	4	4	4	4	4	4	4	4
25	4	4	4	4	4	4	4	4	4	4

Observations: Of the twenty-five student (n = 25), only one student could not correctly answer questions 9 and 10. Apart from following up in person with student #12, the department is satisfied with the results.