

Biology

FELOs in Biology Courses, Sp2023

A. PLNU General Education courses (BIO 1001, 1002, 1003, 1005, 2010 & 2011)

FELO 1d: Critical Thinking

Students will be able to examine, critique and synthesize information in order to arrive at reasoned conclusions. This outcome will be measured yearly via direct, summative assessment.

Outcome Measure: Signature Assignment: Multiple choice questions on the final exam taken from the Test of Scientific Literacy Skills (TOSLS). The whole class was assessed.

Criteria for Success: For BIO1001, 1002, 1003, 1005, 2010, and 2011, at least 60% of the students will answer the questions correctly (an average of 60% for all of the questions). 60% was chosen since these are all introductory courses. BIO2010 and BIO2011 are freshmen courses for all Biology Department majors and also service courses for Allied Health majors. BIO1001, 1002, 1003, and 1005 are General Biology courses for all other majors. Questions from the TOSLS were chosen that specifically addressed critical thinking and were appropriate for the content of each course.

Biology: FELO Data, Spring, 2023

Longitudinal Data:

| | SPRING, 2023 | | FALL, 2022 | | SPRING, 2022 | | FALL, 2021 | |
|--------------|--------------|---|------------|---|--------------|---|------------|---|
| Class | n | % of Students Answering TOSLS Questions Correctly (Ave + S.D.) | n | % of Students Answering TOSLS Questions Correctly (Ave + S.D.) | n | % of Students Answering TOSLS Questions Correctly (Ave + S.D.) | n | % of Students Answering TOSLS Questions Correctly (Ave + S.D.) |
| BIO1001 | 28 | 74+11 | 44 | 73 +15 | NA | Not tested | 43 | 81 +13 |
| BIO1002 | | Not offered | 79 | 70 ±5 | NA | Not offered | 76 | 68 ±6 |
| BIO1003 | 45 | 73 +13 | 46 | 71 +12 | 47 | 76 +11 | 45 | 72 +16 |
| BIO1005 | 43 | 72 +7 | 47 | 72 +11 | 39 | 71 +12 | NA | Not tested |
| BIO2010 | 76 | 83+10 | 90 | 77 +16 | 92 | 80 +13 | 91 | 76 +15 |

| | | | | | | | | |
|---------|----|---------|----|---------|----|--------|----|--------|
| BIO2011 | 63 | 78 + 13 | 41 | 73 + 10 | 70 | 76 + 9 | 46 | 72 + 4 |
|---------|----|---------|----|---------|----|--------|----|--------|

Conclusions Drawn from Data: The students in the various GE courses are meeting the criteria for critical thinking.

Changes to be Made Based on Data: We will continue to use these questions for summative assessment in our GE courses.

Rubric:

Gormally, C., Brickman, P., and Lutz, M. “Developing a Test of Scientific Literacy Skills (TOSLS): Measuring Undergraduates’ Evaluation of Scientific Information and Arguments.” C.B. E. Life Science Education 11(4): 364–377 (2012).

BIO1001: Questions 1, 4, 6, 7, 8, 11, 12, 13, 14, 18, 28

BIO1002: Questions 2, 6, 18, 28

BIO1003: Questions 4, 6, 7, 8, 11, 12, 13, 14, 18, 28

BIO1005: Questions 2, 6, 18, 28

BIO2010: Questions 1, 2, 7, 8, 11, 18, 19, 24, 25

BIO2011: Questions 2, 6, 18, 28