UA Rich Mountain
Assessing Student Learning
Course Outcomes Report
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Type semester and year.

1. **Purpose**
The Course Outcomes Report supplies information each semester regarding student learning on the course level. This report must be submitted to your division chair by the last day of the semester. Data from this report will be integrated into the annual Program Review. The Strategic Goals aligned with this report are Strategic Goal Three: Provide High Quality Education and Strategic Goal Four: Continuous Quality Improvement.

2. **Course Details**
Course Name: Microbiology and Immunology Course #: BIOL2013

3. **Assessed Outcome**
Course Outcome: Out of 19 students, over 18 students improve their learnings in the course of microbiology, and which is over 90% achievement.

Related Program Outcome: Copied the student progress in the edn of this report by comparing pre-test and Final exam obtained grade.

Related GELO category (choose one):
- ☐ Thinking critically
- ☐ Communicating effectively
- ☐ Using technology
- ☒ Conducting relevant research

4. **Evidence of Student Learning**
Describe the classroom activity/tools related to the **course** objective (project, discussion, essay, quiz, etc.): Basic principle and applications of fermentation in daily life was the project and a part of lab report. In current project, students prepared their own samples to make domestic products such as yogurts, Kimchi and breads. Minimum guidance was given to the students to understand the principle and physiological process of fermentation to write a technical report. Prior to final exam. Moreover, students should collect original research articles including review articles and web search to explain the industrial applications and importance of fermentation. However, current report does not explain much about the data obtained from lab work, but it supports to the students to prepare a report in the format of mini review article to understand the principle and importance of the fermentation in daily life. This would help students to expend horizon of their knowledge in the area of regulatory mechanism of fermentation to prepare some domestic products as well as basic principle of the industrial application of this process.
Interestingly, almost over 80% students could make significant improvement on the following procedure, collecting, analyzing and implementing data to write their technical lab report in the format of mini-review article. No surprise that initially, students usually struggle to follow protocol and finding related references, but with the passes of time they significantly improved on it. I make it

sure that students clearly understood what they need to do, and which references need to be cited. I believe that all students who challenged this project, performed very nice. I believe that all the students who performed this project have above 90% on their project work. I strongly believe that students also must have developed their skill to write mini-review professionally.

5. Course Data

Number of students in your course(s) who met the course objective: 18

Total number of students in your course section(s): 19

Percent (%) of students achieving this course objective: 95

6. Response to Data

Will you change how you teach as a result of this assessment?

☒Change(s) needed. In this course, more research activities will be conducted on the basis of required instrumentation. To full-fill the research requirements, we already have ordered some instruments such as electrophoresis documentation and PCR machine.

☐No change(s) needed. *Type explanation here.*

***Attach <u>anonymous</u> student samples of each activity along with the grading rubric/scale.**
****Attach any meeting minutes associated with this assessment.**

Outcome by comparing of the Final exam and pre-test is copied below. Both, pre-test and Final exams were conducted for 150 points. Except one student showed in yellow background, 18 students had a significant progress during teaching learning process during Spring 2022.

A	B	T	W
Last Name	First Name	Final Exam	Pre-test
Bravo Jain	Emili	138	40
Coon	Cortney	138	50
Dettmer	Madison	147	62
Diaz	Miguel	117	32
Garrison	Aubrey	120	50
Glossup	Melanie	144	48
Land	Courtney	111	46
Maechler	Andrea	138	58
Magueyal	Haley	138	28
MALONE	KATIE	114	52
Marrufo	Brenci	120	38
McKee	Kaylin	144	34
Rodriguez	Virginia	96	60
Sikes	Lauren	144	50
Tackett	Hailey	120	118
Tyler	Madison	129	28
Warren	Alyssa	126	42
Whisenhu	Jacey	120	40
Wright	Alexandre	129	52