**FINAL ASSESSMENT REPORTING FORM**

**(To be Completed by Faculty)**

|  |
| --- |
| **Program or Course: BIO 205** |
| **Date: 9/21/2021** |
| **Number of Student Participants: 100** |
| **Number of Faculty/Staff Participants: 4** |
| **Name of person completing report: Fotini Sioris** |
| **Assessment Reporting Form:** This report is to show that assessment is occurring and that the results are being used to make changes to improve student learning. The assessment being reported could be an assessment of a Program Learning Outcome (PLO) or a Measurable Student Level Outcome (MSLO). Each program should be assessing and gathering data for at least two PLOs OR two MSLOs that contain CSLOs each year. |
| **1. What PLOs and/or MSLOs and CSLOs did you assess this year?**  **MSLOs assessed:**  1. (Analysis Level) Outline the history of microbiology and the contributions of various scientists to the field. (CSLO 2)  2. (Analysis Level) Describe and distinguish between the various types of microbes. (CSLO 2 , 3 & 4)  3. (Analysis Level) Describe and differentiate the structural and functional characteristics of prokaryotic and eukaryotic cells. (CSLO 2 & 4)  4. (Evaluation Level) . Explain and analyze the various metabolic pathways of microbes with a focus on different methods of energy acquisition. (CSLO 2 & 4)  5. (Analysis Level) Describe and analyze microbial growth media, patterns, and factors that affect growth. (CSLO 2, 3 & 4)  6. (Analysis Level) Identify and evaluate antiseptics, disinfectants, and sterilizing methods used to control microbial growth. (CSLO 2, 3 & 4)  7. (Comprehension Level) Understand principles of microbial genetics including the structure and function of microbial genomes and plasmids, horizonal gene transfer, and gene regulation. (CSLO 2 &4)  8. (Comprehension Level) Identify the role of microbiology in modern healthcare and biotechnology. (CSLO 1, 2 & 4)  9. (Comprehension Level) Identify and explain the principles involved in classification of microbes. (CSLO 2 & 4)  10. (Comprehension Level) Explain basic principles of acellular pathogens with a focus on viral structure, genomes and replicative life cycles. (CSLO 2 &4)  11. (Comprehension Level) Understand fundamental concepts of epidemiology and their application to public health. (CSLO 1, 2, 3 &4 )  12. (Synthesis Level) Describe microbial mechanisms of pathogenicity . (CSLO 2 & 4)  13. (Analysis Level) Describe and analyze specific and nonspecific host immune defenses against pathogens. (CSLO 2 & 4)  14. (Comprehension Level) Explain the modes of action of antimicrobial drugs and the mechanisms of drug resistance in microbes. (CSLO 1, 2 & 4)  15. (Analysis Level) Explain the importance of microorganisms in the microbiome, industry and environment. (CSLO 1, 2 & 4)  16. (Application Level) Apply essential laboratory techniques for cultivating and characterizing microbes including subculturing, microscopy, staining, biochemical reactions, and serological testing. (CSLO 2, 3 & 4)  17. (Application Level) Demonstrate and explain the importance of aseptic technique with live microorganisms using proper safety and disposal protocol. (CSLO 2, 3 & 4)  **CAC CSLOs assessed:**  **1.Cultural and Civic Engagement** Participate in diverse environments while demonstrating global citizenship and social consciousness.  **2.Integrative Knowledge** Identify, comprehend, apply and synthesize facts, concepts, theories and practices across broad and specialized knowledge areas.  **3.Personal and Professional Skills** Demonstrate skills which enhance personal and professional development.  **4.Reasoning Skills** Inquire and analyze to solve problems, draw logical conclusions, or create innovative ideas. |
| **2. Describe the assessment method used and criteria for successful achievement of student learning outcomes. (e.g., rubrics, licensing exam, internship, portfolio, exam, research paper, performance exam, EAC, etc.)**  For the Spring 2021 Course Assessment, students were asked to answer questions aligned to the seventeen MSLOs and the four CAC CSLOs (see listed above). The Spring 2021 Assessment was a newly updated assessment compared to the one used in Fall 2020, and included updated MSLOs for the course and more clear questions for the students. The assessment method included a timed EAC Assessment Exam uploaded in Blackboard. The Exam included 17 pools of multiple choice questions, with each pool including 4-5 questions per MSLO. Each student was presented with one question per MSLO, randomly chosen from the pools, with a total of 17 questions per student. Each MSLO was also aligned to a CSLO. Students were asked to complete the Assessment online for Spring 2021 and Fall 2020 due to covid restrictions. Spring 2021 Data were compiled anonymously by our division assistant Debbie Nichols and were evaluated by our four faculty members who teach Microbiology and compared to Fall 2020 data. For Fall 2020 there were eight learning outcomes (#4,#7,#8, #11) where our students scored low, below 70%. In our December 2020 Assessment Form, our faculty decided to update the MSLOs and provide more clear questions to the students and shared teaching ideas that could improve student responses to these outcomes. With the new implemented changes our Spring 2021 data were much better and only two MSLOs below 70% (#6 and #11). All CSLOs were scored above 70% . |
| **3. How many students were proficient in the PLOs OR MSLOs and CSLOs? What was determined as proficient? (i.e. 70% = proficient)**  Overall, our students scored an average of 75% for the Fall 2020 Assessment (70 out of 94 students) and 81% for the Spring 2021 Assessment (81 out of 100 students). It was noted that MSLO performance improved on most MSLOs. The chosen proficient rate is 70%. For Fall 2020 there were eight learning outcomes (#4,#7,#8, #11) where our students scored low, below 70%. In our December 2020 Assessment Form, our faculty decided to update the MSLOs and provide more clear questions to the students and shared teaching ideas that could improve student responses to these outcomes. With the new implemented changes our Spring 2021 data were much better and only two MSLOs below 70% (#6 and #11). Some of the MSLO percentages had a minimal insignificant decrease in correct responses, but this is expected since Spring 2021 implement new critical thinking questions.  All CSLOs were scored above 70% .  Please note that we have been conducting BIO 205 Assessments since Spring 2019 and student performance has been improving. Please also note that we had no comparison for CSLO data because Spring 2021 was the first time we assessed CSLOs following the Assessment Committee’s suggestion. It was noted that during Fall 2020 and Spring 2021 students were completing Assessment online and not in class as previous semesters, with some instructors using Respondus during covid. |
| **4. What changes/improvements were made or will be made in response to the outcomes of the assessment process?**  Our Spring 2021 Assessment that the faculty need to look at learning outcomes #6 and #11 -- focus on student understanding of epidemiology concepts and antiobitic lab results. This lab has been hard to teach being online with covid. We will re-evaluate students this semester, Fall 2021 and more data comparison will follow. |

***Feel free to attach your PLOs OR MSLOs and CSLOs and indicate which were assessed***

**FALL 2020 and SPRING 2021 MSLO data**

**(% of students that gave correct response for each question per MSLO)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **MSLOs** | | **% correct FA2020** | | **%correct SP2021** |
| **1** | | **98** | | **98** |
| **2** | | **98** | | **77** |
| **3** | | **73** | | **81** |
| **4** | | **19** | | **79** |
| **5** | | **70** | | **82** |
| **6** | | **76** | | **54** |
| **7** | | **52** | | **80** |
| **8** | | **69** | | **88** |
| **9** | | **70** | | **77** |
| **10** | | **91** | | **79** |
| **11** | | **68** | | **89** |
| **12** | | **88** | | **87** |
| **13** | | **86** | | **84** |
| **14** | | **73** | | **62** |
| **15** | | **76** | | **91** |
| **16** | | **84** | | **89** |
| **17** | | **97** | | **83** |
| **18** | | **62** | | n/a |
| **CSLO data** |  | |
| **CSLOs** | | **% FA2020** | | **% SP2021** |
| CSLO.01 Cultural / Civic Engagement | | n/a | | 83 |
| CSLO.02 Integrative Knowledge | | n/a | | 81 |
| CSLO.03 Personal and Professional Skills | | n/a | | 79 |
| CSLO.04 Reasoning Skills | | n/a | | 80 |

**GRAPH showing MSLO data for FALL 2020 and SPRING 2021**

**GRAPH showing overall improvement throughout semesters**