UNIVERSITY OF ARKANSAS
PULASKI TECH

Assessment Report:
BIOL 2101 Microbiology Lab
2019-2020

Course-Level Learning Outcomes

1. What are the Course-Level Outcomes (CLOs)?

By the end of the course, the students will be able to:

1. Properly adjust microscope and analyze specimens at high magnification using oil immersion.

2. Prepare stained slides for microscopic analysis.

3. Use proper aseptic and safety techniques in microscopic testing and analysis.

4. Analyze results and provide conclusions from microbiological tests.

These CLOs are based on ACTS Course 2004 lab CLOs

2. Which CLOs were addressed for this academic year? (2019-2020)

CLOs 1 and 2

3. Which CLOs are being addressed in your assessment plan next academic year? (2020-2021)

CLOs 3 and 4.

4. Explain the assessment cycle.

CLOs are assessed every semester with major changes in assessment occurring annually. New assessment efforts start in the spring semester, with follow-up in the fall. Instructors meet at the beginning of each semester to analyze old results, develop changes to curriculum and assessment, and determine how assessment will be carried out.

5. What are the assessment methods? Are they direct or indirect?

We use a direct method of two lab practical activities given to all students in all sections. Students prepared a Gram Stain slide using proper lab and staining technique from memory. Students separately analyzes prepared Gram stained slides for bacterial morphology, arrangement and Gram status. Questions can be improved in the fall semester, however questions for new topics selected for assessment are substituted in during the spring semester.

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Activities must be taken for a score or points. Instructors can have students do demonstration labs or other activities to prepare.

6. What are the assessment goal(s)?

Besides the CLOs themselves, Microbiology lab is a follow up course to A&P I lab (1104) and Introductory Biology lab (1101). Assessment topics include concepts introduced in earlier course upon which we have added more conceptually. For example we build upon the microscopy skills learned in prerequisite courses. Therefore these assessments include assessing how much students learned and retained in earlier courses.

7. What were the findings for this academic year? (2018-2019)

Results are from fall 2019 and spring 2020 data.

Preparing Gram Stain slide: 75% pass rate N= 195

Analysis of Gram Stain slide: 93% pass rate N= 195

8. What is your analysis of the findings?

Results were discussed among the faculty. Students did well again, so assessment in lab will change to new concepts of metabolism analysis and aseptic skill.

Spring 2020 was disrupted by the COVID-19 pandemic. Fortunately our lab assessments were completed before the shutdown around mid-terms. We were however not able to test run our new lab assessment ideas for metabolism as mentioned in last years report.

9. What is the action plan for the next academic year? (2020-2021) Explain.

Instructors will continue to make these microscope tests part of the curriculum as well. Students are now consistently good at Gram stain slide making and analysis. We will switch now to two new concepts using two different labs. First, a metabolism analysis assessment after the month of metabolic test labs are complete. Students will have to identify a bacterial species based on metabolic tests, and also explain some of the concepts behind the tests. We will be able to conduct this online and virtually while the pandemic occurs. Aseptic technique we will be more difficult, however we have devised an experiment the students can conduct at home to see the effect.

Qualitatively, the immediate shift to online labs in the spring was an incredible challenge. We have never conducted online labs before. However it did generate a tremendous brainstorming of ideas which has improved over time. We are deploying simulations and case studies which require greater analytical and application skill. We

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have developed a take-home kit of materials and Petri dishes, that allow us to have virtual students continue their work as needed.