#4. Executive Summary: Undergraduate Program Assessment: Alternative Delivery

Submit to the Assessment Committee Chair via email.

Department: Bio **Date: 7/15/17** **Course(s): Bio 110**

Alternative Format(s) – select as many as are applicable:

Dual Credit **Select** **Select** **Select** **Select** **Select**

Members (must include more than course instructor only) **involved with analysis of artifacts:**
Jennifer Fruend, Connie Callahan, Kyle Johnson, Rob Hermann

See #3 Assessment Plan: Alternative Delivery: Student Outcomes for: *a) Course requirement evaluation; b) Student Outcome; c) Question(s); e) Methodology*

Analysis of artifacts:

1). Student Outcome*: **PERFORMANCE CRITERIA*** *- How was data analyzed? (attach rubrics/scoring tools if used).* Given a classic biological scenario of Henrietta Lacks, students will relate multiple concepts of general biology to address issues of cancer, viral and organismal genetic diversity, environmental influences over life processes, and social implications of biological information. These outcomes are split into individual questions with a rubric to score each item. Both are attached.

2). **COMPARABILITY** – *How did you determine if the outcomes of the traditional and alternative deliver modes were comparable?* (note "na" if delivery modes were not compared). The response items were to be written independently by each participating student. The dual credit liason scored each item for each student in both dual credit and typical delivery sections. The total score was also calculated per participating student. A one-tailed t-test determined the significant mean differences or lack thereof per test item and total score for students enrolled in dual credit versus typical delivery sections.

Summary of RESULTS*:

1). Restate the assessment question(s) (from the Assessment plan): As a result of this class and activities within this class, the student shall be able to use basic biological principles and apply it to an everyday living senario. Specifically, I want to know if students can (a) recall biological principles, (b) select related principles for a given scenario, (c) apply the principle logically to solve a problem or explain a phenomenon, and (d) relate biological concepts to global or social contexts.

2). Summarize the assessment results. A narrative summary is required. Charts, tables or graphs are encouraged but optional. The results of the t-test for comparison of means were calculated for each test item and for the total score. For items 1, 2, 4, 5, 6, and the Total, the dual credit enrolled students scored significantly higher ($p < 0.05$) than the students enrolled in the on campus, typical delivery class. On items 3 and 7 there was no statistical difference between the scores. Therefore, it is safe to confirm that students enrolled in dual credit courses perform at least as well or better than the on campus, typical delivery students.

*3). **INTERPRETATION*** *- Discuss how the results answer the assessment question(s).* Considering the content of the questions, students in both courses were knowledgeable about genetic variation across populations, particularly for humans but less so for viruses. In general, the dual credit students used more formal biological vocabularly and related expression of the disease more specifically to protein synthesis, whereas that detail was almost exclusively absent from the on campus, typical delivery course student responses. Students in both sections were able to discuss some social implications of vaccination decisions and inequities of health care. However, students in both sections were more likely to attribute inequity to vague references to health care or technology access as opposed to specific issues of costs or the status of women in some developing countries. Disease transmission, vaccine knowledge, relationships between virus and cell processes were all more specifically conveyed by the dual credit students. Many students were able to list environmental conditions that can alter gene expression or cause other biological interactions, but few listed them in terms of other cancers, such as lung cancer, that were irrelevant to the given scenario.

4). Observations made that were not directly related to the question(s). (*i.e. interrater reliability of the scoring tool was low*) The dual credit liason scored each student response, so there was only one rater. However, though students were allowed to review and prepare for the assessment prior to writing it, the

dual credit students submitted their work to their teacher via computer and the on campus students submitted it hand-written during a final exam.

5). ***How did the outcomes of the traditional and alternative format analysis compare*? The alternative delivery students (dual credit) performed better or as well as on campus students.**

Sharing of Results:
When were results shared? Date: 7/16/17
How were the results shared? (i.e. met as a department) met as a department
Who were results shared with? (List names): Rob Hermann, Connie Callahan, Kyle Johnson, Jennifer Fruend

Discussion of Results –Summarize your conclusions including:
1. **ACTION*-** *How will what was learned from the assessment impact the alternative format teaching of this course starting the next academic year?* I will recommend to the alternative delivery instructors some specific resources for both vaccination issues, sexual assault and disease statistics, and social justice/global status of women information used in classes on campus. Otherwise, the actual biological concepts were very strong as conveyed by the student artifacts. To assure consistency, I will recommend that the students write the responses in class without the use of Internet or technology, as is the expectation of on campus students.

2. **IMPACT*-** *What is the anticipated impact of the* **ACTION*** *on student achievement of the learning outcome in the next academic year?* I anticipate observing greater application of biological concepts (genetic variation, vaccine science, and protein synthesis) to personal, real-life scenarios--meaning, they will not merely report the science but attribute them to decision-making they will need to consider with regards to vaccines, sexuality, parenting, and environmental exposures.

3. **BUDGET IMPLICATIONS** – *Indicate budget requirements necessary for the successful implementation of the* **ACTION*** (i.e. an additional staff person, new equipment, additional sections of a course). n/a

Submitted via email to Assessment Committee Chair by: Jenn Freund
Reviewed by the Assessment Committee (date): 8/17/17

Submitter notified/additional action needed: na

BUDGET IMPLICATIONS – Assessment Committee Chair notified appropriate Dean: na

Approved & Posted to Assessment site: 8/17/17