2017-2018 Annual Program Assessment Report

Please submit report to your department chair or program coordinator, the Associate Dean of your College, and to james.solomon@csun.edu, Director of the Office of Academic Assessment and Program Review, by September 28, 2018. You may, but are not required to, submit a separate report for each program, including graduate degree programs, which conducted assessment activities, or you may combine programs in a single report. **Please identify your department/program in the file name for your report.**

College: Science and Mathematics

Department: Biology

Program: GE Courses in the Natural Sciences Section

Assessment liaison: Cheryl Hogue

1. **Please check off whichever is applicable:**
   A. _____ Measured student work within program major/options.
   B. _____ Analyzed results of measurement within program major/options.
   C. _____ Applied results of analysis to program review/curriculum/review/revision major/options.
   D. ____x_____ Focused exclusively on the direct assessment measurement of General Education Natural Sciences learning outcomes

2. **Overview of Annual Assessment Project(s).** On a separate sheet, provide a brief overview of this year's assessment activities, including:
   - an explanation for why your department chose the assessment activities (measurement, analysis, application, or GE assessment) that it enacted
   - if your department implemented assessment **option A**, identify which program SLOs were assessed (please identify the SLOs in full), in which classes and/or contexts, what assessment instruments were used and the methodology employed, the resulting scores, and the relation between this year's measure of student work and that of past years: (include as an appendix any and all relevant materials that you wish to include)
   - if your department implemented assessment **option B**, identify what conclusions were drawn from the analysis of measured results, what changes to the program were planned in response, and the relation between this year's analyses and past and future assessment activities
   - if your department implemented **option C**, identify the program modifications that were adopted, and the relation between program modifications and past and future assessment activities
   - if your program implemented **option D**, exclusively or simultaneously with **options A, B, and/or C**, identify the basic skill(s) assessed and the precise learning outcomes assessed, the assessment instruments and methodology employed, and the resulting scores
   - in what way(s) your assessment activities may reflect the university's commitment to diversity in all its dimensions but especially with respect to underrepresented groups
   - any other assessment-related information you wish to include, including SLO revision (especially to ensure continuing alignment between program course offerings and both program and university student learning outcomes), and/or the creation and modification of new assessment instruments

3. **Preview of planned assessment activities for 2018-19.** Include a brief description as reflective of a continuous program of ongoing assessment.

2. Overview of Annual Assessment Project(s).

We offer several general education courses in the Biology Department. These courses strive to provide students with basic knowledge in the sciences, impart an understanding of the scientific method, provide students with a heightened awareness of how knowledge gained from science applies to everyday life, and promote a better appreciation of biodiversity. Through our GE curriculum we contribute to students becoming not only better informed about important issues that affect our society but employing critical thinking skills when approaching these issues. We are committed to providing a learning environment where all students can thrive and progress.

The CSUN Student Success Dashboard provides data on the failure rates in courses taught at the University. There are three courses in our department that have the most students with non-passing grades and two of these are GE courses in the Natural Sciences section, Biology 100 (Introductory Biology) and Biology 101 (General Biology). This past academic year (2017-2018) the Department was charged with conducting assessment of these courses, both of which have high DFU rates (student earned a non-passing grade of D, F NC, or WU in the course). Biology 100 has a DFU rate of 23% and Biology 101 has a DFU rate of 22%.

Assessment Method.

Early in the fall semester of 2017, two full-time faculty members who regularly teach Biology 100 and/or 101 were asked to take the lead on assessment for these courses. They agreed that direct assessment should be done using multiple-choice questions. This is the assessment tool we have used for our core classes. Dr. Cheryl Van Buskirk had previously been administering assessment questions to sections of Biology 100 that she had taught. These questions provided a starting point for discussions on the assessment questions to be used. The questions were circulated to other instructors that teach Biology 100 (Drs. Aida and Stan Metzenberg, Maurie Beck, and Mike Franklin) and members of the Curriculum / Assessment Committee. The questions underwent revision and a final version of the assessment questions was produced.

The same process was used for assessment of Biology 101. Drs. Mary-Pat Stein, Terri Richardson, and Aida & Stan Metzenberg produced a draft of possible assessment questions for the course. These questions were circulated to one other instructor for Biology 101 and members of the Curriculum / Assessment Committee. The questions were revised, and a final version produced.

The multiple-choice questions used for the assessment of Biology 100 & 101 addressed the SLOs for the Natural Sciences section of the GE Program. The SLOs are as follows:

1. Demonstrate an understanding of basic knowledge, principles and laws in the natural sciences.

2. Explain how the scientific method is used to obtain new data and advance knowledge.

3. Demonstrate an understanding of the logical foundations and boundaries of science.

4. Recognize the contribution and potential of science in human society and everyday life.

5. Demonstrate competence in applying the methods of scientific inquiry.

6. Demonstrate an ability to apply scientific knowledge and to critically assess real-world issues and make sound decisions.

Assessment Results and Discussion.

Biology 100:
There were 11 sections of Biology 100 taught during the 2017-2018 academic year. Ten of these sections were assessed and the results are presented in Figure 1. Mean performance score for all sections of Biology 100 was 67%, which is well above our 60% benchmark for satisfactory performance on the assessment questions. This same benchmark is used for the core classes in our B.A. and B. S. Programs. Questions of particular concern are numbers 5 and 10 where percent correct fell below 60%. These questions dealt with heredity and evolution which are major biological concepts covered in the course. Additionally, scores on questions 4 (61%) and 6 (62%) barely exceeded the 60% correct benchmark. Both of these questions covered genetics. We have both full-time faculty and lecturers that teach this course which has contributed greatly to consistency in course content in past years. Part-time lecturers that also teach this course on a regular basis also bring consistency to the content of the course. Most instructors require or recommend the same text and students are provided with a wealth of resources to enhance learning of course material. We will engage in more discussions both at the level of the Curriculum / Assessment Committee, the group of instructors that regularly teach this course, and faculty in the department as to how to continue to improve performance of students in this course.

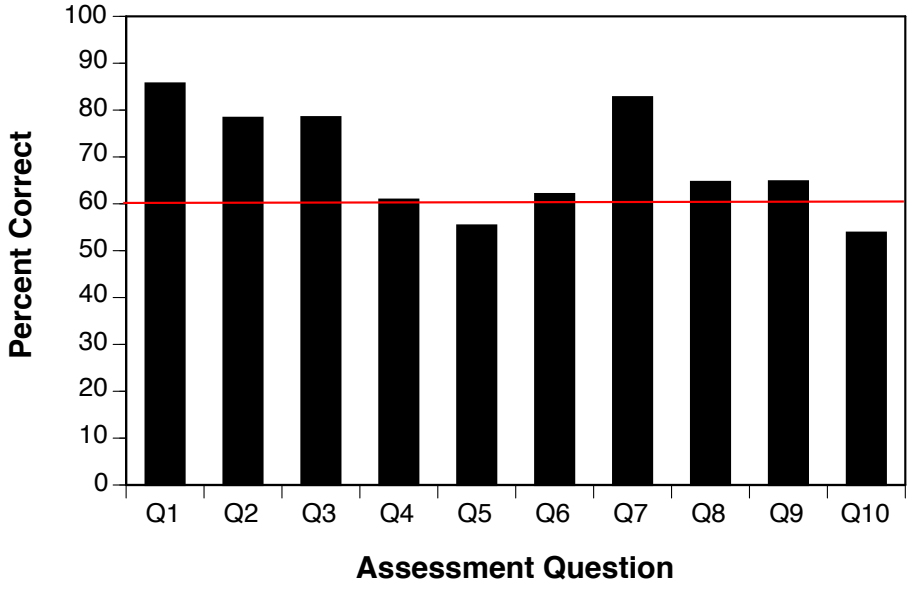

Figure 1. Assessment of the SLOs for the Natural Sciences Section of the GE Program in Biology 100 during academic year 2017-2018. A total of 1,432 undergraduate students were given the assessment questions. The percentage of students that answered each question correctly is shown. The horizontal red line represents the performance goal for students on the assessment questions, 60% correct.

Biology 101:

There were seven sections of Biology 101 taught during the 2017-2018 academic year. All sections were assessed, and the results are shown in Figure 2. The mean performance score for these sections was 65%, above the minimum performance goal of 60%. Scores on almost half of the assessment questions asked to students were below the 60% benchmark. Questions of concern are 2, 6, 7, 8, 11, 12, 14 and 18 that covered cell structure and function, metabolism, heredity, and evolution. Biology 101 is a course that is usually taken by Kinesiology, Public Health, and Nutrition majors. It is also a prerequisite course for Human Anatomy (Biology 211) and Human Physiology (Biology 281) which are required courses for some of the programs in these departments. Discussions among the Curriculum/Assessment Committee, the group of instructors that regularly teach this course, and faculty in the Biology department will help us in identifying potential ways to further improve student success in Biology 101.

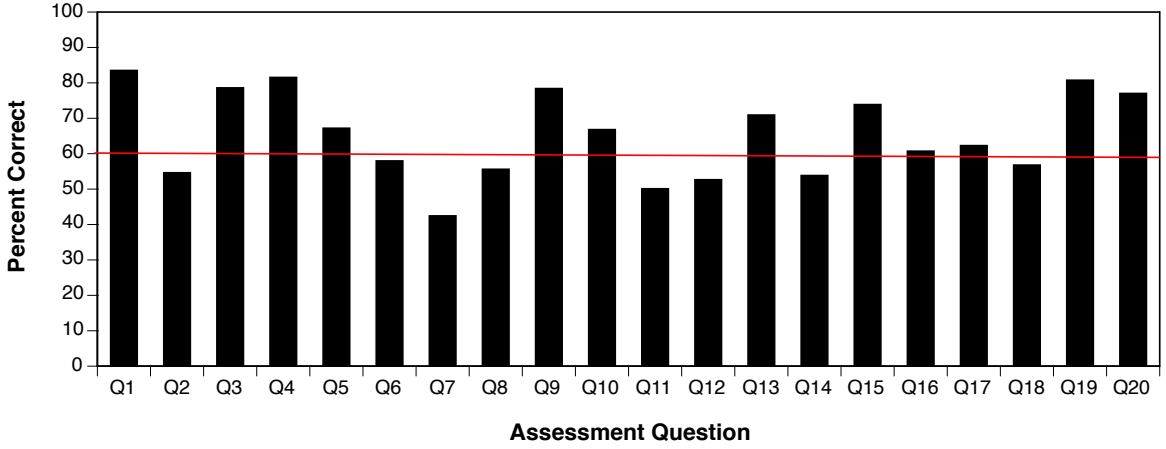

Figure 2. Assessment of the SLO1 for the Natural Sciences Section of the GE Program in Biology 101 during academic year 2017-2018. A total of 509 undergraduate students were given the assessment questions. The percentage of students that answered each question correctly is shown. The horizontal red line represents the performance goal for students on the assessment questions, 60% correct.

3. Preview of planned assessment activities for 2018-19.

We will be assessing our core courses for the Biology B.A. and B.S. programs. Faculty will be encouraged to assess SLOs 4 and 5 in the upper-division courses in the major. Our M.S. program will be assessed using the thesis project (proposal through thesis defense stages) and select graduate level courses including Biology 502 (Biometry).