

# Assessment: Reporting Unit Four Column

## Biomedical Sciences - B.S.

<i>Objectives</i>	<i>Assessment Methods</i>	<i>Results/Observations</i>	<i>Meaningful Changes</i>
<p><b>16-20 PLLO 1</b> - Students will demonstrate the ability to use the Scientific Method in the conduct of biological studies.</p> <p><b>Objective Status:</b> Active</p> <p><b>Objective Type (Control-click to select multiple):</b> 16-20 Plan, B.S. Biomedical Sciences, Program-Level Learning Objectives (PLLO)</p>	<p>We will administer a survey of five questions (part of the Gen Ed Assessment) in BIO 111 course. The questions had been designed by faculty teaching the course, and approved by the University Gen Ed Committee. The questions are as follows:</p> <ol style="list-style-type: none"><li>1. A medical scientist is designing an experiment to test the results of a new drug that she hypothesizes will greatly reduce and possibly eliminate the side effects of a new cancer treatment. If this experiment is to be set up correctly, she must<ol style="list-style-type: none"><li>A. divide the patients into two groups and give each group the same amount of the new drug.</li><li>B. divide the patients into two groups and give one group the new drug and give the other group nothing.</li><li>C. divide the patients into two groups and give one group the new drug and the other group a drug that has no effect (for example, a tablet that only contains sugar).</li><li>D. divide the patients into two groups and give one group the new drug for one week and the</li></ol></li></ol>		

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	<p>other group a different drug for one week.</p> <p>E. divide the patients into two groups and give one group one-half of the dosage of the new drug and the other group nothing</p>	<p>Dr. James isolated Staphylococcus aureus, a type of bacteria, from the leg wound of a ten year old boy. He suspected these bacteria would grow better at body temperature than room temperature (72oF), but thought that he should collect data to support his thinking. Dr. James introduced the same number of Staphylococcus bacteria into each of six test tubes containing the same type and amount of nutrient broth. Three test tubes were incubated at 98.6oF (Group 1), while three test tubes (Group 2) sat at 72oF. After 24 hours, Dr. James compared the turbidity (indicative of growth) of all six tubes and rated each on a scale of 0 - 4. 0 indicates no turbidity (no growth), while 4 indicates high turbidity (high growth). The following data were collected: (SEE DOCUMENT REPOSITORY FOR DATA)</p> <p>2. The dependent (responding) variable in this experiment is:</p> <p>A. the temperature</p> <p>B. growth of bacteria, as indicated by the turbidity in the test tubes</p> <p>C. the time that the test</p>	

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	<p>tubes were allowed to sit</p> <p style="padding-left: 40px;">D. amount of initial inoculum, or number of bacteria introduced into each test tube</p> <p>3. The independent (experimental) variable is:</p> <p style="padding-left: 40px;">A. temperature</p> <p style="padding-left: 40px;">B. growth of bacteria</p> <p style="padding-left: 40px;">C. incubation period</p> <p style="padding-left: 40px;">D. amount of initial inoculum</p> <p>4. Choose the hypothesis for this experiment:</p> <p style="padding-left: 40px;">A. Based on the data collected during this experiment, <i>S. aureus</i> grows better at body temperature than room temperature.</p> <p style="padding-left: 40px;">B. Based on previous experience, it is predicted that <i>S. aureus</i> will grow better at 98.6°F. (body temperature than at room temperature)</p> <p style="padding-left: 40px;">C. The hypothesis is not specifically identified in the excerpt as a hypothesis. There is, therefore, no hypothesis.</p> <p style="padding-left: 40px;">D. Based on the data collected during the experiment, it is confirmed that <i>S. aureus</i> grew better at room temperature.</p> <p>5. The following statement is an example of which scientific process? Ginkgo trees may lose their leaves in response to decreasing day length.</p> <p style="padding-left: 40px;">A. deductive reasoning</p>		

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	<p>B. experiment C. hypothesis D. inductive reasoning E. theory</p> <p><b>Criterion:</b> 70% of the students will score in the "Competent" category ( 3 or above correct out of 5 questions) in the use of the Scientific Method. <b>Schedule:</b> Annually</p> <hr/> <p><b>Student</b> - Graduating seniors enrolled in BIO 495 will be administered an Exit Questionnaire. Among the several questions in the questionnaire, Question #37, asks students to assess their knowledge and use of the scientific method on the Likert scale. <b>Criterion:</b> 70% of the students on their exit questionnaire will assess themselves as "Very Knowledgeable" or above in the use of the Scientific Method <b>Schedule:</b> Annually</p>		
<p><b>16-20 PLLO 2</b> - Students will be able to communicate effectively their scientific findings in a scientific report. <b>Objective Status:</b> Active <b>Objective Type (Control-click to select multiple):</b> 16-20 Plan, B.S. Biomedical Sciences, Communication Skills Learning Objective, Program-Level Learning Objectives (PLLO)</p>	<p><b>Faculty</b> - In one of our introductory sequence of courses, BIO 112 (Ecology and Evolution), we will use a lab dealing with Arthropod Diversity to assess this objective. Students will test the Intermediate Disturbance Hypothesis, by collecting Arthropods in Grassy areas vs. Edges, they will then identify the specimens, conduct data analysis and finally write a scientific report. See documents for the scoring rubric of the scientific paper. <b>Criterion:</b> 70% of the students will obtain a grade of satisfactory in</p>		

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	<p>scientific report writing.  <b>Schedule:</b> Annually</p> <p><b>Student</b> - Graduating seniors enrolled in BIO 495 will be administered an Exit Questionnaire. Among the several questions in the questionnaire in Question #38, students will be asked to assess their ability to write a scientific report. They will evaluate themselves on the likert scale.  <b>Criterion:</b> 70% of the students on their exit questionnaire will assess themselves as "Very Knowledgeable" or above to write a scientific report.  <b>Schedule:</b> Annually</p>		
<p><b>16-20 PLLO 3</b> - Students will demonstrate the use of a basic scientific equipment (compound microscope)  <b>Objective Status:</b> Active  <b>Objective Type (Control-click to select multiple):</b> 16-20 Plan, B.S. Biomedical Sciences, Program-Level Learning Objectives (PLLO)</p>	<p><b>Faculty</b> - For assessment purposes effective use of a compound microscope will serve as a marker for a more general objective of use of scientific equipment. BIO 319 (Zoology) course instructor will provide these results based on the performance of students in the first lab practical that deals with protozoans.  <b>Criterion:</b> 70% of the students will demonstrate proficiency in the use of a compound microscope.  <b>Schedule:</b> Annually</p> <p><b>Student</b> - For assessment purposes effective use of a compound microscope will serve as a marker for the more general objective of use of scientific equipment. Graduating seniors enrolled in BIO 495 will be administered an Exit Questionnaire. Among the several questions in the questionnaire, students will be asked to assess their ability to use a</p>		

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	<p>compound microscope (Question #41). They will evaluate themselves on the likert scale.  <b>Criterion:</b> 70% of the students on their exit questionnaire will assess themselves as "Very Knowledgeable" or above in the use of a compound microscope.  <b>Schedule:</b> Annually</p>		
<p><b>16-20 PLLO 4</b> - Student will demonstrate an understanding of the relationship between anatomy, the physical structure, with physiology, the function of the body.  <b>Objective Status:</b> Active  <b>Objective Type (Control-click to select multiple):</b> 16-20 Plan, B.S. Biomedical Sciences, Program-Level Learning Objectives (PLLO)</p>	<p><b>Directly related to Objective</b></p>	<p><b>Result Status:</b> Result Closed-No further action needed  <b>Result/Observation Type:</b> Strength  Faculty in our department were concerned with the low MCAT scores our students were making on the standardized exam that is used to evaluate a students knowledge and aptitude for professional school admission. As a result of these low MCAT scores our students faced low acceptance rates into professional schools. (04/06/2017)  <b>Related Documents:</b>  <a href="#">Bachelor of Science in Biomedical Sciences - New Program.rtf</a></p>	<p><b>Meaningful Changes:</b> Created a new degree program in Biomedical Sciences with a Pre-medical concentration. this allowed us to revise our curriculum, and provide students with the best knowledge to improve their performance on the MCAT exams. (04/06/2017)</p>
		<p><b>Result Status:</b> Result Closed-No further action needed  <b>Result/Observation Type:</b> Strength  Faculty had noticed that there were an increasing number of students seeking preparation for careers as Physician Assistant. (04/06/2017)  <b>Related Documents:</b>  <a href="#">Bachelor of Science in Biomedical Sciences - New Program.rtf</a></p>	<p><b>Meaningful Changes:</b> Created a new degree program in Biomedical Sciences, with a Physician Assistant concentration. (04/06/2017)</p>
		<p><b>Result Status:</b> Result Closed-No further action needed  <b>Result/Observation Type:</b> Strength  Based on student input, faculty wanted to more closely tailor the major in Biomedical Sciences to specific professional programs and schools or research track requirements. (04/06/2017)  <b>Related Documents:</b>  <a href="#">Bachelor of Science in Biomedical Sciences - New Program.rtf</a></p>	<p><b>Meaningful Changes:</b> Created a new Biomedical Sciences major with several concentrations such as Pre-Optometry, Pre-Dental, Pre-Veterinary , and Biomedical Research. (04/06/2017)</p>
	<p>Evaluations in BIO 348: Scores for 4 exam questions over the course of</p>		

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	<p>the semester evaluating knowledge of structure/function will be recorded.  <b>Criterion:</b> 70% of the students in BIO 348 will obtain a satisfactory grade.  <b>Schedule:</b> Annually</p> <hr/> <p>Self Evaluation of students on Exit Survey: I understand how structure affects the physiology Question #69.  <b>Criterion:</b> 70% of the students on their exit questionnaire will assess themselves as "Very Knowledgeable" or above in understanding how structure affects function.  <b>Schedule:</b> Annually</p>		
<p><b>16-20 PLLO 5</b> - Students will be able to locate, read, and comprehend biomedical research articles.  <b>Objective Status:</b> Active  <b>Objective Type (Control-click to select multiple):</b> 16-20 Plan, B.S. Biomedical Sciences, Critical Thinking Learning Objective, Program-Level Learning Objectives (PLLO)</p>	<p><b>Directly related to Objective</b></p> <hr/> <p><b>Faculty</b> - Evaluation in BIO 331 (Cell Biology): Students will be given a lead scientific paper dealing with a topic in cell biology. Students will then complete an assignment (see DOCUMENT REPOSITORY for the assignment) on the journal article and additional literature searches they conduct. Performance on this assignment will be reported by the BIO 331 instructor.  <b>Criterion:</b> 70% of the students will achieve a grade of "C" or better on this assignment  <b>Schedule:</b> Annually</p> <hr/> <p><b>Student</b> - Graduating seniors will be administered an exit questionnaire</p>	<p><b>Result Status:</b> Result Closed-No further action needed  <b>Result/Observation Type:</b> Strength  Faculty in our department were concerned about the low acceptance rates of our students into professional programs. In addition, our students had a low awareness of alternative careers in the biomedical field. (04/06/2017)  <b>Related Documents:</b>  <a href="#">BIO 332 CCF - New Course.docx</a></p>	<p><b>Meaningful Changes:</b> We created a new course BIO 332 - Careers in Biomedical Sciences. This course exposed students to all the possible careers in the field of biomedical sciences. (04/06/2017)</p>

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and in Question # 65 they will be asked to assess themselves on their ability to find articles in the primary literature. Rating will utilize the likert scale.

**Criterion:** 70% of the students on their exit questionnaire will assess themselves as "Very Knowledgeable" or above.

**Schedule:** Annually