

2015-2016 Outcome Reporting Example for Graduate and Undergraduate Programs

Degree Program: BS Biology

Department Chair: John Doe

Point of Contact Regarding Assessment (if different than Chair): Jane Smith

Program Mission Statement:



Table 1: Student Learning Outcomes

Please list all of your student learning outcomes, the assessment measure(s) used to collect data on each outcome, and the achievement target for each outcome/measure pair. Then list the findings, action plans, and comments you have for each student learning outcome measured during the 15-16 academic year.

Student Learning Outcome (SLO)	Assessment Methodology (Measure)	Target	2015-2016 AY Findings Did you meet your target?	Action Plans Implemented For This SLO This Year	Comments Regarding Outcome of Any Action Plans Implemented For This SLO
SLO #1: Explain the core biological concepts related to evolution and principles of genetics.	Capstone paper. In BIOL 4030, students are required to complete a capstone paper. This paper contains a section for students to explain the core biological concepts related to evolution and principles of genetics. A rubric will be used to evaluate student performance on this aspect of the capstone paper.	80% of the students will meet or exceed performance expectations on the rubric items pertaining to evolution and genetics (Scale: 1 = significantly below expectations, 2 = somewhat below expectations, 3 = meets expectations, 4 = slightly exceeds expectations, and 5 = significantly exceeds expectations.)	43 students took the BIOL 4030 course. 72% (31 students) of the seniors taking the BIOL 4030 course were rated as meeting or exceeding expectations for evolution and 63% for genetics (27 students). Target: Not Met	Although there was a slight increase in student performance from the previous year, we still are not meeting our target. The program has decided that students need some refresher sessions on core evolution and genetics concepts since this information is mainly covered during their sophomore year in the program. This will be implemented during 2016-2017 and re-measured in 2017-2018.	Last year the program decide to review with students what was expected of them in the capstone paper. There was a 10% increase in the percentage of students meeting the target. (2014-2015: 55%)
	Indirect measure: Graduating student exit survey. Questions pertaining to the importance and achievement of evolution and genetics. Two items on a 4-point likert scale for both evolution and genetics (Importance: 1 = not important, 2 = somewhat important, 3 = important, 4 = very important and Achievement: 1 = beginning, 2 = developing, 3 = accomplished, and 4 = exemplary).	80% of students will say that these areas of biology are "Important" or "Very important" to a biology major and 90% of students will say that regarding achievement they were "accomplished" or "exemplary."	40 students completed the graduating student exit survey. 70% (28 students) of students rated the importance of the evolution area as either "important" or "very important." This is below our target. 83% (33 students) of the students rated the importance of the genetics area as either "important" or "very important," meeting the target. 93% (37 students) of students rated their achievement in the evolution area as "accomplished" or "exemplary," meeting our target for this area. 83% (33 students) of students rated their achievement in genetics as "accomplished" or "exemplary," meeting the target.	Students feel that they are achieving these areas in the undergraduate program in Biology. However, they don't feel as if the evolution component is as important as the program would like. The program will ask their Advisory Board about the concept of evolution to ensure this is still a critical area for undergraduate Biology majors. And, if so, the program will continue to emphasize this area and reinforce the importance of these topics to students during the course of their program.	No previous action plans were implemented for this area. The survey was created and piloted during the 14-15 academic year, and this is only the second time it has been implemented.

Table 1: Student Learning Outcomes (cont.)

Student Learning Outcome (SLO)	Assessment Methodology (Measure)	Target	2015-2016 AY Findings Did you meet your target?	Action Plans Implemented For This SLO This Year	Comments Regarding Outcome of Any Action Plans Implemented For This SLO
SLO #2: Effectively communicate scientific information in both written and oral formats.	Capstone paper: In BIOL 4030, students are required to complete a capstone paper. This paper will be rated with a rubric designed to evaluate the student's ability to communicate effectively in writing.	Written communication targets: 80% of the students will meet or exceed expectations on the rubric items pertaining to written communication. Rating of a "3" or above. (Scale: 1 = significantly below expectations, 2 = somewhat below expectations, 3 = meets expectations, 4 = slightly exceeds expectations, and 5 = significantly exceeds expectations.) And 40% of the students will either slightly exceed or significantly exceed expectations (rating of "4" or "5").	Only the indirect survey measure was implemented this year. The direct measure will be collected during 2016-2017 for this student learning outcome.	NA	NA
	Capstone presentation: Students are also required to do a presentation in this course for their capstone project. A rubric designed to measure oral communication skills will be used to rate student performance on the presentation.	Oral communication targets: 70% of the students will meet or exceed expectations on the rubric items pertaining to oral communication. Rating of a "3" or above. (Scale: 1 = significantly below expectations, 2 = somewhat below expectations, 3 = meets expectations, 4 = slightly exceeds expectations, and 5 = significantly exceeds expectations.) And 30% of the students will either slightly exceed or significantly exceed expectations (rating of "4" or "5").			
	Indirect measure: Graduating student exit survey. Questions pertaining to the importance and achievement of effective written and oral communication. Two items on a 4-point likert scale for both written and oral communication (Importance: 1 = not important, 2 = somewhat important, 3 = important, 4 = very important and Achievement: 1 = beginning, 2 = developing, 3 = accomplished, and 4 = exemplary).	80% of students will say that written and oral communication are "important" or "very important" for a biology major and 90% of students will say that regarding achievement they were "accomplished" or "exemplary."	40 students completed the graduating student exit survey. 98% (39 students) of students rated the importance of written communication as either "important" or "very important," and 88% (35 students) of students rated the importance of oral communication as "important" or "very important," meeting the target for these areas. 93% (37 students) of students rated their achievement in written communication as "accomplished" or "exemplary" and 90% (36 students) of students rated their achievement in genetics as "accomplished" or "exemplary," meeting the target for these areas.	Students feel that they are achieving both oral and written communication skills in the program. The program will examine these findings as compared to the direct assessments that will be implemented during the 2016-2017 academic year.	NA

Table 1: Student Learning Outcomes (cont.)

Student Learning Outcome (SLO)	Assessment Methodology (Measure)	Target	2015-2016 AY Findings Did you meet your target?	Action Plans Implemented For This SLO This Year	Comments Regarding Outcome of Any Action Plans Implemented For This SLO
SLO #3: Demonstrate ethical standards when conducting biological research.	In BIOL 3942, students are required to conduct several labs during the course of the semester. The final lab is designed so that students are challenged with several ethical issues. Students will be rated with a rubric on how they overcome these ethical issues.	<p>Since the appropriate handling of ethical issues is very important in biological research and to the program, we are setting very high standards. Therefore, the program wants 95% of the students to meet or exceed expectations and 75% of students to either slightly exceed or significantly exceed expectations.</p> <p>(Scale: 1 = significantly below expectations, 2 = somewhat below expectations, 3 = meets expectations, 4 = slightly exceeds expectations, and 5 = significantly exceeds expectations.)</p>	Not collected in 2015-2016. Will collect data during 2016-2017.	NA	NA
SLO #4: Explain how the study of biological sciences impacts the real-world.	In BIOL 4090, students are required to write a research paper on a current finding in biology and how it is impacting the real world. Student responses to this paper will be rated using a rubric. One section of this rubric pertains specifically to how well they explain how the current finding is impacting the real world.	<p>80% of students will meet or exceed expectations when it comes to explaining the real-world impacts of biology (rating of "3" or above), and 30% of students will either slightly exceed or significantly exceed expectations (rating of "4" or "5").</p> <p>(Scale: 1 = significantly below expectations, 2 = somewhat below expectations, 3 = meets expectations, 4 = slightly exceeds expectations, and 5 = significantly exceeds expectations.)</p>	<p>Did we meet our targets? Yes, and no.</p> <p>45 students took the BIOL 4090 course.</p> <p>80% (36 students) of our students were rated as "meeting" or "exceeding" expectations in this area. However, only 7% (3 students) of the students scored in the highest category.</p>	The program feels that this concept is very important for undergraduate students and therefore would like to see more students rated in the "slightly exceeding" or "significantly exceeding" categories. This past year the program developed and implemented a new "Current Topics in Biology" course. The program will start requiring this course of all students beginning in the 2016-2017 academic year. We will be tracking the results as the students move through the new curriculum.	This is a new assessment methodology so no previous action plans were implemented.
	Indirect measure: Graduating student exit survey. Questions pertaining to the importance and achievement of this area by students. Two items on a 4 point likert scale (Importance: 1 = not important, 2 = somewhat important, 3 = important, 4 = very important and Achievement: 1 = beginning, 2 = Developing, 3 = accomplished, and 4 = exemplary).	80% of students will say that this area of biology is "important" or "very important" to a biology major and 90% of students will indicate that they are "accomplished" or "exemplary" regarding achievement.	<p>40 students completed the graduating student exit survey.</p> <p>95% (38 students) of students rated the importance of this area as either "important" or "very important," meeting the target.</p> <p>73% (29 students) of students rated their achievement in this area as "accomplished" or "exemplary," not meeting the target for this area.</p>	Students feel that this is a very important area in the field of biology but do not feel they are achieving this to the degree the program would like. The program is hoping that the addition of the required "Current Topics in Biology" course will further expose students to the real world impacts of the field. We will be tracking these percentages as the students move through the new curriculum.	No previous action plans were implemented for this area. The survey was created and piloted during the 2014-2015 academic year and this is only the second time it has been implemented.

Table 1: Student Learning Outcomes (cont.)

Student Learning Outcome (SLO)	Assessment Methodology (Measure)	Target	2015-2016 AY Findings Did you meet your target?	Action Plans Implemented For This SLO This Year	Comments Regarding Outcome of Any Action Plans Implemented For This SLO
SLO #5: Effectively execute basic lab and technology skills required for biology professionals.	Students in the BIOL 2860 course are required to conduct a laboratory experiment which demonstrates their lab skills and their ability to use the technology of the field. Students are rated with the use of a rubric developed by the department.	Since this is a lower division course the initial target is that 70% of the students will meet or exceed expectations. (Scale: 1 = significantly below expectations, 2 = somewhat below expectations, 3 = meets expectations, 4 = slightly exceeds expectations, and 5 = significantly exceeds expectations.)	85 students took BIOL 2860. We met our target for this outcome. 79% (67 students) of the students taking BIOL 2860 met or exceeded expectations.	No action plan needed at this time. We are meeting our target for this area.	This outcome was measured during the 13-14 academic year and we were not meeting our target. At that time we implemented a lab report review day in the class to go over basic lab procedures and demonstrate to students the appropriate way to use the current technology. This was designed to help students recall what they learned in the first lab course in the BIOL 2850-2860 series.
	Senior level students are required to take the BIOL 4880 lab course. Students in this course are rated with the use of the same department-developed rubric used in the BIOL 2860 course.	Since this course is taken immediately prior to graduation students are expected to be highly skilled in these areas. Therefore, 95% of the students will be rated as meeting or exceeding expectations with 70% of the students exceeding expectations. (Scale: 1 = significantly below expectations, 2 = somewhat below expectations, 3 = meets expectations, 4 = slightly exceeds expectations, and 5 = significantly exceeds expectations.)	45 students took the BIOL 4880 lab course. We met the target of 96% (43 students) of the students being rated as meeting or exceeding expectations. However, only 51% (23 students) of our seniors were meeting the second target of exceeding expectations.	The faculty member teaching this course has decided to implement two new labs for the seniors that will require them to walk through the use of each piece of equipment and conduct basic lab procedures.	This is a new assessment being conducted by the department and no previous action plans have been implemented.
	Indirect measure: Graduating student exit survey. Questions pertaining to the importance and achievement of basic lab and technology skills. Two items for each area on a 4 point likert scale (Importance: 1 = not important, 2 = somewhat important, 3 = important, 4 = very important and achievement: 1 = beginning, 2 = developing, 3 = accomplished, and 4 = exemplary).	80% of students will say that basic lab and technology skills are "important" or "very important" to a biology major and 90% of students will say that they are "accomplished" or "exemplary" in regard to achievement.	40 students completed the graduating student exit survey. 95% (38 students) of students rated the importance of basic lab skills as either "important" or "very important" and 85% (34 students) of the students rated technology skills as either "important" or "very important," meeting the targets. 93% (37 students) of students rated their achievement of basic lab skills as "accomplished" or "exemplary" and 95% (38 students) rated their achievement of technology skills as "accomplished" or "exemplary," meeting the targets.	The program is meeting the targets for this outcome in terms of both importance and achievement.	No previous action plans were implemented for this area. The survey was created and piloted during the 2014-2015 academic year and this is only the second time it has been implemented.

Table 1: Student Learning Outcomes (cont.)

Student Learning Outcome (SLO)	Assessment Methodology (Measure)	Target	2015-2016 AY Findings Did you meet your target?	Action Plans Implemented For This SLO This Year	Comments Regarding Outcome of Any Action Plans Implemented For This SLO
SLO #6: Critically analyze scientific research and findings.	In BIOL 3942, students are required to critically analyze several research studies prior to conducting each of the labs. For the last critical review students are rated with a rubric measuring their ability to analyze the research and findings presented.	70% of the students will meet or exceed expectations. (Scale: 1 = significantly below expectations, 2 = somewhat below expectations, 3 = meets expectations, 4 = slightly exceeds expectations, and 5 = significantly exceeds expectations.)	Not collected in 2015-2016. Will collect data during 2016-2017.		
SLO #7: Concentration, Cell Biology outcome: Explain the use of cells and biological materials in biotechnology.	Students choosing the concentration of cell biology are required to take BIOL 3250. On the final, students are required to answer short-answer questions explaining the use of cells and biological materials in biotechnology. Answers will be scored from 1 to 5 then averaged for each student.	75% of students will score an average of 4.0 or higher on the items related to the use of biological materials in biotechnology.	Not collected in 2015-2016. Will collect data during 2016-2017.		
SLO #8: Concentration, Enviro. Biology: Explain the role different biological components play in the development of biofuels.	Students choosing the concentration of Enviro. Biology are required to take BIOL 3650 Biofuels. On the final, students are required to answer short-answer questions explaining how the different biological components play a role in the development of biofuels. Answers are scored from 1 to 5, then averaged for each student.	75% of students will score an average of 4.0 or higher on the biofuels items.	22 students took BIOL 3650 Biofuels. 86% (19 students) of the students scored an average of 4.0 or higher on the biofuels items, meeting the target.	NA – Students met the target since the restructuring of the course.	The last time this assessment was conducted only 50% of the students scored an average of 4.0 or higher on the 4 short-answer items. Faculty in the concentration changed the structure of the course and how they taught the Biofuels area. This has resulted in a significant increase in student performance in this area.
	Students choosing the Environmental Biology concentration are also required to take a capstone course in the concentration (BIOL 4410). In this course, students are required to write a paper on biofuels. Students are rated on a rubric designed by the concentration faculty.	85% of the students will meet or exceed expectations in their ability to explain the role biological components play in the development of biofuels. (Scale: 1= significantly below expectations, 2= somewhat below expectations, 3=meets expectations, 4 = slightly exceeds expectations, and 5 = significantly exceeds expectations.)	19 students took BIOL 4410. 95% (18 students) of students were rated as “meeting” or “exceeding” expectations, meeting the target.	The concentration faculty are pleased with the students’ performance on this learning outcome.	This was the second time this assessment was conducted and both times the achievement target was met.

- The program has developed an appropriate number of student learning outcomes, all of which are measurable and have action verbs.
- The outcomes are narrowly defined and specific and seem appropriate for an undergraduate program.
- Outcomes align with the mission statement including: 1) student knowledge across various areas and 2) critical thinking.

- Each student learning outcome has a direct measure that is a good indicator of the outcome.
- The program is using multiple measures for many of its student learning outcomes (either multiple direct or direct and indirect).
- Measures are specific to the outcomes and will produce data specific enough to make improvements.

The program has defined achievement targets in specific terms for each of the outcome-measure pairs and these targets are achievable but rigorous.

- The findings presented by the program:
- Are related to the outcome-measure pair.
 - Are on the same scale as the achievement target.
 - Are specific enough to examine all aspects of the stated outcome (if applicable).
 - Are identified as meeting or not meeting their targets.

- Action plans are:
- Given for all outcomes where achievement targets were not met.
 - Each action plan given is related to the outcome.
 - The action plans developed have the potential to affect student learning.
 - The action plans are sustainable and realistic.

The program reviewed any previous action plans and commented on results.

Table 2: Program Outcomes

Please list all of your program outcomes, the assessment measure(s) used to collect data on each outcome, and the achievement target for each outcome/measure pair. Then list the findings, action plans, and comments you have for each program outcome you measured during the 15-16 academic year.

Program Outcome (PO)	Assessment Methodology (Measure)	Target	2015-2016 AY Findings Did you meet your target?	Action Plans Implemented For This PO This Year	Comments Regarding Outcome of any Action Plans Implemented For This PO
PO #1: Students enrolled in the BS Biology program at the end of their sophomore year will complete the program.	Tracking of students enrolled in the program.	80% of students enrolled at the end of their sophomore year will complete the program within two years.	At the end of the Spring 2014 semester 52 students were still enrolled in the Biology BS program. 44 students or 85% have completed the program as of Spring 2016. Target: Met	NA – Meeting target.	The program did not meet the established target for this program outcome in 2010-2011 (65%) and decided to require students to complete an additional course prior to moving into the upper division courses. The findings for this year show a vast improvement over the findings from the 2010-2011 academic year. It took the program a few years to implement this action plan but we feel that it has made a tremendous difference in the number of students completing the program.
PO #2: Students enrolled in the BS Biology program will continue on to an advanced degree program in a biology related field or obtain employment in a related field within 1 year of graduation.	Alumni tracking / survey of students who completed the program during the previous academic year.	75% of students completing the BS program in Biology will report continuing in an advanced degree program or obtaining employment in a related field.	During the previous academic year, 46 students completed the Biology BS program. 65% (30 students) of those students reported continuing on to an advanced degree program or obtaining employment in a related field. Target: Not Met	The program is not meeting its target for this program outcome. We decided that we will have workshops and seminars for students on applying to graduate school and jobs.	This is a new program outcome.

- The program has developed two program outcomes for the upcoming year.
- Each of these outcomes is focused on either a specific student achievement area or an activity of the program.
- The outcomes are feasible for the program and the program could develop action plans to address any deficiencies.
- Reflective of the developed mission statement area of obtaining employment or advanced degree.

- Each program outcome has a direct measure that is a good indicator of the outcome.
- Measures are specific to the outcomes and will produce data specific enough to make improvements.

The program has defined achievement targets specific to each outcome-measure pair and the targets are achievable but rigorous.

The findings presented by the program:

- Are related to the outcome-measure pair.
- Are on the same scale as the achievement target.
- Are specific enough to examine all aspects of the stated outcome (if applicable).
- Are identified as meeting or not meeting their targets.

Action plans are:

- Given for all outcomes where achievement targets were not met.
- Each action plan given is related to the outcome.
- The action plans developed have the potential to affect student achievement.
- The action plans are sustainable and realistic.

The program reviewed any previous action plans and commented on results.