

Program Student Learning Outcomes Assessment for Instructional Programs at Fullerton College			
Intended Outcomes	Means of Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Upon successful completion of courses leading to the Pre-Nursing and Microbiology Associate in Sciences Degrees, the student will be able to demonstrate an understanding of how the scientific method is used to explore anatomy, physiology, and microbiology	Common questions assessed at the course level.	81.1% success	We are satisfied with these results but we will seek continuing quality improvement with ongoing SI
Upon successful completion of courses leading to the Pre-Nursing and Microbiology Associate in Sciences Degrees, the student will be able to demonstrate safe and proficient use of laboratory equipment and techniques including microscopes, dissection, aseptic handling of microorganisms, basic biochemical testing protocols, etc.	Student project involving laboratory work was assessed at the course level.	91% success	We are satisfied with these results but we will seek continuing quality improvement with ongoing SI
Upon successful completion of courses leading to the Pre-Nursing and Microbiology Associate in Sciences Degrees, the student will be able to distinguish between normal and pathological phenomena.	Common questions on exams assessed at the course level.	Pre-nursing 68% Microbiology 83%	Two methods will be employed to improve this outcome: 1. move emphasis on case studies. 2. Increased emphasis of these concepts in SI.

Biology

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Intended Outcomes	Means of Assessment & Criteria for Success	Summary of Data Collected	Use of Results
1. Students will be able to demonstrate an understanding of how the scientific method is used to explore topics in biology.	Exam Questions	34 of 34 (100%) successful students answered the 9 exam questions correctly.	N/A
2. Students will be able to demonstrate safe and proficient use of laboratory equipment and techniques.	Student demonstration of correct microscope technique (must score 2.5/3)	33 of 40 (83%) successful students were able to correctly operate a microscope.	A revision of supporting activities and increased student feedback have been implemented to increase the number of proficient students.
	Taxonomic collections (students must properly collect, identify, and curate at least 20/25 insect and plant specimens)	9 of 13 (69%) successful students were able to properly curate their taxonomic collections.	An increased number of curation labs and a distribution of the grading rubric have been implemented to increase the number of proficient students.

3. Students will be able to explain the significance of evolutionary theory and how it relates to life on Earth.	Lab Practicum (students correctly classify and characterize 7/10 specimens)	33 of 40 (83%) successful students were able to classify invertebrate specimens.	A revision of supporting activities and increased student feedback have been implemented to increase the number of proficient students.
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Chemistry

Table 4.2: Program-Level Student Learning Outcomes Assessment for Instructional Programs at Fullerton College

Intended Outcomes	Means of Assessment	Summary of Data Collected	Use of Results
1. The student will be able to demonstrate the use of proper procedures and regulations for safe handling and use of chemicals.	Common questions or problems. Participation points in laboratory section for safety and proper handling of chemicals and equipment. Lab practicum at the end of the semester. Criteria for Success: 65%	The assessments to date have focused primarily on the use of laboratory equipment and techniques during the CHEM 111B practicum. The success rate is significantly greater than the Department's criteria for success. Success Rate: 87%	The success rate is in excess of the Department criteria by nearly 20%. The assessments demonstrate that the successful student is using laboratory equipment properly. Future assessments will need to examine the students' ability to properly use chemicals.
2. The student will be able to demonstrate the ability to conduct experiments, analyze data and interpret results, while observing responsible and ethical scientific conduct.	Laboratory skills assessed against a course standard and/or rubric common to all faculty for laboratory notebook and/or laboratory skill. Criteria for Success: 65%	The assessments were based on the evaluation of an entry in the students' laboratory notebooks from CHEM 111B. The success rate is significantly greater than the Department's criteria for success. Success Rate: 92%	The success rate is in excess of the Department criteria by slightly less than 30%. The assessments demonstrate that students are generally able meet the outcome. Future assessments may rely on a different experiment, or require students to submit a formal (typed) laboratory report.
3. The student will be able to demonstrate knowledge of inorganic chemistry appropriate for general chemistry and have the ability to articulate this chemical knowledge in verbal, written, and/or computational form.	Common questions or problems. Pre- and post-testing in sections and/or American Chemical Society (ACS) National Standardized Examination will be administered by all sections and will be assessed based on section by faculty. Criteria for Success: 65%	The assessment is based on the average performance of students in CHEM 111A and 111B. The success rates for CHEM 111A and 111B were 49% and 91%, respectively. The CHEM 111A success rate was significantly lower than the Department criteria due to a poor performance on three of the selected questions. Success Rate: 71%	The success rates for the items assessed in CHEM 111A are incredibly low. Whereas the assessments provide a path towards improvement (identifying topics which require further instruction), they also illustrate the inherent limitations associated with adjunct faculty. Adjunct faculty are more heavily relied upon for CHEM 111A than CHEM 111B, and are likely a significant source for the low success rate.

Earth Sciences

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Intended Outcomes	Means of Assessment & Criteria for Success	Summary of Data Collected	Use of Results
1. Upon successful completion of courses leading to the Geology AS-T, the student will be able to demonstrate an understanding of how the scientific method is used to explore topics in geology.	Common questions, problems, or projects assessed at the course level.	2010 69% 2011 71% 2012 72% 2013 71% 2014 72%	Revision of assessments; refinements of projects; modification of department-authored textbook.
2. Upon successful completion of courses leading to the Geology AS-T, the student will be able to apply geology concepts to better understand current issues of environmental and/or geologic concern.	Common questions, problems, or projects assessed at the course level.	2010 69% 2011 70% 2012 72% 2013 71% 2014 72%	Revision of assessments; refinements of projects; modification of department-authored textbook.

Environmental Sciences

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Intended Outcomes	Means of Assessment & Criteria for Success	Summary of Data Collected	Use of Results
1. Upon successful completion of courses leading to an Associate of Sciences Degree in Environmental Sciences, the student will be able to examine, identify and characterize natural ecosystems.	Common questions or problems. Written responses to homework study questions. Classroom or online chat room spoken responses to homework study questions. Examination questions. Classroom or online forum discussion.	Number of students assessed: 353 Number of students who met the outcome: 283	Prepared Student Learning Outcome Assessment Worksheet.
2. Upon successful completion of courses leading to an Associate of Sciences Degree in Environmental Sciences, the student will be able to examine, distinguish and characterize the ecological communities that compose natural ecosystems.	Common questions or problems. Written responses to homework study questions. Classroom or online chat room spoken responses to homework study questions. Examination questions. Classroom or online forum discussion.	Number of students assessed: 320 Number of students who met the outcome: 218	Prepared Student Learning Outcome Assessment Worksheet.
3. Upon successful completion of courses leading to an Associate of Sciences Degree in Environmental Sciences, the student will be able to analyze and explain the organization and dynamics of natural ecosystems.	Common questions or problems. Written responses to homework study questions. Classroom or online chat room spoken responses to homework study questions. Examination questions. Classroom or online forum discussion.	Number of students assessed: 306 Number of students who met the outcome: 220	Prepared Student Learning Outcome Assessment Worksheet.

Horticulture

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Intended Outcomes	Means of Assessment & Criteria for Success	Summary of Data Collected	Use of Results
1. The students will be able to demonstrate an understanding of the biology of plants, abiotic components, and horticulturally-significant insects.	Exam questions in Hort 152 and Soils 155	76% of the students assessed met the outcome	N/A

2. The students will be able to apply horticultural concepts to real-world problems and solutions.			
3. the students will be able to identify plants, abiotic components, and horticulturally-significant insects.			

Nutrition and Foods

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Intended Outcomes	Means of Assessment & Criteria for Success	Summary of Data Collected	Use of Results
1. 90% or more of students will correctly identify valid and reliable sources of nutrition information.	Students need to identify valid and reliable sources of nutrition information on the final exam	Data was collected from final exams in the fall of 2013. 148 students out of 162 or 91% were able to correctly identify valid and reliable sources of nutrition information.	We are meeting this department SLO.
2.			

Physics

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Intended Outcomes	Means of Assessment & Criteria for Success	Summary of Data Collected	Use of Results
1. Upon successful completion of courses leading to the Physics AS-T, the student will be able to demonstrate an understanding of how the scientific method is used to explore topics in physics.	Common questions, problems, or projects assessed at the course level.	91% of students succeeded on an SLO for Physics 223 involving qualitative reasoning. 71% of students succeeded on an SLO for Physics 222 involving the experimental investigation of electromagnetic phenomena.	Discussed by instructors.
2. Upon successful completion of courses leading to the Physics AS-T, the student will be able to demonstrate the ability to apply physics concepts to solve problems.	Common questions, problems, or projects assessed at the course level.	18% of students succeeded on an SLO for Physics 223 involving quantitative reasoning. 62% of students succeeded on an SLO for Physics 222 involving quantitative reasoning 64% of students succeeded on an SLO for Physics 221 involving quantitative reasoning	Discussed by instructors.