Assessment: Assessment Unit Four Column

Spring/Summer 2019

El Camino: PLOs (NSC) - Astronomy

PLOs	*Assessment Method Description*	*Results*	*Actions*
PLO #3 Origins - Students will be able to describe the structure and contents of the Universe and major events in the history of the Universe that led to the formation of the Earth. **PLO Status:** Active **PLO Assessment Cycle:** 2014-15 (Spring 2015), 2018-19 (Spring 2019) **Input Date:** 11/12/2013	<style isBold='true' isItalic='null' isUnderline='null' size='10' Forecolor='#000000' Backcolor='null' fontName='Calibri' >Essay/Written Assignment - </style><style isBold='null' isItalic='null' isUnderline='null' size='10' Forecolor='#424242' Backcolor='null' fontName='Calibri' >Assessment In a short essay, describe the Big Bang Theory. Discuss the major observations that are explained by the theory. Rubric 4 points: The student’s explanation includes a description of the origin of the Universe in a hot, dense state and the	**Semester of Current Assessment:** 2014-15 (Spring 2015) **Standard Met:** Standard Not Met Instructor A. Pts number % 4 4 16% 3 13 52% 2 5 20% 1 2 8% 0 1 4% Instructor B. 4 4 7% 3 11 20% 2 18 33% 1 18 33% 0 3 6 Instructor B analyzed one section's results in more detail to check comprehension of the evidence in favor of the Big Bang Theory. The results are as follows: Hubble's Law 4 Helium-4 production 9 Quasars 7 CMB 10 Total students 32	**Action:** Develop a simple assessment of understanding of origin concepts to be administered to both Astronomy 20 and Astronomy 25. (10/19/2016) **Action Category:** SLO/PLO Assessment Process **Action:** Revise the assignment to elicit a fuller response. (05/01/2016) **Action Category:** SLO/PLO Assessment Process

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	formation of matter from pair production. The student shows understanding of the evidence for the Big Bang from the cosmic abundance of helium, the evolutionary changes in galaxies, and the Cosmic Microwave Background. 3 points: The Big Bang is well-described. One piece of evidence is well-explained. 2 points. The Big Bang Theory is fairly well described, but no supporting evidence is mentioned. 1 point. The student shows some understanding that the Universe began in a hot, dense state. No supporting evidence is presented. </style> **Standard and Rubric:** It is expected that 70% or more of students will score 3 or above on this SLO.	Analysis Comparing Instructor A with Instructor B, Instructor A's students did considerably better on this assessment; in fact they came very close to meeting our goal (68%, just shy of 70%). It's hard to say what this means. Perhaps Instructor B simply grades harder. Perhaps the results are affected by the method of giving the assessment. Instructor A gave it as a quiz, whereas Instructor B gave it as a homework assignment. Perhaps it reflects the timing of the assessment; Instructor B gave it several weeks after the students studied the Big Bang Theory in class. Instructor B noticed that many students seemed to have taken their answers from the Wikipedia article "Big Bang"; indeed, a few copied it word for word. Having said all that, overall, most students came away with an understanding that the Universe began in a hot dense state and has been expanding ever since, a major part of this Student Learning Objective. They are not so clear on the evidence in favor of the Big Bang. An astronomy major would be expected to name at least three of the observations that support the Big Bang theory; but it could be argued that all a general education student needs to know is that there are several independent lines of evidence and to be able to name one or two. To this extent, the students met their objective. We think the assigment can be re-worded to bring out a fuller response from the students. We also recommend presenting the assignment uniformly as an exam question. We kept track of students who had taken Astronomy 20 prior to taking Astronomy 25. Unfortunately, there were only five. Their scores were: Pts # 4 1 3 1	

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		2 2 1 1 The median score for students who had taken both Astro 20 and Astro 25 was 2.4, compared with 1.9 for students who took only Astro 25. This result shows a modest improvement, but it's hard to put much significance into it because the numbers are so low. Furthermore, only those students who are highly interested in the subject take both courses, so they would be expected to do better than the average student. (10/19/2015) **Faculty Assessment Leader:** S.V. Lloyd **Faculty Contributing to Assessment:** A. Said **Courses Associated with PLO Assessment:** Astronomy 20, Astronomy 25	
	Essay/Written Assignment - Assessment activity In a short essay, describe the nebular theory of the formation of the planets. Discuss the evidence that supports the theory. Evaluation rubric 4 points: The student's explanation includes a description of the collapse of a molecular cloud, formation of a proto-star, condensation, accretion, and collisions. The motions of the planets and the composition of terrestrial vs. giant planets is discussed. 3 points: The process of planet formation is well-described, but the discussion of the evidence is incomplete. 2 points. The process of planet	**Semester of Current Assessment:** 2014-15 (Fall 2014) **Standard Met:** Standard Not Met Points Instructor A Instructor B 0 6 (25%) 19 (33%) 1 0 (0%) 36 (62%) 2 2 (8%) 1 (2%) 3 5 (20%) 1 (2%) 4 11 (44%) 1 (2%) Analysis The two instructors got strikingly different results. One reason could be that Instructor A did the assessment as a take-home assignment while Instructor B put it on an in-class exam. Based on this result, it appears that students benefit from doing a written assignment before taking an exam. (04/10/2015) **Faculty Assessment Leader:** S. V. Lloyd **Faculty Contributing to Assessment:** R. Shirvanian **Courses Associated with PLO Assessment:** Astronomy 20, Astronomy 25	**Action:** Give the students a written assignment. Administer the assessment in a consistent way. (12/01/2015) **Action Category:** Teaching Strategies

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	formation is fairly-well described, but no supporting evidence is mentioned. 1 point. The process of collapse is mentioned, but several steps are omitted. No supporting evidence is presented. **Standard and Rubric:** 80% of the students will receive 3 or 4 points. **Exam/Test/Quiz -** Students were presented with 14 words/key phrases which related to the origin of the solar system, or evidence for the big bang theory, or neither. The students had to place the correct terms under designated columns. The assessment is attached. **Standard and Rubric:** The solar system column and big bang theory were out of 6 points. The "neither" column was all (100%) or nothing correct. The points were calculated by taking the correct answers and subtracting the incorrect answers, which allows us ideally to separate those who just guessed versus those who know their material. It is expected that 60% of students who took Astronomy 20 will score 4 points or above in the first column and 60% of students who took Astronomy 25 will score 4 points or above in the second column. Those who have taken both classes should score 4 points or above in both columns and 100% in the last column. **Related Documents:**	**Semester of Current Assessment:** 2018-19 (Spring 2019) **Standard Met:** Standard Not Met The data is attached. Based on the data, students who have taken both Astronomy 20 and Astronomy 25 as well as Astronomy 12 did the best, however not 100% great. There were still people who received less than a 4 in the first 2 columns and did not get 100% on the last column. Also, there are only 7 students out of over 100 who have taken all three courses. We suspect if a student takes all three courses, he/she is genuinely interested in astronomy and therefore may retain the information better. Looking at all other combinations (e.g. students from only astro 20, or astro 20 and astro 12, etc.), there is no distinct correlation. For one instructor, students who have only taken astro 20 did better on the astro 25 column, suggesting perhaps it's easier to assign terms they have never heard of rather than actual knowledge of said terms. For the other instructor, students who had only taken astro 25 did better in the astro 25 column, but still not reaching the 60% mark. In general, the PLO results are inconclusive. Not many students take all the astronomy courses offered. Some who do don't take them consecutively. Most students only take one course and perhaps the lab. Based on the data, taking the lab does not enhance ones knowledge on either subject	**Action:** We may need to change the assessment or the assessment directions so the results better reflect on students' knowledge/understanding rather than guessing correctly. (09/27/2020) **Action Category:** SLO/PLO Assessment Process

PLOs	Assessment Method Description	Results	Actions
	PLO spring 2019 origins.pdf	matter. (09/28/2019) **Faculty Assessment Leader:** S. Kadakia **Faculty Contributing to Assessment:** S. V. Lloyd **Courses Associated with PLO Assessment:** Astronomy 20 and Astronomy 25 **Related Documents:** PLO sprnig 2019 results table.pdf PLO spring 2019 results table.Lloyd.rtf	

Assessment: Assessment Unit Four Column

Spring/Summer 2019

El Camino: PLOs (NSC) - Physics

PLOs	*Assessment Method Description*	*Results*	*Actions*
PLO #2 Solving Physics Problems - Upon completion of their course of study in the Physics Department, students will be able to identify and apply the laws of physics along with the necessary mathematics to successfully solve a physics problem. **PLO Status:** Active **PLO Assessment Cycle:** 2014-15 (Spring 2015), 2018-19 (Spring 2019) **Input Date:** 11/12/2013	**Exam/Test/Quiz -** A problem will be assigned to every students participating in this SLO: **Standard and Rubric:** A total of 10 points will be assigned to students that correctly solve the assigned problem. 50% of the students will earn a grade of 5/10 or higher.	**Semester of Current Assessment:** 2014-15 (Spring 2015) **Standard Met:** Standard Met A total of 446 students from all courses took this SLO. 90 or 20% of students earned a score of less than 5/10.There were some differences in the score from all courses. All of the courses average scores were higher than the benchmark of 5/10. The courses lower than average scores were Physics 2A and Physics 3B. As a program, the Physics Program experiences a large drop of students in the Physics 2A and Physics 1A class. It is therefore not surprising that the average score for Physics 2A was lower than average. The average score for Physics 1A was slightly larger than the average score. It is not clear why the scores for the Physics 3B course were lower than average. The data shows that instructors are doing an adequate job teaching students how to solve relatively complicated physics problems like the ones used for this SLO. The data do not suggest a need for further support from the college. The college is currently providing support through MESA and we can continue to work with MESA to improve student outcomes. An attempt was made to have all instructors grade a problem using uniform criteria but this led to complicated grading because many tasks were evaluated. We should have fewer tasks to evaluate in order to simplify the assessment of SLOs. For a more complete assessment of the data see related	**Action:** Simplify the assessment of many SLOs by reducing the number of tasks to be evaluated. (06/12/2015) **Action Category:** SLO/PLO Assessment Process

PLOs	Assessment Method Description	Results	Actions

document.

A total of students participated in this SLO.

(06/09/2015)
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Faculty Contributing to Assessment: J. Coroneus, E. Goldmann, N. Kadomoto, N. Lev, Zeke Murdock, S. Prieto, S. Stolovy, K. Strohmaier, M. Van Biezen
Courses Associated with PLO Assessment: PHYS1A, PHYS1B, PHYS1C, PHYS1D, PHYS2A, PHYS2B, PHYS3A, PHYS3B
Related Documents:
PLO #2 Assessment Data and Analysis_Sp15.docx.docx