

# Comprehensive Program Review Report



## Program Review - Astronomy

### Program Summary

#### 2020-2021

**Prepared by:** Shirin Sadeh, professor of Astronomy

**What are the strengths of your area?:** The Astronomy 10 course counts as a General Education requirement. It is a transferable course which is typically completed by students as they prepare to transfer out of COS to a four year university. This course is offered to all majors on campus ranging from Liberal arts to Science and Engineering. Enrollments in this course have traditionally been very high and its success rate has been within an acceptable range. The success rate of this course has fluctuated slightly in the past three years. The success rate for this program has increased from 55% in 2018 to 56% in 2019 and further increased to 70% in Spring of 2020 according to the college's data dashboard. This course shares the Physics/Engineering budget and occasionally benefits from the existing grants. This has lead to the improvement of this course by providing better opportunities for learning. For example, this course currently offers a laboratory session during which students learn how to build telescopes; this has had a positive impact on the enrollment and success of this course. The course offers field trips to the local planetarium. We are pleased to report that over the past decade, the faculty in this program has developed a great partnership with the Pena Planetarium which has lead to much enthusiasm and positive feedback for this program.

**What improvements are needed?:** The Astronomy course could definitely benefit from a budget allocated directly to it. The topics covered in this course are different from those of a Physics/Engineering course, and should have its own budget without burdening other programs. By developing a budget for this course, the instructor can better plan purchasing suitable equipment to address its specific topics. There has been a fair amount of improvement in our budget which has consequently advanced our way of teaching this course. This program has shown an average consistent pass rate of about 58% over the past few years. We offered tutorial services for this course in 2019. we are happy to report that this service contributed to an increase in the success rate of the course to 70%. Every effort is being made to offer a weekly workshop or a tutorial service to continue improving student performance.

**Describe any external opportunities or challenges.:** It is very important that the instructor of this course stays current with the developments in the field of Astronomy to better serve our students. It is imperative that the instructor of the course is a member of the Astronomical Society and attends its related conferences. Additionally, this course visits the local Pena planetarium every semester to provide our students with further access to current sky events and other observational aspects of astronomy. It has been my understanding that a significant number of the students who enroll in this course do not possess the necessary mathematical skills to meet the needs of this course. An important challenge for me is to make sure our students do not feel alienated from the course due to being less prepared. Providing weekly workshops and tutorials could help improve retention and consequently success of our students in this program; I can assure you that every effort is being made to make such an assistance offered to our students. I have also been attending the annual AAAS conference in the past few years; the experience has been quite enlightening. I continue to feel much enriched by this exposure and was able to bring back the latest scientific developments to the classroom. I am thankful for the campus grants which make trips to such great conferences possible.

**Overall SLO Achievement:** There are currently three planned Student Learning Outcomes for this course. The expected success rate was around 70% and the actual evaluation of these outcomes indicate an improved average of about 68% success. We still have room for more improvement in achieving the higher goal set for our outcomes in the future.

**Changes Based on SLO Achievement:** As the instructor of this course, I plan on dedicating more class time to the respective SLO's in order to further improve their success. The expected tutorial services for this program should also help in improving our students success rate. I find myself rethinking my delivery system of the material for this course. This is very important, especially for a program with such a diverse academic background. I have utilized hands-on astronomical exercises during lecture periods. These range anywhere from building their skills in navigating through the night sky using Celestial spheres to

short trips outside on the quad for observing spectral patterns of difference light sources. Students have showed ample enthusiasm for such activities. We have purchased both portable and stationary spectrometers to make such student activities possible.

**Overall PLO Achievement:** Our program learning outcomes continue to be successful with some room for improvement. We started offering tutoring sessions for this program this semester. My thanks to our MESA program for its continued efforts to providing opportunities for student success.

**Changes Based on PLO Achievement:** I continue to make improvements in my delivery methods and support materials to ensure even higher PLO achievements. I have great hopes for finding new tutors for this program. This is an important service to help our students with additional opportunities for learning and success outside of the classroom.

**Outcome cycle evaluation:** There is no need to modify the schedule since it allows for regular assessment of all outcomes.

## Action: Budget for Astronomy

We need to have a specific budget for Astronomy. I will work closely with our Department Dean, and the Division Chair to identify the specific needs of this course and agree on an adequate amount for equipment and supplies.

**Leave Blank:** Continued Action

**Implementation Timeline:** 2020 - 2021

**Leave Blank:** 12/15/2021

**Leave Blank:**

**Identify related course/program outcomes:** All three course outcomes of Kepler's Third Law, Stellar Luminosity, and Einstein's Equation could be improved once this action is completed.

District objectives #1 and #7 are linked to this action.

**Person(s) Responsible (Name and Position):** Shirin Sadeh( instructor) , Francisco Banuelos, Dean, and Ryan Froese, Division Chair

**Rationale (With supporting data):** There is currently no budget for the Astronomy course while there are many expenses for this 3 hour per week course. This course has its own specific needs which require resources allocation. Our success rate in this program has increased by 14% since the 2018-2019 academic year. Enrollment in this program proves to be consistently high and this necessitates a closer and more attentive response to the ever growing needs of this program.

**Priority:** Medium

**Safety Issue:** No

**External Mandate:** No

**Safety/Mandate Explanation:**

### Update on Action

#### Updates

**Update Year:** 2020 - 2021

08/28/2020

**Status:** Continue Action Next Year

We still need to improve our budget allocation for this program. I will continue to work closely with our Area Dean and Division Chair to make every effort to get adequate equipment and supplies for this program.

**Impact on District Objectives/Unit Outcomes (Not Required):**

## Resources Description

**Equipment - Instructional** - Specific departmental budget. (Active)

**Why is this resource required for this action?:** The Astronomy program currently does not have a specific budget allocated to it.

**Notes (optional):**

**Cost of Request (Nothing will be funded over the amount listed.):** 3000

## Link Actions to District Objectives

District Objectives: 2018-2021

**District Objective 1.1** - The District will increase FTES by 1.75% over the three years

**District Objective 2.1** - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5

# Program Review - Astronomy

percentage points over three years
<b>District Objective 2.2</b> - Increase the number of students who transfer to a four-year institution by 10 percent over three years
<b>District Objective 3.1</b> - By 2021, increase the placement rates into transfer-level English and transfer-level math for targeted groups that fall below the District Average.
<b>District Objective 3.2</b> - By 2021, increase the percentage of students in targeted groups who complete transfer-level English (by 10 percentage points) and transfer-level math (by 5 percentage points) within their first year
<b>District Objective 4.1</b> - Increase the use of data for decision-making at the District and department/unit level
<b>District Objective 4.2</b> - Improve organizational effectiveness by strengthening operations of and communication between District departments, divisions, and constituents
District Objectives: 2013-2015
<b>2013-2015: District Objective #1</b> - District Objective #1 for 2013-2015: Provide effective academic support services as measured by an increase in the rate at which students successfully complete courses.
<b>2013-2015: District Objective #7</b> - District Objective #7 for 2013 - 2015: Allocate resources based on an accountable and systematic District-wide planning and budget development process that links this allocation to Institutional Program Reviews and the Strategic Plan.
District Objectives: 2015-2018
<b>District Objectives - 1.1</b> - Increase overall enrollment by 1.75% annually
<b>District Objectives - 2.1</b> - Increase the number of students who are transfer-prepared annually.
<b>District Objectives - 2.2</b> - Increase the number of students who earn an associate degree or certificate annually.
<b>District Objectives - 2.3</b> - Increase course success and completion rates in pre-transfer English, Math, and English as a Second Language courses annually.
<b>District Objectives - 2.4</b> - Increase Career Technical Education course success rates and program completion annually.
<b>District Objectives - 3.1</b> - Reduce the achievement gap of disproportionately impacted student groups annually, as identified in the Student Equity Plan.
<b>District Objectives - 4.1</b> - Improve operational systems based upon data driven decision-making as described in the COS 2.0 manuals.
<b>District Objectives - 4.2</b> - Improve the efficiency, effectiveness and communication of human, physical, technological, and financial resources to advance the District Mission.