

Comprehensive Program Review Report



Program Review - Astronomy

Program Summary

2022-2023

Prepared by: Marc Royster

What are the strengths of your area?: The Astronomy 10 course counts as a General Education requirement. It is a transferable course that 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 are increasing. As a result, we successfully expanded the number of sections offered with an online summer session and a second offering in the Spring. In particular, the additional section in the Spring is scheduled in the evening to encourage enrollment from students that may not be available during the day.

In addition, a newly formed student club, Giant Astronomy Student (GAS) Club, was recently chartered at the start of the Fall 2022 semester. As of now, the club is heavily attended and is planning a number of outreach activities. The formation of the club is the result of student interest in the astronomy program and provides an opportunity to accelerate the growth of the program through outreach.

The enrollment of the course has steadily increased over the last four years (excluding the COVID pandemic). The expanded course offering in the Spring was a success and fostered a growing program. The success rates have remained steady and there is opportunity for improvement without jeopardizing the content of the course.

	2017/2018	2018/2019	2019	2021/2022
Census Enrollment	93	106	49 (fall only)	124
Success Rate (%)	55/54	57/55	67 (fall)	56/60

This course shares the Physics/Engineering budget and occasionally benefits from existing grants. This has led to improvements by providing better opportunities for learning such as providing laptops to utilize computer simulations in class.

What improvements are needed?: Astronomy is in a unique position of serving a broad group of students that may not have an initial interest in a STEM major/course. By having the equipment and resources to actively engage the audience, there is an opportunity to increase the overall number of STEM transfer students. Over the years, the program has amassed a few telescopes that have allowed students to observe astronomical objects on campus in the evening/night.

However, a telescope that can be used during the daytime has the potential to be utilized during classroom time. The dynamic engagement that a telescope provides can serve as a catalyst to increase interest in STEM majors in general. In addition, such a telescope presents an opportunity to capture COS students during potential outreach activities on campus (Club Rush, Mental Health Fair, etc).

Describe any external opportunities or challenges.: The Astronomy 10 course is presented for non-science majors but benefits being auxiliary to the Physics program. As such a number of resources available to the statewide MESA program are available

to the Astronomy program. Last year, a telescope was purchased that is highly mobile and as result we were able to allow students to observe the night on a weekly basis. This ultimately culminated into the chartering of the Giant Astronomy Student Club.

Non-science majors historically struggle with mathematical reasoning and it is typically a barrier to success in Astronomy 10. The instructor continues to develop material/activities that allow students to understand the material without resorting to mathematics.

Overall SLO Achievement: These were assessed by a previous professor and are up to date on the assessment cycle.

Changes Based on SLO Achievement: None at this time.

Overall PLO Achievement: N/A?

Changes Based on PLO Achievement: N/A?

Outcome cycle evaluation: Last completed in Spring 2020

Action: Increase student engagement with daytime observation equipment

Purchase solar telescope with H-alpha filter.

Leave Blank:

Implementation Timeline: 2022 - 2023

Leave Blank:

Leave Blank:

Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Marc Royster

Rationale (With supporting data): A solar telescope provides a unique opportunity for students to observe dynamic activity occurring on the sun. This activity ranges from solar flares bigger than the Earth and prominences that can extend beyond the size of the Sun itself. In particular, such a telescope is used during the daytime which means it can be utilized during class or during events on campus, serving as an essential outreach tool. The engagement provided by the solar telescope has the potential to increase both FTES and success rates.

Below is an example of the type of telescope that will serve this need. After shipping, tax, and potentially other accessories we are requesting \$4000.

<https://cloudbreakoptics.com/collections/lunt-and-coronado/products/copy-of-solarmax-iii-70mm-double-stack-with-10mm-blocking-filter-324004>

See attached.

Priority: Medium

Safety Issue: No

External Mandate: No

Safety/Mandate Explanation:

Resources Description

Equipment - Instructional - Solar Telescope (Active)

Why is this resource required for this action?: A solar telescope provides a unique opportunity for students to observe dynamic activity occurring on the sun. This activity ranges from solar flares bigger than the Earth and prominences that can extend beyond the size of the Sun itself. In particular, such a telescope is used during the daytime which means it can be utilized during class or during events on campus, serving as an essential outreach tool. The engagement provided by the solar telescope has the potential to increase both FTES and success rates.

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Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 4000

Related Documents:

[solar_telescope.png](#)

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