

Fall 2021 Comprehensive Program and Area Review (PAR):

Astronomy

Background Information:

- What organizational unit does your program/area belong to?

X Academic Services

- Name of your Program, Discipline, Area or Service:

Astronomy

- Name(s) of the person or people who contributed to this review:

Scott Hildreth (Shannon Lee, Steve Asztalos, Katie Berryhill are all adjunct colleagues in our discipline and were included in the discussion.)

- What division does your Program/Area reside in?

X Science and Mathematics

Status of Program Goals from Prior Comprehensive PAR Cycle

Goal from Previous Cycle	Status of Goal	Outputs or measures (e.g students served, program change made, etc.) Please explain.
1. Support the inclusion of a roof-top observatory into Measure A construction plans.	<u>X</u> In Progress	The new Bio Phase II-Faculty Office Building planned to replace 2100 includes a rooftop observing platform and observatory space.
2. Identify, scope, and propose upgrades to the planetarium projection system.	<u>X</u> Achieved	The planetarium projector system was upgraded in October of 2019, supported by BOND funds, and we are now using the higher-resolution projector and movies in our current Fall 2021 classes
3. Update SLOs, and share across the faculty what we have learned using the new online systems.	<u>X</u> Achieved	We are using the new SLOs in our current Outcomes Assessments Reviews (just completed Astro 10 this fall using the new rubrics)

Learning Outcomes Assessment Results

SLOs:

Student Learning Outcomes (SLOs): SLOs are the outcomes that instructors aim for students to successfully reach by the end of a course. SLOs should be established for each course, listed in CurricUNET, displayed on all course syllabi, and assessed in CurricUNET on a 5-Year cycle. The following questions are about SLO assessment.

- How many courses in your discipline have SLOs developed and listed in CurricUNET?
 X All courses
- How many courses in your discipline have rubrics (or some other form of assessment) developed to measure SLOs?
 X All courses
- How many courses in your discipline had their SLOs assessed and recorded in CurricUNET in the 5-year cycle?
 X All courses
- Assessing SLOs has led to improvements in my area.
 Strongly disagree
 Somewhat disagree
 X Neither agree nor disagree
 Somewhat agree
 Strongly agree

PLOs:

Certificate and Degree programs also establish and assess **Program Learning Outcomes (PLOs)**. PLOs are the outcomes students should successfully reach when they complete all the requirements for a certificate or degree program. PLOs are also assessed in CurricUNET on a 5-year cycle.

Astronomy is not a program per se, and we do not have PLOs. Students typically take just one course, or perhaps Astro 10 and 30, or Astro 20 and 30, but perhaps 85% of our students only take one class.

Institutional Supports and Barriers

Reflect on your experiences, data, and/or previous program reviews and consider what work in your discipline/service area you are most proud of and what problems remain a major challenge. Then respond to the following questions:

- What institutional-level supports or practices were particularly helpful to **your program or area** in reaching its PAR Goals, SLOs, PLOs, SAOs, and/or the college mission?

Our two largest goals involved facilities – planning for an enhanced lab experience for our students with a rooftop observation platform and observatory, and upgrading our planetarium with an improved projection system. The Facilities and Infrastructure Technology (FIT) Committee was instrumental in supporting both goals, and active participation in that committee played a key part in our ability to meet the goals. In essence, our success reflects the need for faculty to participate actively in the shared governance processes, so that we can understand how our campus prioritizes projects, how funds are allocated to many worthy and time-critical needs, and how collaborative decisions are reached. And when opportunities for funding arise, we can act collegially and with the support of the entire team of faculty, classified professionals, and administration for our priorities.

- What institutional-level barrier or challenges prevented or hindered **your program or area** from reaching its PAR Goals, SLOs, PLOs, SAOs, and/or the college mission?

N/A – we met our goals and were not hindered or prevented by any institutional-level barriers or challenges.

- What institutional-level supports or practices do employees in your program/area believe are particularly helpful **to students** in reaching their educational milestones and/or goals? (i.e., from your vantage point, what does Chabot do for students that we should **keep** doing?)

Without any doubt, the most important institutional-level support crucial to the success of students in astronomy comes from our Counseling Faculty.

Students take Astronomy largely to fulfill science course degree and transfer requirements. Typically 95% of our students are not science majors, and at least half of the students report some sort of anxiety- or outright fear - about taking a college level science class. Many students don't know that they can take an elective like astronomy P/NP and still make progress towards the degree or transfer. Many students come into our classes expecting to learn about their astrological sign, or to sit under the planetarium dome and just enjoy the view – and are totally surprised by the workload required. And at least half of our students take the classes without yet having a major in mind.

All of these students are helped by our counseling colleagues, who offer guidance, realism in terms of required study hours, and options for scheduling that can help students find success.

- What institutional-level barriers or challenges do employees in your program/area believe are a hindrance **to students** in reaching their educational milestones and/or goals? (i.e., from your vantage point, what does Chabot do that we should **stop** doing or **change** to better support our students?)

In light of the answer above, even more access to counseling colleague assistance (either through virtual Q&A or easy drop-in appointments), especially in the first few weeks of a course before the P/NP election deadline, would be beneficial.

Academic Programs/Disciplines Data

Astronomy Program FTES and Enrollment

			Primary		Enrollment								
Division	Subject	Term	Section Cnt	Capacity	Census	Fill Rate	FTE-FT	FTE-OL	FTE-PT	Total FTEF	WSCH	FTES	WSCH/FTEF
5300 - Science and Math	ASTR	Fall 2018	11	444	390	88%	1.16	0.00	0.96	2.12	1,172	38.66	552.83
		Spring 2019	9	356	311	87%	0.56	0.00	1.16	1.72	937	31.02	544.77
		Summer 2019	1	44	35	80%	0.00	0.00	0.20	0.20	109	3.52	545.00
		Fall 2019	11	408	390	96%	1.16	0.00	0.96	2.12	1,175	38.66	554.25
		Spring 2020	9	356	332	93%	1.12	0.00	0.60	1.72	1,000	32.72	581.40
		Summer 2020	1	44	36	82%	0.00	0.00	0.20	0.20	111	3.60	555.00
		Fall 2020	6	264	250	95%	0.40	0.00	0.80	1.20	754	24.72	628.33
		Spring 2021	7	308	288	94%	0.40	0.00	1.00	1.40	864	28.50	617.14
		Term Avg.	7	278	254	89%	0.60	0.00	0.74	1.34	765	25.18	572.34
	Term Avg.	7	278	254	89%	0.60	0.00	0.74	1.34	765	25.18	572.34	

- Over the past 3 years, in comparison to the overall FTES trends of the college, FTES in your discipline have:
 X Decreased in comparison to the overall college trends

Please provide a brief explanation that would help the college understand these trends (e.g., tangible reasons for the increase or decrease).

Our colleague of 20 years, Tim Dave, retired in 2019, and we have not been able to hire a replacement (although the faculty prioritization process supported our program, and prior to COVID in Spring 2019, we had already created a hiring committee and put out a job announcement, and had received applications. With no other full-time faculty in the program, and the very significant technical demands upon any faculty member to teach in the planetarium, and no classified professional support for the lab or planetarium, we really can't offer more classes. Clearly past data from 2018 and before showed demand and high fill rates for up to 21 classes a year. We are at 12 now, and even that will be hard to staff.

- As noted above, enrollments impact our funding. Please review the courses in your discipline in the [Chabot College Enrollment Management Data Dashboard](#): are there specific courses/sections that, on average, across the past three years did not fill to capacity? Why might this be?

Fill rates in Astro are very high, and continue to be so. The program overall averages 89% fill, including summers which bring the average down. The Astro 30 lab is routinely at 100%+, Astro 10 at 90-95%, and Astro 20 at 90%. Online options – for which we typically offered two each term prior to COVID, and hopefully will continue to do so – always show an even higher fill rate.

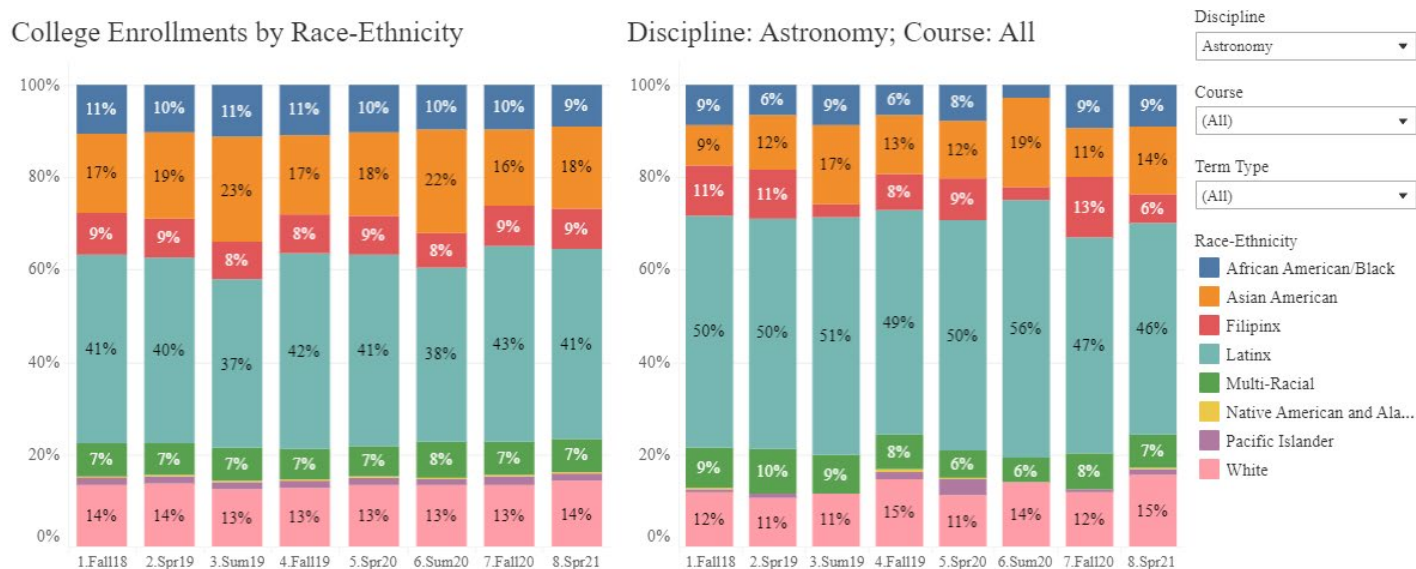
- Is there anything faculty in your area would consider doing to improve overall discipline productivity* while maintaining our commitment to student learning? (e.g., taking additional students in sections with higher fill rates or changing the days/times or format—in-person, hybrid, online—of low fill-rate classes, etc.)

Hiring an additional full-time colleague, and hiring a classified professional to help with the lab, would improve our unit's productivity, without question. A case in point: We have tried for 3 years to get a new class, Astro 45, which might serve even more of our students hoping for just an AA or AS degree, and not thinking about transfer to UC or CSU. But launching a new class, working with Counseling faculty to promote the offering and clarify what sorts of students might benefit most, developing the curriculum and SLOs and schedules, all take time and are tasks that full-time faculty can do, but also things that adjunct colleagues might not be able to do. We've been very, very fortunate to have an adjunct colleague, Shannon Lee, willing to help, but even with her significant contributions and immense investment in time for our program, it is just not reasonable to expect the same results that a full-time colleague might be able to foster. Similarly, we surely could support two, and probably justify a third Astro lab to serve students wishing for that elusive one unit of science laboratory classwork required for CSU and UC transfer. But without a lab tech, it is almost impossible to ask an adjunct colleague to teach an evening lab without more support.

Productivity, as measured by WSCH/FTEF, is one rational metric to use in evaluating our program, but it is a dangerous one to hold up as effectively capturing what a program "costs" in terms of people. Lab classes take enormous time in preparation for classes, and clean up – but those hours do not show up in WSCH/FTEF. Indeed, just the opposite happens – lab classes necessarily are kept smaller because of safety and equipment constraints, and so they pull down the overall subdivision numbers. Including lab data in those numbers as a measure of a programs "productivity" misses how much time and effort is required to run the program at all. And even though the Astro 30 lab has high fill rates, it shows a 466 WSCH/FTEF. To say that this means we are not as productive with the class is terribly frustrating, and honestly quite unfair. (Apologies for the soapbox diatribe).

- Are there any classes in your discipline which routinely fill to capacity and for which there is often a waitlist? If yes, please list here.

The online sections always fill, and often do have a wait list. The Astro 30 lab often has a small waitlist – more when we can only offer a single section because of staffing constraints.



- The representation of traditionally underrepresented race/ethnicity/gender student groups in our **discipline/major** compared to our industry/field:
☐ could be improved.
☐ is just right.
☒ is outstanding - we are increasing the diversity of the field.
- DI Groups in our **general education** classes:
☐ are **underrepresented** in comparison to their representation in the student body.
☒ have **similar representation** in comparison to their representation in the student body.
☐ are **overrepresented** in comparison to their representation in the student body.
☐ Not applicable, our discipline does not have high enrollments in general education classes.

Observations from the Course Enrollments Data:

Astronomy shows what appears to be a higher average number of students identifying as Latinx than the college overall (~ 50% for Astro to ~40+% for the College as a whole). Astronomy also shows what appears to be a slightly lower average number of African American/Black students (~ 9% for Astro to ~ 10+% for the college). Enrollment by gender in astronomy matches the college overall very closely. Astronomy shows a higher ratio of full-time students, reflecting perhaps the number of daytime offerings rather than evening or weekend classes. While Chabot doesn't have a degree in Astronomy, and typically might have 1-2 students thinking about Astronomy as a transfer major, it is interesting to note that nationally Astronomers and Physics are ~ 86% White (Non-Hispanic), and 89% are male, according to the Census Bureau statistics. Clearly as we interest Chabot's students in astronomy as a potential major, the diversity that typifies our college population will broaden the profession.

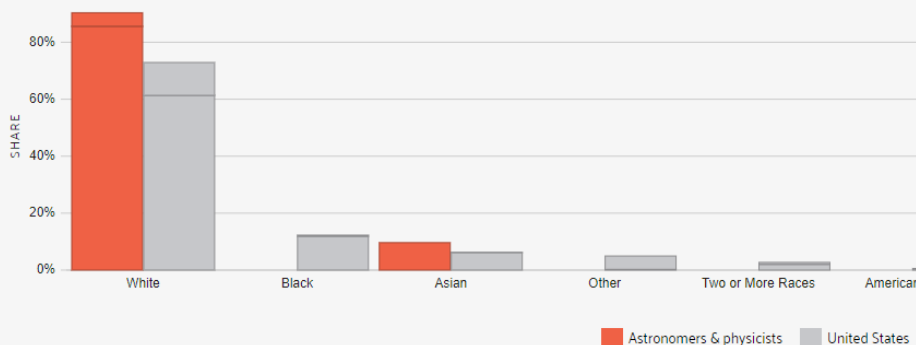
Race & Ethnicity

MOST COMMON RACE OR ETHNICITY OF ASTRONOMERS & PHYSICISTS

1. White (Non-Hispanic)
2. Asian (Non-Hispanic)
3. White (Hispanic)

85.6% of Astronomers & physicists are White (Non-Hispanic), making that the most common race or ethnicity in the occupation. Representing 9.64% of Astronomers & physicists, Asian (Non-Hispanic) is the second most common race or ethnicity in this occupation. This chart shows the racial and ethnic breakdown of Astronomers & physicists.

Data from the [Census Bureau ACS PUMS 1-Year Estimate](#).



Non-Credit

- Does your program/area offer non-credit classes?

☐ Yes
☒ No

- Over the next 3 years, non-credit course offerings in our program/area are planned to:

☐ Decrease
☐ Stay the same as they are now
☐ Increase

Course success rates

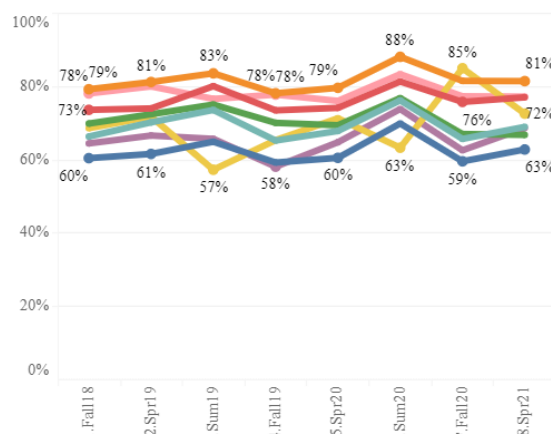
Refer to the [Chabot College Course Enrollments and Success Rates Dashboard](#).

- Over the past three years, how have course success rates in your discipline changed? Course success rates have:

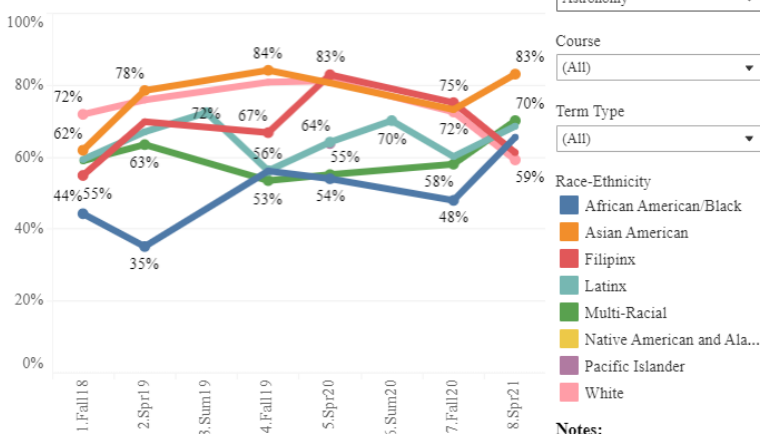
☐ Decreased
☒ Stayed roughly the same
☐ Increased

Success rates in astronomy are 5-8% lower than college averages, and corresponding non-success and withdrawal rates are higher. This is not new – we’ve seen similar data over the past 20+ years of program reviews. Astronomy is not an easy subject, and it is often taken by students new to college, who are surprised by the level of reading and scholarship required for success.

College Success Rates by Race-Ethnicity



Discipline: Astronomy; Course: All



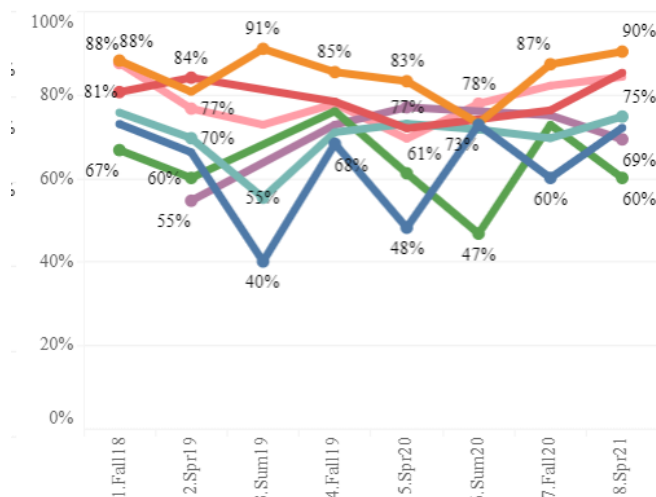
- Check all groups that are **disproportionately impacted** (succeeding at lower rates than students from other racial/ethnic, gender groups, or the overall college average):

☒ African American/ Black
☐ Asian American/ Asian
☐ Filipino/x
☐ Latinx/ Chicanx
☐ Native American/ Alaska Native
☐ Pacific Islander/ Hawaiian
☐ White/ European American
☐ Female
☐ Male

Success rates for African-American/Black students in Astronomy are historically significantly under the college average, and this, too, is a trend we've seen for many years, and one that is mirrored across the country, at all levels of higher education. According to the American Institute of Physics, and its August 2019 focus on "African-American Participation and Bachelors in the Physical Science and Engineering" (<https://www.aip.org/statistics/reports/african-american-participation-among-bachelors-physical-sciences>) with included data from 2005-2015, African-Americans remain underrepresented in the physical sciences and engineering fields. We should capitalize on Chabot's recent efforts to support student success, especially within the African-American/Black community, with the Black Excellence 10x10 Villages projects, and reach out to the Umoja team as well, to improve our understanding of the types and levels of support services we might encourage, and amplify, for our Black students.

Chabot's data shows large jumps in success for African-American/Black students between different years and semesters, but given the very small number of students, that data's volatility reflects very small population sizes. One idea to help identify whether the lower success rates reflect the discipline or the students would be to look at similar GE-level introductory science classes offered at Chabot.

Discipline: Geography; Course: All



Geography, like Astronomy, is taken by students seeking science credit for AA/AS and transfer, and provides a direct comparison. Similar to Astro, African-American/Black students seem to struggle in Geography more than other populations.

Based on the similarities in Astronomy and Geography, and the national trends shared in the AIP report, we do not see the continued greater lack of success in astronomy as something unique to Chabot – but it still is very troubling, and something we want to continue to attack. Faculty are actively trying to find creative ways to build relevance through identification of role models and increasing visibility of African-American astronomers – and graduate students on their way. We hope that the new Astronomy 45 class, with its increased focus on

current news and media, might be one way to attract and retain students currently under-represented in science, and further improve student success for all groups.

One additional institutional data report that might help would be how many students take Astronomy vs. other science classes to earn their AA/AS degrees, and then compare success rates for those students overall, and within the classes that did provide the science units. That would allow us to unpack student success by comparable courses.

Program completion (AD-Ts, AA/AS, Chancellor-approved Certificates)

Take a look at the IR report on [Degrees by Discipline](#).

- Over the past 3 years, what is the trend in Degrees awarded (AD-Ts and AA/AS) in your program(s)?

[Astronomy doesn't appear as a separate program nor does it have an AD-T. It is a General Education science, and taken by students in all of the programs listed in the report.](#)

Take a look at the IR report on **Chancellor-Approved** [Certificates by Discipline](#).

- Over the past 3 years, what is the trend in **Chancellor-Approved** certificates awarded in your program(s)?

[Astronomy doesn't appear as a separate program nor does it have a separate Chancellor-Approved certificate. It is a General Education science, and taken by students in many of the programs listed in the report.](#)

Please provide a brief explanation that would help the college understand these trends in degree and certificate completion. (e.g., tangible reasons for the increase or decrease).

[N/A.](#)

- If your area does not produce a lot of degrees or Chancellor-approved certificates, is there an associated industry test for which you are preparing students or non-Chancellor-approved certificates? If you have any data on success rates or numbers for the industry certification/test or for non-Chancellor-approved certificates, please share. (Optional)

[N/A](#)

- What barriers make it difficult for students to complete your program? Are there any barriers that could be disproportionately experienced by students from a particular demographic group (e.g., racial/ethnic, age, disability status, parents, etc.)

[N/A](#)

Staffing Analysis

In this section you will analyze trends in staffing, technology, and facilities.

Staffing	Current # (Fall 2021)	How has staffing for this group changed in the last 3 years (decrease, flat, increase)
Full-time Faculty	(1) Scott Hildreth	<u>X</u> Decreased
Part-time Faculty	(4) Shannon Lee, Gabe Prochter, Steve Asztalos, & Katie Berryhill	<u>X</u> Stayed roughly the same
Full-time Classified Professionals	0	<u>X</u> Stayed roughly the same
Part-Time Permanent or Hourly Classified Professionals	0	<u>X</u> Stayed roughly the same
Student Employees	0	<u>X</u> Stayed roughly the same
Independent Contractors/Professional Experts	0	<u>X</u> Stayed roughly the same

Academic Disciplines Only: Compare changes over the past three years in the FTES/enrollment in your area with changes in staffing in this same time period. What do you notice?

Because of the retirement of Tim Dave, we are unable to staff as many Astro classes that students might wish to take (especially the evening lab section).

Compare the representation of DI populations in your program's/area's staffing (faculty, classified professionals, and administrators) to the representation of DI populations in the students you serve. What do you notice? If there is a gap in representation between students and the Chabot professionals who serve them, how has your program/area addressed that gap?

Tim Dave was a brilliant motivator for all of his students, and especially for African-American/Black students. Given the challenges that Black students seem to face in succeeding in the course, losing Tim is doubly hard. The same can be said for motivating women to consider Astronomy (and Physics) when we do not have a full-time female colleague (as our sister college, Las Positas, does with Robin Rehagen, who is terrific.)

Technology

- The **technology** in our program/area is sufficient to support student learning and/or carry out our program/area outcomes and goals.
 X Strongly agree

Facilities

- The **facilities** in our program/area are sufficient to support student learning and/or carry out our program/area outcomes and goals.
 X Strongly agree

Chabot's planetarium is outstanding – an incredible asset to the program, the college, and the community. With the recently upgraded full-dome projector, we offer students and visitors an outstanding venue in which to learn about astronomy. Chabot's astronomy lab is well-equipped with basic telescopes, although more emphasis on astrophotography would be something to add.

Professional Development

- In general, **Faculty members** in my program/area regularly participate in professional development activities offered by/at Chabot.
 X Strongly agree

In general, **Classified Professionals** in my program/area regularly participate in professional development activities offered by/at Chabot.

N/A

- In general, **Faculty members** in my program/area regularly participate in professional development activities offered outside of Chabot.
 X Strongly agree
- In general, **Classified Professionals** in my program/area regularly participate in professional development activities offered outside of Chabot.

N/A

- How did these professional development experiences contribute to improving your program/area, equity, and/or student learning and achievement?

Sharing the planetarium for some professional development experiences (like stress-reduction, led by Sadie Ashraf, and learning about indigenous cultures with Veronica Martinez, show how we can learn from one another while supporting the entire college.

Program Maps and Equity in Scheduling

- Have you completed all program maps for your discipline?
☐ Yes (or we will do so by the deadline).
☐ No, because one or more of our program(s) is/are being discontinued (please fill in name of program in space below).
☐ No, because one or more of our program(s) cannot currently be completed because not all classes have been offered recently or will be offered in the next 3 years (please fill in name of program in space below).
☒ No, for another reason... (please fill in the reason below).

If you checked off “No” above, please explain.

Astronomy is not part of a program. It is a GE science taken by students across the campus, in a variety of programs, as a way to fulfill AA/AS degrees and help in transferring to four-year institutions.

- Can a student who is working toward the degree(s)/certificate(s) in your area take all their required courses for this program: 1) during the day or 2) in the late afternoon/evening/weekend or 3) online? What changes would be needed to ensure access for students in all three scenarios?

N/A

- How are you collaborating with other disciplines with whom you share students to ensure that your schedules are not conflicting, so that students with specific educational goals can take the courses they need to finish in a timely fashion? Please discuss the discipline(s) with whom you already collaborate, as well as any discipline(s) with whom you would like to start collaborating.

Faculty in Astronomy are also teaching in Physics, and our schedules are usually dictated first by the physics classes that must not conflict with Engineering, Math, Computer Science, Chemistry, and Biology. We try to offer GE astronomy mornings and afternoons on MW and TTh schedules, as well as online, to provide multiple access points.

- Are there any classes in your discipline that you do not offer every semester or every year that are required for any of your degrees or programs? In an *ideal* world, with perfect coordination and infrastructure, how would you want to communicate which **required courses** are **not** offered in all semesters to: 1) counselors, 2) other faculty, and 3) students? (If you offer all classes required for degrees/certificates in all semesters, then you can write NA.)

N/A

Planning

Goal	Briefly describe the expected <i>outputs</i> (e.g., direct short-term results like # of students served, workshops held, etc) or <i>outcomes</i> (e.g., longer-term results like course success rates or degrees earned) for your goal.	EMP Alignment	Equity DI Group Alignment	SCFF Metric Alignment
1. Continue to promote construction of astronomy observing platform and observatory in new Bio Phase II-Faculty Office building	In the next PAR cycle, the final building plan should hopefully be approved, budgeted, and start construction. No student-centered results are expected, yet. But curriculum can begin to be developed in anticipation of the construction.	☐ Equity ☐ Access ☒ Pedagogy and Praxis ☒ Academic and Career Success ☐ Community and Partnerships	☐ African American/Black ☐ Latinx ☐ Native American/Alaska Native ☐ Pacific Islander/Hawaiian ☐ Disabled ☐ Foster Youth ☐ LGBT ☐ DI Gender	☒ Enrollment/FTES ☐ Transfer level English, math or ESL achievement ☒ Degree or certificate completion ☒ Transfer ☐ CTE Units ☐ Attainment of a Living Wage ☐ Supplemental Metric (Financial aid or AB 540)
2. Continue to participate in webinars, seminars, conferences, and discussions about increasing under-represented groups in Astronomy and Physics	A goal could be to attend at least one conference each semester that includes this issue, for all faculty.	☒ Equity ☐ Access ☐ Pedagogy and Praxis ☐ Academic and Career Success ☐ Community and Partnerships	☒ African American/Black ☒ Latinx ☒ Native American/Alaska Native ☒ Pacific Islander/Hawaiian ☒ Disabled ☒ Foster Youth ☒ LGBT ☒ DI Gender	☐ Enrollment/FTES ☐ Transfer level English, math or ESL achievement ☐ Degree or certificate completion ☐ Transfer ☐ CTE Units ☐ Attainment of a Living Wage ☐ Supplemental Metric (Financial aid or AB 540) ☐ Other _____
3. Continue to promote Astronomy 45 as a viable option for students seeking AA/AS degrees.	Get to offer the class at least once per semester to develop an understanding of whether it is meeting student needs that are as yet not	☒ Equity ☒ Access ☐ Pedagogy and Praxis ☐ Academic and Career Success ☐ Community and Partnerships	☒ African American/Black ☒ Latinx ☒ Native American/Alaska Native ☒ Pacific Islander/Hawaiian ☐ Disabled ☐ Foster Youth ☒ LGBT ☐ DI Gender	☐ Enrollment/FTES ☐ Transfer level English, math or ESL achievement ☐ Degree or certificate completion ☐ Transfer ☐ CTE Units ☐ Attainment of a Living Wage ☐ Supplemental Metric (Financial aid or AB 540) ☐ Other _____

Equipment Requests

Criterion for distributing funding vary by committee (check out the [Resource Allocation Rubrics](#) available on PAR's website), but are consistently based on the [Educational Master Plan](#), the [College's Planning Priorities](#), and the [President's College Planning Initiatives](#).

	Rank (1, 2, 3, etc. after all requests have been entered)	Project Name Use the same project name for all requests related to a large project or put 'individual request'	New, Updated, or Repeat Request	Vendor Name	Brief Item Description	Justification BRIEFLY justify how this spending relates to the EMP, College's Annual Planning Priorities and/or President's Planning Initiatives (2-3 sentences).	Quantity (1, 2, 10, 12, etc.)	Year(s) Needed	Estimated Cost Per Year (Total \$)
Item 1	1	Observatory & Astro Lab	<u>X</u> New	Unistellar	eVscope eQuinox telescope with integrated CCD	With the possibility of an observation deck in a new building, this telescope offers us a way to gather imagery for student analysis. This equipment will help to make the new building even more effective as a teaching space.	1 per year, starting in 2022 to learn how to use the system, and 1 per year thereafter through 2025	<u>X</u> Annual	\$3000
Item 2	2	Infrared Astronomy Lab equipment	<u>X</u> New	Amazon	Through NASA's SOFIA project, a variety of equipment to help students 'see' Infrared Radiation	Lab equipment will be useful in both Astronomy and Physics courses, and enhance student learning	7 sets of speakers, wires, circuits, and chips	<u>X</u> 2022-23	\$2100

Human Resource Requests (e.g., Faculty, Classified, Administrative, Student Workers, etc.)

	Rank (1, 2, 3, etc. after all requests have been entered)	Project Name Use the same project name for all requests related to a large project or put 'individual request'	New, Updated, or Repeat Request	Classification	Position Title	Avg. hours per week (5, 20, 40, etc.)	Justification BRIEFLY justify how this spending relates to the EMP, College's Annual Planning Priorities and/or President's Planning Initiatives (2-3 sentences).	Year(s) Needed	Estimated Cost Per Year (Total \$)
Position 1	1	Individual Request <i>(Also requested in Physics Program Review)</i>	<u>X</u> Repeat	<u>X</u> Faculty FT	Instructor, Astronomy & Physics	40	We need another full-time colleague to make up for losing Tim Dave in Astronomy & Physics, and Jose Alegre in Physics. This position was approved in the Faculty Prioritization process for 2019, and we had started level 1 interview planning prior to COVID19.	<u>X</u> Annual	Depends on experience, but ranging from Step 1 – Step 10 of current faculty salary schedule (\$68K - \$97K)
Position 2	2	Individual Request <i>(Also requested in Physics AND Engineering Program reviews)</i>	<u>X</u> Repeat	<u>X</u> Classified PT	Laboratory Technician	20	We still have no classified support for Physics, Astronomy, nor Engineering lab courses. The position form is a duplicate of what has been submitted for Physics.	<u>X</u> Annual	Range 33 of Classified Salary Schedule. Step 1: \$2208/mo for ½ time, \$26.5K/yr for ½ time

Supplies Requests

	Rank (1, 2, 3, etc. after all requests have been entered)	Project Name Use the same project name for all requests related to a large project or put 'individual request'	New, Updated, or Repeat Request	Brief Item Description (1-2 sentences)	Justification BRIEFLY justify how this spending relates to the EMP, College's Annual Planning Priorities and/or President's Planning Initiatives (2-3 sentences).	Quantity (1, 2, 10, 12, etc.)	Year(s) Needed	Estimated Cost Per Year (Total \$)
Item 1	1	Astronomy Lab Supplies	<u>X</u> Repeat	Astro labs require ~ 7 eyepieces of various sizes each year, and other telescope- related supplies	These are standard supplies requested every year to support our lab classes.	7	<u>X</u> Annual	\$300
Item 2	2	Planetarium Cabling, Lights, and Lamps	<u>X</u> Repeat	Projector Lamps HDMI and Apple Connectors and Cables	The planetarium has 3 data projectors, one main Canon full-dome projector, and associated equipment. Keeping things running takes routine replacement of failing parts.	Misc	<u>X</u> Annual	\$1200
Item 3	3	Planetarium Art	<u>X</u> New	Unframed Constellation Art for Planetarium Wall	Each semester we show students how the Sun appears to move in front of the Zodiac constellations, and put up handwritten labels. Actual small images of each constellation will be easier to see, more beautiful, and even more effective in helping students and visitors understand the sky.	12 (one per month)	<u>2022</u>	\$300 (including 12 images at \$10 each, frames, and tax)

Technology Requests

	Rank (1, 2, 3, etc. after all requests have been entered)	Project Name Use the same project name for all requests related to a large project or put 'individual request'	New, Updated, or Repeat Request	Was the feasibility of the request discussed with IT?	Brief Item Description (1-2 sentences)	Justification BRIEFLY justify how this spending relates to the EMP, College's Annual Planning Priorities and/or President's Planning Initiatives (2-3 sentences).	Quantity (1, 2, 10, 12, etc)	Year(s) Needed	Estimated Cost Per Year (Total \$)
Item 1	1	Planetarium	<u>X</u> Updated	Yes (in 2020)	12 TB data drive for planetarium show backup	Chabot has invested BOND funds to acquire new full-dome features, and needs to make sure those are backed up.	1	<u>X</u> 2022-23	\$350
Item 2	2	Upgrade Astronomy & Physics Laptops <i>(Also requested in Physics Program Review)</i>	<u>X</u> New	Yes	New Windows laptops able to run current software	The (24) current laptops are heavily utilized in every physics & astronomy lab, but at 6+ years old, are ready for replacement. They run Windows 7 (out of support) and don't support HDMI video out. The units we have are terrific, and we can survive for another year or two with them, but some are breaking and losing hard-drive storage. We have a plan for gradual replacement for campus computers and hopefully these units will qualify if budget allows.	24	2023-24	\$15-20K