Program Efficacy Report
Spring 2016

Name of Department: **Physics/Astronomy/Observatory**

Efficacy Team: Paula Ferri-Milligan, Robert Jenkins, Sandra Moore

Overall Recommendation (include rationale): Conditional

Curriculum is out of date and must be updated immediately. In order to move to continuation all curriculum must be launched by the October 1, 2016 curriculum deadline.

The department does an adequate job with analyzing its demographic data. It addresses the gender disparity and has participated in events focused on women in science to promote recruitment. It also addresses the disparity for African Americans and Hispanics, noting the mathematics prerequisite and the basic skills data for these populations as a possible reason for the disparity. The department is concerned with meeting the scheduling needs of its students. It analyzes the courses offered in the past and the percentage of fill rates in order to improve its pattern of service. The department's success and retention rates are consistent and high (for the 2014-15 academic year success was 76% and retention was 89%, and it provides a detailed discussion of SLO and PLO outcomes.

It cites its attempts to increase efficiency through double lecture sections. The FTES have steadily increased. It states that the WSCH per FTEF has grown from 591 in the year 2011-12, peaked at 643 in 2013-14, and then declined to 599 in 2014-15" but does not offer an analysis of that data. Although all Physics and Astronomy courses are articulated for transfer and the college catalog is current, the majority of the courses in the department are not current. The department "recognizes its oversight…and will complete the reviews of these courses by the beginning of Fall 2016." The department identifies weaknesses that address the lack of qualified faculty, retirements in the Planetarium and Physics Laboratory staff, and funding, but there are no plans to meet the challenges that are presented. The department does address space issues and has a plan stated to remedy those.

Strategic Initiative	Institutional Expectations	
	Does Not Meet	**Meets**
Part I: Access		
Demographics	*The program does not provide an appropriate analysis regarding identified differences in the program's population compared to that of the general population*	*The program provides an analysis of the demographic data and provides an interpretation in response to any identified variance.* *If warranted, discuss the plans or activities that are in place to recruit and retain underserved populations.*
Efficacy Team Analysis and Feedback: Meets The department does an adequate job with analyzing its demographic data. It addresses the gender disparity and has participated in events focused on women in science to promote recruitment. It also addresses the disparity for African Americans and Hispanics, noting the mathematics prerequisite and the basic skills data for these populations as a possible reason for the disparity. The department works with other departments and the Student Success Center to address that issue. However, a recruitment plan is not addressed for those populations.		
Pattern of Service	*The program's pattern of service is not related to the needs of students.*	*The program provides evidence that the pattern of service or instruction meets student needs.* *If warranted, plans or activities are in place to meet a broader range of needs.*
Efficacy Team Analysis and Feedback: Meets The department is concerned with meeting the scheduling needs of its students. It analyzes the courses offered in the past and the percentage of fill rates in order to improve its pattern of service. The department also collaborates with other departments in the division to ensure that students have a pathway to graduate. It offers day, evening, Saturday, summer, and hybrid courses. It is considering re-offering Physics 101 online, with labs meeting on campus; it does not offer 100% online courses because it does "not believe it is pedagogically sound or feasible to offer laboratory instruction on-line."		
Part II: Student Success		
Data demonstrating achievement of instructional or service success	*Program does not provide an adequate analysis of the data provided with respect to relevant program data.*	*Program provides an analysis of the data which indicates progress on departmental goals.* *If applicable, supplemental data is analyzed.*
Efficacy Team Analysis and Feedback: Meets The department provides an adequate analysis of the data. The department's success and retention rates are consistent and high (for the 2014-15 academic year success was 76% and retention was 89%. The department encourages its students to participate in tutoring, supplemental instruction, and Student Success Center activities. It addresses the low average for degrees awarded and sites that it is due to students transferring at various points in their program of study and for various reasons. Although reasons are given for the lack of degree completion, no relevant data is given nor is there a plan to obtain data.		

Student Learning Outcomes and/or Student Achievement Outcomes	*Program has not demonstrated that they have made progress on Student Learning Outcomes (SLOs) and/or Service Area Outcomes (SAOs) based on the plans of the college since their last program efficacy.*	*Program has demonstrated that they have made progress on Student Learning Outcomes (SLOs) and/or Service Area Outcomes (SAOs) based on the plans of the college since their last program efficacy.*

Efficacy Team Analysis and Feedback: Meets

The department provides both SLO and PLOs and provides a detailed discussion of those outcomes. The department has assessed all of its active courses and plans to incorporate what was discovered from the data to improve instructional services. It does note that Astronomy 222 and Physics 222 have not been evaluated—these are independent study courses and have not had enrollment in those courses for the past several years. Physics 010 also has not been evaluated because it has not been offered recently. The department notes that "the most recent SLO data only recently has been mapped by the SLO Cloud to be used to analyze Program Level Outcomes, and so initial results may need some careful reflection." It does not provide a timeline for this activity.

Part III: Institutional Effectiveness

Mission and Purpose	*The program does not have a mission, or it does not clearly link with the institutional mission.*	*The program has a mission, and it links clearly with the institutional mission.*

Efficacy Team Analysis and Feedback: Meets

The department notes that it "provides quality education to students…in the physical sciences and to physics, math, engineering, chemistry, pre-health, pre-med, and other science majors."

Productivity	*The data does not show an acceptable level of productivity for the program, or the issue of productivity is not adequately addressed.*	*The data shows the program is productive at an acceptable level.*

Efficacy Team Analysis and Feedback: Meets

It cites its attempts to increase efficiency through double lecture sections. The FTES have steadily increased. It states that the WSCH per FTEF has grown from 591 in the year 2011-12, peaked at 643 in 2013-14, and then declined to 599 in 2014-15."

Relevance, Currency, Articulation	*The program does not provide evidence that it is relevant, current, and that courses articulate with CSU/UC, if appropriate.* *Out of date course(s) that are not launched into Curricunet by Oct. 1 may result in an overall recommendation no higher than Conditional.*	*The program provides evidence that the curriculum review process is up to date. Courses are relevant and current to the mission of the program. Appropriate courses have been articulated or transfer with UC/CSU, or plans are in place to articulate appropriate courses.*

Efficacy Team Analysis and Feedback: Does Not Meet

The majority of the courses in the department are not current. The department "recognizes its oversight…and will complete the reviews of these courses by the beginning of Fall 2016." All Physics and Astronomy courses are articulated for transfer. College catalog information is accurate.

Part IV: Planning

Trends	*The program does not identify major trends, or the plans are not supported by the data and information provided.*	*The program identifies and describes major trends in the field. Program addresses how trends will affect enrollment and planning. Provide data or research from the field for support.*

Efficacy Team Analysis and Feedback: Meets

The department identifies local career trends. It cites the chronic shortage of health care professionals and the new medical school at UC Riverside as increasing the demand for science courses. The department discusses the impaction of science courses on campus. And the ending of grant funding in the Science Division is noted as an impact to the "peer-led communities fostered by the Student Success Center."

Accomplishments	*The program does not incorporate accomplishments and strengths into planning.*	*The program incorporates substantial accomplishments and strengths into planning.*

Efficacy Team Analysis and Feedback: Meets

The department cites a number of accomplishments. The department collaborates with UC Riverside and Cal Poly, Pomona, to acquire tutors for Physics; offers Planetarium shows each year for the general public as an outreach program; established the AA in Physics for Transfer Degree; piloted the use of Web-Assign in Physics 150AB and 200/201 to test the effectiveness of problem-solving software for upper division courses; offered Physics courses using multiple lab sections to meet the scheduling needs of students. The department discusses the way each of the accomplishments fits into the overall workings of the department.

Weaknesses/challenges	*The program does not incorporate weaknesses and challenges into planning.*	*The program incorporates weaknesses and challenges into planning.*

Efficacy Team Analysis and Feedback: Meets

The department identifies weaknesses that address the lack of qualified faculty, retirements in the Planetarium and Physics Laboratory staff, and funding. Adequate plans exist to address the challenges. The department does address space issues and has a plan stated to remedy those.

Part V: Technology, Partnerships & Campus Climate

	Program does not demonstrate that it incorporates the strategic initiatives of Technology, Partnerships, or Campus Climate. *Program does not have plans to implement the strategic initiatives of Technology, Partnerships, or Campus Climate.*	*Program demonstrates that it incorporates the strategic initiatives of Technology, Partnerships and/or Campus Climate.* *Program has plans to further implement the strategic initiatives of Technology, Partnerships and/or Campus Climate.*

Efficacy Team Analysis and Feedback: Meets

The department addresses all three strategic initiatives. Technology is incorporated into the classrooms with digital scales and digital electric multimeters, clickers, and Web-Assign. Campus Climate/Partnerships are addressed through offering public shows in the Planetarium and the Observatory, collaborating with SBVC's Financial Aid Office and Outreach for Science Day, providing workshops for middle and elementary school students.

Part VI: Previous Does Not Meets Categories		
	Program does not show that previous deficiencies have been adequately remedied.	*Program describes how previous deficiencies have been adequately remedied.*
Program Review 2012 team efficacy report does not identify any department deficiencies.		