PROGRAM REVIEW Fall 2017

Program: Physics & Astronomy
Division: MSEPS
Date: Sept. 30, 2017
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SLO/SAO Point-Person: Robin Rehagen

Audience: *Deans, Vice Presidents of Student Services and Academic Services, All Planning and Allocation Committees. This document will be available to the public.*

Uses: *This Program Review will be used to inform the campus and community about your program. It will also be used in the processes of creating Division Summaries, determining College Planning Priorities and allocating resources. A final use is to document fulfillment of accreditation requirements.*
Time Frame: *This Program Review should reflect on program status during the 2016-17 academic year. It should describe plans starting now and continuing through 2017-18. This document also provides the opportunity to describe more long-term plans (optional).*

Sections: *The first section of this Program Review focuses on general program reflection and planning. The second section is a review of curriculum. Only programs with curriculum need to complete Section 2. The third section is a CTE update, to be completed by CTE programs only.*
Topics: *A list of topics of particular interest to Program Review readers can be found here:* https://goo.gl/23jrxt
Help: *Contact Karin Spirn: kspirn@laspositascollege.edu*

Instructions:

1) *Please respond to each question as completely as possible.*
2) *If the requested information does not apply to your program, write "Not Applicable."*
3) *Optional: Meet with your dean to review this document before October 13.*
4) *Send an electronic copy of this form to Karin Spirn and your Dean by October 16*

Links:

Program Review Home Page: https://goo.gl/XATgjJ
Fall 2016 Program Review Updates : https://goo.gl/YV8QOt
Frequently Asked Questions: https://goo.gl/iIhRtt

Section One: Program Snapshot

A. Data Review: Describe any significant changes to your program's data since last year's Program Review Update (Fall 2016).

Possible sources of relevant information might include, but are not limited to, the following:

- Data generated by your program
- Data from the Office of Institutional Research (https://goo.gl/WuR9cQ)
- CEMC Data
- Labor Market Data
- SLO/SAO Data

1) We have changed the numbering rubric for our Science and Engineering major courses. Physics 8A is now Physics 1A, Physics 8B is now Physics 1C, Physics 8C is now Physics 1B, and Physics 8D is now Physics 1D. We made this change to shift the order in which students took these courses. Although students may still take physics 1B and 1C in either order, the new numbering system encourages students to take 1B (formally physics 8C) first. Since physics 1B requires a bit less mathematical rigor than physics 1C, we are confident that this change will produce a higher success rate for all students in the physics and engineering sequence. It will also allow us to plan our schedule with a bit more certainty since most students will take classes in the recommended alphabetical order (1A-1D).
2) Enrollment: In Spring 2017 we had 183 student enrolled, down a bit less than 5% from our spring enrollment in enrollment of 189, although this number is very similar to that of 2015, and is a 60% increase over our numbers from spring 2014! Demographics at least one encouraging trend however. There has been a significant increase in Female students enrolled, from 41 in 2016 to 60 in 2017, with a corresponding decrease of about 20 male students. There are now "only" twice as many male students enrolled as female students. Otherwise, age demographics have remained relatively constant and similar to the campus as a whole. Since it was noted in the program review update, it is worth mentioning that the same percent of Latino students are taking physics (20%) as in the past four years.

   Our course success rates have fallen a bit, from 80% in spring of 2015, to 82% in spring of 2016 to 73% in 2017. It is unclear what factors have led to this decrease. Possibilities include changes in staffing, a slight increase in the unit load of students, and the inclusion of Physics 2A as a part of the Engineering Tech program. Since the Engineering tech cohort will be taking Physics 10 and 10L in 2018, at least this variable will be tested. The course completion rate was also down slightly, from 89% to 85% over the past year. In Terms of productivity, spring of 2017 was somewhat of a down semester, with our productivity dropping from a WSCH/FTEF of 407 to 366 in one year. We believe that Fall of 2017 and Spring of 2018 will show a significant rebound based on enrollment in physics sections in Fall of 2017.

   In Astronomy, enrollment increased by 14% over the past year, while demographics, student profiles, and success rates have remained very constant, with a slight uptick (8%) in student completion over the past year. In direct contrast to physics, WSCH/FTEF has had its highest level since 2013 with a productivity number of 568—a 15% increase over last year.

Changes in Scheduling and course offerings:

1) We increased the number of sections we have offered in the Physics 1 series and 2 series. In Fall of 2016, we offered 7 sections of the Physics 8 series (now the 1 series) for the first time (specifically, 4 sections for physics 1A, 2 for 1B, and 1 for 1C). The same number of sections is offered in Fall of 2017. While some sections were slightly under-enrolled in 2016, this is not the case the 2017 as will be discussed later in this document.

We have also increased the number of sections offered in the physics 2 sequence, with 2A sections increased from 2 to 3 in the fall semester, with a corresponding increase in spring 2018 from 1 to 2 sections of physics 2B. The reasons for this increase is most likely related to a change made at Chabot College. There, the physics 2 sequence has been eliminated from the schedule in favor of a calculus-based physics 3 sequence for life science students. As a result, students without the mathematical prerequisites for calculus were compelled to look elsewhere to fulfil their physics requirements. It is not clear whether this "bump" in enrollment for physics 2 will continue into next year and beyond.

2) Engineering technology, a relatively new program to train veterans to work in technical STEM related fields, also populates the physics 2 sequence, since physics 2A is currently a requirement for their degree or certificate. Due to relatively low success rates of this cohort compared with the non-Engineering tech students, a shift to physics 10 and physics 10L is being considered for these students.

B. Changes to Program and Needs: Describe any significant changes to your program or your program's needs since the previous Program Review Update (Fall 2016).

1) As described above, we have been experiencing increased enrollment in our physics classes as the college grows. We have had increasing difficulty scheduling our twelve 3-hr lab classes inside our single physics lab classroom (rm 1831). Somedays, the lab room is in constant use from 8am to 10:30pm and it's becoming very difficult to schedule our long lab classes without conflicting with other math/science courses. Consequently, we have a great need of an additional physics lab room. 1822, conveniently next door to both the physics lab room and the equipment storage area, is currently being used as the engineering lab room. However, it is in use infrequently. In the short term, hosting some physics labs there should work. As both the engineering and physics programs grow, however, this will also become unsustainable. It is also not an ideal arrangement in terms of space, because both engineering and physics labs require lots of different equipment. Engineering equipment in particular tends to be larger and not portable.

A much better option would be having at least 2 lab rooms designated specifically for physics and astronomy labs. The 1826 room (currently used as a lecture room) was originally designed to become an additional lab room when program needs required. Use of this room as a lab room would greatly help the program. Of course, this would require extra lecture space to replace the 1826 room, which is frequent use.

2) Equipment from our Fall 2016 Instructional Equipment Request has arrived and has helped facilitate smaller lab group sizes and more hands-on student interaction during physics labs, continuing a trend from prior semesters. This includes smaller and more versatile laptop computers, a full set of Vernier data acquisition modules.

Mark an X next to each area that is addressed in your response.

Definitions of terms: https://goo.gl/23jrxt

	Community Partnerships/Outreach
x	Curriculum*
	Enrollment Management
	External Factors
	Facilities,** Supplies and Equipment (Including Software)
x	Financial/Budgetary
x	Human Resources
x	Learning Support
	LPC Planning Priorities https://goo.gl/LU99m1
x	Pedagogy
x	Professional Development
	Services to Students
x	SLO/SAO Process
x	Technology Use

*Curriculum will also be addressed in Part 2 (Curriculum Review).

**Facilities will also be addressed in Question H.

3) Led by Dr. Rehagen, we have continued our efforts to develop new labs for the Physics 8 series. Specifically, several inquiry-style labs have been developed and implemented for Physics 8A and 8B over the past year. The purpose of these labs is to give students more control over their learning in the lab classroom and provide them with first-hand experience using the scientific method to design, implement, and assess their own physics experiments. 4)At the initiative Dr. Travis White, a physics and mathematics adjunct instructor, we are also experimenting with a "flipped classroom" approach in the Physics 2 sequence. It is currently too early to tell how this approach will integrate into Dr. White's teaching, and into the department as a whole. 5)As part of the curriculum process, course outlines have been rewriting and entered in Curricunet for all physics and astronomy classes, with the most recent updates completed in Sept 2017 for Physics 10 and 10L. These updates were motivated by changes in rubric, pedagogy, and simply the periodic need to update course outlines. We have also revised the SLOs for all our physics and astronomy courses this fall to reflect changes in pedagogy, and the campus wide philosophy about SLOs.	

C. Reflection: What plans from the 2016 Program Review Update or any previous Program Reviews/Updates have been achieved and how?

1) Plan from 2016 Program review update: "We plan to update all course outlines in the Physics department in the following order: Physics 8A,8B,8C,8D, Physics 2A, 2B, Physics 10 and Physics 10L." **Result**: all course outlines have been updated as of Sept 2017 2) Plan from 2016 Program review update: "As part of the course outline update, we plan to address the concern about the current suggested order of the physics 8 series classes." **Result:** The Physics 8 series has been changed to the physics 1 series as described earlier. 3)Plan from 2016 Program review update: "We will update course outlines for all astronomy courses (Astronomy 10, Astronomy 20, and Astronomy 30). As part of our update, we are strongly considering adding one or more prerequisites to Astronomy 10 and Astronomy 20 to address the increasing number of students who are under prepared for the critical thinking, and mathematical reasoning that astronomy	Mark an X next to each area that is addressed in your response. Definitions of terms: https://goo.gl/23jrxt

	Community Partnerships/Outreach
x	Curriculum*
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x	Pedagogy
	Professional Development

requires."
Result: Astro 10 and Astro 20 have been updated. Astro 30 is still in the process of being updated. Although no prerequisites have been added, math and English advisories have been included in the course outlines.

4)Plan from 2016 Program review update: "Over the coming year, we plan to continue to develop new labs for our Physics 8 series, with the long-term goal of creating a standardized lab manual for students."
Result: No lab manual has been produced. Although we have continued to develop new labs, particularly in inquiry based learning, we have abandoned the idea of a lab manual for the physics 1 or 2 series. Such a lab manual has proved unworkable due to the unique and changing nature of each instructor's goals for physics labs. Under the guidance of Andrew Lozano, our lab technician, we have developed a method of storing equipment that allows for a "plug and play" approach for a wide variety of labs.

5)Plan from 2016 Program review update: "We also have plans to create an online catalog (with pictures and a short description) of all the physics demos and lab equipment available at LPC, organized by physics subject."
Result: no progress has been made on this goal

6)Plan from 2016 Program review update: "We would also like to improve enrollment continuity between physics classes in the 8ABCD sequence"
Result: The change to physics 1ABCD was designed in part to address this issue by standardizing expectations between classes (i.e. a student in 1C can be assumed to be familiar with physics 1B concepts, etc). In terms of continuity and pedagogical expertise among adjunct instructors, we have held a meeting to discuss assessments for the new SLOs for physics/astronomy courses that will become active in Spring 2018. Such meetings are difficult to schedule on a regular basis for the entire department given the busy schedules of adjunct faculty, however, we continue to work together on a one-on-one basis to share innovations and standards.

7)Plan from 2016 Program review update: We plan to finally identify a dark sky location on campus property and move the astronomy dome there and repair the telescope within or resolve to live the situation as is and adjust by improving or replacing existing facilities and equipment.
Result: No progress has been made in this area, but we have consistently reiterated this need in discussion of Measure A funding, with the hope that such a site might be made available (and more easily accessible to vehicles carrying telescopes).

	Services to Students
	SLO/SAO Process
x	Technology Use

*Curriculum will also be addressed in Part 2 (Curriculum Review).

**Facilities will also be addressed in Question H.

D. Impacts to Students (Optional): Discuss at least one example of how students have been impacted by the work of your program since the last Program Review Update (only if you did not already answer this in Questions A, B or C).

Please see sections A, B, and C above.	Mark an X next to each area that is addressed in your response.	
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	x	Enrollment Management
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	x	Human Resources
	x	Learning Support
	x	LPC Planning Priorities https://goo.gl/LU99m1
		Pedagogy
		Professional Development
		Services to Students
	x	SLO/SAO Process
		Technology Use
	*Curriculum will also be addressed in Part 2 (Curriculum Review).	
	**Facilities will also be addressed in Question H.	

E. Obstacles: What obstacles has your program faced in achieving plans and goals?

1) Our plans to implement a comprehensive catalog of all our physics equipment has not been realized for two main reasons. The first is simply that our full-time faculty in physics and astronomy have been too busy (outside of their normal teaching load) implementing the other listed goals involving curriculum and SLOs, as well as considerable time spent recruiting, interviewing, and scheduling instructors for several sections of physics and astronomy. The other reason is that our laboratory technician has not made this goal a priority among his many tasks and projects. This is likely no fault of his own--considering that the full-time instructors have not stressed either goal as a priority. In fact, it is clear that the physics and engineering lab tech has a finite "bandwidth" for new	Mark an X next to each area that is addressed in your response.	
	Definitions of terms: https://goo.gl/23jrxt	
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	x	Enrollment Management
	x	External Factors
	x	Facilities,** Supplies and Equipment (Including Software)
		Financial/Budgetary

project due to his many growing demands and responsibilities. It would appear that the implementation of a design element in engineering and engineering tech, facilitated by the arrival of 3D printers, a laser engraver, and many shop tools has occupied significant time of the lab tech that would have been used for similar projects in the past. **2)** Our goal to identify a dark sky site and build an observatory there, or move and repair our existing facility has not been achieved for a few reasons. The first is the same as above—insufficient time available due to work on our curricular, staffing, scheduling, and SLO goals. The second is again due to the lack of time available and allocation of priorities of our lab technician. The third and perhaps most significant reason is that the Director of Facilities and (to a lesser extent) the facilities committee have not prioritized the potential use of the mitigation land for astronomy use. With the passage of our recent bond measure, dark sky locations on campus are now unsuitable for long term astronomy use since those areas will soon be brightly lit and/or built upon. Thus the mitigation land is our current best option.	x	Human Resources
	x	Learning Support
		LPC Planning Priorities https://goo.gl/LU99m1
		Pedagogy
		Professional Development
		Services to Students
		SLO/SAO Process
		Technology Use
	*Curriculum will also be addressed in Part 2 (Curriculum Review).	
	**Facilities will also be addressed in Question H.	

F. Short Term Planning: What are your most important plans (either new or continuing) for next year?

1) Create new lab space for physics (and astronomy) labs. See the first item discussed in part (B) of this document. **2) Streamline the hiring process.** We are greatly in need of a larger pool of qualified adjunct instructors for physics and astronomy. Currently, a great deal of time and energy has been required to find adjunct instructors to teach new sections of classes. In some cases these sections were added at nearly the last minute due to sudden demand (30 students on the waiting list for physics 2A for example). This problem is exacerbated by the tradition of scheduling classes first and then looking for instructors to teach them. Since many adjuncts either teach at other institutions or work full time, daytime classes are increasingly difficult to staff. 3) **Improving the scheduling process.** An increasing number of physics sections must fit into a matrix of increasing complexity to allow students to successfully complete sequences in biology, chemistry, computer science, mathematics, and engineering. In addition, we are limited in our block scheduling by the traditional	Mark an X next to each area that is addressed in your response.	
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college hours of Wed 2:30 to 4:30, and to a single lab room. Solutions may include yearly schedule meetings, hour reductions (i.e. if Math 2 would eliminate the TBA hour), and scheduling software.

4) **Increase the lab tech position from 10 Months to 12 months and change the position from lab technician to lab coordinator.** As our lab tech is increasingly occupied with workforce development projects, changes to the engineering program, and much larger physics and engineering enrollments than in past semesters, we must strongly consider allowing the lab tech to work in the summer when few students are present to organize storage, repair equipment, and complete projects that cannot be completed during the busy fall and spring semesters. Also, the duties of the position require someone with considerable expertise in multiple areas—a requirement that is incompatible with the pay and listed duties of a lab tech as currently written. The turnover in lab techs (one every three years) is largely due to the lack of pay and the limitations of assigned duties. Since it is likely that our staffing needs will grow, rather than stay stable or shrink, we believe a coordinator is necessary for long term stability.

5) **Add a part time lab tech position** (15 – 20 hours per week) to assist the lab tech with equipment repair, organization, and attention to projects that cannot be completed otherwise. Preferably, the lab tech would also have an interest in astronomy and could work with instructors and full-time lab tech to realize the potential of our astronomy program. A part time lab tech would also allow for lab assistance beyond the 8 hour work day of the full time lab tech. Physics labs typically run from 8 AM to 7:30 pm, and astronomy labs often run as late as 10:20 pm.

6) **Add 1 – 3 sets of new equipment for new labs in Physics 1D.** Currently, we only have suitable lab equipment for 8 to 10 labs in physics 1D. Instructors typically make up the time with simulations, student projects, worksheets, exams, and problem solving sessions. However, to comply with our articulation agreements, we should add at least 2 more labs in the short term.

7) **Continue efforts to identify a dark sky site**, preferably in the campus mitigation land, design, and begin work on a suitable facility for observational astronomy.

x	Technology Use

*Curriculum will also be addressed in Part 2 (Curriculum Review).

**Facilities will also be addressed in Question H.

G. Long Term Planning (Optional): Please detail any long-term plans for the next 3-5 years. (Only if you have significant plans, such as implementation of a grant project, creation of long-term initiatives including those using restricted funds such as Equity or SSSP, construction and outfitting of a new building).

1) As mentioned in (5) above, Adding an additional lab tech help for work in Astronomy and currently "optional" physics projects. It is apparent that engineering and engineering tech program require a larger percentage of the lab tech's time and energy compared with the description of the position. For the physics and astronomy program to continue to serve a larger number of students and to achieve its pedagogical goals, more assistance will be required. 2) Complete work on a dark sky site for use by astronomy lab and observation activities by astronomy classes and members of the community.	Mark an X next to each area that is addressed in your response.	
	Definitions of terms: https://goo.gl/23jrxt	
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H. Do you have any facilities needs that are currently unmet? If yes, please describe.

1. **An additional lab room dedicated specifically for physics and astronomy.** As described in detail in Section B, physics is running out of lab room space in our single lab room. The 1826 room (currently used as a lecture room) is designed to be converted to an additional lab room when needed. If physics were able to use this room for its purpose as a lab room, that would solve our problem. Of course, this would require extra lecture space to replace the 1826 room, which is nearly always in use. Note that a secondary option would be to incorporate physics and astronomy labs into a new building. Note that in the Enviornmental studies program review, there is also the need for space to host a new lab to accompany EVST 5 (and possibly bio 40 as well). The extra lab space should also be able to serve in this capacity.
2. **Additional storage for physics equipment.** Because physics and astronomy also share storage with a growing and diversifying engineering program, we are having difficulties finding storage for equipment that is organized and used easily for labs and demonstrations.
3. **A dark sky site for astronomy, with proper vehicle access and storage for telescopes.** As described above, we need a dark sky site for astronomy. This would preferably make use the mitigation lands and include vehicle access (or a short walk from vehicle access), and a storage

facility for telescopes. Preferably, the storage facility would be part of a structure that would allow one or more telescopes to remain mounted for observation and astrophotography. This storage facility would have to be robust enough to protect the expensive equipment against inclement weather (rain, heat, etc.) and theft.

I. Mission: Explain how your program's plans and accomplishments support the mission of Las Positas College:

Las Positas College is an inclusive learning-centered institution providing educational opportunities and support for completion of students' transfer, degree, basic skills, career-technical, and retraining goals.

1) Achievement: We have updated update all course outlines in the Physics department. Primarily, this change supports the completion of students' transfer degrees by solidifying the articulation to transfer institutions.

2) Achievement: The Physics 8ABCD series has been changed to the Physics 1ABCD series. This change supports the successful completion of courses in the engineering physics sequence by establishing a standardized track, as well as expectations, for students to take and succeed in Physics 1A-1D

3) Achievement: We updated all but one of the course outlines for the astronomy courses. These updates support the completion of students' transfer degrees by solidifying the articulation to transfer institutions. It also should improve student success in astronomy courses by including prerequisite advisories in mathematics, preventing underprepared students from enrolling.

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J. Program-Set Standard (Instructional Programs Only): Did your program meet its program-set standard for successful course completion? ____yes _____no

(This data can be found here: https://goo.gl/b59nCy)

If your program did not meet your program-set standard, discuss possible reasons and how this may affect program planning or resource requests.

K. SLO/SAO Reflection: Describe an example of how your program used course SLO data (CSLOs), Student Service Area Outcome (SAO) data or Program SLO data (PSLOs) from last year (2016-17) to impact student learning or achievement. Focus on PSLOs or CSLOs where you have multiple semesters of data to analyze. (Copy the box below if you would like to discuss multiple examples.)

Course Name, Program Name or Student Service Area: Physics 8A CSLO
Text of the CSLO, SAO, or PSLO: By the end of this course, students should be able to analyze physical situations quantitatively by selecting relevant equations and models, modifying them as appropriate, and using them correctly to solve problems.
Describe the quantitative or qualitative results: This SLO aims to understand how well students understand the content of the course. The distribution of student outcomes on this SLO is roughly normally distributed, with the majority of students falling in the C-range of understanding, and few students truly achieving on an "A"-level.
Discuss and reflect upon student achievement for this CSLO/PSLO/SAO. Discuss any actions taken so far (and results, if known) and your action plan for the future: Student grades in our courses are determined by several factors (exam scores, lab scores, HW assignments, etc.) so they are often higher than C-level on average, when all parts of the course are taken into account. However, it is concerning that a focus on exam scores alone gives a "C" average. In a way, it makes sense, because by definition "C" is supposed to be "average", but in reality when a student earns a "C" on a test they do not understand the material on a deep level. The entire physics sequence is cumulative, and without a clear understanding of the material in Physics 8A students will not be able to succeed later on in the physics sequence. One way to help them succeed in subsequent classes (8B, 8C, 8D) is to continue to stress and review the concepts from 8A and incorporate them throughout the later courses, rather than assuming that all students exit 8A with a deep understanding of kinematics, forces, and conservation laws. Currently, we are trying to do this in the higher-level courses. To test whether this long-term plan is working, we should try to chart the content-oriented SLO for each course in the sequence, and see if the average score goes up or down further on into the sequence. If students tend to increase their understanding as the sequence goes on, this would indicate that they are building upon previous knowledge and making connections between the courses, and that this learning process just takes time. However, if the average score goes down, it might mean that lack of understanding in 8A is propagating throughout the rest of the sequence.
What changes in student achievement are evident across the semesters you analyzed? What are some possible explanations for these changes in student achievement? There were no obvious trends across semesters.

L. Plans for Analysis of SLO/SAO Data: Identify the PSLOs, CSLOs, or SAOs that your program plans on focusing on the upcoming year with subsequent analysis. (Copy the box below as needed.)

Circle One: CSLO ***__PSLO__*** SAO
Course, Program Name, or Student Service Area: **Physics**
Text of CSLO/PSLO/SAO: **Upon successful completion of an AS in Physics, students are able analyze physical situations quantitatively using fundamental physics principles, ranging from Newtonian**

mechanics to modern physics.
If you plan on analyzing a PSLO, identify the CSLOs that feed into the PSLO that will need to be assessed. Upon completion of PHYS 1A, students should be able to analyze physical situations quantitatively using Newtonian mechanics and conservation laws. Upon completion of PHYS 1B, students should be able to analyze physical situations quantitatively using principles of hydrodynamics, thermodynamics, harmonic motion, wave motion, and optics. Upon completion of PHYS 1C, students should be able to analyze physical situations quantitatively using principles of electricity and magnetism. Upon completion of PHYS 1D, students should be able to analyze physical situations quantitatively using principles of relativity, quantum mechanics, nuclear physics, and particle physics. Upon completion of PHYS 2A, students should be able to analyze physical situations quantitatively using Newtonian mechanics, conservation laws, thermodynamics, hydrodynamics, and principles of harmonic and wave motion. Upon completion of PHYS 2B, students should be able to analyze physical situations quantitatively using principles of electricity, magnetism, relativity, quantum mechanics, nuclear physics, and particle physics.

Section Two: Curriculum Review
(Programs with Courses Only)

The following questions ask you to review your program's curriculum. To see the last outline revision date and revision due date:

1. Log in to CurricUNET
2. Select "Course Outline Report" under "Reports/Interfaces"
3. Select the report as an Excel file or as HTML

Curriculum Updates

A. Title V Updates: Are any of your courses requiring an update to stay within the 5 year cycle? List courses needing updates below.

Yes. Astronomy 30. We are in the process of updating that course right now.

B. Degree/Certificate Updates: Are any degrees/certificates requiring an update to do changes to courses (title, units) or addition/deactivation of courses? List needed changes below.

No.

C. DE Courses/Degrees/Certificates: Detail your department's plans, if any, for adding DE courses, degrees, and/or certificates. For new DE degrees and/or certificates (those offered completely online), please include a brief rationale as to why the degree/certificate will be offered online.

No new plans.

Section Three: CTE Updates
(CTE Programs Only)

A. Labor Market Conditions: Examine your most recent labor market data. Does your program continue to meet a documented labor market demand? Does this program not represent unnecessary duplication of other training programs in the college's service area? (Please note: your labor market data should be current within two years. Contact Vicki Shipman or the current CTE Project Manager for access to data).

B. Advisory Boards: Has your program complied with advisory board recommendations? If not, please explain.

C. Strong Workforce Program Metrics: Utilizing LaunchBoard, review the Strong Workforce Program Metrics. Review the data and then answer the following questions.

(Contact Vicki Shipman or the current CTE Project Manager for help accessing the data).

C1. Does your program meet or exceed the regional and state medians **for increased enrollments, completions, and/or transfer since your last program review**? If not, what program improvements may be made to increase this metric?

C2. Does your program meet or exceed the regional and state medians **for students gaining employment in their field of study**? If not, what program improvements may be made to increase this metric?

C3. Does your program meet or exceed the regional and state medians **for student employment rates after leaving the college**? If not, what program improvements may be made to increase this metric?

C4. Does your program meet or exceed the regional and state medians **for increased student earnings and median change in earnings?** If not, what program improvements may be made to increase this metric?