**Department/Program Review Summary**

**2011-12**

**Department:** Physics (PHY)

**Date of Review:** April 13, 2012

**Review Team Members and Titles:**

Helen Grove, Sr. Vice President and Provost

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Ryan Murphy, Professor, Business Information Systems

John Parcell, Associate Professor, Music

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**Department Members Present:**

Roger Abernathy, Dean, Science, Math and Engineering

Art Ross, Chair, Physics

Faculty and Staff:

Marlon Aldridge

Karen Butcher

Lori Cutright

Lee Day

Charles Grooms

Shan Huang

Lalitha Locker

**Commendations**:

* The self-study and subsequent discussion in the Review Team meeting demonstrated the department has a willingness to try new things, to explore innovative techniques, to embrace those things that are working and abandon those things that are not. There are several examples of innovations that the department has developed and implemented.
* The department deserves a strong commendation for its pioneering work on development of the online version of the laboratory based astronomy course.
* The tripling of enrollment in astronomy courses subsequent to the development of online sections also deserves special mention.
* The department has a strong sense of who its stakeholders are, and recognizes that in their role as a “service department” they need to be closely attuned to the needs of other departments that utilize their courses.
* The Physics Resource Laboratory (PRL) demonstrates a strong commitment to finding ways to help students succeed, and the data from recent years indicates that an increasing percentage of students in Physics courses are taking advantage of it. (Is this what the data indicated or was it just an increase overall?)
* The department has explored the use of an integrated lecture/lab approach, an approach that reportedly is supported by numerous research studies, and many sections offered by the department now benefit from the blending of the lecture and lab components into a more holistic process.
* The department serves many students from other institutions, particularly students from four-year institutions who come to take many courses at Sinclair rather than their home institutions. There is a considerable amount of anecdotal evidence that students experience greater quality and success than they do in these courses at their home institution.

**Recommendations for Action**:

* It does not appear that the department has fully addressed the recommendations from the last Program Review. Those previous recommendations are listed below. In addition to prioritizing the recommendations from the current Program Review, priority should also be given to taking action on the previous items which are listed below.
	+ Clarify for the department the steps needed to expand and formalize an assessment plan. Continue development and implementation of the department’s assessment plan, and report on progress annually. Make more extensive use of data to improve assessment.
	+ Consider developing a formal advisory mechanism to provide regular feedback and assistance to the department. Include regular feedback from area universities as well as Sinclair Community College.
	+ Continue work to support the development and performance of part-time faculty.
	+ Review the department’s curriculum and update as needed. Please note:
		- Many of the existing courses, as reflected by Master Syllabi, have not been revised since 1995.
		- The new Curriculum Management Tool will be a useful assist in expanding assessment practices.
		- Evaluate the need for PHY 133, 270 and 295 given the low enrollment in these courses over the past five years; deactivate if appropriate.
		- Incorporate General Education learning outcomes as appropriate.
	+ The department appears to have an opportunity to expand offerings for teacher education, transfer and Allied Health. The department should pursue this opportunity and request resources as needed.
* The department should focus on the development of department/program outcomes. While this is a “service department” that will not have any programs in semesters, the department should still focus on developing appropriate, measurable outcomes and then performing assessment to see if those outcomes are being achieved. The department should work closely with its divisional Learning Liaison and the Director of Curriculum and Assessment in developing these department outcomes, which will then become the outcomes that are used in future Annual Updates and Program Reviews.
* In conjunction with the development of Department/Program Outcomes, the department should make development of an assessment plan a top priority. A crucial first step in this plan will be development of common measures across all sections of a course. This may take the form of common assignments, common exams, or perhaps some common items on certain exams, but a consistent set of data needs to be collected from all sections of a course that will allow the department to demonstrate student learning in terms of both course outcomes and program/department outcomes. Again, it is recommended that the department work closely with its divisional Learning Liaison and the Director of Curriculum and Assessment in developing this assessment plan.
* It would appear that there is room to engage adjuncts more and provide an increased level of oversight. The department should seriously consider development of common syllabi for courses that adjunct faculty can use to ensure they stay within the bounds of the curriculum. The department might explore use of the new Teaching Syllabus Tool to this end. Additional training of adjuncts appears to be in order, especially in improving their readiness to teach an integrated lecture-lab format.
* In order to fully align with four-year institutions, it must be determined that there is alignment within the department. The conversion to semesters provides a great opportunity to hit the”reset” button in this area, leading to greater consistency across the department.
* Relating to the recommendation above, the department should strengthen its relationships with external institutions, seek external input into departmental changes under consideration, and ensure alignment with four-year programs. It is recommended that the department explore the development of an Advisory Committee to assist in this regard, as was suggested in the previous Program Review recommendations.
* The Physics Resource Laboratory holds great promise in terms of increasing student success, but there is a lack of evidence that the lab does indeed improve student outcomes. The department should begin collecting data to determine the impacts of the lab on learning. This could be a real “flag waving” opportunity for the department that would validate the efforts and resources being devoted there. The department is encouraged to collect full ID numbers and reasons students are visiting as they enter the PRL, and to use that data to document student use and any increases in student success associated with use of the PRL.
* There is a considerable amount of external research to support the integrated lecture/lab approach. The department may choose to buttress this with internal comparisons between sections that take this approach and those who don’t. If the data indicates that student success is substantially increased by this approach, then the department should scale this approach to encompass all lecture/lab sections it offers. If professional development is required for faculty to appropriately implement this approach, it is recommended that training be done so that all faculty can use it effectively.
* There has been a tremendous emphasis on STEM areas for several years now. The department may want to thoughtfully explore whether an associate degree program should be developed that would allow for smooth transfer into a four-year Physics program. There is every indication that there will be growth in opportunities for those holding baccalaureate degrees in STEM fields, and the department may want to position itself to be part of that pipeline in Physics.

**Overall Assessment of Department’s Progress and Goals**:

This is a department that is doing many noteworthy things, including online laboratory based astronomy courses which reflect nationally recognized expertise and innovation. Moreover, the department has a clear sense of who its stakeholders are and strives to meet their needs.

It appears that the department is aware of many of the steps that needs to be taken to move forward, but has not yet developed a plan for taking those steps. Assessment of student learning which is tied to course and department outcomes needs to occur on a consistent and comprehensive basis across all sections that are offered by the department. The department needs to work together to develop a consensus on making its offerings more consistent from section to section and on developing and implementing strategies for measurement of student learning.

**Institutional or Resource Barriers to the Department’s Ability to accomplish its Goals, if any**:

Questions were raised among the review team regarding errors in degree audits for the Physics programs which are not being converted to semesters; it is not clear whether this represents a barrier, but the department should check with Registration to determine whether or not there is in fact an issue with this. Also, while it has been recommended that better data be collected and analyzed for the PRL, it is also recognized that capturing usage data for support labs is something that needs to be addressed campus-wide. This is also a challenge for other support labs. Finally, during the discussion in the review meeting it was mentioned that four-year institutions are sometimes reluctant to accept credits transferred from Sinclair and apply them to degree program requirements. When this occurs for any guaranteed transfer courses (TAG, OTM, CTAG), it is recommended that all such cases be referred to the Provost’s Office so that contact with the appropriate channels at these four-year institutions can be made at a higher level of administration.