

Annual Assessment Report

Department: Physics

Academic Year: 2017

Date of Submission: Sept. 16, 2017

Department Chair: Kenneth Kihlstrom

I. Response to the previous year PRC's recommendations

<ul style="list-style-type: none"> Item: Consider clarifying what kind of diversity you seeking to achieve with your new hires. This might involve looking at what other Physics departments look like in terms of diversity, or California looks like in terms of diversity, or what our student body looks like. 	<p>Response: The physics department at Westmont has been “white-male” for decades. Warren Rogers leaving gave an opportunity to diversify in a new hire. A couple applied to share the position which would have allowed us to include gender diversity. They were finalists along with a white male and all involved in the process recommended the white male who was much more experienced and capable. While he came, he since decided to return to UCLA and once again we are in hiring mode. Last year’s PRC suggested defining diversity. The diversity profile of California or even our student body is wildly different than that of Physics departments (or physicists in general). Fewer than 15% of physics faculty are women, half of B.S. only granting institutions have no women faculty. 1/4th of new hires are women (well above the roughly 20% earning PhD’s). The numbers are slightly better in Astronomy but not much. The numbers for minorities are far worse. Some 8% of PhD’s are granted to under-represented minorities. 79% of physics faculty are white and a bit over 14% Asian. There are definitely challenges to adding diversity. Nonetheless we see this as an important goal in our current search.</p>
<ul style="list-style-type: none"> Item: Get back on track with the assessment process – not for the sake of assessment per se – but to make sure that the Physics department is a strong healthy program. 	<p>Response: In some ways, the assessment process is really for the sake of assessment per se. The realism is both Dr. Sommermann and I are not far off from retirement which means the new hires in the next few years will be the ones charting the course of physics and engineering/physics going forward. They will be the ones asking the key questions. Of course, we want to help them formulate the key questions. In addition, we have been in survival mode for a few years now. First when Warren Rogers went to serve as interim Provost, then two years with him first on leave then leaving for Indiana Wesleyan and us in hiring mode. We thought</p>

	Jonathan Mitchell would be the foundation of the department going forward but with his return to UCLA (because he wanted to focus on research), once again we are a “two-man band”. Nonetheless we have a responsibility to be the best department we can be but that will be done by doing the best hiring possible, as well as by assessing student abstracts.
Item:	Response:
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<p>Notes: The feedback from last year’s report showed both readers went through the report carefully but beyond this showed great insight into the circumstances of our department. The feedback was wise and well considered. This last year with Jonathan Mitchell began a process of looking forward to what we wish to become as he, working with us began developing a vision for the program going forward. But because of his return to UCLA, we are left with wondering if the next new hire will share the same vision or look to a different direction. In this report, we’ll talk about the collaborative visions that began to develop but with the understanding when a “new Pharaoh arises” this direction could well change.</p>	

II A. Program Learning Outcome (PLO) assessment

If your department participated in the ILO assessment you may use this section to report on your student learning in relation to the assessed ILO. The assessment data can be requested from the Dean of Curriculum and Educational Effectiveness.

Program Learning Outcome	Communications PLO
Who is in Charge /Involved?	Ken Kihlstrom
<u>Direct Assessment Methods</u>	Analyze student abstracts on their lab reports. Abstracts are critical in scientific publications. A read of an abstract will often determine if the reader goes on to read the whole paper. Often the abstract is the only thing that gets read so communicating concisely what was accomplished and how in a succinct way is critical. We developed a rubric to evaluate each of a number of qualities of writing we were looking for. We then summarized the results for the class as a whole for an early (in the semester), a mid lab and the final lab. We were looking for both improvement but especially that by the end, the quality of the writing was solid. Also (and this is a change from our previous six-year report) we took the

	data in the second semester freshman lab (previously we did it in the first semester). This allows a bit more experience with the writing before evaluating their performance.
<u>Indirect Assessment Methods</u>	
Major Findings	The results of the analysis are in Appendix A (both the graphs and raw data). The good news is that our established benchmarks of 60% accomplished and 90% accomplished or satisfactory were met for all three labs (early, mid, last) in all three categories (content, format & style and overall) with the one exception of the content on the last lab. They, in general write well and are able to translate experiments in the lab to clear, complete abstracts of their work. The surprise (and not a good one) was that performance tailed off as the semester went on. Both in content and overall there was a steady decline in their performance. Perhaps it reflected the particular labs (the first was probably the most straightforward to write up) but it would have been nice to see improvement rather than regression. That said, looking at the results from all the labs, the best performance overall came in one of the later labs and the worst happened to be the very last lab (the one we included in the graph).
Closing the Loop Activities	We continue to stress the importance of writing well in the sciences. This happens in intro courses up through senior seminar. In general, our students take pride in their writing ability. We think we could do a bit better on focusing on oral presentations through their career at Westmont and this will be a topic of discussion for the coming year during the writing of our six year report.
Collaboration and Communication: Jonathan Mitchell and I collaborated on the judging of the abstracts. He was teaching the lab while he gave me access to the student abstracts which were available on Canvas. The final results were discussed in a departmental meeting with Michael after Jonathan had left for UCLA.	

or/and

II B. Key Questions

Key Question	None (or at least we put it in category IV)
Who is in Charge/Involved?	

<u>Direct Assessment Methods</u>	
<u>Indirect Assessment Methods</u>	
Major Findings	
Recommendations	
Collaboration and Communication	

III. Follow-ups

Program Learning Outcome or Key Question	
Who was involved in implementation?	
What was decided or addressed?	
How were the recommendations implemented?	
Collaboration and Communication	

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IV. Other assessment or Key Questions related projects

Project	What will be the direction and goals of the department going forward?
Who is in Charge /Involved?	Jonathan Mitchell had primary responsibility for setting visions as he was the one that would be here for the next few decades. But the discussion involved all of us as well as peripherally Provost Mark Sargent and President Gayle Beebe.
Major Findings	For decades, the physics program involved two main components. The first was pure physics as exemplified by a BS in physics, students involved in on campus research (as well as NSF Research Experiences for Undergraduates at other universities) leading to many graduates going on to Physics PhD programs. The second was an engineering focus, exemplified by both the 3:2 dual degree program (allowing students to spend their final two years at an engineering university to get a specialized engineering degree) and the engineering/physics program. But with the acquisition of the Keck Telescope (24”) the possibility of developing a concentration in Astronomy presented itself. In addition, with the imminent start of the College’s capital campaign the question was raised as to whether it was possible to endow an engineering faculty position (or two?) to fully develop an engineering program. Engineering has always been a larger draw of students than pure physics (indeed some of our most promising pure physics grads began as engineering/physics majors). Dr. Mitchell initially resisted the idea of increasing the engineering presence (fearing a dilution of the physics program) but saw the possibility of additional positions strengthening the overall program, including pure physics. We also had extensive discussions of the role an astronomer (or astrophysicist) could play (especially with the Keck Telescope. In addition, astronomy increases the opportunity for diversity in hiring. It was felt that an astronomer would need to be able to teach the pure physics courses as well as astronomy courses.
Action	With the departure of Jonathan Mitchell back to UCLA, in some sense the discussions are on hold. Nonetheless the general direction still seems wise. As we see what comes out of the capital campaign we will know better the possibilities. The more immediate issue, however is the hiring of a new faculty member this year. In the posted ad, we included physics and astronomy (but with the ability to teach the physics courses). But the reality is we will need to see who applies and what strengths they bring. It also gives us another change to bring diversity to the program
Collaboration and Communication: These discussions took place over many departmental meetings as well as meeting with the Provost and President.	

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V. Adjustments to the Multi-year Assessment Plan (optional)

Proposed adjustment	Rationale	Timing
None: Six year report next year		

VI. Appendices

- A. Prompts or instruments used to collect the data
- B. Rubrics used to evaluate the data
- C. Relevant assessment-related documents (optional)