**Executive Summary of Program Assessment**

*The summary, including this page, should be no more than three pages.*

**Campus:** UMSL

**College/School:** Arts & Sciences *(if applicable)*

**Academic Unit:** Physics & Astronomy

**Date Submitted:** 01/08/13 *(dd/mm/yy)*

**Person Responsible for Success of Program:** Bernard Feldman

**Submitted by:** Pat Dolan, Special Assistant to the Vice Chancellor for Academic Affairs

**Degree Programs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Degree (e.g., BS, MA, PhD)** | **Degree Program** | **Enrollment** | | **Number of Degrees Awarded** | |
| **Most Recent Fall Semester**  **(*2012*)** | **5-Year Fall Semester Average** | **Most Recent Academic Year**  **(*2012*)** | **5-Year Average** |
| BS/BA | Physics |  | 45 | 10 | 6.2 |
| MS | Physics |  | 10 | 7 | 4.6 |
| Ph.D. | Physics |  | 15 | 3 | 2.0 |

**Changes Since Last Review**

The Department has lost four faculty lines and 1.5 staff positions since the last review with no replacements provided. There are currently 7.2 FTE faculty members. Faculty teaching loads have also increased. The number of faculty we have to meet the current needs of our BS, MS, and PhD programs is insufficient, and we currently cannot offer all the required courses in our undergraduate curriculum. Despite this, the number of M.S. and Ph.D. degrees have increased slightly over the last 5-year period. Online courses for general education are now being offered and there is increasing demand for introductory physics. The number of student credit hours taught by the Department has increased by 25% in the past 5 years.

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**Strategies or Plans for Improving Program**

1. Expand innovative research programs, particularly those that engage in creative partnerships with local and regional universities and complement our current research strengths. Given the opportunity, we will recruit new faculty members with research interests in highly fundable areas and a strong interest in teaching. Increasing the research opportunities will also enhance our graduate and undergraduate programs by attracting high quality students.
2. Strengthen and expand innovative and creative research collaborations, including interdisciplinary collaborations with the Departments of Chemistry & Biochemistry, Biology, Psychology, and Philosophy, as well as with the Center for Nanoscience and Center for Neurodynamics. These collaborations will increase opportunities for external funding and better prepare our students for the workforce.
3. Improve student retention and graduation rates through innovative teaching techniques and opportunities in high impact educational experiences. The Department is planning revisions to its curriculum to modify existing courses and create new courses that aim at providing additional skills necessary for our students to enter the private work force. The Department is converting an existing classroom to a computer classroom that will be used to modernize and computerize course content in astronomy (lower and upper division courses), nanoscience, computational physics (senior undergraduate level courses), and non-linear dynamics (beginning graduate level / senior undergraduate level courses). Peabody Energy is renovating the Introductory Mechanics Lab into a state-of-the-art teaching lab.
4. Increase student enrollment at the undergraduate and graduate level via innovative recruiting strategies and development of attractive research opportunities with the targets of at least 10 BS/BA, 5 MS, and 2 Ph. D. degrees per year. Graduate enrollments can be increased by expanding research opportunities and increasing external funding. For undergraduate recruitment and retention, we will (1) continue to focus on undergraduate research by maintaining activity with the NASA/Missouri Space Grant Consortium and faculty research grants and jointly fund internships with local industries, (2) increase money available for scholarships by increasing campus programs for alumni, (3) increase the number of research internships by adding research active faculty, and (4) upgrade the campus planetarium and increase its availability to high school students visiting the campus as well as to alumni and the general public.
5. Increase community involvement via both outreach opportunities and business interactions through the Center for Nanoscience by expanding collaborations with regional universities, companies, and/or science centers. Increase placement of students in internships and graduates in local technology companies like Boeing and SunEdison (formerly MEMC Electronic Materials).

**Other Comments**

Research productivity is high and has stayed fairly constant despite the aforementioned drop in the number of faculty and the concomitant increase in teaching/service responsibilities for the remaining members of the Department. According to Academic Analytics data on faculty scholarly productivity, the UMSL Physics & Astronomy Department ranked ahead of the MS&T Physics Department during 2010, despite higher teaching and service loads. In 2012, degree production reached or exceeded target goals with 10 B.S./B.A. , 7 M.S., and 3 Ph.D. degrees.