

FACULTY NEEDS ASSESSMENT APPLICATION
Fall 2015

Name of Person Submitting Request:		Michael Lysak
Program or Service Area:		Physics/Astronomy/Engineering
Division:		Science
Date of Last Program Efficacy:		Spring 2011
What rating was given?		Continuation
# of FT faculty 2	# of Adjuncts 4-5	Faculty Load: 4.63 - 4.98
Position Requested:		One full time Physics/Astronomy faculty
Strategic Initiatives Addressed: (See Appendix A: http://tinyurl.com/l5oqoxm)		Institutional Effectiveness and Resource Management; Student Success

1. Provide a rationale for your request.

In recent years, with the addition of more Physics and Astronomy classes to meet demand, the faculty course load has grown significantly (presently at about 4.80, or 41.7% of classes being taught by full-time faculty), and, as a result, with only two full time faculty, the department has needed to use several adjunct faculty. However, it is very difficult to find instructors who are well-qualified to teach Physics and/or Astronomy, and with such a small pool of adjuncts, the program has suffered; occasionally, for lack of adjuncts and/or scheduling conflicts, classes were cancelled, or the full time faculty sought special permission to take extra overload to cover all courses. Furthermore, with only two full-time faculty, opportunity for innovation is limited, and continuity of instruction in adjunct-taught courses is sporadic, at best. An unstable workforce greatly increases the difficulty in providing quality, consistent service at the appropriate level of rigor. Furthermore, in the near future, the Planetarium Specialist will be retiring; as there is no foreseeable replacement for this position, this will create a tremendous loss: there will be no vital planetarium services available for astronomy lecture and/or lab instruction, none available for other physical science instructors or for other disciplines, and no planetarium shows, tours, or presentations available for the many schools and individuals of our local community. On average, through various Planetarium presentations, SBVC presently serves in excess of 3000 elementary, middle school, and high school students yearly; the Planetarium is clearly a most valuable academic resource and provides vital community outreach activities. Furthermore, the Astronomy program is growing, with the department needing to add more lecture and lab classes to meet student demand. The department proposes that the new faculty position be for a Physics/Astronomy instructor who not only could fill the need for teaching an ever-growing number of Physics and Astronomy classes as well as adding stability and growth to the Astronomy program, but also, perhaps through reassigned time, could work to guide and grow the Planetarium programs and resources together with maintaining and supporting all the vital Planetarium activities provided by the present SBVC Planetarium Specialist.

2. Indicate how the content of the latest Program Efficacy Report and current EMP data support this request. How is the request tied to program planning? (*Reference the page number(s) where the information can be found on Program Efficacy.*)

According to the EMP for Physics/Astronomy, some of the program goals/challenges are to strengthen/build the Engineering program and enhance the Physics/Astronomy curriculum by offering more Engineering courses, and to explore the possibility of offering Physics 101 as a hybrid course. Such goals and challenges cannot be adequately met with only two full-time

faculty members. The Physics/Astronomy 2011 Program Efficacy document states (pg. 17) that "...with only one full time faculty, opportunity for innovation is quite limited, and continuity of instruction in the courses handled by adjuncts is sporadic, at best."...the department again lacks full-time faculty relative to increased load: in Spring 2015, the department added one full-time faculty, but over the past two years our course load has increased by the equivalent of 1.5 full-time faculty (an increase from 3.25 to 4.8). Also, this Efficacy report states (pg. 15) there is a significant projected growth rate predicted for jobs in biophysics and biochemistry, physics education, engineering, geo-related sciences, nursing, and physician's assistants, all of which would predict an increase in Physics enrollment beyond our present growth experience. The Physics/Astronomy department program has rapidly grown and expanded even beyond the capability of our two full-time faculty. If the department is to maintain quality instruction and to successfully plan for such enrollment increases, we will need more full-time faculty.

3. Provide updated or additional information you wish the committee to consider (*for example, regulatory information, compliance, updated efficiency, student success data, planning, etc.*).

As stated in the 2011 Program Efficacy document (pg. 12), the productivity of the Physics/Astronomy department has grown significantly from a WSCH/Faculty Load ratio low of 461 (2006-2007); the ratio for 2014-2015 was 599; also, the department has been more efficient in spite of having only one full-time faculty from the end of Fall 2002 up until Spring 2015. For 2014-2015, the department's Success rate was 76%, and its Retention rate was 89%; these rates have, in fact, moderately increased over the years, up from the respective rates of 68% and 80% in 2010-2011, with average respective rates of 78.3% and 91.5% in the period 2011-2015. As student populations increase, the need for another full-time faculty will become even more important. In fact, in recent semesters, the waiting lists have exceeded 20 students for each of our Physics classes, and similarly for our Astronomy classes. Clearly, there is a need for the department to offer more sections, and an additional full-time faculty will be important in filling that need. Further, with an additional full-time faculty, the department will be able to expand and strengthen its Engineering program, which is in keeping with the STEM programs and initiatives currently pursued by various departments at SBVC; presently, the Physics/Astronomy department offers only one Engineering course, in Vector Statics. Finally, in Fall of 2015, the Science Division has ranked this Faculty Needs request as #4 out of five requests.

4. What are the consequences of not filling this position?

Since Fall 2003 the Physics/Astronomy department has needed to use several adjunct faculty due to the relatively large course load (presently at about 4.80), with both full-time faculty teaching overload. If both the department's full-time faculty members had no overload, this load value of 4.80 suggests that, on average, only 41% of our courses would be taught by full time faculty; this would not support quality instruction for our students, and it stifles successful attempts of program growth, development and expansion. It is very difficult to find qualified faculty to teach Physics and Astronomy, and the usual turnover associated with adjunct instructors versus the consistency afforded by full-time faculty negatively impacts quality of instruction, enrollments, and, ultimately, productivity. Further, without additional full-time faculty, the Engineering program will not have an opportunity to expand and grow, and progress relative to the STEM initiatives will be negatively impacted. Finally, without a faculty to help assume the responsibilities of the Planetarium Specialist, a most vital academic resource, and a most important community outreach tool will be lost.