

FACULTY NEEDS ASSESSMENT APPLICATION
Fall 2017

Name of Person Submitting Request:		Michael Lysak
Program or Service Area:		Physics/Astronomy/Engineering
Division:		Science
Date of Last Program Efficacy:		Spring/Fall 2016
What rating was given?		Continuation
# of FT faculty 2	# of Adjuncts 5-6	Faculty Load (per semester): 5.19-5.45
Position Requested:		One full time Physics/Astronomy faculty
Strategic Initiatives Addressed: Strategic Directions + Goals		Student Success

1. Provide a rationale for your request. (Explain, in detail, the need for this position.)

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 5.45, or 36% of the academic load being taught by full-time faculty), and, as a result, with only two full time faculty, the department has continued to use several adjunct faculty. For example, this Fall 2017, due to high student demand and long waiting lists, another lecture and lab section of Physics 150A/200 needed to be opened; further, a section of Engineering 100 was added in Spring 2016. 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 and/or part-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. Additionally, at the end of Spring 2017, the Planetarium Specialist had retired; as this position has not yet been replaced, this creates a tremendous loss. Furthermore, the Astronomy program is also growing, with the department needing to add more lecture and lab classes to meet student demand. The department proposes the creation of a new faculty position for a Physics/Astronomy instructor who could not only fill the need for teaching an ever-growing number of Physics/Astronomy classes, but could also add stability and growth to the Physics/Astronomy program.

2. Indicate how the content of the department/program's latest Efficacy Report and/or current EMP supports this request and how the request is tied to program planning. (*Directly reference the relevant information from your latest Efficacy Report and/or current EMP in your discussion.*)

According to the EMP for Physics/Astronomy, some of the program goals/challenges are: hire another full-time Physics/Astronomy faculty to improve the quality of instruction; strengthen the Engineering program and offer more ENGR courses; create a hybrid Physics 101 course with on-line lectures and on-campus labs and/or tests; develop strategies to increase student success rates and to maintain a high efficiency of classes determined by WSCH/FTEF; and develop ways to encourage more students to major in the physical sciences, to encourage more pre-med students to attend SBVC, and to increase the average number of Physics/Astronomy degrees awarded each year. Such goals and challenges cannot be adequately met with only two full-time faculty members. The Physics/Astronomy 2016 Program Efficacy document states (pg. 29) that "...with

only two 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 four years our course load has increased by the equivalent of 2.2 full-time faculty (an increase from 3.25 to 5.45). Also, this Efficacy report states (pg. 27) there is a significant projected growth rate predicted for jobs in biomedical engineering, biophysics and biochemistry, physician assistants, registered nurses, post-secondary physics instructors, geoscientists, physicists, environmental engineers, civil engineers, physical scientists, nuclear engineers, and aerospace engineers, 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. Indicate any additional information you want the committee to consider (*for example, course fill rates, regulatory information, compliance, updated efficiency, student success data, planning, etc.*).

As stated in the 2016 Program Efficacy document (pg. 23), the productivity of the Physics/Astronomy department has grown significantly from a WSCH/Faculty Load ratio low of 591 (2011-12), peaked at 643 (2013-14), and decreased to 599 (2014-15); according to the EMP for Physics/Astronomy, the WSCH/FTEF ratio has decreased slightly to 539, where FTEF has risen to 9.60. 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 2016-17, the department's Success rate was 77%, and its Retention rate was 90%; these rates have, in fact, moderately increased over the years. 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 two Engineering courses: one, an introduction to Engineering careers, and the other in Vector Statics. Finally, in Fall of 2017, the Science Division has ranked this Faculty Needs request as #3 out of several faculty requests.

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

The Physics/Astronomy department uses several adjunct faculty due to the relatively large course load (presently at about 5.45), with both full-time faculty teaching overload. If both the department's full-time faculty members had no overload, this load value of 5.45 suggests that, on average, only 36% 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.