

PSME Division

Program Review 2017-18 PSME Deans Summary

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The PSME Division has seen a small decline in WSCH (-1.8%), during the past four report years, during which the College as a whole suffered a much steeper decline (-6.6%). After 10 years of continuous and significant growth, enrollment began to decline about two years ago, though at a rate far less than that for the College as a whole. During the past four years, FT load remained about the same, but PT load increased by 16%. During the same period, overall student success remained approximately constant and the equity gap dropped a small amount, from 17% to 15%.

Enrollment, success, and equity trends varied strongly by department and circumstances during the past four report years. In astronomy and meteorology, recent FT retirements have had significant negative enrollment consequences (MET WSCH -24%), though with the recent hire of a new meteorology instructor and the addition of several new online sections, meteorology enrollment for this (2017-18) year is back to earlier levels. Chemistry enrollment over the past four years is up a small amount (1.6%), but is essentially limited by our laboratory staff support and lab facilities. Physics has increased WSCH by 5.9% over the same period, and engineering increased by 29.7%. Math, which dominates Division statistics due to its large size, has declined (-1.3%).

Within individual departments, large variations also occur from course to course. In math, we have seen significant enrollment increases (up to 25%) in advanced courses with a concurrent decrease (25%) in basic skills level enrollment. Major recent changes in assessment policy (using HS gpa for placement) may have been a causal factor, and next year's implementation of AB705 will certainly cause further large perturbations in math enrollment trends. Likewise, variations in success rates between courses are often startling. Math and physics continue to raise success rates and decrease equity gaps, but the progress is much slower than anyone desires. On the other hand the MPS program continues with its impressively higher success rates and small equity gaps, physics 10 has success rates for the past three years around 90% and an equity gap in the 1 – 6% range while physics 50 has success rates hovering around 50% and an equity gap of 20%. Engineering has reduced its equity gap to zero. Access to more refined data will enable us to better understand these variations and investigate more effective approaches to improving our performance.

In short, issues of enrollment, success, and equity are complex, driven by both internal and external factors, and difficult to predict or control. What I can offer is a summary of what I see as a commonality across departments and courses and some of the issues that I feel might be addressed in order to improve the performance of our Division:

- Loss of experienced, quality, full-time faculty
 - The loss of a single FT meteorology/astronomy instructor who taught very large concurrent classes, taught 5 sections per quarter, and taught four quarters per year had a very significant effect on enrollment.
 - The loss of 5 FT math faculty to retirement with a single replacement position and the loss of 2 FT Chemistry faculty with a single replacement
 - The anticipated loss of 3 - 5 additional FT faculty at the end of this year in a period of little to no hiring.
 - The difficulty of recruiting any quality PT faculty in the areas of astronomy, meteorology, and engineering due to competition with other employment opportunities.
 - The difficulty of recruiting, hiring, mentoring, and evaluating a continual stream of PT math, physics, and engineering faculty. This burden is accelerated as there are fewer and fewer FT faculty left to assist in the process.
 - The difficulty of recruiting and maintaining faculty in light of the high regional housing costs.

When funding and enrollment allow, I hope the College restores some of the key FT faculty positions that have not been replaced. However, given the current District financial status, it is not reasonable to expect replacement hiring in the near future. In order to increase access to quality PT faculty I would suggest organizing a regional part-time pool that would allow part-timers to obtain assignments across districts (thereby promising a more attractive income and improving scheduling and transportation issues) while allowing colleges to share recruiting, training and evaluation burdens. If this is something that others feel might be useful, the participation of the faculty union and College administration might be helpful in initiating such a plan.

- Additional staff resources
 - The chemistry and physics departments have a real need for additional laboratory technicians. The current inability to support lab courses has a measurable effect on student enrollment and success.

Again, given the current circumstances, I do not foresee hiring for these positions in the near future, but I do think it worthwhile pointing out their continuing need.

- Division level counselors
 - We can learn from our successes; the MPS model of embedded counselors and the increase in PSME counseling made available through a grant have had very significant positive effects on enrollment and success.

For financial reasons, it is unlikely that we will be hiring new counselors from our usual labor funding. However, to any degree possible, we should apply as many resources as possible to increasing direct counseling support to our most vulnerable students. This need will become even more important with the implementation of AB 705 and the accelerated expectations on our basic skills students. Basic skills, equity, and any AB 705 funding would be well utilized by supporting program level counseling.

- Inter-departmental cooperation
 - PSME departments have begun to work together to increase enrollment and enhance student engagement. There is a large crossover between astronomy, geology, and meteorology. Topics such as the geology of the moon, weather on Jupiter, and global warming are cross-disciplinary. Faculty have begun giving mini-mutual presentations in each of their classes to highlight the connections and to advertise related courses that might be of interest to students. Similar activities might also work for inter-Divisional departments such as environmental science and meteorology, statistics and political science, or art and chemistry (the chemistry of glazes).
 - AB 705 will necessitate a major change in curriculum and approach to the teaching of mathematics in the State. It will change how advising, counseling, and other student services support the affected students and curriculum. It will also affect prerequisites and assessment. Furthermore, as many students will be impacted by program changes in both language arts and mathematics, there will be a necessary interaction between those disciplines in scheduling. I anticipate a need for a formal structure that brings many areas of the College together to provide a smooth and effective implementation of this major initiative.
- Equipment Funding
 - I strongly support funding PSME Division equipment requests. In general they are minimal and necessary. Having hands on experience with equipment is critical to the mission of science and engineering education and a strong enhancement to the engagement of students.
- Professional Development
 - The Division has a need for enhanced professional development opportunities in chemistry:

- Chemistry safety training: I would recommend that staff development funds be allocated for practical, relevant training for our chemistry faculty and that training be offered on a continuing basis to all new faculty hires and as a periodic refresher for all chemistry faculty. The department has contacts with personnel who are certified in chemical hygiene training and who are well qualified to provide such training. Faculty development funds should be provided to support this critical need.