

2017-18 Department Student Success Plan Update

Chemistry and Physics

Please complete this plan update and submit to your Dean by November 3. Your Dean will offer you feedback by November 17 and advance final version¹ to Academic Affairs by November 21. Previous report and plans can be found at this website: <http://irt2.indstate.edu/cms7/sp16/index.cfm/departments-plans/>.

Person Primarily Responsible for Preparing this Report: Eric Glendening

- 1. Department goals to facilitate persistence to degree** (include action steps, dates, and person(s) responsible underneath each goal):
 - a. Schedule chemistry and physics classes to meet demand for coursework in the physical sciences and facilitate degree completion for all students. The schedule will ensure that all of the 100-level service courses in chemistry and physics (with the exception of PHYS 101 and PHYS 115/116) are offered every semester. Target date for completion: May 1, 2018. Person responsible: Eric Glendening
 - b. Continue offering on-line courses in CHEM 100/L and PHYS 105/L. CHEM 100/L is offered fall, spring, and summer; PHYS 105/L is offered in the spring. Target date for completion: May 1, 2018. Persons responsible: Michelle Baltz-Knorr, Eric Glendening, John Moody, Joe West
 - c. Advocate for a proctored math placement exam. Some students clearly obtain assistance on the current, un-proctored Maple TA exam, allowing students to be placed in chemistry and physics courses in which they are unlikely to succeed. Target date for completion: May 1, 2018. Persons responsible: Eric Glendening, Valentina French, Jennifer Inlow.
 - d. Reexamine prerequisites for PHYS 106 and 116. It seems that students who are unable to achieve at least a C in PHYS 105 or 115 are not successful in their next PHYS course (either 106 or 116). Use data from past years to determine whether it is appropriate to establish a grade requirement for students entering 106 or 116. Target date for completion: May 1, 2018. Persons responsible: Valentina French, Eric Glendening
 - e. Provide opportunities for 15-20 students to participate in chemistry and physics research in the Summer Undergraduate Research Experiences (SURE) program, and expand opportunities for undergraduate research during the academic year. Target date for completion: May 1, 2019. Persons responsible: Rick Fitch, Eric Glendening, Joe West
 - f. Ensure that at least half of students participating in the SURE program complete sufficient work to present the results of their research at a regional or national meeting. The Department, Dean's Office, Center for Student Research and Creativity, and the local section of the American Chemical Society will provide travel support. Target date for completion: May 1, 2018. Persons responsible: SURE faculty (Fitch, Glendening, Inlow, Noll, Van Hoven, West, Wolf, Zhang)
 - g. Provide continuing support to our student organizations, including the American Chemical Society (ACS) student members group, the Society of Physics Students (SPS), and the ISU Chapter of Timmy Global Health. The three organizations are open to all students who have interests in chemistry, physics, and global healthcare and service. The ACS and SPS groups are financially supported by the Department; Timmy receives support from the Center for Global Engagement and from the Honors Program. Target date for completion: May 1, 2018. Persons responsible: faculty advisors (Glendening, Mikula, Van Hoven)

¹ Dean will request a refinement to plan if it is not suitably addressing the questions. Plan will be shared with Trustees.

- h. Consider student performance in the chemistry and physics majors and propose mechanisms for fast-fail or gatekeeping that help direct a student out of the major before it becomes essentially impossible for the student to complete the major. Target date for completion: May 1, 2019. Persons responsible: chemistry advisors and physics faculty (Inlow, Mikula, Noll, Van Hoveln, West, Zhang)
- i. Support faculty development by sponsoring travel to attend chemistry and physics teaching conferences, including the Biennial Conference on Chemistry Education (BCCE) and meetings of the American Association of Physics Teachers (AAPT), American Physical Society (APS), and American Chemical Society (ACS). Target date for completion: May 1, 2019. Person responsible: Eric Glendening

2. Department goals to enhance student performance and/or learning outcome achievement² (include action steps, dates, and person(s) responsible for each goal):

- a. Continue to offer Preparatory Chemistry (CHEM 101) for students who need to complete the science majors' level general chemistry (CHEM 105/106) but lack the appropriate background in chemistry to succeed. Correlate performance on the first CHEM 105 exam with final grades so that we can somewhat more aggressively encourage at-risk students in CHEM 105 to switch to CHEM 101. Assess outcomes to determine whether CHEM 101 is supporting student success. Target date for completion: May 1, 2019. Persons responsible: CHEM 101/105 instructors (Gilbert, Glendening, Jeewandara, Moody, Rosenhein)
- b. Continue to offer workshops in general chemistry (CHEM 105/106) and general physics (PHYS 105) to strengthen students' problem-solving skills and to foster strong peer-peer relationships that enhance the likelihood of success in these and advanced courses in chemistry and physics. Target date for completion: May 1, 2018. Persons responsible: 105/106 instructors (French, Gilbert, Glendening, Jeewandara, Mikula, Moody, Noll, Rosenhein, West, Zhang)
- c. Fund and organize the Chemistry and Physics Help Center, a free, drop-in tutoring service for students in freshman- and sophomore-level chemistry and physics courses. Target date for completion: May 1, 2018. Persons responsible: Michelle Baltz-Knorr, Eric Glendening, Steve Wolf
- d. Provide student employment opportunities in the Department, including positions as Science Help Center tutors, teaching assistants, laboratory assistants, and stockroom assistants. Develop training materials for teaching and laboratory assistants. Target date for completion: May 1, 2018. Persons responsible: Michelle Baltz-Knorr, Eric Glendening, Jennifer Inlow, Steve Wolf

Benchmark Metrics

Metric	2016-17 FTFT-BDS Cohort Actual	2017-18 Target	3 Year Target (2019-20)
Freshmen Retention ³ (by <u>latest department</u>)	76%	78%	80%
4-Year Grad Rate (by <u>latest department</u>)	33%	35%	38%
	Source data for 2016-17 actual	2017-18 Target	3 Year Target (2019-20)
Other Metric #1 ⁴			
Other Metric #2			

² Department/Program Student Learning Summary Form report may inform what is noted here.

³ In a very few cases, such as with departments with very small numbers of majors or who have few or no new freshmen who enroll in their program, this metric and a grad rate may not be applicable. Other appropriate metrics should be used instead (e.g., service course student performance, transfer students, part-time students, etc.).

⁴ Departments may wish to also focus on key metrics for sub-populations (e.g., transfer students, distance students, minority students, students at a particular class year or years where bottlenecks/movement out of the major/drop out from ISU appear to be a concern) or metrics such as credit hour productivity or D/F/drop rates. See Blue Reports or Institutional Research for ideas.