

Academic Department Student Success Plan

Update: 2015-2018

Oct 28, 2015

Department: Biology

Department Chair: Diana Hews, Interim

Department Mission: The mission of the Department of Biology at Indiana State University is to nurture the academic potential of every student, advance knowledge through quality research, and serve the university and broader communities. Through experiential learning both within and outside the classroom, we motivate our students to become critically thinking, informed citizens with a heightened interest in science. Through one-on-one mentoring, we engage both undergraduate and graduate students in the excitement and challenge of original research. Through research and outreach education, we make valuable contributions at both local and national scales to the scientific community and the well-being of the general public.

Department Freshmen (1st year) Retention¹ Goal(s):

1 Departments w/o undergraduates can adapt the retention and persistence to completion sections to serve their graduate student success purposes or alternatively, integrate into the Other Goal(s), Action Steps, and Benchmarks of focal interest to department section at the end of the template.

GOALS:

- 1) Increase math preparedness and science competency of freshmen majors.
- 2) Increase BIO 101/L and BIO 102/L students that use tutors in the Science HELP Center & attend SI sessions.
- 3) Increase number of freshmen that learn about our faculty members' research programs
- 4) Increase number of freshmen participating in Career-related events and outreach related to their careers, including information on the Biology-MLS program.

BACKGROUND: The 1-yr retention rates, the "Finish in Department" rates, and the D/F rates *for all the STEM disciplines are the lowest in the university*. We believe this reflects, in part, some common challenges for these majors, including

- 1) level of preparation and competence in math and scientific reasoning skills
- 2) minimal understanding what is required to be successful as a BIOLOGY major and to be career-ready.

☐ **Focusing especially on first-year students to increase** a) their genuine understanding of the profile of a successful Biology major (defined as graduating in 4 years), b) their understanding of possible careers in biology (and needs for those career roles) and c) increasing their interest in the discipline all are likely to produce a large effect in overall success and retention.

☐ Many of the factors that we can address and improve require us to focus on advising, courses and curriculum, and "career-education", and to begin these efforts in the freshman year so as to effectively alter the junior and senior completion and retention rate benchmarks. **These may result in lower "retain in department" after end of the first year, but enhanced completion rates at the junior and senior level, which in turn should result in increased 4-year graduation rates for Biology Majors.**

☒ Many actions described below involve communication. We will continue and expand our use of different means of communications (Instagram, Twitter feeds, Slides in Bio 101 & 102 lecture; catchy posters in the hallways; announcements on the BIO major BlackBoard; pizza “developmental “ advising sessions and Career Sessions)

☒ NOTE 1: We advocate for a UNIVERSITY-wide proposal that ALL departments should automatically have an OTH- BlackBoard course created for each Major, populated automatically with students in the major each semester (or at least each year).

☒ NOTE 2: Many of our Actions may be shared by other STEM disciplines. Writing a grant to fund a Grad Student or Post-doc position that could initially implement these and additional actions across all the STEM might be a highly effective way to enhance student success in the College and at ISU.

Action Steps (with dates & person(s) responsible):

Goal 1: Increase math preparedness & science competency of freshmen majors (See actions listed for Goal 2)

- a) Institute a MAPLE score minimum for enrolling in BIO 101 & BIO 102 to parallel existing score minimum for CHEM 105. (*Curriculum Committee, Hews, Spring 2016*).
- b) Increase number of majors enrolling in CHEM 105/L & CHEM 106/L before start of sophomore year by instituting stronger advising practices at the UC level (*Hews Spring 2016*).
- c) Examine possible post-admission bridge programs (Summer camps, free online courses, other mechanisms) to enhance preparedness and increase likelihood of improving the MAPLE scores before enrolling (*Undergraduate Affairs Committee, Hews, Fall 2016*).
- d) Institute of post-admission bridge program in summer before enrollment (*Spring 2017; Hews & UC*)
- e) Create simple PowerPoint slide(s) to be used by advisors and BIO 101 faculty in lectures that communicate and illustrate these benchmark diagnostics, and the historic data trends from our annual BIO 101 course survey. (*Hews, Mitchell, Lima, Fall 2017*)
- f) Work with the UC to revise advising practices of UC advisors based on these analyses including directing students to the newly proposed Biology Minor of 29-32 hours. (*Hews, Spring & Summer 2016 and 2017*).

Goal 2: Increase number of freshmen (BIO101/L, 102/L, 112/L) using tutors in Science HELP Center & attending SI sessions.

- a) Emphasize use of Help Center by improving text in Syllabi and in course lectures (*Bio 10, BIO 102, BIO 112 instructors; Fall 2016 & Spring 2017*).
- b) Develop more exercises for BIO 101/L, BIO 102L course work that will explicitly require students to use the Help center (ALL faculty teaching CORE course- *Lima, Mitchell, Tuttle, Gonser, Hughes, Hews Dannelly, Steding Fall2016 and Spring 2017*).
- c) Aggressively recruit high-performing students to serve as tutors and SIs. Develop mechanisms to increase attendance of SI sessions. (*Hews, Mitchell, Lima, Hughes, Fall 2016, Spring 2017*)
- d) Identify additional funding to assist in supporting the Help Center tutors. (*Hews Fall 2016, Spring 2017*)

Goal 3: Increase number of freshmen learning about our faculty members' research programs

a) Create a pool of single-slide PowerPoint files to use in BIO 101 and BIO 102, each of which highlights a different element of each professors' research. (*All faculty, Fall 2016*)

b) Increase use of "Summary Posters" in the department targeted towards freshman readers, illustrating connections of a specific research program with general biological topics (*All faculty Spring 2017*).

Goal 4: Increase number of freshmen participating in Career-related events and career-related outreach.

a) Identify and provide space for Tri Beta Student organization., which has career-related speakers & conducts outreach (e.g. at the Children's Museum) (*Hews, Dannelly, Fall 2016*)

b) Schedule alumni speaker events with students (e.g. Pizza "career Speaker" Lunches). *Undergraduate affairs committee, Graduate affairs committee, ongoing*)

c) Add career vignettes to BIO 101 and Bio 102 lectures. *Undergraduate affairs committee, Graduate affairs committee, Hews, Mitchell, Lima; starts Fall 2016 ongoing*)

| <i>Retention</i> | Fall 2012 cohort: | Fall 2013 cohort: | Fall 2014 cohort: |
|--------------------------|--------------------------|--------------------------|--------------------------|
| <i>Benchmarks</i> | | | |
| (by latest department) | 73.3% (n=75 in cohort) | 79.4 % (n=63) | 64.2% (N=67) |
| Fall 2015 target: | Fall 2016 target: | Fall 2017 target: | |
| 68% | 70% | 73% | |