***STUDENT LEARNING ASSESSMENT PROGRAM***

***SUMMARY FORM AY 2017-2018***

Please complete a separate worksheet for each academic program (major, minor) at each level (undergraduate, graduate) in your department. Worksheets are due to CASA this year by **June 15, 2018**. Worksheets should be sent electronically to [kjsanders@eiu.edu](mailto:kjsanders@eiu.edu) and should also be submitted to your college dean. For information about assessment or help with your assessment plans, visit the Assessment webpage at <http://www.eiu.edu/~assess/> or contact Karla Sanders in CASA at 581-6056.

**B.S. Biological Sciences**

**Degree and**

**Program Name:**

# Submitted By:

Dr. Gary A. Bulla, Chair, Biological Sciences

**Please use size 10 font or larger.**

**PART ONE**

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| What are the learning objectives? | How, where, and when are they assessed? | What are the expectations? | What are the results? | Committee/ person responsible? How are results shared? |
| 1. Students will  demonstrate the ability  to perform basic  laboratory techniques. | a. Assessed during laboratory  exercises and examinations,  by instructors in core courses which has a  with lab component  (BIO1550G, and BIO3180) | a. 80% will demonstrate  appropriate lab skills in each  BIO core course (C or better  on lab final) | a. Students with C or better  on lab finals  BIO1550G = 92%  BIO 3180= ND | Instructors will collect data and provide to Chair  -Faculty will be informed that BIO met expectations for laboratory competency nor student-rated preparedness. This aspect will be revisited by the Curriculum and Assessment committees and mechanisms sought for improvement. |
| 2. Students will demonstrate the ability to conduct a research project using scientific principles and methods, then interpret their results in terms of current theories and issues in the biological sciences. | a. Number of graduating  seniors that have been  engaged in undergraduate  research projects (Tallied by  Chair)  b. Number of graduating  seniors presenting at research  conferences (Tallied by  Chair)  c. Number of total Bio  students engaged in undergraduate  research projects (Tallied by  Chair) | a. 50% of graduating seniors  will conduct original research  or internship  b. 25% of graduating seniors  will present results at a  research conference.  c. Total number of 80  student semesters engaged in  undergrad research will be  met | a. 23 of 66 (33%) of seniors  indicated that they had  conducted independent  research on  the exit survey  b. 7 of 66 seniors (11%)  of graduating seniors  presented results at a research  conference.  c. Total number of student  semesters engaged in  undergraduate research  was 60 for FY18. Lower  enrollment suggest reducing  the initial target. | a-c. Exit surveys tabulated by the  Chair- Communicated  to BIO Faculty and Assessment  Committee |
| 3. Students will  demonstrate an  ability to write  effectively. | EWP data will be utilized | EWP submissions will  average 3.5 or above in  critical writing samples  in BIO courses | -EWP papers submitted for Bio  students received average  ratings of 3.44/4.0 (3.46 COS  Ave, 3.40 EIU average),  slightly up from 3.39  in FY17. | Benchmark increased from last  year, but not met. Assessment  Committee charged with  discussing the role of BIO  in improving writing skills. |
| 4. Students will be able  to construct a  professional  research poster | a. BIO3120 (a core BIO course)  students will produce  professional posters;  A rubric will be used to assess poster  quality.  b. 50% of students conducting  student research will  present a poster or oral  presentation at a regional  or national research  conference. | a. Students will average 3.0/4.0  in each rubric category.  b. Cannot not assess quality  of presentation, but assume  professional quality to be  accepted at a conference. | a. Not instituted.  b. 7 of 23 seniors (30%)  of graduating seniors  that had conducted  research presented at a  regional or national research  conference. | a-b. Data will be reported to faculty.  Assessment committee charged  with deriving assessment tool for  quality of research in lieu of a  professional presentation.  Benchmark not made, likely  due to decreased research and  travel funding at EIU for the  past 3-4 years. |
| 5. Student will enhance  global citizenship by  participation in biology  clubs with conservation  and/or volunteer efforts. | Assessed by Biology exit  Surveys administered  electronically at end of fall  and Spring semesters  by Chair | 50% of graduating seniors  will indicate that they have  participated in biology clubs  (Botany, Wildlife, Pre-med,  Pre-vet, Earthwise) | 28 of 61 (46%) of graduating seniors  indicated that they participated  in one or more of these clubs,  down from 76% in FY17 | Data will be shared with faculty;  Benchmark not made. Results  will be shared with faculty to  determine potential reasons. |
| 6. Students will  demonstrate the ability  to speak effectively. | Results from speech rubrics  In CMN1300G and EIUXXX  (Senior Seminar) will be  evaluated | Students will demonstrate  Effective speaking skills  by attaining an average of  3.2/4.0 on the scoring holistic  speaking rubric in CMN1300G  and 3.6/4.0 on the  speaking rubric in EIUXXXX | Students averaged 3.29/4.0 in  CMN1300G (down from  3.44 in FY17) compared to  COS and EIU averages of ~3.1  (also ~0.1 lower than FY17.  Students averaged 3.67/4.0 in  EIUXXXX (the same as in  FY17) compared to  COS and EIU averages of 3.64  . and 3.57, respectively. | Benchmarks for effective speaking  met.  Results shared with Faculty and  Assessment Committee |
| 7. Impact of research  experiences will be  considered beneficial  by students | Exit survey will ask “How  would you describe your  research experience, here  in this department? What are  some highlights? What are  some things that the  department can improve on  to make the research  experience better?” | 90% of students that engage  in a research experience will  identify it as beneficial | Of 23 graduating seniors who  conducted research, 100%  provided positive  comments about their  experiences. However, 6  students also commented  that BIO needs to make research  experiences more accessible  to all BIO majors | Benchmark met.  Results shared with Faculty and  Assessment Committee. |
| 8. Research experience  will increase student  desire to attend graduate  school. | Exit survey will ask students  to rate the statement “My  research experience increased  my desire for a graduate  degree. | 70% of students that engage  in a research experience will  agree that is increased their  desire to attend graduate school | 78% (18/23) graduating seniors,  who conducted research  agreed with this statement. | Benchmark not met.  Results shared with Faculty and  Assessment Committee |
| 9. Students will be  be accepted into a  graduate program or  professional school  prior to graduation. | Exit survey will ask students  if they have plans for  graduate school and  provide names of graduate  programs or professional  schools to which they have  been accepted. | 50% of students that indicated  a desire to attend a graduate  program will have been  accepted to a program. | 50% (17/34) of students  planning to enroll in a  professional school graduate  program have been  accepted upon graduation  (up from 35% in FY17) | Benchmark met.  Results shared with Faculty and  Assessment Committee |
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(Continue objectives as needed. Cells will expand to accommodate your text.)

**PART TWO**

Describe your program’s assessment accomplishments since your last report was submitted. Discuss ways in which you have responded to the CASA Director’s comments on last year’s report or simply describe what assessment work was initiated, continued, or completed.

In response to the CASA Directors comments for FY17, BIO continued to include three of the Provosts learning goals into the assessment, and kept EWP results to a

new category related to student writing. The use of student research was questioned, since not only ~50% of students participate in formal research and

25% present their work at conferences (this is decreased in recent years due to lack of funding). As research experience is a key factor in biology programs, we believe

its use as an assessment tool is merited. In this year’s survey, student were asked an open-ended question regarding the perceived value of research experience. 100%

related positive impact of this experience (assessment item #7). Another survey question incorporated asked if the research experience increased the student’s desire

to attend graduate school (78% agreed that it did). Other question included in the exit survey asked if interested students were already accepted into professionl/graduate

programs (50% indicated they has already been accepted).

Recent discussions in the department regarding additional tools to assess learning have not produced a useful product. The suggested ideas of assessing lab

skills in a meaningful way has not been embraced by faculty. However, faculty have been encouraged to include assessment tools with the new introductory BIO majors

course sequence (Bio1500/1550G) and the new Ecology /evolution course BIO 3180 (SP17 start). These need to be pushed for in the next academic year.

**I. Content learning assessment**

As discussed last year, the MFP test in Biology was critically analyzed by the BIO Assessment Committee and deemed an inadequate assessment tool due to lack of participation by the majority of sister institutions. Faculty discussions took place to identify another mechanisms assess student knowledge. The possibility of an in-house exam was discussed but it a consensus on the nature (and value) of such an exam was not clear. However, a charge of the curriculum committee is to develop a set of specific learning goals across the new core curriculum and from that perhaps an assessment tool can be generated.

**Integrative learning-**

**Poster construction/presentation.**

As of FY16, a benchmark for the number of students that present at professional conferences has been incorporated as an assessment tool. It is assumed that any papers accepted

for presentation at a professional conference has met high standards. It is noted that this only assesses a subgroup of students.

**Responses to comments**:

The BIO curriculum committee has focused on instituting major curriculum changes (new anatomy and physiology course sequence, new intro biology course sequence,

merging of the capstone course with the majors ecology course, change of calculus requirement in the major, and creation of a clinical rotation course to provide

pre-health student with clinical experiences required for acceptance into professional schools, rather than assessment issues in the past two years.

The task of assessing lab skills, in-house exams, and rating research projects will be assigned to the Curriculum Committee. We continue to struggle to define a rating

mechanism that applies across several sub-disciplines in BIO.

**II. Exit Surveys: Results and Trends (Appendix 1)**

Sixty-six graduating seniors submitted exit surveys this year (>96% of the FY18 graduating class). Surveys were distributed to students by email using Qualtrics and evening sessions to facilitate response rates.

Obvious strengths regarding BIO faculty included knowledge of subject, organization, helpfulness, attitude, (>89% agree rate in each category).

* Laboratory exercise appropriateness dropped from 88% agree rate in FY16 to 71% in FY17.
* Concerns identified include (as in past years) helpfulness of BIO faculty in career choice (33% positive ratings, a 10% drop from FY16 number).
* The academic advising ratings increased from 50% in FY16 to 59% in FY17 (despite the fact that the pre-health academic advisor positon has been vacant for the past 2 years).
* A large drop in satisfaction with internships being a good compliment to classroom experience (37% in FY17 compared to 87% in FA16), despite 96% of these students considered the internship helped prepare them for graduate school or the job market.

Students involved in research projects continued to show positive responses to academic preparation (73% positive), equipment availability (71% positive), research interest (96% positive), value of the research experience (69% positive) and increased desire to pursue a graduate degree (63%).

Assessment of facilities by students were mixed. Laboratory space and equipment appropriateness was strong (78% and 81% positive, respectively), but ratings of use of modern technology was weaker (dropped from 80% to 71% positive). Participation in honor societies, Botany Club, and the Fish and Wildlife Ecology Club remained strong at 79%.

The majority of respondents (89%) reported that they made the right choice in selecting Biological Sciences as a major.

**PART THREE**

Summarize changes and improvements in **curriculum, instruction, and learning** that have resulted from the implementation of your assessment program. How have you used the data? What have you learned? In light of what you have learned through your assessment efforts this year and in past years, what are your plans for the future?

Due to a change in curriculum, the BIO capstone course BIO4984 was changed to an elective. Therefore, one assessment tool (research writing) was removed and not replaced. The Watson Glazer text was also discontinued at EIU. The department will be charged with identifying assessment tools that apply to all BIO majors.

**Exit Survey**- Biological Sciences began administering the exit survey electronically via Survey Monkey in 2010, but response rate was initially low. As of 2012, the survey was sent out during finals week to increase participation and an on-site exit interview was made mandatory. This resulted in an increase from 32 to 86 respondents in 2013 (86 responses), a level decreased this (66 responses for AY18) due to a lower number of graduating seniors. Last year, survey questions were expanded to assess post-graduation plans and student comments about the program. Results from this survey are used to assess student satisfaction with faculty, program, equipment, internship and research experiences and club participation. This past year, the survey was expanded to include open-ended questions about research experiences, positive and negative aspects of instruction in BIO coursework, professional/graduate school acceptance rates, ratings of Bio office support and overall experience while in the BIO major.

**BIO Curriculum changes**: In the past 3 years, BIO has made five significant changes to the curriculum in order to better meet the needs of our student population. This includes the introduction of an Anatomy I and II course sequence, changing a three semester introductory biology sequence to a two semester sequence, changing the calculus requirement, and merging 2 core courses:

1. **A&P I and II-** Separate Anatomy and Physiology courses have been transformed into an A&P I and II sequence to provide a more cohesive treatment of the subject matter and to assist students in pre-health (~85% of our majors) that transfer for other institutions with similar coursework.
2. **Introductory biology course sequence:** Faculty approved the merging of BIO1100, 1200G and 1300G into a 2 course sequence, BIO1500 and BIO1550G. BIO1500 started in FA16 and BIO1550G started in SP17. BIO1100, 1200G and 1300G have been discontinued.
3. **Merging or Ecology and Organic Evolution coursework:** Faculty approved the merging of BIO3800 Ecology with BIO4984 Organic Evolution (with BIO4984 becoming a BIO elective) in January 2016. This course is scheduled to begin FA17.
4. **Calculus requirement:** Faculty approved allowing MAT2110G Brief Calculus to satisfy the calculus requirement in BIO in SP16. Brief Calculus MAT2110G has only a prerequisite of MAT1271 College Algebra. Therefore, students no longer need to take trigonometry or pre-calculus (both prerequisites for MAT144G) to satisfy the BIO major.  This has eased the burden on students that do not enter EIU with a strong math background. Brief calculus satisfies the calculus requirement for health profession schools.

**Biology Forum** (BIO 1150) course was added to the BIO core eight years ago, and thus nearly all graduating students would have taken this course. The course is designed to provide a broad overview of career paths and employment opportunities in the biological sciences, as well as undergraduate research opportunities. Attendance at and summary of several departmental research seminars is required. Exit survey results do not indicate a positive effect in response to the question of BIO assistance in deciding on a career (question #7 in Exit Survey). The assessment committee will address this issue in AY19.



