

Degree/Certificate: BAE in Biology/Endorsement in Biology

Major/Option: Biology - BAE

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Part I – Program SLO Assessment Report for 2013-14

SLO -I

1. Student Learning Outcome: **Create a community of diverse learners who construct meaning from their science experiences and possess a disposition for further exploration and learning.**
2. Overall evaluation of progress on outcome: Indicate whether or not the SLO has been met, and if met, to what level.
 SLO is met after changes resulting from ongoing assessments, referencing assessment results from the previous year to highlight revisions;
 SLO is met, but with changes forthcoming;
 SLO met without change required
3. Strategies and methods: **Most of our biology education majors were also Noyce scholars last year and so by the terms of the grant were placed in the middle schools and high schools with the highest diversity in the region. This included Rogers and Shadle High Schools along with Glover and Shaw Middle Schools. All student teachers must prepare and pass the Teacher Preparation Exam (TPA) in order to receive certification. The TPA requires students to show diversified learning plans. Also all teacher preparation students must fulfill 30 hours in diverse settings so we are confident that all of our students had the opportunity to achieve this goal in the classroom.**
4. Observations gathered from data: Include findings and analyses based on the strategies and methods identified in item #3.
 - a. Findings: **All students completing certification in Biology, passed the TPA and received their certification last year. Most are now employed teaching middle school or high school and also in high needs schools, many in high needs areas.**
 - b. Analysis of findings: Objective met.
5. **What program changes will be made based on the assessment results?**
 - a) Describe plans to improve student learning based on assessment findings (e.g., course content, course sequencing, curriculum revision, learning environment or student advising). **None warranted.**

b) Provide a broad timeline of how and when identified changes will be addressed in the upcoming year. **None warranted.**

6. Description of revisions to the assessment process the results suggest are needed and an evaluation of the assessment plan/process itself. **Our student performance on the external assessment of the WEST E and the TPA is consistent with student work in our classes. We are confident therefore that what we are doing is preparing them for the classroom.**

SLO-II

1. Student Learning Outcome II: **Organize a safe and effective learning environment**

2. Overall evaluation of progress on outcome:

_____ SLO is met after changes resulting from ongoing assessments, referencing assessment results from the previous year to highlight revisions;

_____ SLO is met, but with changes forthcoming;

X _____ SLO met without change required

3. Strategies and methods: **Students are assessed for this SLO through the Department of Chemistry during their course CHEM 390. This course is required for the General Science Endorsement which, is added on to the BAE. Though we have a contingency plan for those not doing the General Science Endorsement and therefore not taking Chem 390, all of last year's candidates did the General Science Endorsement. Students in CHEM390 are required to retake the exam until they pass minimally at 70%. This course includes updates on OASHA regulations. Other considerations such as care and use of animals in the classroom as well as the protocol for prevention of infectious disease in laboratories is provided when students participate in teaching our laboratories. It is assessed through an on-line training module.**

4. **Observations gathered from data:** Include findings and analyses based on the strategies and methods identified in item #3.

Findings: **100% passed the chemistry safety exam.**

Analysis of findings: **Met objective.**

5. **What program changes will be made based on the assessment results?**

a) Describe plans to improve student learning based on assessment findings (e.g., course content, course sequencing, curriculum revision, learning environment or student advising). **We are currently thinking about developing a science classroom safety course that students would need to pass as part of their BAE in all 4 sciences and perhaps the Natural Science program.**

- b) Provide a broad timeline of how and when identified changes will be addressed in the upcoming year. **Discussions will continue with the possibility of going to CPAC the following year. Our hesitation is the already burdensome length of these programs.**
6. Description of revisions to the assessment process the results suggest are needed and an evaluation of the assessment plan/process itself. **We are reliant on the expertise of the chemists to assess laboratory safety which, mostly includes chemical storage and use. A course dedicated to science classroom safety would include animal use.**

SLO-III:

1. Student Learning Outcome II: **Interrelate and interpret important concepts, ideas and application in the field of biology; and conduct scientific investigations.**
2. Overall evaluation of progress on outcome:
 - ___ SLO is met after changes resulting from ongoing assessments, referencing assessment results from the previous year to highlight revisions;
 - ___ SLO is met, but with changes forthcoming;
 - X ___ SLO met without change required
3. Strategies and methods: **Students are assessed throughout their program in each of their courses and must minimally achieve a 2.0 in any of their courses. Students must also pass an external evaluation on the WEST-E Biology Exam where these topics are assessed.**
4. Observations gathered from data: Include findings and analyses based on the strategies and methods identified in item #3.
 - a. Findings: **100% passed West E Biology Exam**
 - b. Analysis of findings: **Met objective.**
5. What program changes will be made based on the assessment results?
 - a) Describe plans to improve student learning based on assessment findings (e.g., course content, course sequencing, curriculum revision, learning environment or student advising). **None planned.**
6. What program changes will be made based on the assessment results?
 - a) Provide a broad timeline of how and when identified changes will be addressed in the upcoming year. **None warranted.**
 - b) Description of revisions to the assessment process the results suggest are needed and an evaluation of the assessment plan/process itself. **None needed.**

SLO-IV

1. Student Learning Outcome IV: **Develop strategies for teaching that organic evolution is a unifying theme.**
2. Overall evaluation of progress on outcome:
 - i. ____ SLO is met after changes resulting from ongoing assessments, referencing assessment results from the previous year to highlight revisions;
 - ii. ____ SLO is met, but with changes forthcoming;
 - iii. **_X_ SLO met without change required**
3. Strategies and methods: **The Department of Biology's curriculum is particularly strong in giving students ample opportunities to understand this major principle of biology. Not only is the topic of evolution germane to all courses in our curriculum but particular focus is given in the freshmen course (Biol172, Ecology & Evolution) and then in the senior course Biol423, Evolution and Systematics. Students must pass both classes with a 2.0 or better and they are further assessed when they take the West E exam. Finally students in BIOL390 analyze misconceptions held by K-12 students and look at curriculum to overcome these misconceptions. Their evaluations of student answers are graded according to how well they can assess misconceptions.**
4. Observations gathered from data: Include findings and analyses based on the strategies and methods identified in item #3.
 - a. Findings: **100% passed with much higher than 2.0 in Biol172 and Biol423. All students passed the Biol390 assessment with 80% or better performance. All students passed the West E Biology exam.**
 - b. Analysis of findings: **Met objective.**
5. Description of revisions to the assessment process the results suggest are needed and an evaluation of the assessment plan/process itself. **None needed.**
6. What program changes will be made based on the assessment results?
 - i. a) Describe plans to improve student learning based on assessment findings (e.g., course content, course sequencing, curriculum revision, learning environment or student advising). **None planned.**
 - ii. b) Provide a broad timeline of how and when identified changes will be addressed in the upcoming year. **None warranted.**

SLO-V

1. Student Learning Outcome V: **Construct and use effective assessment strategies to determine the backgrounds and achievements of learners and facilitate their intellectual, social and personal development.**

2. **Overall evaluation of progress on outcome:**
 - i. SLO is met after changes resulting from ongoing assessments, referencing assessment results from the previous year to highlight revisions;
 - ii. SLO is met, but with changes forthcoming;
 - iii. X SLO met without change required

3. Strategies and methods: **Assessment gets high coverage in the SCED390 and Biol390 courses. Furthermore, all assessment assignments require a draft read followed by an interview with the student. We recognize that writing valid assessments takes coaching by instructors so invest a lot of our time and student time on developing this skill. We keep abreast with changes in state assessment. For example, the State of Washington adopted the Next Generation Science Standards as their core standards last year. Though they will not be fully implemented until a national assessment has been developed, piloted and implemented, school districts are aligning their learning targets with the NGSS as well as the current Washington Science Standards (Essential Academic Learning Requirements). We are being proactive by having students develop assessments that concurrently meet both sets of standards. Also students are providing assessments for the TPA, that include both standards. Though we anticipate that the new National Science Assessment may be different than the state exam (End of Course Exam – given when student complete a year of high school biology), we are having students develop as summative assessments, questions that look like district end of unit exams modeled after the state’s Powerful Classroom Assessments (PCAs). For training on diagnostic assessments, we have them model writing diagnostic probes similar to those advocated by the National Science Teachers Association (NSTA). Student formative assessments are modeled and evaluated according to the 5E assessment template advocated by the NSTA.**

4. Observations gathered from data: Include findings and analyses based on the strategies and methods identified in item #3.

a. See data below.

	Diagnostic Assessment	Formative Assessment	Summative Assessment
Student Average	85%	87%	88%

- b. Analysis of findings: **Met objective.**
5. Description of revisions to the assessment process the results suggest are needed and an evaluation of the assessment plan/process itself. **None needed.**
6. What program changes will be made based on the assessment results?
- i. a) Describe plans to improve student learning based on assessment findings (e.g., course content, course sequencing, curriculum revision, learning environment or student advising). **None planned.**
 - ii. b) Provide a broad timeline of how and when identified changes will be addressed in the upcoming year. **None warranted.**

NEW: PART II – CLOSING THE LOOP
FOLLOW-UP FROM THE 2012-13 PROGRAM ASSESSMENT REPORT

In response to the university's accrediting body, the [Northwest Commission on Colleges and Universities](#), this section has been added. This should be viewed as a follow up to the previous year's findings. In other words, begin with findings from 2012-13, and then describe actions taken during 2013-14 to improve student learning along, provide a brief summary of findings, and describe possible next steps.

Working definition for closing the loop: *Using assessment results to improve student learning as well as pedagogical practices. This is an essential step in the continuous cycle of assessing student learning. It is the collaborative process through which programs use evidence of student learning to gauge the efficacy of collective educational practices, and to identify and implement strategies for improving student learning.* Adapted 8.21.13 from <http://www.hamline.edu/learning-outcomes/closing-loop.html>.

1. Student Learning Outcome(s) assessed for 2012-13
We assessed all five of the SLOs in this document.

2. Strategies implemented during 2013-14 to improve student learning, based on findings of the 2012-13 assessment activities.
No action was required, as we had met all of our SLOs for 2012-2013.

3. Summary of results (may include comparative data or narrative; description of changes made to curriculum, pedagogy, mode of delivery, etc.): Describe the effect of the changes towards improving student learning and/or the learning environment.
No changes were made.

4. What **further changes to curriculum, pedagogy, mode of delivery**, etc. are projected based on closing-the-loop data, findings and analysis?

We have made minor curriculum revisions based on other program needs that should not impact student learning for the SLOs.