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| For Academic Affairs and Research Use Only |
| CIP Code:  |  |
| Degree Code: |  |

**Reconfiguration of Existing Degree Program Proposal Form**

**[X] Undergraduate Curriculum Council**

**[ ] Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

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| David F. Gilmore | 2/21/2019 |

**Department Curriculum Committee Chair** |

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**COPE Chair (if applicable)** |
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| Travis D. Marsico | 2/21/2019 |

**Department Chair:**  |

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**Head of Unit (If applicable)**   |
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| David F. Gilmore | 2/22/2019 |

**College Curriculum Committee Chair** |

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**Undergraduate Curriculum Council Chair** |
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| Anne A. Grippo | 2/22/2019 |

**College Dean** |

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**Graduate Curriculum Committee Chair** |
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**General Education Committee Chair (If applicable)**   |

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**Vice Chancellor for Academic Affairs** |

1. **Proposed Program Title**

BS Environmental Science

1. **Contact Person** (Name, Email Address, Phone Number)

Dr. Travis Marsico, tmarsico@astate.edu, 972-3082

1. **Proposed Starting Date**

8/16/2019

1. **Is there differential tuition requested?** *If yes, please fill out the New Program/Tuition and Fees Change Form.*

Differential tuition is requested for all CoSM programs.

**Bulletin Changes**

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| **Instructions**  |
| **Please visit** [**http://www.astate.edu/a/registrar/students/bulletins/index.dot**](http://www.astate.edu/a/registrar/students/bulletins/index.dot) **and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.** **\*Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.** - Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font). - Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)*You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the ‘format painter’ icon 🡪 , and selecting the text you would like to apply the change to.* *Please visit* [*https://youtu.be/yjdL2n4lZm4*](https://youtu.be/yjdL2n4lZm4) *for more detailed instructions.* |

 ***\*For new programs, please insert copy of all sections where this is referenced.\****

**Major in Environmental Science**

Bachelor of Science

A complete 8-semester degree plan is available at http://registrar.astate.edu/.

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| **University Requirements:**  |
| See University General Requirements for Baccalaureate degrees (p. 41)  |
| First Year Making Connections Course:  | Sem. Hrs.  |
| BIO 1013~~,~~ Making Connections - Biology  | 3  |
| General Education Requirements:  | Sem. Hrs.  |
| See General Education Curriculum for Baccalaureate degrees (p. 83) Students with this major must take the following: ~~MATH 1054, Precalculus Mathematics or MATH course that requires MATH 1023 as a prerequisite~~ MATH 2204 Calculus ICHEM 1013 AND 1011~~,~~ General Chemistry I and Laboratory ~~BIO 2013 AND 2011, Biology of the Cell and Laboratory~~ BIO 1503 AND 1501 Biology of Plants and LaboratoryCOMS 1203~~,~~ Oral Communication (Required Departmental Gen. Ed. Option)  | 36 |
| Language Requirement:  | Sem. Hrs.  |
| A student must complete the foreign language requirements before being considered an Environmental Science major. (Refer to p. 353 for foreign language requirements).  |
| Major Requirements:  | Sem. Hrs.  |
| ~~AGST 3543, Fundamentals of GIS/GPS~~  | ~~3~~  |
| BIOL 1063~~,~~ People and the Environment | 3 |
| BIO 1303 AND 1301~~,~~ Biology of Animals and Laboratory | 4 |
| ~~BIO 1503 AND 1501, Biology of Plants and Laboratory~~ BIO 2013 AND 2011 Biology of the Cell and Laboratory | 4  |
| ~~BIO 3013 AND 3311, Genetics and Laboratory~~  | ~~4~~  |
| PSSC 2813 AND 2811 Soils and Laboratory | 4 |
| BIO 3023~~,~~ Principles of Ecology  | 3  |
| ~~Choose Two of the Following~~ BIO 3673~~,~~ Human Dimensions of Natural Resources~~BIO 4613 Conservation Biology~~ ~~GEOG 4613 Conservation of Natural Resources~~ ~~POSC 4533 Environmental Law and Administration~~  | ~~6~~ 3 |
| BIO 4613 Conservation Biology  | 3 |
| ~~Choose Two of the Following~~ ~~BIO 4623 Environmental Microbiology~~ ~~BIO 4633 Environmental Toxicology Mechanisms and Impacts~~ ~~GEOG 4113 Water Resources Planning~~ ~~RET 3113 Fundamentals and Applications of Renewable Energy~~  | ~~6~~ |
| BIO 4643 AND 4641 Environmental Biology AND Laboratory | 4 |
| BIO 4021~~,~~ Biological Seminar  | 1  |
| CHEM 1023 AND 1021~~,~~ General Chemistry II and Laboratory | 4 |
| CHEM 3103 AND 3101~~,~~ Organic Chemistry I and Laboratory | 4 |
| ~~Choose One of the following:~~CHEM 3113 AND 3111~~,~~ Organic Chemistry II and Laboratory~~CHEM 3054 Quantitative AnalysisCHEM 4053 Geochemistry~~ | ~~3-~~4 |
| ~~CHEM 4043 Environmental Chemistry~~ | ~~3~~ |
| ~~Choose Two of the Following GEOL 1003 Environmental Geology and GEOL 1001 Environmental Geology LabPHSC 1014 Energy and the Environment PSSC 2813 Soils and PSSC 2811 Soils Lab~~  | ~~8~~ |
| ~~GEOL 4331 Hydrogeology Laboratory~~  | ~~1~~ |
| ~~GEOL 4333 Hydrogeology~~  | ~~3~~ |
| ~~GEOG 4623 Environmental Management~~  | ~~3~~ |
| ~~MATH 2194 Survey of Calculus OR MATH 2204 Calculus I~~ | ~~4~~ |
| ~~PHYS 2054 General Physics I~~  | ~~4~~ |
| PHYS 2034 University Physics I | 4 |
| PHYS 2044 University Physics II | 4 |
| MATH 2214 Calculus II | 4 |
| STAT 3233 Applied Statistics I  | 3 |
| Choose any of the courses below among the five focus areas. Students can choose to mostly stay within one focus area, or they can take courses from across the focus areas, depending on interest and career aspiration.**Biology Focus**BIO 3013 AND 3011 Genetics and LaboratoryBIO 3033 EvolutionBIO 4104 MicrobiologyBIO 4333 Marine BiologyBIO 4373 AND 4371 Animal Ecology AND LaboratoryBIO 4623 Environmental MicrobiologyBIO 4633 Environmental Toxicology Mechanisms and Impacts**Chemistry Focus**CHEM 3054 Quantitative AnalysisCHEM 3153 Survey of Physical ChemistryCHEM 4043 Environmental ChemistryCHEM 4243 BiochemistryCHEM 4241 Biochemistry Laboratory**Agriculture / Sustainability Focus**AGRI 4223 Agriculture and the EnvironmentCE 3263 Introduction to Environmental EngineeringGEOG 4613 Conservation of Natural ResourcesGEOG 4623 Environmental ManagementPSSC 4813 Soil FertilitySOC 4373 Sustainable Development in Modern Society**Geospatial Focus**AGST 3543 Fundamentals of GIS/GPSAGST 4543 Advanced GIS for Agriculture and Natural ResourcesAGST 4773 Remote SensingGEOG 3723 Introduction to Physical Geography Weather and Climate**Economic / Policy / Social Focus**ECON 4363 Global Environmental PoliciesGEOG 3743 Introduction to Land Use PlanningGEOG 4113 Water Resources PlanningPHIL 4733 Environmental EthicsPOSC 4533 Environmental Law and AdministrationSOC 4363 Environmental Sociology | 19 |
| Electives | 6~~-7~~ |
| Subtotal | 81 |
| Total Required Hours | 120 |

**LETTER OF NOTIFICATION – 11C**

**RECONFIGURATION OF EXISTING DEGREE PROGRAMS**

**(Consolidation or Separation of Degrees to Create New Degree)**

\*Please include the documents to be submitted found throughout this LON at the end of the form.

1. Institution submitting request: Arkansas State University-Jonesboro
2. Contact person/title: Dr. Travis Marsico / Interim Chair, Department of Biological Sciences
3. Title(s) of degree programs to be consolidated/reconfigured:

BS Environmental Science

1. Current CIP Code(s)/Current Degree Code(s): 03.0103
2. Proposed title of consolidated/reconfigured program: BS Environmental Studies – request is for an update to existing curriculum
3. Proposed CIP Code for new program: 03.0103 – same as previous
4. Proposed Effective Date: 08/16/2019
5. Reason for proposed program consolidation/reconfiguration:

 *(Indicate student demand (projected enrollment) for the proposed program and document that the program meets employer needs)*

 At the time the program was established in 2016, there were a series of geography and geology courses in the undergraduate bulletin that nearly simultaneously were removed from the offerings at A-State. As students have begun to enroll in this program, it is clear that we cannot meet the degree requirements as written. In the meantime, additional relevant interdisciplinary courses have begun to be taught with regularity. Therefore, this need has provided us the opportunity to reconfigure an important and growing degree program into a program with flexibility for students and relevancy to global environmental issues. This curriculum update represents a large step forward for the quality of the program and the functionality for the students with the practical aspect of regular diverse course offerings.

1. Provide current and proposed curriculum outline by semester.

 *For undergraduate programs, please also fill out 8-semester plan at end of document.*

 *Indicate total semester credit hours required for the proposed program. Underline new courses and provide new course descriptions. (If existing courses have been modified to create new courses, provide the course name/description for the current/existing courses and indicate the related new/modified courses.) Identify required general education core courses with an asterisk.*

 See attached 8-semester degree plan. 120 hours are required for degree completion. There are no new courses that need to be developed to implement the curriculum update.

1. Provide program budget. Indicate amount of funds available for reallocation.

 *See end of document.*

Since this degree program is developed based on existing courses across campus, there is no direct allocation needed for the program. As the program grows, the Department of Biological Sciences will be interested in hiring a biogeochemist who researches water and/or nutrient cycling to enhance the geosciences component of the environmental science degree. This hire has been requested for a Fall 2021 start to the Dean of the College of Sciences and Mathematics with an eye to the future, but the degree plan as outlined here does not require this hire for the degree to function.

1. Provide current and proposed organizational chart. *See end of document.*

N/A

1. Institutional curriculum committee review/approval date: Enter text...
2. Are the existing degrees offered off-campus or via distance delivery? No
3. Will the proposed degree be offered on-campus, off-campus, or via distance delivery?

On campus

1. Identify mode of distance delivery or the off-campus location for the proposed program.

 N/A

1. Provide documentation that proposed program has received full approval by licensure/certification entity, if required.

 *(A program offered for teacher/education administrator licensure must be reviewed/approved by the Arkansas Department of Education prior to consideration by the Coordinating Board; therefore, the Education Protocol Form also must be submitted to ADHE along with the Letter of Notification).*

 N/A

1. Provide copy of e-mail notification to other institutions in the area of the proposed program and their responses; include your reply to the institutional responses. *See end of document.*

N/A. This is an existing degree program on our campus, and we are requesting only a curriculum update.

1. List institutions offering similar program and identify the institutions used as a model to develop the proposed program.

The University of Central Arkansas has an interdisciplinary Environmental Science degree that is similar to this degree. Our goal in redesigning this degree is to provide an interdisciplinary natural resource degree that includes five focus areas: biology, chemistry, agriculture/sustainability, geospatial, and economic/policy/social, as an alternative to our Wildlife, Fisheries & Conservation degree that emphasizes primarily living (biotic) organisms. Students interested in becoming environmental scientists will gain a rigorous foundation in biology, chemistry, physics and mathematics in this degree, and then be able to choose relevant interdisciplinary electives. It would be a good degree for students who want careers as environmental scientists for government agencies (EPA, USDA, USGS), environmental non-profit or NGO organizations, or who plan to work at environmental consulting firms. This degree also prepares students for graduate school in the environmental sciences.

1. Provide scheduled program review date (within 10 years of program implementation).

 Enter text...

1. Provide additional program information if requested by ADHE staff.

Enter text...

President/Chancellor Approval Date: Click here to enter a date.

Board of Trustees Notification Date: Click here to enter a date.

Chief Academic officer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: Enter date.

 Name (printed): Click here to enter text.

**8-Semester Plan: BS Environmental Science**

(**referenced in #9** - **Undergraduate Proposals Only)**

*Instructions: Please identify new courses in italics*.

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| **2019-2020** |
| Students requiring developmental course work based on low entrance exam scores (ACT, SAT, ASSET, COMPASS) may not be able to complete this program of study in eight (8) semesters.  Developmental courses do not count toward total degree hours.  **Students having completed college level courses prior to enrollment will be assisted by their advisor in making appropriate substitutions.   In most cases, general education courses may be interchanged between semesters.**    A minimum of 45 hours of upper division credit (3000-4000 level) is required for this degree.  It is important to note that some upper-level degree requirements may be courses that are only offered once every two years. Students and advisors must become familiar with the cycle of teaching these courses. Students and advisors must also be aware that some courses may be taught only in Fall or Spring semesters. Mandatory state and institutional assessment exams will be required during your degree program.  ***Failure to participate in required assessments may delay graduation.*** |
| **Year 1** |   | **Year 1** |
| **Fall Semester** |   | **Spring Semester** |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |   | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| BIO 1013 | Biology Making Connections | 3 |  |  | BIO 1503 | Biology of Plants  | 3 | X |
| BIO 1303 | Biology of Animals | 3 |  |  | BIO 1501 | Biology of Plants Lab  | 1 | X |
| BIO 1301 | Biology of Animals Lab | 1 |  |  | CHEM 1023 | General Chemistry II | 3 |  |
| ENG 1003 | Composition I | 3 | X |  | CHEM 1021 | General Chemistry II Lab | 1 |  |
| CHEM 1013 | General Chemistry I | 3 | X |  | ENG 1013 | Composition II | 3 | X |
| CHEM 1011 | General Chemistry I Laboratory | 1 | X |  |  | Fine Arts | 3 | X |
|  | Social Science | 3 | X |  |  |  |  |  |
| **Total Hours** |   | 17 |   |   | **Total Hours** |   | 14 |   |
| **Year 2** |   | **Year 2** |
| **Fall Semester** |   | **Spring Semester** |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |   | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| BIOL 1063 | People and the Environment | 3 | X |  | BIO 2013 | Biology of the Cell | 3 |  |
| MATH 2204 | Calculus I | 4 |  |  | BIO 2011 | Biology of the Cell Lab | 1 |  |
| PHYS 2034 | University Physics I | 4 |  |  | MATH 2214 | Calculus II | 4 |  |
| SCOM 1203 | Oral Communication | 3 | X |  | PHYS 2044 | University Physics II | 4 |  |
|  | Social Science | 3 | X |  |  | Humanities | 3 |  |
| **Total Hours** |   | 17 |   |   | **Total Hours** |   | 15 |   |

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| **Year 3** |   | **Year 3** |
| **Fall Semester** |   | **Spring Semester** |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |   | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| BIO 3023 | Principles of Ecology | 3 |  |  | BIO 4613 | Conservation Biology | 3 |  |
| CHEM 3103 | Organic Chemistry I | 3 |  |  | CHEM 3113 | Organic Chemistry II | 3 |  |
| CHEM 3101 | Organic Chemistry I Laboratory | 1 |  |  | CHEM 3111 | Organic Chemistry II Lab | 1 |  |
| PSSC 2813 | Soils | 3 |  |  | STAT | Applied Statistics I | 3 |  |
| PSSC 2811 | Soils Laboratory | 1 |  |  |  | Focus area elective | 3 |  |
|  | Social Science | 3 | X |  |  | Focus area elective | 3 |  |
|  |  |  |  |  |  |  |  |  |
| **Total Hours** |   | 14 |   |   | **Total Hours** |   | 16 |  |
|   |   |   |   |   |   |   |   |   |
| **Year 4** |   | **Year 4** |
| **Fall Semester** |   | **Spring Semester** |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |   | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| BIO 3673 | Human Dimensions of Natural Resources | 3 |  |  |  | Focus area elective | 4 |  |
| BIO 4643 | Environmental Biology | 3 |  |  |  | Focus area elective | 3 |  |
| BIO 4641 | Environmental Biology Lab | 1 |  |  |  | Focus area elective | 3 |  |
| BIO 4021 | Biological Seminar  | 1 |  |  |  | Elective  | 3 |  |
|  | Focus area elective | 3 |  |  |  |  |  |  |
|  | Elective | 3 |  |  |  |  |  |  |
| **Total Hours** |   | 14 |   |   | **Total Hours** |   | 13 |   |
|   |   |  |   |   |   |   |   |   |
| **Total Jr/Sr Hours** | 60 |   |   | **Total Degree Hours** | 120  |

**Program Budget**

**(referenced in # 10)**

Provide program budget. Indicate amount of funds available for reallocation.

N/A

**Organizational Chart**

**(referenced in # 11)**

Provide current and proposed organizational chart. Include where the proposed program will be housed (department/college).

N/A

**Written Notification to Other Institutions**

**(referenced in # 17)**

This should include a copy of written notification to other institutions in area of proposed program and responses

N/A—Approved program with curricular changes only.

**Student Learning Outcomes**

Provide outcomes that students will accomplish during or at completion of this reconfigured degree. Fill out the following table to develop a continuous improvement assessment process.

*For further assistance, please see the ‘Expanded Instructions’ document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.*

**University Outcomes**

Please indicate the university-level student learning outcomes for which this new program will contribute. Please complete the table by adding program level outcomes (PLO) to the first column, and indicating the alignment with the university learning outcomes (ULO). If you need more information about the ULOs, go to the [University Level Outcomes Website](http://www.astate.edu/a/assessment/student-learning-outcomes/files/ULOs%20for%20Website2.pdf).

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|  | **ULO 1: Creative & Critical Thinking** | **ULO 2: Effective Communication** | **ULO 3: Civic & Social Responsibility** | **ULO 4: Globalization & Diversity** |
| **PLO 1** |  |  |  |  |
| **PLO 2** |  |  |  |  |
| **PLO 3** |  |  |  |  |

***Note: Best practices suggest 4-7 outcomes per program; minors would have 1 to 4 outcomes.***

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| **Outcome 1** | Students will be able to (SWBAT) discuss interactions with organisms and their environment. |
| Assessment Procedure Criterion | Graduating students will be provided a survey with relevant questions regarding this student-learning outcome. Students will also make a scientific poster and give a presentation related to organisms and their environment in their capstone course BIO 4021 Biological Seminar. |
| Which courses are responsible for this outcome? | BIO 1303 and 1301 Biology of Animals and Lab, BIO 1503 and 1501 Biology of Plants and Lab, BIO 3023 Principles of Ecology, BIO 4021 Biological Seminar. |
| Assessment Timetable | After three years of data accumulation, we will analyze data for graduating student surveys to determine if our learning outcomes are being met. |
| Who is responsible for assessing and reporting on the results? | The Department of Biological Sciences Assessment Committee (DBSAC) will be responsible for providing the surveys to graduates and reporting the results. The instructor of BIO 4021 will report presentation outcomes to the DBSAC. |

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| **Outcome 2** | SWBAT evaluate impact of current or proposed natural resource conservation strategies. |
| Assessment Procedure Criterion | Graduating students will be provided a survey with relevant questions regarding this student-learning outcome. Also, alumni will be surveyed 2-5 years after graduation to determine if the degree program prepared them for their careers in natural resource conservation. Students also will answer questions related to natural resource conservation strategies on exams in the courses listed below. |
| Which courses are responsible for this outcome? | BIO 3673 Human Dimensions of Natural Resources and BIO 4613 Conservation Biology. |
| Assessment Timetable | After three years of data accumulation, we will analyze data for graduating student surveys to determine if our learning outcomes are being met. |
| Who is responsible for assessing and reporting on the results? | The Department of Biological Sciences Assessment Committee (DBSAC) will be responsible for providing the surveys to graduates and reporting the results. The instructors of BIO 3673 and BIO 4613 will report outcomes to the DBSAC. |

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| **Outcome 3** | SWBAT explain energy production, flow, and transformations. |
| Assessment Procedure Criterion | Graduating students will be provided a survey with relevant questions regarding this student-learning outcome. Students also will answer questions related to energy production, flow, and transformations on exams in the courses listed below. |
| Which courses are responsible for this outcome? | BIOL 1063 People and the Environment, BIO 1503 and 1501 Biology of Plants and Lab, and BIO 4643/4641 Environmental Biology and Laboratory. |
| Assessment Timetable | After three years of data accumulation, we will analyze data for graduating student surveys to determine if our learning outcomes are being met. |
| Who is responsible for assessing and reporting on the results? | The Department of Biological Sciences Assessment Committee (DBSAC) will be responsible for providing the surveys to graduates and reporting the results. The instructors of BIOL 1063, BIO 1503 and BIO 1501, and BIO 4643 and BIO 4641will report outcomes to the DBSAC. |

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| **Outcome 4** | SWBAT communicate physical components of the environment upon which life depends. |
| Assessment Procedure Criterion | Graduating students will be provided a survey with relevant questions regarding this student-learning outcome. Students will also make a scientific poster and give a presentation related to the dependency of organisms upon their physical environment in their capstone course BIO 4021 Biological Seminar. |
| Which courses are responsible for this outcome? | BIO 1303 and 1301 Biology of Animals and Lab, BIO 1503 and 1501 Biology of Plants and Lab, BIO 3023 Principles of Ecology, PSSC 2813 and 2811 Soils and Lab, BIO 4643/4641 Environmental Biology and Lab, BIO 4021 Biological Seminar. |
| Assessment Timetable | After three years of data accumulation, we will analyze data for graduating student surveys to determine if our learning outcomes are being met. |
| Who is responsible for assessing and reporting on the results? | The Department of Biological Sciences Assessment Committee (DBSAC) will be responsible for providing the surveys to graduates and reporting the results. The instructor of BIO 4021 will report presentation outcomes to the DBSAC. |