Environmental science is an interdisciplinary field, focusing on the study of physical, chemical, and biological processes that underpin both natural ecosystems and human-influenced systems. While their focus is often on the physical and life sciences, environmental scientists must also be mindful of social issues, political context, economic factors, and human well-being in order to understand environmental issues and address environmental problems. The coursework for the Environmental Science degree reflects this broad, systems-level approach, with coursework in science and mathematics, as well as the social sciences. This allows students to gain a deeper understanding of the science and social issues involved in addressing complex environmental problems such as environmental contamination, access to food and safe drinking water, and climate change.

The undergraduate degree program in Environmental Science includes a core of required courses intended to provide students with an understanding of the fundamental principles of biology, chemistry, geology, mathematics, physics, and statistics necessary to understand environmental challenges. In addition, further required courses and electives allow students to apply this fundamental knowledge to broader environmental issues and problems, and to deepen their understanding of natural systems, human systems, and sustainability. The Environmental Science B.S. program serves as preparation for employment in a variety of related fields, both in technical and policy/management roles requiring extensive technical knowledge and background. Due to the breadth of disciplines involved in environmental science, students wishing to do independent work professionally may wish to consider graduate study in a field of specialization, if further training is required for their chosen path.
### PROGRAM STUDENT LEARNING OUTCOMES (PLOs)

Students graduating with a B.S. in Environmental Science will be able to:

<table>
<thead>
<tr>
<th>PLO 1</th>
<th>ILO 1, 5, 6</th>
<th>Demonstrate foundational knowledge of Earth processes, natural systems, and the effects of human activity (Knowledge)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLO 2</td>
<td>ILO 1, 2, 3, 4, 6</td>
<td>Develop fundamental field, laboratory, and computer skills necessary for environmental science (Skills)</td>
</tr>
<tr>
<td>PLO 3</td>
<td>ILO 1, 2, 3, 5, 6</td>
<td>Critically evaluate, analyze, and integrate scientific findings, data, and socioeconomic context to understand environmental issues (Analysis and synthesis)</td>
</tr>
<tr>
<td>PLO 4</td>
<td>ILO 1, 2, 3, 4, 6</td>
<td>Effectively communicate in oral and written form, and develop collaborative skills (Communication)</td>
</tr>
<tr>
<td>PLO 5</td>
<td>ILO 1, 3, 5, 6</td>
<td>Understand the role of the environmental science in local, regional, and global sustainability, and the role of an ethical scientist (Sustainability and global thinking)</td>
</tr>
</tbody>
</table>
### Year 1: 2018-2019

1. **Which PLO(s) to assess**
   - PLO 2 (Skills), PLO 3 (Analysis and synthesis)

2. **Assessment indicators**
   - ENSC 350/GEOL 432 (Hydrology/Hydrogeology) assignment/project; ENSC 499 (Seminar) final project

3. **Sample (courses/# of students)**
   - ENSC 350/GEOL 432, 24; ENSC 499, 18

4. **Time (which quarter(s))**
   - Winter 2019

5. **Responsible person(s)**
   - Mike Massey, Jean Moran

6. **Ways of reporting (how, to who)**
   - The report is delivered to the Chair, and distributed to the faculty. It is also included within the department report.

7. **Ways of closing the loop**
   - Areas of improvement are discussed at faculty meetings, improvements and revisions to future courses are expected.

### Year 2: 2019-2020

1. **Which PLO(s) to assess**
   - PLO 1 (Knowledge)

2. **Assessment indicators**
   - Course assignments and projects, with department rubric

3. **Sample (courses/# of students)**
   - ENSC 414 (Hazardous Waste), 24; ENSC 420 (Global Change), 24

4. **Time (which quarter(s))**
   - Fall 2019; Spring 2020.

5. **Responsible person(s)**
   - Mike Massey, Gita Dunhill

6. **Ways of reporting (how, to who)**
   - Reports first to the Chair and then to the entire faculty for comment & discussion. An end-of-year meeting will be devoted to evaluating assessment results and "closing the loop."

7. **Ways of closing the loop**
   - Identified "areas for improvement" will be incorporated into modified/updated courses for future graduate majors

### Year 3: 2020-2021

1. **Which PLO(s) to assess**
   - PLO 4 (Communication), PLO 5 (Sustainability & Global Thinking)

2. **Assessment indicators**
   - Course assignments and projects, oral presentations; department rubrics will be used

3. **Sample (courses/# of students)**
   - ENSC 499 (Seminar), 18; ENSC 280 (Humans and the Environment), 25-50+

4. **Time (which quarter(s))**
   - Winter 2021; Spring 2021.

5. **Responsible person(s)**
   - Mike Massey, department faculty

6. **Ways of reporting (how, to who)**
   - Reports first to the Chair and then to the entire faculty for comment & discussion. An end-of-year meeting will be devoted to evaluating assessment results and "closing the loop."

7. **Ways of closing the loop**
   - Identified "areas for improvement" will be incorporated into modified/updated core courses for future majors. Issues with the Thesis process will be discussed and acted upon.
### Year 4: 2021-2022

1. **Which PLO(s) to assess**
   - PLO 2 (*Skills*), PLO 3 (*Analysis and synthesis*)

2. **Assessment indicators**
   - ENSC 350/GEOL 432 (Hydrology/Hydrogeology) assignment/project; ENSC 499 (Seminar) final project, field courses

3. **Sample (courses/# of students)**
   - ENSC 350/GEOL 432, 24; ENSC 499, 18; field courses, 22

4. **Time (which quarter(s))**
   - Fall 2021, Spring 2022; intersession (for field courses)

5. **Responsible person(s)**
   - Mike Massey, Jean Moran, and affiliated faculty

6. **Ways of reporting (how, to who)**
   - Reports first to the Chair and then to the entire faculty for comment & discussion. An end-of-year meeting will be devoted to evaluating assessment results and “closing the loop.”

7. **Ways of closing the loop**
   - We will assess progress made since 2018-2019, adjust strategies. Revise program requirements as needed.

### Year 5: 2022-2023

1. **Which PLO(s) to assess**
   - PLO 1 (*Knowledge*)

2. **Assessment indicators**
   - Course assignments and projects, precis & oral presentations; department rubrics will be used

3. **Sample (courses/# of students)**
   - ENSC 414 (Hazardous Waste), 24; ENSC 420 (Global Change), 24

4. **Time (which quarter(s))**
   - Fall 2022, Spring 2023

5. **Responsible person(s)**
   - Mike Massey, Jean Moran, department faculty

6. **Ways of reporting (how, to who)**
   - Reports first to the Chair and then to the entire faculty for comment & discussion. An end-of-year meeting will be devoted to evaluating assessment results and “closing the loop.”

7. **Ways of closing the loop**
   - Assess progress made since 2019-2020, adjust strategies.