Institutional Effectiveness
2024-2025

Program: Environmental Sciences PhD
College and Department: College of Interdisciplinary Studies, Environmental Sciences
Contact: Tammy Boles
Mission:

Environmental Sciences Ph.D. Program Mission: The Environmental Sciences (EVS) doctoral program's mission is to advance the knowledge and promote the leadership necessary to understanding natural environments by incorporating perspectives from social sciences, humanities, and environmental sciences in the program's teaching and research in the fields of natural resources and the environment.

Concentrations: There are five concentrations available within the EVS Ph.D. program:

(1) Agriculture; (2) Biology; (3) Chemistry; (4) Geosciences; and (5) Integrated Research

The Agriculture, Geosciences, and Integrated Research concentrations were officially added in Spring 2018.

Attach Curriculum Map (Educational Programs Only):
Attached Files: See Appendix 1

Student Learning Outcome 1.1.

Define Outcome:
EVS students will demonstrate understanding of the interdisciplinary nature of environmental sciences such that they are aware of a wide range of environmental concerns beyond the boundaries of any single, specific discipline.

Assessment Methods:
Assessment Method for Student Learning Outcome 1.1. Written and Oral Comprehensive Exams.

Criteria for Success (Threshold for Assessment Methods):
Criteria for success is students passing their comprehensive exams

Link to 'Tech Tomorrow' Strategic Plan:

Results and Analysis:
Five EVS students, three in Biology, and two in Integrated Research, successfully completed their comprehensive exams during the 2024-2025 reporting period. One portion of the exam covers the core courses all students are required to take. There are five core courses in Agriculture, Biology, Chemistry, Geology, and Social Policy, and students take courses and comprehensive exams in four areas. They do not take the course in their area of study. Integrated Research students, along with their advisor, choose which four courses to take.

Use of Results to Improve Outcomes:
Comments: A standardized rubric for scoring individual components of the comprehensive exam was designed by the EVS curriculum committee, although the rubric is not currently being used by all instructors. Beginning in 2024, the instructor for EVSC 6010 Environmental Chemistry began using the standardized rubric in a pilot study to compare scores with and without the rubric. Of the five students who completed and passed the comprehensive exam in 2024, four students passed with an average score of 85. One student was not able to complete the EVSC portion of the exam in the time provided, although the student passed the overall comprehensive exam. Scores on the EVSC exam with and without the rubric were similar, although the rubric provides more consistent and fair evaluation.

Student Learning Outcome 2.1.

Define Outcome:
Students will improve oral and written communication skills by giving technical presentations at symposia, conferences, and similar venues where abstracts are peer-reviewed for acceptance.

Assessment Methods:
Assessment Method for Student Learning Outcome 2.1. Student Annual Reports (number of poster and platform technical presentations given).

Criteria for Success (Threshold for Assessment Methods):
The School of Environmental Studies provides supplemental support for student travel to meetings for the purposes of making presentations.

Criteria for success is students traveling to meetings (local, regional, national, and/or international to present their research either through oral or poster presentations.

Link to 'Tech Tomorrow' Strategic Plan:

Results and Analysis:

Table 1. Scholarly activity related to oral communication skills shown by EVS Ph.D. students in the current (2023) and previous six calendar-year reporting periods.

	Student annual report period								
Type of scholarly activity	2016	2017	2018	2019	2020	2021	2022	2023	2024
Poster presentations	17	14	15	15	25	15	18	-	-
Oral presentations	9	26	19	16	13	22	43	-	-
TOTAL	26	40	34	31	38	37	61	35	41

Use of Results to Improve Outcomes:
Three faculty advisor training sessions were held in November 2024. The sessions covered a variety of ways that the EVS program supports students and faculty seeking knowledge and improvement. Several items for improvement were covered, including departmental support of $500-1000 per student each year for travel to conferences to present research.

Student Learning Outcome 2.2.

Define Outcome:
Students will improve written communication skills by submitting manuscripts to peer-reviewed publications such as scholarly journals, conference proceedings, books, or similar outlets.

Assessment Methods:
Assessment Method for Student Learning Outcome 2.2. Student Annual Reports (number of manuscripts submitted and accepted for publication).

Criteria for Success (Threshold for Assessment Methods):

Link to 'Tech Tomorrow' Strategic Plan:

Results and Analysis:
Table 2. Scholarly activity related to written communication skills shown by EVS Ph.D. students in the current (2022) and previous six calendar-year reporting periods.

	Student annual report period								
Type of scholarly activity	2016	2017	2018	2019	2020	2021	2022	2023	2024
Manuscripts submitted	10	13	14	27	8	15	11	6	4
Manuscripts published	12	14	10	16	12	10	9	4	13

Use of Results to Improve Outcomes:

Summative Evaluation:

Student Learning Outcome 2.1 - Three faculty advisor training sessions were held in November 2024. The sessions covered a variety of ways that the EVS program supports students and faculty seeking knowledge and improvement. Several items for improvement were covered, including departmental support of $500-1000 per student each year for travel to conferences to present research.

The EVS Director initiated discussions with the Department of Physics during the fall 2024 semester to consider adding a sixth concentration in Physics, which could be especially attractive given the proximity to Oak Ridge National Laboratory. During the fall 2025 semester, THEC forms and new courses in Environmental Sciences-Physics will be presented, with target implementation of the new concentration beginning in fall 2026.

List of Appendices:

Appendix 1: Curriculum Map

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Table 4. EVS course alignment with program goals and student learning outcomes.

Course	Title	**1.1** Interdisciplinary environmental understanding	**2.1** Communication skills (conference presentations)	**2.2** Communication skills (journal publications)
EVSA 6010	Environmental Agriculture	**x**		
EVSB 6010	Environmental Biology	**x**		
EVSC 6010	Environmental Chemistry	**x**	**x**	
EVSG 6010	Environmental Geology	**x**		
EVSS 6010	Environmental Social Policy	**x**		
EVS 7900	Scientific Writing and Grantsmanship		**x**	**x**
EVS 7910	Environmental Sciences Seminar		**x**	**x**
EVS 7990	Research and Dissertation	**x**	**x**	**x**
7000-level electives	(various courses)	**x**	**x**	**x**