

**Assurance of Student Learning Report  
2022-2023**

College of Health & Human Services

Department of Public Health

Environmental & Occupational Health Science (548)

Jacqueline Basham

**Is this an online program?**  Yes  No

Please make sure the Program Learning Outcomes listed match those in CourseLeaf . Indicate verification here  
 Yes, they match! (If they don't match, explain on this page under **Assessment Cycle**)

*Use this page to list learning outcomes, measurements, and summarize results for your program. Detailed information must be completed in the subsequent pages. Add more Outcomes as needed.*

**Program Student Learning Outcome 1:** Analyze environmental and occupational safety and health problems.

**Instrument 1** Comprehensive Final Report – ENV 410 Water Treatment Processes

**Instrument 2**

**Instrument 3**

Based on your results, check whether the program met the goal Student Learning Outcome 1.

Met

Not Met

**Program Student Learning Outcome 2:** Design processes and programs to solve problems in environmental and occupational health science.

**Instrument 1** Comprehensive Final Proposal – ENV 321 Fundamentals of Industrial Hygiene

**Instrument 2**

**Instrument 3**

Based on your results, check whether the program met the goal Student Learning Outcome 2.

Met

Not Met

**Program Student Learning Outcome 3:** Communicate environmental and occupational safety and health strategies to a variety of audiences.

**Instrument 1** Internship Portfolio – ENV 491 Internship in Environmental Health & Safety

**Instrument 2**

**Instrument 3**

Based on your results, check whether the program met the goal Student Learning Outcome 3.

Met

Not Met

**Assessment Cycle Plan:**

The program is aligned with the learning outcomes and EHAC accreditation competencies and standards. Reviews are performed on an annual basis to ensure the learning outcomes are still sufficient for EHAC accreditation. A new measurement instrument was selected to assess SLO 3 for academic year 2022-23. All student learning outcomes were met during the 2021/2022 and 2021/2023 periods. Therefore, for SLO 2 the program is going to discuss moving the success target from 75% to 80% since this goal has consistently been met. This will allow the program to continue improving our students and overall successes. EOHS faculty will continue to revisit the program on an annual basis to ensure core course SLOs are aligned with the competencies and EHAC accreditation standards.

<b>Program Student Learning Outcome 1</b>			
<b>Program Student Learning Outcome</b>	Analyze environmental and occupational safety and health problems		
<b>Measurement Instrument 1</b>	<b>Direct measure of student learning:</b> Students in ENV 410 Water Treatment Processes, a junior/senior level course, were required to complete a comprehensive written laboratory report that required them to synthesize their laboratory work from the entire semester. As part of this comprehensive lab report, students must analyze all data that was collected and determine what solutions are available to improve the watershed in which they worked. To assess SLO 1 the laboratory report which includes literature review, background, lab result analysis and discussion of solutions was evaluated. It is important to note that during the assessment period (2022-2023) the ENV 410 course had to be taught as “ENV 475 Special Topics in Environmental Health” due to insufficient enrollments, and therefore, the ENV 475 course was used to evaluate SLO 1 during this assessment period.		
<b>Criteria for Student Success</b>	Students should score between “Proficient” or greater on the Environmental Health Reports Rubric for SLO 1. Scores on the rubric item for this SLO ranged from “Exemplary” (90-100), “Proficient” (Upper 80-89), “Apprentice” (70-79), and “Novice” (60-69).		
<b>Program Success Target for this Measurement</b>	75% of students will have earned a score of proficient or greater on their comprehensive lab report for SLO 1.	<b>Percent of Program Achieving Target</b>	83% of students in the program earned proficient or greater on their comprehensive final report for SLO 1.
<b>Methods</b>	<b>Direct:</b> Artifacts from the course were collected from all EOHS program students in the course ( $N = 6$ ). The papers were evaluated according to the Environmental Health Reports Rubric (Appendix 1). Each student paper was scored from 1 to 4 on each of the SLOs in the rubric. Scores represented the following ranges “Exemplary - 4” (90-100), “Proficient - 3” (Upper 85-90) and (Lower 80-84), “Apprentice - 2” (70-79), and “Novice - 1” (60-69). SLO 1 was assessed based on the lab report learning outcome of “Compile Environmental Health Information”.		
<b>Based on your results, highlight whether the program met the goal Student Learning Outcome 1.</b>		<input checked="" type="checkbox"/> <b>Met</b>	<input type="checkbox"/> <b>Not Met</b>
<b>Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn't, and plan going forward)</b>			
<b>Results:</b> The results show that students in the Environmental & Occupational Health major are able to analyze environmental and occupational safety and health problems.			
<b>Conclusions:</b> After evaluation of the SLOs in the Fall 2022 semester by EOHS faculty members it was determined that each learning objective would be more clearly evaluated if only one instrument was selected. Evaluating only one instrument allows for better focus and leaves less room for ambiguity about whether the objective is being met. Previously, this SLO was analyzed using two instruments one of which was also used to analyze SLO 3. Faculty made the decision that utilizing a different instrument from 3 different courses would allow for better evaluation of the program overall. Therefore, the internship portfolio was removed as an instrument of evaluation for SLO 1 and will only be used to evaluate SLO 3.			
<b>Plans for Next Assessment Cycle:</b> Assessments for the EOHS program occur on a yearly basis, therefore, the next assessment of SLO 1 will occur in the Fall 2023 semester. The comprehensive final reports will continue to be collected from the ENV 410 course. The program coordinator for the 2023/24 academic year, Jacqueline Basham, will be responsible for collecting and providing information and data related to SLO 1.			

<b>Program Student Learning Outcome 2</b>			
<b>Program Student Learning Outcome</b>	Design processes and programs to solve problems in environmental and occupational health science.		
<b>Measurement Instrument 1</b>	<b>Direct measure of student learning:</b> Students in ENV 321 Fundamentals of Industrial Hygiene, a junior/senior level course, were given a case study as a final project to determine the best way to monitor for a noise hazard within a factory. Students are given the issue related to noise and must design a monitoring program to meet the Occupational Safety & Health Administration requirements for a Hearing Conservation Program. Students have to present their final project to the class and in proposal form as if they were presenting to the owner of the company. This requires them to explain the problem, explain the program they have developed to solve the problem and present the budget required to implement the solution.		
<b>Criteria for Student Success</b>	Students should score between “Proficient” or greater on the Environmental Health Reports Rubric for SLO 2. Scores on the rubric item for this SLO ranged from “Exemplary” (90-100), “Proficient” (Upper 80-89), “Apprentice” (70-79), and “Novice” (60-69).		
<b>Program Success Target for this Measurement</b>	75% of students will have earned a score of proficient or greater on their final project for SLO 2.	<b>Percent of Program Achieving Target</b>	92% of students in the program earned proficient or greater on their comprehensive final proposal for SLO 2.
<b>Methods</b>	<b>Direct:</b> Artifacts from the Fundamentals of Industrial Hygiene course were collected from program students in the course ( $N = 12$ ). The projects were evaluated according to the Environmental Health Reports Rubric (Appendix 1). Each student project was scored from 1 to 4 on each of the SLOs in the rubric. Scores represented the following ranges “Exemplary - 4” (90-100), “Proficient - 3” (Upper 85-90) and (Lower 80-84), “Apprentice - 2” (70-79), and “Novice - 1” (60-69). SLO 2 was assessed based on the lab report learning outcome of “Compile Environmental Health Information”.		
<b>Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.</b>			<input checked="" type="checkbox"/> <b>Met</b> <input type="checkbox"/> <b>Not Met</b>
<b>Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn't, and plan going forward)</b>			
<b>Results:</b> The results show that students in the Environmental & Occupational Health major are able to design processes and programs to solve problems in environmental and occupational health science.			
<b>Conclusions:</b> After evaluation of the SLOs in the Fall 2022 semester by EOHS faculty members it was determined that no changes were needed in analyzing SLO 2. SLO 2 will continue to be analyzed utilizing the comprehensive final proposal from the ENV 321 course and will be evaluated again during the next assessment period.			
<b>Plans for Next Assessment Cycle:</b> Assessments for the EOHS program occur on a yearly basis, therefore, the next assessment of SLO 2 will occur in the Fall 2023 semester. The comprehensive final proposals will continue to be collected from the ENV 321 course. The program coordinator for the 2023/24 academic year, Jacqueline Basham, will be responsible for collecting and providing information and data related to SLO 2. Since the target of 75% of students earning a score of proficient or greater has consistently been met the program coordinator plans to discuss if the target can be moved from 75% to 80% for the 2023/24 evaluation period.			

<b>Program Student Learning Outcome 3</b>			
<b>Program Student Learning Outcome</b>	Communicate environmental and occupational safety and health strategies to a variety of audiences.		
<b>Measurement Instrument 1</b>	<b>Direct measure of student learning:</b> All students in the Environmental and Occupational Health Science program are required to complete an internship and internship portfolio. The internship portfolio requires that the student collects information about the internship site, objectives, competencies applied, daily and weekly work tasks, methods applied, analyze data and present results, accomplishments, and an evaluation of the internship.		
<b>Criteria for Student Success</b>	Students should score “Proficient” or greater on the Environmental Health Internship Portfolio Rubric (Appendix 2) for SLO 3. Possible scores on the rubric item for this SLO were “Exemplary” (90-100), “Proficient” (Upper 80-89), “Apprentice” (70-79), and “Novice” (60-69).		
<b>Program Success Target for this Measurement</b>	75% of students will have earned a score of proficient or greater on their internship portfolio for SLO 3.	<b>Percent of Program Achieving Target</b>	100% of students earned a score of proficient or greater on their internship portfolio for SLO 3.
<b>Methods</b>	Student portfolios (N=1) were evaluated. The evaluation was divided into categories that evaluated a student’s analytic, communication, and management competencies. These were competencies that were modified from the CDC, EPA, and EHAC competencies for environmental health practitioners. To assess SLO 3 “Analyze data, present results, and discuss findings” was evaluated for each student. Portfolios were scored on the rubric item for this SLO ranging from “Exemplary” (90-100) to “Novice” (60-69).		
<b>Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.</b>			<input checked="" type="checkbox"/> <b>Met</b> <input type="checkbox"/> <b>Not Met</b>
<b>Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn’t, and plan going forward)</b>			
<p><b>Results:</b> The results show that students in the Environmental &amp; Occupational Health major are able to communicate environmental and occupational safety and health strategies to a variety of audiences.</p> <p><b>Conclusions:</b> After evaluation of the SLOs in the Fall 2022 semester by EOHS faculty members it was determined that each learning objective would be more clearly evaluated if only one instrument was selected. Evaluating only one instrument allows for better focus and leaves less room for ambiguity about whether the objective is being met. Previously, this SLO was analyzed using two instruments one of which was also used to analyze SLO 2. Faculty made the decision that utilizing a different instrument from 3 different courses would allow for better evaluation of the program overall. Therefore, the comprehensive final project was removed as an instrument of evaluation for SLO 3 and will only be used to evaluate SLO 2.</p> <p><b>Plans for Next Assessment Cycle:</b> Assessments for the EOHS program occur on a yearly basis, therefore, the next assessment of SLO 3 will occur in the Fall 2023 semester. The internship portfolio will continue to be collected from the ENV 491 course. The program coordinator for the 2023/24 academic year, Jacqueline Basham, will be responsible for collecting and providing information and data related to SLO 3.</p>			

**\*\*\* Please include Curriculum Map (below/next page) as part of this document**

**APPENDIX 1: Environmental Health Reports Rubric**

<b>Learning Outcomes</b>	<b>Exemplary - 4</b>	<b>Proficient - 3</b>	<b>Apprentice - 2</b>	<b>Novice - 1</b>
Compile environmental health information	Information was collected from relevant sources in a manner that provided interpretation of the environmental health issue, problem, or methods applied.	Information was collected from relevant sources in a manner that provided synthesis of the environmental health issue, problem, or methods applied.	Information was collected from relevant sources with some interpretation, but a synthesis of the environmental health issue, problem, or methods applied was not provided.	Information was collected from relevant sources with no interpretation or synthesis of the environmental health issue, problem, or methods applied was not provided.
Explanation of the environmental health problem	Environmental health issue or problem was comprehensively stated and explained.	Environmental health issue or problem was clearly stated and explained.	Environmental health issue or problem was clearly stated but not explained.	Environmental health issue or problem was not clearly stated or explained.
Apply methods to assess the environmental health problem or issue	Field and laboratory methods were applied correctly in a manner that provided a comprehensive analysis of the problem.	Field and laboratory methods were applied correctly in a manner that provided an analysis of the problem.	Field and laboratory methods were applied correctly, yet not in a manner that provided an analysis of the problem.	Field and laboratory methods were not applied correctly, and did not provide an analysis of the problem.
Analyze data, present results, and discuss the findings	Data analysis was correct and presented through a series of graphs and tables that were explained in the report.	Data analysis was correct and presented through a graph or table that that was explained in the report.	Data analysis had errors and a table or graph was presented, yet it was not explained in the text of the report.	Data analysis had errors and a table or graph was not presented nor explained the report.
Develop conclusions and recommendations of the assessment	Conclusions and recommendations were developed that provided a comprehensive solution to the environmental health problem.	Conclusions and recommendations were discussed that provided a solution to the environmental health problem.	Conclusions and recommendations were presented, but did not provide a solution to the environmental health problem.	A Conclusion was presented, with not recommendations, and it did not include a solution to the environmental health problem.

**APPENDIX 2: Environmental Health Internship Portfolio Rubric**

<b>Learning Outcomes</b>	<b>Exemplary - 4</b>	<b>Proficient - 3</b>	<b>Apprentice - 2</b>	<b>Novice - 1</b>
Compile internship information and develop an internship introduction.	Internship information was compiled by the student, including weekly reports, and was complete. The introduction explained the work site, acquisition of the internship, and the job duties of the internship.	Internship information was compiled by the student, including weekly reports, and was complete. The introduction described the work site, acquisition of the internship, and the job duties of the internship.	Internship site information was compiled by the student, including weekly reports, with some information missing. The introduction discussed some aspects of the work site, acquisition of the internship, and the job duties of the internship.	Internship site information was compiled by the student with errors and omissions. The introduction was limited and mentioned work site and a few job duties of the internship.
Explain the internship objectives.	Objectives of the internship were thoroughly explained by the student. The student's explanation showed a direct link to program competencies of communication, assessment, and management.	Objectives of the internship were explained by the student. The student's explanation showed connection to program competencies of communication, assessment, and management.	Objectives of the internship were somewhat discussed by the student. The student's explanation showed some connection to program competencies of communication, assessment, and management.	Objectives of the internship were listed by the student. The student's explanation showed no connection to program competencies of communication, assessment, and management.
Apply environmental health methods to assess a problem presented in the internship.	Environmental health methods were applied correctly in a manner that provided a comprehensive analysis a problem presented in the internship.	Environmental health methods were applied correctly in a manner that provided an analysis of a problem presented in the internship.	Environmental health methods were applied correctly, yet not in a manner that provided an analysis of the problem presented in the internship.	Environmental health methods were not applied correctly, and did not provide an analysis of the problem presented in the internship.
Analyze data and present results of the internship in writing	Results were presented accurately and were discussed in the internship report and presentation. The analysis was comprehensive and produced results that solved a problem presented in the internship.	Results were presented accurately and somewhat discussed in the internship report and presentation. The analysis was produced results that may be used to address a problem presented in the internship.	Results were presented with errors and some discussion in the internship report and presentation. The analysis was not used to solve a problem and was more of an exercise. Presentation was incomplete.	Results were limited with errors and limited discussion in the internship report and presentation. The analysis was not sufficient to solve a problem and was not shown in the presentation.

Develop an evaluation of the internship	The evaluation provided a comprehensive explanation of the importance of the internship, the competencies practiced, changes the student would implement at the site, and relation of the internship to the student's professional development.	The evaluation provided an explanation of the importance of the internship, the competencies practiced, a mention of changes the student would implement at the site, and relation of the internship to the student's professional development.	The evaluation provided a discussion of the importance of the internship. A few competencies practiced were discussed, as well as a limited discussion of the relation of the internship to the student's professional development.	The evaluation provided a limited discussion of the importance of the internship. Competencies practiced were not discussed. The relation of the internship to the student's professional development was mentioned in a sentence or two.
---	---	---	---	---

**Appendix 3: BS EOHS Curriculum Map**

<b>KEY:</b>								
<b>I = Introduced</b>								
<b>R = Reinforced/Developed</b>								
<b>M = Mastered</b>								
<b>A = Assessed</b>								
			<b>Learning Outcomes</b>					
			<b>LO1:</b>	<b>LO2:</b>	<b>LO3:</b>	<b>LO4:</b>	<b>LO5:</b>	<b>LO6:</b>
			Analyze environmental and occupational safety and health problems (SLO1)	Design processes and programs to solve problems in environmental and occupational health science (SLO2)	Communicate environmental and occupational safety and health strategies to a variety of audiences (SLO3)	Apply a comprehensive educational background in basic sciences, environmental science, mathematics, environmental health, and occupational safety and health.	Demonstrate professionalism, diversity, equity, and inclusion, and apply ethical decision making with the ability to work on diverse and multidisciplinary teams	Engage in life-long learning to inform and guide the practice of environmental and occupational safety and health in a rapidly changing field
<b>Course Subject</b>	<b>Number</b>	<b>Course Title</b>						
ENV	120	Introduction to Occupational Safety and Health	I	I	I	I	I	I
ENV	221	Safety and Health Standards, Codes, and Regulations	R		R	R	R	
ENV	280	Introduction to Environmental Science			I	I	I	I
ENV	321	Fundamentals of Industrial Hygiene	R	A	M	R	M	
ENV	323	Fundamentals of Industrial Hygiene Laboratory	R	R	R	R	M	R
ENV	360	Air Pollution Control	R	I	R	R	R	
ENV	365	Air Pollution Control Laboratory	R	I	R	R	R	R
ENV	380	Principles of Environmental Toxicology	R	R	R	R		
ENV	410	Water Treatment Processes	A	R	R	R	R	
ENV	411	Water Treatment Processes Laboratory	R	R	M	R	R	R
ENV	423	Safety Program Management	R	M	R	R	R	
ENV	460	Environmental Management	R	M	R	R	R	
ENV	474	Environmental Risk Assessment	R	M	R	R	M	
ENV	480	Hazardous and Solid Waste Management	R	M	R	R		
ENV	486	Senior Environmental Health Seminar			M		M	M
ENV	491	Internship in Environmental, Health, and Safety	M	M	A	M	M	M
PH	383	Biostatistics in the Health Sciences	R			R		
PH	384	Introduction to Epidemiology			R	R		
PH	385	Environmental Health	R	R	R	IR		R
BIOL	207	General Microbiology				IR		R
BIOL	208	General Microbiology Laboratory				IR		R
CHEM	107	Fundamentals of Organic Chemistry				IR		R
CHEM	108	Fundamentals of Organic Chemistry Laboratory				IR		R
PHYS	231	Introduction to Physics and Biophysics I				IR		R
PHYS	232	Laboratory for Physics and Biophysics I				IR		R