

Assurance of Student Learning Report 2020-2021

College of Health and Human Services

Department of Public Health

M.S. in Environmental and Occupational Health Science (0473)

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

Student Learning Outcome 1: Develop insight into environmental and occupational health exposures and apply appropriate solutions to assess and reduce these exposures.

Instrument 1 **Direct:** Hazard analysis and risk assessment.

Instrument 2

Instrument 3

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

Met

Not Met

Student Learning Outcome 2: Analyze data, interpret results, and present the results in writing.

Instrument 1 **Direct:** Environmental toxicology data analysis report.

Instrument 2

Instrument 3

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

Met

Not Met

Student Learning Outcome 3: Communicate environmental health risks and exchange information through public speaking, written reports, and interpersonal skills.

Instrument 1 **Direct:** Environmental health term paper.

Instrument 2

Instrument 3

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

Met

Not Met

Program Summary (Briefly summarize the action and follow up items from your detailed responses on subsequent pages.)

This assessment indicates that the mean scores for all SLOs meets program success targets. Adjustments in core course offerings have helped strengthen program goals and outcomes. The MS EOHS programs (both on campus and online) are accredited by the National Environmental Health Science and Protection Accreditation Council (EHAC) through 2026. The programs have met required competencies and means of assessment for accreditation. In Spring 2020, core course requirement changes were made based on the accreditation requirements, and PH 501 Research Methods and EOHS 502 Health Promotion in the Workplace were added to core course requirements. The changes were implemented in Spring 2021. Like other core courses, both PH 501 and EOHS 502 are offered at least once every academic year, excluding the summer term. Inclusion of EOHS 502 will strengthen the competency on communication and management, while PH 501 will strengthen study design, data analysis and presentation of results. Overall, each of these courses will strengthen the SLOs for the programs. Currently, SLOs 1, 2, and 3 meet these overarching competencies of communication, and assessment. Following EOHS Program Advisory Board meeting in Fall 2020, curriculum mapping was conducted by the faculty. The following recommendations came out of this year's assessment:

- Advisory Board meeting will take place in Fall 2021. The meeting will focus on improving the curriculum to make it relevant to the field.
- EOHS Program faculty will conduct curriculum mapping in Fall 2021/Spring 2022.

- Faculty in the program will use the curriculum mapping and ensure measurable outcomes are emphasized in the relevant syllabi.
- SLOs for risk assessment and hazard analysis will be evaluated to ensure to that focus is not only on occupational safety and health but also mainstream environmental health.
- Program faculty will evaluate rubrics to assess the SLOs.
- Program faculty will evaluate the program changes needed to meet student learning outcome requirements.

Student Learning Outcome 1

Student Learning Outcome	Develop insight into environmental and occupational health exposures and apply appropriate solutions to assess and reduce these exposures.		
Measurement Instrument 1	<p>Direct: Students in EOHS 550 Principles of Occupational Safety and Health, a core course, were required to complete a comprehensive hazard analysis and risk assessment for a workplace hazard. Students developed a spreadsheet to review and rate the hazard and assign risks. The risk assessment required assessment of potential routes of exposure, creation of a risk decision tree, and development of a control strategy to eliminate and manage the hazard. To assess SLO 1 the “Hazard Analysis and Risk Assessment Rubric” was used to score the assignment for each student.</p>		
Criteria for Student Success	Students should score “Competent” or greater on the “Hazard Analysis and Risk Assessment Rubric” for each learning outcome to meet SLO 1.		
Program Success Target for this Measurement	75%	Percent of Program Achieving Target	92%
Methods	<p>Direct: Artifacts from the EOHS 550 Principles of Occupational Safety and Health course were collected from all students in the course ($N=13$). The Hazard Analysis and Risk Assessment exercise was evaluated according to the “Hazard Analysis and Risk Assessment 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 “Proficient - 3” (90-100), “Competent - 9” (80-89), “Novice - 2” (70-79), and “Incomplete - 1” (60-69). SLO 1 was assessed based on the total score for the rubric. A total score of 80 points or greater on the rubric would indicate “Competent” performance on the exercise. A total of 12 of 13 students scored “Competent” or greater for SLO 1.</p>		
Measurement Instrument 2	Do you have other measures of assessment for SLO 1? If so, please add that here along with all the information below. If not, you may delete this section and move on to “... whether the program met the goal Student Learning Outcome 1.”		
Criteria for Student Success			
Program Success Target for this Measurement		Percent of Program Achieving Target	
Methods			
Measurement Instrument 3	Do you have other measures of assessment for SLO 1? If so, please add that here along with all the information below. If not, you may delete this section and move on to “... whether the program met the goal Student Learning Outcome 1.”		
Criteria for Student Success			
Program Success Target for this Measurement		Percent of Program Achieving Target	
Methods			
Based on your results, highlight whether the program met the goal Student Learning Outcome 1.		<input checked="" type="checkbox"/> Met	<input type="checkbox"/> Not Met

Actions (Describe the decision-making process and actions for program improvement. The actions should include a timeline.)
Fall 2021/Spring 2022 curriculum mapping will be conducted to explore if the SLO also covers mainstream environment and not just occupational safety and health.
Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.)
The EOHS Advisory Board will meet in Fall 2021 to review the curriculum. Curriculum mapping will be done in Spring 2022 for implementation in Fall 2022. The program improvement is to enhance SLO1 within the context of mainstream environment.
Next Assessment Cycle Plan (Please describe your assessment plan timetable for this outcome)
This outcome will be assessed in 2022/2023. Specifically, we need to assess SLO 1 after the Fall 2023 in meeting environmental exposure and risk competencies. We will collect rubric scores for the courses (EOHS 550 and an environmental health course, to be determined) and evaluate competencies on risk assessment, hazard analysis and controls for both workplace and mainstream environment. The changes will be led by the Program Director, supported by EHOS faculty and advisory board.

Student Learning Outcome 2			
Student Learning Outcome	Analyze data, interpret results, and present the results in writing.		
Measurement Instrument 1	Direct: Students in EOHS 577 Environmental Toxicology, a core course, were required to complete an analysis of an environmental toxicology data set, present the results, discuss the results, and write a conclusion based on the analysis. Students applied Excel and statistical software to develop, organize, and analyze the dataset. The “Environmental Toxicology Data Report Rubric” (Appendix 1) was used to assess SLO 2.		
Criteria for Student Success	Students should score “Competent” (Total Score of 15 or greater) or greater on the “Environmental Toxicology Data Report Rubric” (Appendix 2).		
Program Success Target for this Measurement		Percent of Program Achieving Target	
Methods	Direct: Artifacts from the EOHS 577 Environmental Toxicology were collected from all students ($N = 11$). The Environmental Toxicology Data Report exercise was evaluated according to the “Environmental Toxicology Data Report Rubric” (Appendix 2). Each student report was scored from 1 to 4 on each of the learning outcomes in the rubric, which all pertain to SLO 2. A total score of 80% or greater on the rubric would indicate “Competent” performance on the exercise.		
Measurement Instrument 2			
Criteria for Student Success			
Program Success Target for this Measurement	75%	Percent of Program Achieving Target	91%
Methods			
Measurement Instrument 3			
Criteria for Student Success			
Program Success Target for this Measurement		Percent of Program Achieving Target	

Methods	
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Not Met
Actions (Describe the decision-making process and actions planned for program improvement. The actions should include a timeline.)	
To improve data analysis and reporting capabilities of students, and meet updated accreditation standards, PH 501 Research Methods was added to the core of the program in Spring 2021 and implementation will start 2022-2023. EOHS faculty will reevaluate the SLO for the new core course, PH 501 in 2022-2023. This will us enogh time to assess the impact of the new course.	
Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.)	
Changes were made to the program in Spring 2021. PH 501 was added to the core based on EHAC requirement and to improve SLO3. Program improvement will be assessed in 2022-2023.	
Next Assessment Cycle Plan (Please describe your assessment plan timetable for this outcome)	
This outcome will be assessed in 2022-2023. Specifically, we need to assess SLO 2 after Spring 2022. This will allow time to adequately assess the impacts of adding PH 501 Research Methods to the core. We will again collect rubric scores for the artifacts from EOHS 577 Environmental Toxicology, and PH 501 Research Methods. The instructors of the courses and the program director will evaluate the scores on the rubric.	

Student Learning Outcome 3			
Student Learning Outcome	Communicate environmental health risks and exchange information through public speaking, written reports, and interpersonal skills.		
Measurement Instrument 1	Direct: Students in PH 584 Principles of Environmental Health, a core course, were required to complete a comprehensive written term paper that requires synthesis of environmental and occupational health and safety information from the US Healthy People Initiative. Students developed a comprehensive report including information and data systhesis, critique of related-policies, program outcome assessment, and provide conclusions and recommendations. The Term Paper is then orally presentated to colleagues students as lay individuals and professionals. To assess SLO 3 the “Environmental Health Term Paper and Presentation Rubric” was used to score the assignment for each student.		
Criteria for Student Success	Direct: Students in PH 584 Environmental Health, a core course in the program, were required to complete a comprehensive written term paper that required them to synthesize the information from the course. The paper required reflection, analysis and integration, and a oral presentation. To assess SLO 3 the “Environmental Health Term Paper Rubric” was used. Students should score “Competent” or greater on the “Environmental Health Term Paper and Presentation Rubric” for each learning outcome to meet SLO 3.		
Program Success Target for this Measurement	75%	Percent of Program Achieving Target	85%
Methods	Direct: Artifacts from the course were collected from all students in the course ($N = 26$). The papers were evaluated according to both the Environmental Health Term Paper Rubric and Presentation Rubric (Appendix 3). Each student paper was scored from 1 to 4 on each of the SLOs in the rubric. Scores represented the following ranges “Proficient - 2” (90-100), “Competent - 0” (80-89), “Novice - 0” (70-79), and “Incomplete - 4” (60-69). SLO 3 was assessed based on the total score for the rubric. A total score of 80% or greater on the rubric would indicate “Competent” performance on both the Term Paper and the Oral Presentation. A total of 22 of 26 students scored “Competent” or greater for SLO 3.		
Measurement Instrument 2			
Criteria for Student Success			

Program Success Target for this Measurement		Percent of Program Achieving Target	
Methods			
Measurement Instrument 3			
Criteria for Student Success			
Program Success Target for this Measurement		Percent of Program Achieving Target	
Methods			
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.			<input checked="" type="checkbox"/> Met
<input type="checkbox"/> Not Met			
Actions (Describe the decision-making process and actions for program improvement. The actions should include a timeline.)			
To evaluate the scores for SLO 3, EOHS faculty will assess the Rubric to determine the areas of performance less than Competent. The rubric focusses on Reflection, Analysis and Integration, Presentation, Format and Professionalism. This evaluation will yield the areas for continued improvement. Once this is determined, these skills will be emphasized in PH 501 Research Methods and EOHS 502 Health Promotion in the Workplace, both are core courses. This is still planned to be assessed in 2022-2023.			
Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.)			
Changes were made to the program in Spring 2021 (for implementation in Fall 2021). PH 501 Research Methods and EOHS 502 Health Promotion in the Workplace were added to the core. These changes should provide for continued improvement of student rubric scores. SLO3 will be evaluated in 2022-2023.			
Next Assessment Cycle Plan (Please describe your assessment plan timetable for this outcome)			
The EOHS faculty will assess the program in 2022-2023. Specifically, we need to assess SLO 3 after students have had time to take both PH 501 Research Methods and EOHS 502 Health Promotion in the Workplace. These courses were added to the core in Spring 2021 to address the competencies in SLO 3. This will allow time to assess the impacts of adding PH 501 Research Methods and EOHS 502 Health Promotion in the Workplace to the core. We will again collect rubric scores for the artifacts from PH 584 Principles of Environmental Health, PH 501 Research Methods, and EOHS 502 Health Promotion in the Workplace. The instructors of the courses will maintain the artifacts, as well as the Program Director. The instructor and the program director will evaluate the scores on the rubric and report these to the EOHS faculty for review.			

Appendix 1: Hazard Analysis and Risk Assessment Rubric

Learning Outcomes	Proficient - 4	Competent - 3	Novice - 2	Incomplete - 1	Score
Identify and assess the hazard	The hazard was identified and explained. An explanation was provided that detailed the hazard type and impacts of exposure.	The hazard was identified and explained. An explanation was provided that listed the hazard type and an impact of exposure.	The hazard was identified. The explanation was limited and provided the hazard type and listed some potential impacts.	The hazard was identified.	
Assess the potential routes of entry	Routes of entry were evaluated based on the hazard and the workplace conditions. The evaluation investigated how the hazard was created and the exposure pathways.	Routes of entry were evaluated based on the hazard and the workplace conditions. The evaluation discussed the exposure pathways.	Routes of entry were described based on the hazard and the workplace conditions. The evaluation listed the exposure pathways.	Routes of entry were listed based on the hazard and the workplace conditions.	
Develop a risk assessment	A risk assessment was created based on severity, frequency, possibility, and likelihood. The risk assessment was accurate without errors.	A risk assessment was created based on severity, frequency, possibility, and likelihood. The risk assessment was accurate minimal errors.	A risk assessment was created based on severity, frequency, possibility, and likelihood. The risk assessment had several errors.	A risk assessment was incomplete based on severity, frequency, possibility, and likelihood. The risk assessment if attempted had many errors.	
Create a risk assessment decision tree for hazard reduction	Management of the hazard was developed through a risk assessment decision tree. The decision tree detailed the elimination of the hazard. A thorough justification and discussion was provided.	Management of the hazard was developed through a risk assessment decision tree. The decision tree detailed the reduction of the hazard. A discussion was provided.	Management of the hazard was attempted through a risk assessment decision tree. The decision tree was not clear on how the hazard would be reduced.	The decision tree was incomplete. The student did not provide an indication that the hazard would be reduced.	
Develop a control strategy or method	A control strategy was explained and applied to the workplace hazard. A clear method was developed that would eliminate the hazard and potential exposures.	A control strategy was applied to the workplace hazard. A method was shown that would reduce the hazard and potential exposures.	A control strategy was described for the workplace hazard. A method was listed to reduce the hazard.	A control strategy was listed for the workplace hazard.	

Appendix 2: Environmental Toxicology Data Report Rubric

Learning Outcomes	Proficient - 4	Competent - 3	Novice - 2	Incomplete - 1	Score
Develop background on the problem	A background analysis of the environmental toxicology problem was developed and thoroughly discussed. The student developed a detailed research question.	A background analysis of the environmental toxicology problem was developed and discussed. The student developed a research question.	A background analysis of the environmental toxicology problem was discussed.	A background analysis of the environmental toxicology problem was insufficient.	
Explanation of the dataset and methods of data analysis	Environmental toxicology dataset was explained. The methods for data analysis were correct and constructed for each step of the analysis.	Environmental toxicology dataset was explained. The methods for data correctly discussed.	Environmental toxicology dataset was described. The methods for data analysis were incorrectly discussed.	Environmental toxicology dataset was described.	
Results	Results of the analysis were presented as a series of tables and graphs. Tables and graphs were correctly formatted and complete. The analysis had no errors. Tables and graphs were described.	Results of the analysis were presented as a series of tables and graphs. Tables and graphs were correctly formatted and complete. The analysis had few errors. Tables and graphs were described.	Results were presented as a series of tables and graphs. Tables and graphs were incorrectly formatted and not complete. The analysis had several errors.	Results were presented as in a few tables and graphs. Tables and graphs were incorrectly formatted and not complete. The analysis had many errors.	
Discussion	A discussion was authored that addressed the research questions. Results were explained and applied to evaluate the environmental toxicology problem.	A discussion was authored that addressed the research questions. Results were explained.	A discussion was authored yet did not address the research questions. Results were not fully explained.	A discussion was authored that did not address the research questions or results.	
Conclusion	Conclusions and recommendations were developed that provided a comprehensive solution to the environmental toxicology problem.	Conclusions and recommendations were discussed that provided a solution to the environmental toxicology problem.	Conclusions and recommendations were presented, but did not provide a solution to the environmental toxicology problem.	A Conclusion was presented, without recommendations, and it did not include a solution to the environmental toxicology problem.	

Appendix 3: Environmental Health Term Paper Rubric

Competencies	Proficient - 4	Competent - 3	Novice - 2	Incomplete - 1	Score
Reflection	Ability to proficiently demonstrate reflection and deep thinking of acquired knowledge and concepts, and integrate them into different issues from a wide range of perspectives (e.g. different contexts, cultures, disciplines, etc.); demonstrate critical thinking skills in writing.	Showing satisfactory ability to relate acquired knowledge to the chosen State’s healthy people 2020 initiative; demonstrating attempt to analyze from a number of different perspectives.	Only includes mere description of theoretical knowledge; no reflection is demonstrated beyond description.	No critical analysis of the written report is demonstrated.	
Analysis & Integration	Points well articulates and supported by figures and charts analyzed from secondary data. Ideas /concepts are well articulated with a common ‘thread’ from beginning to end. Succinct strategy provided coherently supported by data on the chosen objective.	Concepts are generally Connected, and supported by secondary data to show the state of progress made in achieving the chosen objective. Still able to observe how the student develops during the learning process.	Little or no analysis and poorly integrated. No data presented to show the progress made in achieving the chosen objective or goal areas.	No analysis is demonstrated, merely copying and pasting primary source data tables and not fully intergrating in the work.	
Presentation	Slides are professionally prepared with tables, charts and pictures. Coherent flow if information linking different sections of the talk. Presenter manages time efficiently, maintains eye contact with audience, show mastery of slides, and professionalism in handling audience questions.	Presentation professionally prepared with tables, charts, and pictures. Information not well coordinated. Presenter evidently seen struggling to communicate well prepared slides, and audience questions not well handled.	Presentation poorly organized filled with text mostly from the term paper. Presenter uses numerous technical jargons not easily understood by lay audience, mostly reading slides or notes, and audience questions not well handled.	Presenter only reading slides without discussing them.	
Format & Professionalism	Writing is well focused; arguments and perspectives are precisely defined; coherent in developing an insightful idea is demonstrated. Paper well cited using APA referencing format, and few to no typos or grammatical errors.	Arguments and perspectives are clearly stated; some indication of efforts to organize the paper but not deep enough to be very insightful. Paper cited using APA referencing format, and few typos or grammatical errors.	Do not show any original thinking or perspectives; chaotic on organization and presentation of ideas. Paper not cited with many typos and grammatical errors. Abstract not provided.	Basic structure of the paper is not met.	