

## Assurance of Student Learning Report 2022-2023

College of Health and Human Services	Department of Public Health
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Master of Science (M.S.) in Environmental and Occupational Health Science (0473)

Edrisa Sanyang

<b>Is this an online program?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Please make sure the Program Learning Outcomes listed match those in CourseLeaf . Indicate verification here <input checked="" type="checkbox"/> Yes, they match! (If they don't match, explain on this page under <b>Assessment Cycle</b> )
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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. Add more Outcomes as needed.*

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

<b>Instrument 1</b>	Hazard analysis and risk assessment.
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<b>Instrument 2</b>	
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<b>Instrument 3</b>	
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<b>Based on your results, check 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>
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**Program Student Learning Outcome 2:** Analyse data, interpret results, and present the results in writing.

<b>Instrument 1</b>	Environmental toxicology data analysis report.
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<b>Instrument 2</b>	
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<b>Instrument 3</b>	
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<b>Based on your results, check 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>
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**Program Student Learning Outcome 3:** Communicate environmental health risks and exchange information through public speaking, written reports, and interpersonal skills.

<b>Instrument 1</b>	Environmental health term paper.
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<b>Instrument 2</b>	
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<b>Instrument 3</b>	
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<b>Based on your results, check 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>
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**Assessment Cycle Plan:**

All Program Student Learning Outcomes for 2022-2023 academic year has been assessed and met. In 2023 and 2024 academic year, Program Student Learning Outcome 2 will be modified to include building skills to apply data analytics, and statistical methods to analyze data, interpret and present results in writing. Both EOHS 572 and 577 will be used to address this Program Student Learning Outcome. EOHS 572 is approved to move to the core required courses for the M.S in EOHS.

### Program Student Learning Outcome 1

<b>Program Student Learning Outcome</b>	Develop insight into environmental and occupational health exposures and apply appropriate solutions to assess and reduce these exposures.		
<b>Measurement Instrument 1</b>	<b>Direct:</b> Students in EOHS 550 Principles of Occupational Safety and Health, a core required 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 hazards and assign risks. The risk assessment required analysis of potential routes of exposure, creation of a risk decision tree, and development of a control strategy to eliminate and manage the hazards. To assess SLO 1 the “Hazard Analysis and Risk Assessment Rubric” was used to score the assignment for each student.		
<b>Criteria for Student Success</b>	Students should score “Competent” or greater on the “Hazard Analysis and Risk Assessment Rubric” for each learning outcome to meet SLO 1.		
<b>Program Success Target for this Measurement</b>	75%	<b>Percent of Program Achieving Target</b>	100%
<b>Methods</b>	<b>Direct:</b> Artifacts from the EOHS 550 Principles of Occupational Safety and Health course were collected from all students in both the online class (N = 6), and face-to-face (N = 3). In both classes, 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 - 6” (90-100), “Competent - 5” (80-89), “Novice - 0” (70-79), and “Incomplete - 0” (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. All the 6 students in the online and 3 students in the face-to-face classes scored “Competent” or greater for SLO 1.		
<b>Measurement Instrument 2</b>	Do you have other measures of assessment for SLO 1? If so, please add those 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.”		
<b>Criteria for Student Success</b>			
<b>Program Success Target for this Measurement</b>		<b>Percent of Program Achieving Target</b>	
<b>Methods</b>			
<b>Measurement Instrument 3</b>	Do you have other measures of assessment for SLO 1? If so, please add those 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.”		
<b>Criteria for Student Success</b>			
<b>Program Success Target for this Measurement</b>		<b>Percent of Program Achieving Target</b>	
<b>Methods</b>			

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
<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 is what is expected. Both online and face-to-face students performed successfully in the assessment, and there is no marked different between the two provisions.		
<b>Conclusions:</b> The assessment method for this important program student learning outcome seems to be working well for both the online and face-to-face classes.		
<b>Plans for Next Assessment Cycle:</b> There is no planned changes for this SLO. EOHS 570 Industrial Hygiene, recently added core required course, reinforces the learning outcome as well to meet the industry demands and to attain Qualified Academic Program status by the Board of Certified Safety Professionals. The course will not impact the SLO or the assessment currently being used.		

Program Student Learning Outcome 2			
<b>Program Student Learning Outcome</b>	Analyze data, interpret results, and present the results in writing.		
<b>Measurement Instrument 1</b>	<b>Direct:</b> Students in EOHS 577 Environmental Toxicology, a core required course, were required to complete an analysis of an environmental toxicology data set, present the results, discuss the results, and write a technical report based on the analysis. Students applied Microsoft Excel and a statistical software of their choice to develop, organize, and analyze the dataset. The "Environmental Toxicology Data Report Rubric" (Appendix 2) was used to assess SLO 2.		
<b>Criteria for Student Success</b>	Students should score "Competent" or greater		
<b>Program Success Target for this Measurement</b>	75%	<b>Percent of Program Achieving Target</b>	100%
<b>Methods</b>	<b>Direct:</b> Artifacts from the EOHS 577 Environmental Toxicology were collected from all students ( $N = 12$ ). 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. Scores represented the following ranges "Proficient - 12" (90-100), "Competent - 0" (80-89), "Novice - 0" (70-79), and "Incoomplete - 0" (60-69). SLO 2 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 the exercise. All the 12 students scored "Competent" or greater for SLO 2.		
<b>Measurement Instrument 2</b>			
<b>Criteria for Student Success</b>			
<b>Program Success Target for this Measurement</b>		<b>Percent of Program Achieving Target</b>	
<b>Methods</b>			
<b>Measurement Instrument 3</b>			
<b>Criteria for Student Success</b>			
<b>Program Success Target for this Measurement</b>		<b>Percent of Program Achieving</b>	

		<b>Target</b>	
<b>Methods</b>			
<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>			
<p><b>Results:</b> The results are what is expected. However, the National Institute of Occupational Safety and Health (NIOSH, the single most funder for this program) is interested in developing research competencies including study design, data analytics, and presenting results in writing. EOHS 572 Environmental and Occupational Epidemiology is approved as a core required course to help improve learning and outcomes for this SLO.</p> <p><b>Conclusions:</b> The SLO is not comprehensive enough. Study design need to precede data analytics and presenting results in writing. EOHS 572 is added to the core required course to address this gap.</p> <p><b>Plans for Next Assessment Cycle:</b> The next assessment cycle will include evaluating program student learning outcome on study design as well as data analytics and presenting results in writing. EOHS 572 Environmental and Occupational Epidemiology will be implemented in 2023-2024 academic year. The revised program student learning outcome will focus on applying data analytics, and statistical methods to analyze data, interpret and present results in writing.</p>			

<b>Program Student Learning Outcome 3</b>			
<b>Program Student Learning Outcome</b>	Communicate environmental health risks and exchange information through public speaking, written reports, and interpersonal skills.		
<b>Measurement Instrument 1</b>	<p><b>Direct:</b> Students in PH 584 Principles of Environmental Health, a core required 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 synthesis, critique of related-policies, program outcome assessment, and provide conclusions and recommendations. The Term Paper is then orally presented 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.</p>		
<b>Criteria for Student Success</b>	Students should score “Competent” or greater		
<b>Program Success Target for this Measurement</b>	75%	<b>Percent of Program Achieving Target</b>	100%
<b>Methods</b>	<p><b>Direct:</b> Artifacts from the course were collected from online (N = 9) and face-to-face students (N = 9). 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 - 21” (90-100), “Competent - 5” (80-89), “Novice - 0” (70-79), and “Incomplete - 0” (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. All 18 students scored “Competent” or greater for SLO 3.</p>		
<b>Measurement Instrument 2</b>			
<b>Criteria for Student Success</b>			
<b>Program Success Target for this Measurement</b>		<b>Percent of Program Achieving</b>	

			<b>Target</b>
<b>Methods</b>			
<b>Measurement Instrument 3</b>			
<b>Criteria for Student Success</b>			
<b>Program Success Target for this Measurement</b>		<b>Percent of Program Achieving Target</b>	
<b>Methods</b>			
<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 is what is expected. Both the online and face-to-face students performed successfully in the learning outcome, and there is no marked differences between the two provisions.</p> <p><b>Conclusions:</b> The assessment method seems to be working well for both the online and face-to-face provisions.</p> <p><b>Plans for Next Assessment Cycle:</b> There is no planned changes for this SLO.</p>			

## CURRICULUM MAP – Master of Science in Environmental and Occupational Health

<b>Program Name</b>	Master of Science (M.S.) in Environmental and Occupational Health Science (0473)
<b>Department</b>	Public Health
<b>College</b>	Health and Human Services
<b>Contact Person:</b>	Edrisa Sanyang
<b>Email:</b>	<a href="mailto:edrisa.sanyang@wku.edu">edrisa.sanyang@wku.edu</a>

### KEY:

I = Introduced

R = Reinforced/Developed

M = Mastered

A = Assessed

			Program Student Learning Outcomes			
			LO1	LO2	LO3	LO4
			Develop insight into environmental & occupational health exposures & apply appropriate solutions to assess and reduce these exposures.	Analyze data, interpret results, and present the results in writing.	Communicate environmental health risks and exchange information through public speaking, written reports, and interpersonal skills.	Identify sources of data and compile information on environmental and occupational exposures.
Course Subject	Number	Course Title				
EOHS	502	Health Promotion in the Workplace	R		R	
EOHS	550	Principles of Occupational Safety & Health	IRMA		IR	I
EOHS	560	Environmental Management & Risk Assessment	IR		IR	RM
EOHS	577	Environmental Toxicology	R	MA	R	IR
PH	501	Research Methods	I	R	R	
PH	520	Biostatistics for Public Health	I	R	R	
PH	582	Epidemiology		I	I	I
PH	584	Principles of Environmental Health	I		MA	
EOHS	546	Internship	M	M	M	M
PH	588	Public Health Capstone	M	M	M	M
PH	599	Research Thesis/Writing	M	M	M	M

**NOTE 1:** If you have a program with multiple tracks, create a curriculum map for each track in a different sheet/tab, and specify the name of the track in addition to the name of the program.

**NOTE 2:** Your program may have a component or milestone that is important for your learning outcomes, but that you don't associate with a course number. Examples might include independent/mentored research, qualifying exams, a prospectus, defense, clinical rotations, etc. Alternatively, your program may have several components or milestones that fall under one course number that you would like to differentiate in the curriculum map. Feel free to add those details to the curriculum map in order to represent those learning opportunities (Please omit optional extracurricular activities).

**Appendix 1: Hazard Analysis and Risk Assessment Rubric**

<b>Learning Outcomes</b>	<b>Proficient - 4</b>	<b>Competent - 3</b>	<b>Novice - 2</b>	<b>Incomplete - 1</b>	<b>Score</b>
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**

<b>Learning Outcomes</b>	<b>Proficient - 4</b>	<b>Competent - 3</b>	<b>Novice - 2</b>	<b>Incomplete - 1</b>	<b>Score</b>
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**

<b>Competencies</b>	<b>Proficient - 4</b>	<b>Competent - 3</b>	<b>Novice - 2</b>	<b>Incomplete - 1</b>	<b>Score</b>
<b>Reflection</b>	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.	
<b>Analysis &amp; Integration</b>	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.	
<b>Presentation</b>	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.	
<b>Format &amp; Professionalism</b>	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.	