Assurance of Student Learning Reflection 2024-2025	
Ogden College of Science and Engineering	*Physics and Astronomy*
Homeland Security Sceinces 413	
Ivan Novikov	
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 **Evaluation)**

Instructions: For the 2024-25 assessment, we are asking you to reflect on the last three-year cycle rather than collect data. It's important to take time to look over the results from the last assessment cycle and really focus on a data-informed direction going forward. In collaboration with your assessment team and program faculty, review each submitted template from 2021-2024 and consider the following for each Program Learning Outcome, add your narrative to the template, and submit the draft to your ASL Rep by May 15, 2025.

Program Student Learning Outcome 1	
Program Student Learning Outcome	**Students will demonstrate successful use of critical laboratory methods required for empirical measurements**.
Evaluation	We found this learning outcome to still be relevant to the program. The program trains graduate students to be the future experimental scientists in the Homeland Security Sciences arena, thus the primary skill they should acquire in the program are proper laboratory methods required for empirical measurements.
Measurement Instruments	The measurement instrument (successful defense of the thesis) is measuring the outcome. Students will not receive a positive evaluation on the thesis if they cannot demonstrate a mastery of laboratory methods which provide the empirical measurements needed to support their hypothesis.
Criteria & Targets	The criteria for success and targets are deemed adequate and appropriate for the assessment of the outcome.
Results & Conclusion	**Results**: We met the targets in each of the last 3 years. This results is expected; it is rare that an MS student will not attain the required skills needed to successfully defend the MS thesis. **Conclusions**: We conclude our process is producing the desired assessment of the program learning outcome.
****IMPORTANT - Plans for Next Assessment Cycle**:	We will continue with learning outcome, measurement instrument, criteria and targets for the next assessment cycle.

Program Student Learning Outcome 2	
Program Student Learning Outcome	**Students will demonstrate a mastery of empirical methods via written expression**
Evaluation	We found this learning outcome to still be relevant to the program. Written expression of scientific ideas is a skill students must master to go onto additional academic preparation, or to be successful in the HSS workforce.
Measurement Instruments	The measurement instrument (evaluation of the written thesis) is measuring the outcome. The written thesis represents the capstone written presentation of the students work, and is the culmination of a collaborative process between the student, thesis committee, and thesis mentor.
Criteria & Targets	The criteria for success and targets are deemed adequate and appropriate for the assessment of the outcome.
Results & Conclusion	**Results**: We met the target in each of the last 3 years. This results is expected; by the time the written thesis is submitted and evaluated by the thesis committee, students have refined the thesis via input from the committee and mentor and may also have published parts (or all of) the thesis in the refereed literature, where they receive additional external input on their written expression. **Conclusions**:. We conclude our process is producing the desired assessment of the program learning outcome.
****IMPORTANT - Plans for Next Assessment Cycle**:	We will continue with learning outcome, measurement instrument, criteria and targets for the next assessment cycle. The associated evaluation rubric will be modified to clarify certain rubric scoring items. We are not concerned about negative effects of AI on this item; AI cannot accurately reproduce the specifics of an experiment performed by the students. We hope that our mature graduate students will learn to use AI as a tool to aid their written expression, not a crutch on which to lean for their written expression of ideas.

Program Student Learning Outcome 3	
Program Student Learning Outcome	**Students will demonstrate a mastery of empirical methods via oral expression**
Evaluation	We found this learning outcome to still be relevant to the program. Oral expression of scientific ideas is a skill students must master to go onto additional academic preparation, or to be successful in the workforce.
Measurement Instruments	The measurement instrument (evaluation of the oral thesis presentation) is measuring the outcome. The oral thesis presentation and defense represents the capstone oral presentation of the students work, and is the culmination of a collaborative process between the student and thesis mentor. Usually, students have presented their work orally in a number of conference presentations, receiving feedback from their mentor, other scientists, and peers.
Criteria & Targets	The criteria for success and targets are deemed adequate and appropriate for the assessment of the outcome.
Results & Conclusion	**Results**: We met the targets in each of the last 3 years. This results is expected; by the time the thesis is defended to the thesis committee, students have refined the thesis via input from the committee and may also have presented parts (or all of) the thesis in oral presentations in conference venues where they receive additional external input on their oral expression. **Conclusions**:. We conclude our process is producing the desired assessment of the program learning outcome

****IMPORTANT - Plans for Next Assessment Cycle**:	We will continue with learning outcome, measurement instrument, criteria and targets for the next assessment cycle. The associated evaluation rubric will be modified to clarify certain rubric scoring items.

To add more outcomes, if needed, select the table above and copy & paste below.