Assurance of Student Learning 2019-2020	
Ogden College of Science and Engineering	*Physics and Astronomy*
Homeland Security Sciences 413	
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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: Students will demonstrate successful use of critical laboratory methods required for empirical measurements.			
Instrument 1	Performance in constructing and presenting research in Physics 598 and at conferences.		
Instrument 2	Successful defense and completion of the required MS Thesis		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 1.		**Met**	**Not Met**

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

Graduate students are required to take 3 semesters of Physics 598. The graduate director coordinates the Physics 598 course and provides feedback to the thesis mentors on student performance in the construction and presentation of thier research in Physics 598. The graduate director also meets with the thesis committee after the thesis defense to discuss each student's individual progress and performance. Information gained from these discussions is used as feedback to adjust the content of the Physics 598 course to better train students in research presentation and is provided to faculty mentors to inform them of student strengths and weakness so that they may adjust their expectations and training methods accordingly. Follow-up occurs after every thesis defense, which is typically 1-3 times per academic year. Information from the 2019-20 academic year has been used adjust content focus areas in Physics 598 and inform faculty mentors of identified student weaknesses that can be addressed in the process of the thesis research.

Student Learning Outcome 1			
Student Learning Outcome	Students will demonstrate successful use of experimental methods required for empirical measurements.		
Measurement Instrument 1	This will be measured by student performance in the Physics 598 (Graduate Seminar) courses. Students are required to present results of their research activities as part of the course requirements.		
Criteria for Student Success	Students receive a grade of B or better in the course. (This criteria will be modified beginning in AY 20-21 -we did not recieve the feedback on 2018-19 report in time to institute the change in time for AY 19-20).		
Program Success Target for this Measurement	100	**Percent of Program Achieving Target**	100

Methods	In 2019-2020 a total of 4 students were evaluated in the Physics 598 course. Student oral presentations are evaluated based upon the following criteria: the content of the presentation was high quality, and the delivery of the presentation was high quality, and student made a serious effort to prepare for the presentation.			
Measurement Instrument 2	Successful defense and completing of the MS thesis			
Criteria for Student Success	Students will successfully defend the MS thesis and graduate with the MS degree.			
Program Success Target for this Measurement	**100**	**Percent of Program Achieving Target**	**100**	
Methods	MS student projects will be overseen by a committee of faculty who will evaluate their oral (MS defense) and written (MS Thesis) presentation of their thesis project. The oral thesis defense is judged based on quality of the presentation and the ability of the students to clearly explain their research and answer questions about their experimental methodology. The written thesis is evaluated based on the ability of the students to clearly explain in writing their research and their experimental methodology.			
Based on your results, highlight whether the program met the goal Student Learning Outcome 1.		**Met**	**Not Met**	

Actions (Describe the decision-making process and actions for program improvement. The actions should include a timeline.)

The graduate director coordinates the Physics 598 course and provides feedback to the thesis mentors on student performance in the construction and presentation of thier research in Physics 598. He also coordinates the Physics 598 course and meets with the thesis committee after the thesis defense to discuss each student's individual progress and performance. Information gained from these discussions is used as feedback to adjust the content of the Physics 598 course to better train students in research presentation and is provided to faculty mentors to inform them of student strengths and weakness so that they may adjust their expectations and training methods accordingly.

Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.)

Follow-up occurs after every thesis defense, which is typically 1-3 times per academic year. Information from the 2019-20 academic year has been used adjust content focus areas in Physics 598 and inform faculty mentors of identified student weaknesses that can be addressed in the process of the thesis research.

Next Assessment Cycle Plan (Please describe your assessment plan timetable for this outcome)

This will be assessed in the next assessment cycle. We will update the criteria for student success for the next assessment cycle to be that 90% of all students evaluated will have an overall score of good or better on the assesment rubric (see attached). We will also begin to have faculty mentors or thier represenattive utilize the assessment rubric when students are giving presentations at local, regional, state and national conferences.

In the next assessment cycle, we will add 2 additional learning outcomes (one for oral and another for written communication skills) to meet the ASL committee's demand there be 3 learning outcomes. The evaluation of the MS Thesis will be moved from being a measurement instrument under Learning Outcome 1 into 2 separate learning outcomes addressing oral and written communication skills. These will be assessed by applying rubrics currently under development to the MS thesis written and oral presentation.

Physics and Astronomy Rubric for evaluating oral presentations

	4: Excellent	3: Good	2: Needs some improvement	1: Needs major improvement
Understanding of material	Presentation demonstrated excellent understanding of the topic and its context.	Presentation demonstrated adequate understanding of the topic and its context.	Presentation demonstrated some gaps and/or errors in student understanding of the topic and context.	Presentation demonstrated significant gaps or errors in student understanding of the topic and context.
Presentation organization and flow.	Presentation was well organized and seamlessly presented.	Presentation was logically organized and adequately presented.	There were minor issues with the organization and flow of the presentation.	Presentation was disorganized and/or confusingly presented.
Interaction with audience	Student developed excellent rapport with the audience during the presentation.	Student interacted with the audience and made eye contact most of the time.	Student had a little interaction with the audience and made eye contact some of the time.	Student did not interact with or look at audience.
Answering questions	Student provided thoughtful, quality responses to questions from audience.	Student provided adequate responses to questions from audience.	Student had some difficulties in understanding or answering questions from audience.	Student completely misunderstood or was unable to provide answers to questions from audience.