

Physics Assessment Plan

1. Students will demonstrate an ability to identify, formulate, and solve complex problems by applying principles of engineering, science, and mathematics (CC: CT)

Course	Outcome Assessed	Assessment Method	Threshold	Frequency
EGR2014 EGR2014L	Students will be able to set up a problem with the appropriate variables and solve the problem	Exam Question	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually
EGR2024 EGR2024L	Students will be able to set up a problem with the appropriate variables and solve the problem	Exam Question	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually
PHY4063	Students will be able to set up a problem with the appropriate variables and solve the problem	Exam Question	At least 80% of the students will score 2.5 or higher on the associated rubric	Alternating Year
PHY2044	Students will be able to set up a problem with the appropriate variables and solve the problem	Exam Question	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually

2. **Students will demonstrate an ability to apply physical principles, mathematical reasoning, and computational techniques to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.**

Course	Outcome Assessed	Assessment Method	Threshold	Frequency
EGR1023 EGR1023L	Student design teams will be able to successfully implement the engineering design process to identify a feasible solution to a problem	Faculty Team Assessment of Final Project (Open House Demo)	At least 80% of the teams will score 2.5 or higher on the associated rubric	Annually
EGR2024 EGR2024L	Student design teams will be able to successfully implement an engineering design process that addresses real problems for existing communities. Constraints should include the technical as well as considering public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	Faculty Team Assessment of Final Project (Open House Demo)	At least 80% of the teams will score 2.5 or higher on the associated rubric	Annually
PHY4072	Student design teams will be able to successfully implement an engineering design process to identify a feasible solution to a problem	Faculty/Review Team Assessment of Project Proposal	At least 80% of the teams will score 2.5 or higher on the associated rubric	Annually
PHY4072	Student design teams will be able to describe the constraints that impact the engineering solution to a problem. Constraints should include the technical as well as considering public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	Faculty/Review Team Assessment of Project Proposal	At least 80% of the teams will score 2.5 or higher on the associated rubric	Annually

PHY4072	Student design teams will be able to build a budget for the project and discuss financial limitations	Faculty/Review Team Assessment of Project Proposal	At least 80% of the teams will score 2.5 or higher on the associated rubric	Annually
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3. Students will demonstrate an ability to communicate effectively with a range of audiences

- **Students will be able to speak about their work with precision, clarity and organization. (CC: OC)**
- **Students will be able to write about their work with precision, clarity and organization. (CC: WC)**
- **Students will be able to identify, locate, evaluate, and effectively and responsibly use and cite information for the task at hand. (CC: IL)**

Course	Outcome Assessed	Assessment Method	Threshold	Frequency
EGR2014 EGR2014L	(WC) Students will be able to write a lab report that accurately summarizes the experiment and the results	Lab Report	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually
EGR2024 EGR2024L	(IL) Students will be able to appropriately identify, locate, evaluate, and effectively and responsibly use and cite information for the final project	Final Report	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually
EGR2024 EGR2024L	(WC) Students will be able to write a report with appropriate figures, tables, equations, and formatting	Final Report	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually
PHY4082	(OC) Students will be able to speak about their work with precision, clarity and organization	Faculty Team Assessment of Final Project Presentation	At least 80% of the teams will score 2.5 or higher on the associated rubric	Annually
PHY4082	(WC) Students will be able to write about their work with precision, clarity and organization	Faculty Team Assessment of Final Project Report	At least 80% of the teams will score 2.5 or higher on the associated rubric	Annually
PHY4082	(IL) Students will be able to identify, locate, evaluate, and effectively and	Faculty Team Assessment of Final Project Report	At least 80% of the teams will score 2.5 or higher on the associated rubric	Annually

	responsibly use and cite information for the task at hand			
PHY4082	Student reflection on preparation to communicate effectively	Senior Survey (Indirect Method)	80% of the respondents will say that they are satisfied or higher	Annually

4. Students will demonstrate an ability to recognize ethical and professional responsibilities and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

Course	Outcome Assessed	Assessment Method	Threshold	Frequency
EGR1023 EGR1023L	Students will be able to determine an ethical response to a hypothetical engineering problem, acknowledging the impact of their solutions in the context of the problem (global, economic, environmental, societal)	Homework Assignment or Exam Question	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually
EGR2014 EGR2014L	Students will be able to determine an ethical response to a hypothetical engineering problem, acknowledging the impact of their solutions in the context of the problem (global, economic, environmental, societal)	Homework Assignment or Exam Question	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually
EGR2024 EGR2024L	Students will be able to discuss the impact of their proposed solution to an engineering problem, considering global, economic, environmental, and societal contexts	Homework Assignment	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually
PHY4072	Students will be able to describe the role of engineering ethics, professional responsibility and the impact of contexts in their project	Faculty/Review Team Assessment of Proposal	At least 80% of the teams will score 2.5 or higher on the associated rubric	Annually
PHY4082	Student reflection on preparation to recognize ethical and professional responsibilities and make informed judgements	Senior Survey (Indirect Method)	80% of the respondents will say that they are satisfied or higher	Annually

5. Students will demonstrate an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

Course	Outcome Assessed	Assessment Method	Threshold	Frequency
EGR1023 EGR1023L	Students will demonstrate an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	Homework Assignment to Complete Evaluation of Each Team Member	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually
PHY4072	Students will demonstrate an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	Homework Assignment to Complete Evaluation of Each Team Member	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually
PHY4082	Students will demonstrate an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	Homework Assignment to Complete Evaluation of Each Team Member	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually
PHY4082	Student reflection on preparation to be part of a team	Senior Survey (Indirect Method)	80% of the respondents will say that they are satisfied or higher	Annually

6. Students will demonstrate an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions (CC: QR)

Course	Outcome Assessed	Assessment Method	Threshold	Frequency
EGR2014 EGR2014L	Students will be able to carry out an experiment based on instructions and accurately record data	Procedures Document	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually
EGR2014 EGR2014L	Students will be able to analyze experimental data and draw conclusions	Lab Report	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually
PHY4082	Student reflection on preparation to conduct experiments and interpret data	Senior Survey (Indirect Method)	80% of the respondents will say that they are satisfied or higher	Annually

7. Students will demonstrate an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Course	Outcome Assessed	Assessment Method	Threshold	Frequency
EGR1023 EGR1023L	Students will be able to acquire and use knowledge not in a textbook for the development of their project	Homework Assignment	At least 80% of the students will score 2.5 or higher on the associated rubric	Annually
PHY3083	Students will be able to acquire and use knowledge not in a textbook for the development of their project	Faculty Team Assessment of Final Project (Open House Demo)	At least 80% of the students will score 2.5 or higher on the associated rubric	Alternating Year
PHY4072	Students will be able to acquire and use knowledge not in a textbook for the development of their project	Faculty/Review Team Assessment of Project Proposal	At least 80% of the teams will score 2.5 or higher on the associated rubric	Annually
PHY4082	Student reflection on preparation to acquire and apply new knowledge	Senior Survey (Indirect Method)	80% of the respondents will say that they are satisfied or higher	Annually

