PHYS 102 Introduction to Physics 2
Credit Hours: 4
Scheduled hours per week
Lecture: 3
Lab: 2
Other: 0

Catalog Course Description: Continuation of PHYS 101. Light; optics; electricity; magnetism.

Pre-requisites: PHYS 101

Co-requisites: PHYS 102L

Course Learning Outcomes:
Upon successful completion of this course, students are expected to be able to:

1. Develop a qualitative understand of electricity, magnetism, light and optics; and to be able to apply this understanding to real-world settings.
2. Develop analytical reasoning and quantitative problem solving skills that allow the analysis (using vector notation, trigonometry and algebra) of physical systems. Students should be able to analyze systems experiencing changing forces in multiple dimensions. This includes carefully reading the problem, converting the problem statement to an appropriate representation including pictures/graphs and the appropriate mathematical variables and relationships, and answering specified questions using proper logical, algebraic and trigonometric procedures.
3. Use laboratory equipment to explore the behavior of physical systems. The students should be able to perform experiments that investigate the qualitative behavior of systems and experiments that collect numerical data. From numerical data, students should be able to quantitatively analyze the data to demonstrate physical principles, extract physical parameters, test models, and refine models. The students should understand the role of error in experimentation and be able to assess that error.

Topics to be studied:
- Electric Charge and Electric Field
- Electric Potential and Electrical Energy
- Electric Currents
- Direct Current Circuits and Instruments
- Magnetism
- Electromagnetic Induction
- Electromagnetic Waves
- Light
- Interference and Diffraction of Light
- Optical Instruments

Relationship of Course to Program or Discipline Learning Outcomes:

Relationship of Course to Science Learning Outcomes:	
Students will learn the process and reasoning behind the Scientific Method and be able to conduct experiments that meet the requirements of the model.	x

Students exhibit the basic safety-related rules and regulations of working in the lab.	x
Students be able to recount the basic safety tenants associated with a specific scientific discipline.	
Students will become proficient at Science Writing.	
Students will recognize and identify the applications of their specific discipline in the 'real world.'	x
Students will accurately recount important milestones in the history of scientific inquiry in their discipline.	
5/3/2016	

Relationship of Course to General Education Learning Outcomes:	
Composition and Rhetoric Students illustrate a fundamental understanding of the best practices of communicating in English and meet the writing standards of their college or program-based communication requirements.	
Science & Technology Students successfully apply systematic methods of analysis to the natural and physical world, understand scientific knowledge as empirical, and refer to data as a basis for conclusions.	x
Mathematics & Quantitative Skills Students effectively use quantitative techniques and the practical application of numerical, symbolic, or spatial concepts.	x
Society, Diversity, & Connections Students demonstrate understanding of and a logical ability to successfully analyze human behavior, societal and political organization, or communication.	
Human Inquiry & the Past Students interpret historical events or philosophical perspectives by identifying patterns, applying analytical reasoning, employing methods of critical inquiry, or expanding problem-solving skills.	
The Arts & Creativity Students successfully articulate and apply methods and principles of critical and creative inquiry to the production or analysis of works of art.	
5/3/2016	

Special requirements of the course:

Additional information:

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