I. Course Title
   • General Physics I Lab

II. Course Prefix/Number
   • PHYS 231

III. Credit Hours
   • 1.0

IV. Prerequisites
   • MATH 120 Minimum Grade D
   • Co-requisite: PHYS 230

V. Catalog Description
   • One two-hour laboratory per week with lab projects that coincide with the lecture material in Physics 230. A calculus-based treatment of data will be required for some lab projects. The laboratory experience provides a vital link for students in their development of an ability to apply mathematics to simple systems, allowing them to analyze the system for a theoretical behavior and to account for the errors which give them the observed behavior.

VI. Curricular Relationships
   • This course is required for students pursuing the B.S. degree in chemistry or chemical physics, and is a required course for nearly all engineering degrees. The lecture-lab combination is an approved general education course on the ASC campus and is on the statewide list of courses that have been given guaranteed transfer status for general education credit

VII. Student Learning Outcomes
   • Students will be able to analyze data graphically and to interpret the results.
   • Students will be able to use common numerical methods to analyze data.
   • Students will understand and employ simple error analysis techniques in the analysis of data.
   • Students will be able to present the analysis of an experiment in a logical and well-organized manner.
• Students will be able to discuss quantitatively and qualitatively the limitations of classical physics.

• Students will be able to write a professionally acceptable laboratory report.

VIII. Content Outline

• The laboratory exercises focus on mechanical systems and error analysis. Approximately eight laboratory exercises are completed in the semester. Some exercises require only one week to complete, while others may require two or three weeks of class time. Typically exercises are:
  • Density and Error Analysis;
  • Newton’s Second Law of Motion;
  • Coefficient of Restitution;
  • Conservation of Energy;
  • Projectile Motion;
  • The Simple Pendulum;
  • Simple Harmonic Motion;
  • Air Friction.

IX. Course Procedures/Policies/Grading Scale

• Attendance is required.

• Grades are based on the laboratory reports with a majority of the points being assigned to the analysis and conclusion.

X. Required/Recommended Readings

• Laboratory handouts published in-house by physics faculty.

XI. Issues Unique to this Course

• None

XII. Additional Departmental Issues

• None