
Department of Physics and Engineering

Instructor: Dr. Paul D. Schmelzenbach
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Office Hours: 1-2:30 MWF, by appt.

Meeting: 1:30 R (RS 236)
Office Phone: 849-2933
Office Location: RS 207

Materials – Access to a computer with \LaTeX and MATLAB.

Description – This capstone in physics and engineering provides students the opportunity for preparation of a technical paper on research and to orally present results of this research. First, topics investigated will draw on learning from the core curriculum classes, including topics in an advanced laboratory setting in mechanics, quantum mechanics, statistical mechanics, or electricity and magnetism. Students will then develop and explore a project of their choosing. Other areas of importance will also be explored in this course including considering one's vocation.

Learning Outcomes – This course supports the overall learning objectives of the physics and engineering programs to: design and conduct experiments or complete engineering design projects as well as analyze and interpret data and effectively communicate complicated technical information

Within these broader outcomes, in this course you will

1. Use data analysis and error analysis techniques within lab experiments.
2. Employ proper techniques to minimize uncertainty and eliminate systematic errors in experiments
3. Use knowledge from operational manuals to correctly use advanced equipment.
4. Present data effectively in written and oral formats.
5. Create near-publication-quality manuscripts in \LaTeX .
6. Design and carry-out an experimental investigation.
7. Appraise manuscripts of peer investigations.
8. Make an effective presentation at a level appropriate to a technical meeting.
9. Respond effectively to technical questions about their investigation.

Final Grades – The grade you earn in this course is based on the scale shown to the right. The points you receive during the course are weighted accordingly:

- Advanced Lab Rotation: 25%
- Vocational Activities: 5%
- Physics Exam: 10%
- Final Project Activities: 20%
- Final Talk: 20%
- Final Manuscript: 20%

A	100 - 91.0
A-	91.0 - 89.5
B+	89.5 - 87.0
B	87.0 - 81.0
B-	81.0 - 79.5
C+	79.5 - 77.0
C	77.0 - 71.0
C-	71.0 - 69.5
D+	69.5 - 67.0
D	67.0 - 61.0
D-	61.0 - 55.0

As with all courses at PLNU, this course supports the cause to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service becomes an expression of faith. Being of Wesleyan heritage, we aspire to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

Academic Integrity – Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See Academic Policies for definitions of kinds of academic dishonesty and for further policy information.

Academic Accommodations – If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at DRC@pointloma.edu. See Disability Resource Center for additional information.

Attendance – Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See Academic Policies in the Undergraduate Academic Catalog.

Final Exam – Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the Class Schedules site.

FERPA Policy As a student at Point Loma, you have a legal right to privacy as outlined in the federal FERPA (Family Educational Rights and Privacy Act) legislation. See Policy Statements for full text.