INSTRUCTOR: Kari A. Wojtkowski, Ph.D., B.S. Physics, University of MO—Rolla (Currently MS&T), M.S. Physics, University of MO—St. Louis, Ph.D. Physics (Astrochemistry/Astrobio/Astrophysics) University of MO—St. Louis/Missouri University of Science & Technology Joint Program.


PREREQUISITES:

✓ MATH 1030 (Algebra)
✓ MATH 1035 (Trigonometry)
✓ Calculus (MATH 1100 or 1800) strongly recommended
✓ Physics 1011 (Physics I)

WARNINGS:

➢ This course will not satisfy the Physics requirement for Physics, Engineering or Chemistry students
➢ Biology and Biochem/Biotech students must take the 3 credit version of the course and the 1 hour lab.

OFFICE LOCATION:
Benton Hall 316

OFFICE HOURS:
wojtkowskik@umsl.edu ← Best way to reach me

“Official” Office Hours: Tuesday through Thursday, 12:15 p.m. – 1:30 p.m. These are the hours I guarantee I will be available. If you arrive at say, 1:00 and we are still working at 1:30, I will extend my office hours. However, at 1:30 p.m., if no one is around for help, my office hours will end. (You are also welcome to email me to make an appointment for another time, say, after your lab.) Each Thursday afternoon TAs will be available for a question and answer session in Science Room on the 1st floor of Stadler.
LABORATORY: Your lab Teaching Assistant (TA), will teach and grade the lab portion of the course. S/he will give me your grade at the end of the term.

- Lab reports must be typed.
- Your lab report must be original. **You will receive an automatic zero if you simply turn in a copy of your lab partner’s report.**
- You will complete a formal lab report for the first lab, and then one other formal lab report of your choice. All other labs are informal and should consist of your calculations, analysis, & questions.
- Each formal lab will be graded out of 100 points. Each informal lab report is worth 50 points. The lowest informal lab report will be dropped. The formal lab reports will graded on
  - Objective/Procedure
  - Data/Calculations/Analysis
  - Questions
  - Conclusions
- Labs will be due the next time your lab section meets after the experiment. **No late labs will be accepted.** Your lowest informal lab score will be dropped.
- NO makeup labs will be given. Any student with more than two (>2) zeros in lab will receive an ‘F’ for the lab course.
- You must attend the lab section for which you are registered. Labs in general are full and cannot accommodate extra students. If you choose to change sections you MUST officially do so through the register so that you are in the correct Canvas course.

TEACHING ASSISTANTS:

Section 001: 7:45 – 9:15 a.m.: Younas Khan younas.khan@mail.umsl.edu
Section 002: 12:20 – 1:50 p.m: Philip Chrostoski pccq9@mail.umsl.edu
Section 003: 2:00 – 3:00 p.m.: Evan Schmitz erschmitz@mail.umsl.edu
Components of a Good Lab Report

1. Objective/Purpose
   This should be a short statement giving the reason for completing the lab. It answers “What’s the point?” It should be written as a complete sentence, not a fragment. “To measure the resistance of 10 resistors” is not a proper objective statement, but “This lab introduced the student to measurement of the resistance of resistors” is a nice objective statement.

2. Procedure
   A short and concise summary of the procedure followed to complete the objective. DO NOT list the steps one by one in detail. For example, “We used multimeter set to measure resistance to determine the resistance of 10 resistors. Using the markings on the resistor, we confirmed that the value of the resistance was within the tolerance set by the manufacture,” is a nice concise, preferred statement. What I do not want to see is this: “First we obtained a multimeter, then we set it to measure Ohms. We connected the resistor at each end using alligator clips, and recorded the resistance. We then disconnected the resistor and connected a new resistor and repeated the process. Then we wrote down the color code for each resistor and looked up the resistance in the chart. Finally, we recorded our resistances and calculated the percent error between the measured value and the manufacturer’s value.” In a word, SUMMARIZE!

3. Data—in tables
   All data should be presented in a data table with units! Units are extremely important; without units, a number is meaningless. “I walked 20” has no meaning. But, “I walked 20 minutes” makes more sense. Proper units also avoid the destruction of multi-million dollar science instruments—google “Mars Climate Rover.”

4. Calculations
   The results of your calculations can be included in your data table. For example, a table might contain position, time, and then velocity, where the velocity is the calculated quantity. Students are encouraged to use a spreadsheet program to complete tables and calculations, but must show a sample of each calculation in the lab. (These may be handwritten).

5. Summary & Conclusion
   The lab should end with a summary of what was done, the results, possible errors associated with the lab, and answers to any questions throughout the lab. Those questions are there to guide the student in knowing what should have been learned from the lab. A paragraph or two is plenty here. Please do not list questions & answers, work them into the summary paragraph(s).
Tentative Lab Schedule (Subject to change at the Instructor’s discretion)

Monday, June 15: NO LAB (Read Introduction to Statistics, Error and Measurement)

Tuesday, June 16: NO LAB (Read Introduction to Statistics, Error and Measurement)

Wednesday, June 17: LAB 1: Electrostatic Force (Coulomb's Law)

Thursday, June 18: LAB 2: Electric Fields and Equipotential Surfaces

Monday, June 22: Exam I: Ch 19 & 20 NO LAB

Tuesday, June 23: Lab 3: Ohm’s Law

Wednesday, June 24: LAB 4: Resistors in Series and Parallel

Thursday, June 25: LAB 5: Kirchhoff’s Laws

Monday, June 29: Exam II (Ch 21 & 22) NO LAB

Tuesday, June 30: Lab 9: RC Circuits

Wednesday, July 1: Lab 8: Magnetic Field Induced by a Current-Carrying Wire

Thursday, July 2: Lab 10: Reflection & Refraction

Monday, July 6: Exam III (Ch 23, 25, & 26) NO LAB

Tuesday, July 7: Lab 11: Diffraction, Wavelength, and Atomic Line Spectra

Wednesday, July 8: NO LAB

Thursday, July 9: Final Exam – NO LAB