MISSOURI WESTERN STATE UNIVERSITY
COLLEGE OF LIBERAL ARTS AND SCIENCES
DEPARTMENT OF COMPUTER SCIENCE, MATHEMATICS, AND PHYSICS

COURSE NUMBER: PHY 313

COURSE NAME: Modern Physics Laboratory

COURSE DESCRIPTION:

Modern Physics Laboratory is a one (1) semester credit hour lab course introducing selected experiments in modern physics.

PREREQUISITE:

PHY 111 (College Physics II) or current enrollment in PHY312 (University Physics III)

TEXT:

COURSE OBJECTIVES:

The primary goal of PHY 313 is to supplement the modern physics course (PHY 111 or PHY 312) with laboratory experiences. Part of this laboratory experience is to develop skills at writing effective lab reports. Students who successfully complete this course will have met the following objectives:

1. Systematically and quantitatively relate basic principles of modern physics to methods of problem formulation and solution.

2. Obtain appropriate data, analyze the data, and draw appropriate conclusions from the data in laboratory experiments.

3. Write formal lab reports.

STUDENT COMPETENCIES:

In order to meet the above objectives, successful students will:

1. Take appropriate data measurements for each assigned experiment.

2. Analyze data through calculations, tables and graphs.

3. Draw appropriate conclusions regarding the physical properties studied in the lab experiment.

4. Write formal lab reports demonstrating thorough understanding of each experiment.

COURSE OUTLINE:

Lab 1: Experiments on the Doppler Effect (MW DVD 1083)
Lab 2: Determination of Newton's Constant (MW DVD 1077)
Lab 3: Determination of Boltzmann's Constant (MW DVD 1085)
Lab 4: Determination of the Velocity of Radio Waves (MW DVD 1076)
Lab 5: Velocity of Light (MW DVD 1075)
Lab 6: Rutherford Scattering (MW DVD 1082)
Lab 7: Milliken Oil Drop Experiment (MW DVD 1081)
Lab 8: Ionization and Excitation Potential (MW DVD 1084)
Lab 9: Electron Diffraction (MW DVD 1080)
Lab 10: Radioactive Half Life (MW DVD 1086)