Course Name: PHY-233 Laboratory for Engineering Physics III

Date Updated: 2/2022

Credit Hours/week: Lab 1 hrs./wk. – 1 cr.

BEGINNING: SPRING 2022

Catalog Description: This course is a continuation of the Engineering Physics laboratory sequence. The course continues to develop professional laboratory technique through experiments on selected topics in geometric optics, physical optics and modern physics.

Prerequisite: PHY-134, PHY 232

Text: Tullen & Tenney, Engineering Physics III Lab Manual, CPS

Supplementary Material: Scientific Calculator

Specialized equipment, supplies, facilities, for classes limited by enrollment or restricted by accreditation an*d/*or equipment limitations:

Syllabus:

Topics
Discussion - Laboratory policies & procedures, Introduction to geometric optics
Lenses & Mirrors
Interference, Diffraction, Resolution
Microwaves
Plane diffraction grating on the spectrometer table
The spectrometer (Prism)
Michelson interferometer
The photoelectric effect
Determination of Planck's constant using the light-emitting diode
Electron diffraction
Franck-Hertz
Bragg reflection of X-rays from NaCl and Lif

Format for Offering this Course: Traditional

Students are expected to adhere to the policies of the County College of Morris. These can be accessed at: (insert link here)

Statement of Expected Course LEARNING OUTCOMES

- Measure electron spin and angular momentum in a laboratory setting
- Use the scientific method of inquiry to derive the relationship between experimental data and the topics covered in the lecture portion of the class
- Use the scientific method to analyze and derive conclusions from collected data and information *(*Gen Ed)
- Explain the difference between a hypothesis, a theory and a law as they are used in science (Gen Ed)
- Properly use laboratory instruments that one would encounter in experiments involving Quantum Mechanics and Nuclear Physics
- Learning Activities to support general education outcomes: Lab experiments, videos and in-class demonstrations. Assessment Methods related to general education outcomes: Laboratory experiments requiring students to draw correct conclusions based on observation and processing of experimentai data - documented in a Lab Report

Statement of Relation to Curriculum(s);

Required for Engineering Science major; elective for Mathematics and Science majors; general education elective for other majors satisfying a science requirement through enrollment in calculus based physics.