Course Outline for: PHYS 2250 Modern Physics

A. Course Description:

1. Number of credits: 4
2. Lecture hours per week: 4
3. Prerequisites: PHYS 1122 and MATH 1520
4. Corequisites: None
5. MnTC Goals: None

An introduction to the topics of modern physics including the special theory of relativity and quantum theory. Seminal experiments of modern physics are explored, along with their theoretical implications. Topics will include wave-particle duality, the uncertainty principle, the Schrodinger equation, and additional material chosen from atomic, molecular, nuclear, elementary particle, and condensed matter physics. This course requires a background in calculus and calculus-based physics.

B. Date last reviewed/updated: January 2025

C. Outline of Major Content Areas:

1. Special Relativity
2. Quantum Theory
3. Additional topics from Atomic, Nuclear, Particle and Condensed Matter Physics

D. Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

1. Solve physical problems relating to course topics.
2. Explain the significance of seminal modern physics experiments as they relate to the theories of Modern Physics.
3. Demonstrate proficiency in written communication of physics concepts with clarity and precision.

E. Methods for Assessing Student Learning:

Methods for assessment may include, but are not limited to, the following:

1. Written and/or oral reports
2. Homework
3. Activities
4. Projects
5. Quizzes
6. Exams

F. Special Information:

None