University of the Incarnate Word
PHYS 1301 General Physics I
Course Syllabus

Catalog Course Description:
1301 Physics
3 credit hours
This course is a study of mechanics, gravitation, fluids, heat, and thermal properties of matter.

Prerequisites:
Credit for MATH 1304 College Algebra

Context:
This class is the first semester of a two-semester, classical physics course designed to meet the needs of majors in Biology, Chemistry, pre-professional students, and for students in other science-related programs. This course is also open to all students who need to fulfill the four-hour laboratory science requirement. The course cannot be repeated for credit. Course audience is for freshman through senior level.

Course Overview:
Topics include an examination and analysis of concepts in mechanics, thermodynamics, vibrations, and wave motion. The course includes detailed qualitative studies of basic concepts and principles in Newtonian mechanics, heat, and wave motions, and the mathematical descriptions and analysis used in problem solving. General problem solving strategies will be used to enable the student to understand the nature of a problem and to correctly solve the problem. Examinations will be given on each of the physics topics to evaluate each student’s knowledge and comprehension.

Course Outcomes:
Expected outcomes include:
1. Describe the three fundamental quantities of length, mass, and time; apply dimensional analysis to algebraic problem solving; apply conversions in the metric system
2. Describe the nature of linear motion; apply vectors in two-dimensional analysis of motion
3. Apply Newton’s Laws of Motion for objects within an inertial frame of reference
4. Construct free-body diagrams for objects
5. Describe and calculate quantities of work, energy, momentum, and circular motion
6. Explain Newton’s Universal Law of Gravitation and Kepler’s Laws of Planetary Motion; derive and apply equations based on these laws
7. Describe the nature of rotational equilibrium and rotational dynamics, the nature and behavior of different states of matter, heat, the Laws of Thermodynamics, the nature of vibrations, waves and sounds; derive and apply equations based on these concepts

Students will apply conceptual skills in deductive reasoning and critical thinking, apply mathematical analysis using algebra to all physics concepts, collect and organize data, display data through charts and graphs, and interpret data. Students will be able to set up experiments,
collect data, make predictions, and interpret experimental results.

**Disability Accommodation:**
The University of the Incarnate Word is committed to providing a supportive, challenging, diverse and integrated environment for all students. In accordance with Section 504 of the Rehabilitation Act – Subpart E and Title III of the Americans with Disabilities Act (ADA), the University ensures accessibility to its programs, services and activities for qualified students with documented disabilities.
For more information, contact the Student Disability Services Office:

Director, Moisés Torrescano  
Academic Counselor, Cynthia Pino  
Location Administration Building – Room 105  
Phone (210) 829-3997  
Fax (210) 829-6078

*Information listed above is contact information for Student Disability Services’ Academic Counselor, Cynthia Pino.*

**Academic honesty statement:**
The highest standards of academic honesty are expected in the course. Forms of academic dishonesty include, but are not limited to cheating, plagiarism, counterfeit work, falsification of academic record, unauthorized reuse of work, theft, collusion. See the student handbook for definitions and procedures for investigation of claims of academic dishonesty.

**Coordinator:**
Professor Alison Whittemore, Chair, Department of Engineering

**Persons who prepared this description:**
Michael Frye, Assistant Professor, Department of Engineering

Approval Date of Syllabus: 1/2002