

TROY UNIVERSITY  
PHY 2262, Physics I with Calculus

1. Course Listing, Number, Title, Number of Semester Hours:

PHY 2262, Physics I with Calculus, (3)

2. Accurate Course Description:

Principles and laws of mechanics and thermodynamics, utilizing the methods of calculus. Prerequisite: MTH 1125. Co-requisite: PHY L262

3. Course Textbooks, Manuals, or Required Materials:

*Physics for Scientists and Engineers, 7<sup>th</sup> edition*, by Serway

4. Course Topics

1. The laws and principles of basic physics as they relate to the interaction of matter and energy and their conservation
2. Measurement and mathematical concepts
3. Vectors
4. Motion in one dimension
5. Motion in two dimensions
6. The laws of motion
7. Work and energy
8. Potential energy
9. Conservation of energy
10. Linear momentum and collisions
11. Circular motion and other applications of Newton's laws
12. Torque and static equilibrium of a rigid body
13. Oscillatory motion
14. Mechanics of solids and fluids
15. Thermal physics
16. Heat
17. Laws of thermodynamics

TROY UNIVERSITY  
PHY 2262, Physics I with Calculus

1. Course Listing, Number, Title, Number of Semester Hours:

PHY L262, Physics I with Calculus Laboratory (1)

2. Accurate Course Description:

Laboratory work emphasizing basic principles of mechanics and thermodynamics, the use of measuring instruments, and the interpretation of data. Co-requisite: PHY 2262

3. Course Textbooks, Manuals, or Required Materials:

*Physics Laboratory Experiments*, 6<sup>th</sup> edition, by Wilson

4. Course Objectives

To demonstrate a knowledge of--

1. Measurement and error
2. Acceleration of gravity
3. Projectile motion
4. Force and acceleration
5. Static and kinetic friction
6. Conservation of energy
7. Rotational motion and energy
8. Archimedes' Principle and specific gravity
9. Young's modulus
10. Specific heat

To demonstrate an ability to--

11. Investigate scientific phenomenon, interpret findings, and communicate them to others
12. Set up and conduct physics experiments