

# Review for the PHY 101 Laboratory Exam(s)

## Purpose and Key Terms for Each Lab Experiment

- **Superposition of Waves** - To obtain the resultant wave formed by the superposition of two traveling waves.  
Superposition, Constructive Interference, and Destructive Interference  
Transverse Waves and Longitudinal Waves  
Wavelength, Period, Frequency, and Wave Speed  
Crest, Trough, Amplitude, and Baseline
- **The Vibrating String** - To study harmonics and overtones in a vibrating string.  
Transverse Waves  
Wavelength, Period, Frequency, and Wave Speed  
Harmonics and Overtones  
Nodes and Antinodes  
Wave Speed
- **The Organ Pipe** - To study overtones and harmonics of standing waves in organ pipes.  
Longitudinal Waves  
Wavelength, Period, Frequency, and Wave Speed  
Open Pipes and Closed Pipes  
Harmonics and Overtones  
Nodes and Antinodes  
Wave Speed
- **Types of Spectra** - To observe the spectrum of light emitted from various types of light sources.  
Spectroscope and Diffraction Grating  
Discrete Spectra and Continuous Spectra  
Emission Spectrum and Absorption Spectrum  
Hot, Low Density Gas  
Energy Levels and Electron Orbits  
Quantum Mechanics  
Angstrom
- **The Ray Box: Part One** - To learn about reflection and refraction of light as well as color addition and color subtraction.  
Ray Box  
Law of Reflection and Law of Refraction  
Concave (Converging) Mirror and Convex (Diverging) Mirror  
Concave (Diverging) Lens and Convex (Converging) Lens

- **The Ray Box: Part Two** - To learn about reflection and refraction of light as well as color addition and color subtraction.

Ray Box

Myopia and Hyperopia

Law of Refraction

Concave (Diverging) Lens and Convex (Converging) Lens

Color Addition and Color Subtraction

Complementary Colors

- **Telescopes** - To learn about telescopes.

Focal Length

Real Images and Virtual Images

Objective Lens, Eyepiece Lens, and Inverter Lens

Concave (Diverging) Lens and Convex (Converging) Lens

Positive Lens and Negative Lens

Astronomical Telescope, Terrestrial Telescope, and Galilean Telescope (Opera Glass)

Magnification

- **Graphing** - To teach the student how to analyze data graphically.

Independent Variable and Dependent Variable

Abscissa and Ordinate

Slope, Y-Intercept, and Equation of a Line

Rise/Run

- **The Simple Pendulum** - To use a simple pendulum to *calculate the acceleration due to gravity*.

Period and Frequency

$T = 2\pi \sqrt{\frac{\ell}{g}}$ , where T is the Period,  $\ell$  is the Pendulum Length, and g is the

Acceleration due to Gravity

- **Additions of Vectors** - To learn about the addition of vectors.

Force Table

Head-to-Tail Method (Graphical Method)

Resultant and Equilibrant

- **Linear Momentum** - To demonstrate and verify the vector nature and conservation of linear momentum.

Conservation of Linear Momentum

Vector Nature of Linear Momentum

Head-to-Tail Method (Graphical Method) and Resultant

- **Centripetal Force** - To learn about uniform circular motion and centripetal force.  
Centripetal Force (Center Seeking Force)  
Rotational Motion and Angular Velocity  
Radians and Radians/Second
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## **How to Prepare for PHY 101 Laboratory Exam(s)**

- Study the lab manual.
  - Review the lab experiment PowerPoint shows.
  - Know the purpose of each laboratory experiment.
  - Study the introduction to each experiment.
  - Know the basic principles of physics that are being used in each experiment. (This may require reviewing the lecture text.)
  - Know the definition of physical terms used in each experiment.
  - Know in general the procedures followed in each experiment.
  - Don't memorize the data obtained in the individual experiments, but do know how to get results from example data that might be given to you.
  - Know how the results you obtained depended on the conditions set in the experiment.
  - These suggestions are not meant to be all-inclusive, but following these should give you a reasonable chance of making a good grade on the laboratory exam(s).
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