Bridging Exemption Test Course Information

Bridging Exemption Test Course: Physics

Overview

This subject is especially suited for students taking 1 semester basic concepts and principles of physics course that can applied later into the study of the field in engineering.

Faculty/Programme Group

- Civil
- Electrical
- Chemical & Natural Resources
- Biomedical & Health Science
- Mechanical
- Bioscience & Bioengineering
- Science
- Education
- Geomatic Science & Engineering (SGS, SGU, SGG)

Topics

Introduction & Vector Algebra
Physical Quantities & Symbols, Measurement Units, Symbols, SI (MKS) System, Prefixes, Unit Conversion, Significant Figures, Scientific Notation.
Vector Quantities, Graphical Representation & Components, Unit Vector, Vector Addition, Subtraction, Vector Multiplication – Dot Product, Cross Product.

Kinematics
Displacement, Average & Instantaneous Velocity, Acceleration, Motion with Constant Acceleration, Free Falling Objects, Projectile Motion.

Dynamics
Mass & Force, Newton's First, Second and Third Law of Motion, Force of Gravity, Normal Force, Free Body Diagram.

Work & Energy
Work, Kinetic & Potential Energy, Conservative, Non-conservative Forces, Work-Energy Theorem, Mechanical Energy and Conservation of Energy, Power.

Static Equilibrium
Particle, Rigid Body and Centre of Mass, Moment of Force (Torque), Conditions for Equilibrium, Stability and Balance, Hooke's Law, Stress and Strain,

Oscillations & Waves
Oscillation of Spring, Simple Harmonic Motion, Simple Pendulum, Wave Motion, Type of Waves.

Bridging Exemption Test Course Information

Electric Charge, Field & Potential
Charge, Insulators & Conductors, Coulomb's Law, Electric Field &Field Lines, Electric Potential, Capacitor & Capacitance, Energy Storage.

DC Circuits
Current & Resistance, Ohm's Law, Electric Power, EMF & Terminal Voltage, Resistors in Series and Parallel, Kirchhoff's Rules, RC Circuits.

Magnetic Field
Field from Magnet and Electric Current, Force on Moving Charge, Force on Electric Current, Force on Parallel Wires.

Optics

The Ray Model of Light, Reflection & Image Formation by a Plane Mirror & Spherical Mirrors, Index of Refraction, Snell's Law, Ray Tracing & Thin Lens Equation, Magnification

Fluids
Density and Specific Gravity, Pressure in Fluids, Atmospheric and Gauge Pressures, Pascal's and Archimedes' Principles.

Exam Details

Format
Subjective

Duration:
2 hours

References

Textbook:
Giancoli, D.C., PHYSICS for Scientists & Engineers (4th Edition), Prentice Hall International.

Others:
F.W Sears, M. W. Zemansky and H.D Young, College Physics 7th edition, Addison-Wesley.
Physics for Science and Engineers, Serwey Jewett 7th edition Thomson brooks/cole