| *SEMESTER* | *DEPARTMENT* | *COURSE TITLE* |
|---|---|---|
| *First* | *General Engineering* | *Physics I* |
| *COURSE CODE* | *HOURS:* 3 | *COURSE SPECIFICATIONS* |
| *EG 102* | *UNITS:* 3 | *Theoretical Contents* |

### *1. Physics and Measurements:*

➢ Standards of length, mass, and time.

➢ Dimensional analysis.

➢ Conversion of units.

### *2. Motion in One and Two Dimensions:*

➢ Position, velocity, and speed.

➢ Instantaneous velocity and speed.

➢ Acceleration.

➢ Motion diagrams.

➢ Freely falling objects.

➢ Projectile Motion.

### *3. Vectors:*

➢ Coordinate systems.

➢ Vector and scalar quantities.

➢ Some properties of vectors.

➢ Components of a vector and unit vector.

### *4. Work and Energy:*

➢ Work.

➢ Kinetic energy.

➢ Potential energy.

➢ Power.

➢ Conservation of energy.

➢ Momentum.

### 5. *The Laws of Motion:*

➢ The concept of force.

➢ Newton's first law.

➢ Some applications of Newton's laws.

### 6. *Fluid:*

➢ Density, specific weight and specific gravity.

➢ Pressure.

➢ Variation of pressure with depth.

➢ Pressure measurements.

➢ Buoyant forces and Archimedes's principle.

➢ Fluid dynamics. Bernoulli's equation.

### 7. *Heat and Thermodynamics:*

➢ Temperature and the zeroth law of thermodynamics.

➢ Thermometers and the Celsius temperature scale.

➢ The constant- volume gas thermometer and the absolute temperature scale.

➢ Thermal expansion of solids and liquids.

➢ Heat and internal energy.

➢ Specific heat.

➢ Latent heat.

➢ Work and heat in thermodynamic processes.

➢ The first law of thermodynamics.

➢ Some applications of the first law of thermodynamics.

### *References:*

1. *Fundamentals of Physics*, Halliday, Resnick. 7$^{th}$ Edition.
2. *Physics for Scientist and Engineers*, Serway Jewwett. 6$^{th}$ Edition