



PHYSICS IMAT PROGRAMME (update 08/06)

Lecturer

tbc

Teaching Hours

15

Analytical Syllabus

Date	Topics	Hours
August 28th	<p>Measures: Direct and indirect measures, fundamental and derived quantities, physical dimensions of quantities, knowledge of the metric system and the CGS System of Units, Technical (or practical) (ST) and the International System (SI) of Units (names and relationships between fundamental and derived units), and multiples and submultiples (names and values).</p> <p>Kinematics: Kinematic quantities, various types of motion with particular regard to uniform and uniformly accelerating rectilinear motion, uniform circular motion, harmonic motion (for all motion: definition and relationships between measures).</p>	10 am – 1 pm
August 29th	<p>Dynamics: Vectors and operations on vectors. Forces, moments of forces about a point. Vector composition of forces. Definitions of mass and weight. Acceleration due to gravity. Density and specific gravity. Law of universal gravitation, 1st, 2nd and 3rd laws of motion. Work, kinetic energy, potential energy. Principle of conservation of energy.</p>	10 am – 1 pm
August 30th	<p>Electrostatics and electrodynamics: Coulomb's law. Field and electric potential. Dielectric constant. Capacitors. Capacitors in series and in parallel. Direct current. Ohm's law. Electrical resistance and resistivity, electrical resistors in series and in parallel. Work, Power, Joule effect. Generators. Electromagnetic induction and alternating currents. Effects of electrical currents (thermal, chemical and magnetic).</p>	10 am – 1 pm
August 31th	<p>Fluid mechanics and Thermodynamics I: Pressure, and its units of measurement (not only in the SI system). Archimedes' principle. Pascal's principle. Stevino's law.</p>	10 am – 1 pm
September 1st	<p>Fluid mechanics and Thermodynamics II: Mechanisms of heat propagation. Changes of state and latent heat. Ideal Gas Laws. First and second laws of thermodynamics.</p>	10 am – 1 pm