• General Physics

Kinematics and dynamics of point particles Work and energy for point particles Mechanics of systems of point particles and rigid bodies Gravitation Mechanics of deformable bodies Thermology Gaseous and liquid state of matter First and Second Laws of Thermodynamics Electrostatics in a vacuum Electric field and potential Systems of conductors and electrostatic field Electrostatics in the presence of dielectrics Steady electric current Steady magnetic phenomena in vacuum and materials Time-varying electric and magnetic fields Electromagnetic waves Interaction of radiation with matter

• General Chemistry

The atom and the periodic table of elements Chemical bonding Oxidation numbers, redox reactions, formal charge Gaseous state Chemical thermodynamics Condensed states of matter Phase changes and phase diagrams Solutions of non-electrolytes Chemical equilibria Solutions of electrolytes Ionic equilibria: acids and bases Ionic equilibria in solution Electrochemistry Basics of chemical kinetics

• Fundamentals of Electrical Engineering

Circuits in steady-state: Kirchhoff's laws Fundamental two-terminal devices Electrical power Equivalent resistance Analysis methods Properties of linear networks Efficiency and matching Circuits in sinusoidal steady-state: phasors Impedance and admittance Instantaneous power, active power, reactive power, apparent power, complex power Methods and theorems of symbolic network analysis Mutual coupling Resonant circuits Power factor correction Magnetic circuits Applications: single-phase transformers; principles of electromechanics and rotating electrical machines