**SRMJEEE 2025 Physics Syllabus**

**Unit 1: Units and Measurement**

* System of units (S.I., fundamental, derived units)
* Errors in measurement
* Significant figures
* Dimensional analysis and applications

**Laws of Motion**

* Concept of force
* Newton’s laws of motion
* Projectile motion
* Uniform circular motion
* Friction and its laws
* Centripetal force and applications

**Work, Energy and Power**

* Work and energy
* Potential and kinetic energy
* Power
* Collisions: Elastic and inelastic

**Unit 2: Gravitation**

* Universal law of gravitation
* Acceleration due to gravity
* Variation of 'g' (altitude, latitude, depth)
* Gravitational potential
* Escape velocity
* Orbital velocity
* Geostationary satellites

**Mechanics of Solids and Fluids**

* Hooke’s law
* Moduli of elasticity
* Surface tension
* Capillarity
* Viscosity (Poiseuille’s formula, Stokes' law)
* Streamline and turbulent flow
* Reynolds number
* Bernoulli’s theorem and applications

**Unit 3: Electrostatics**

* Electric charge and conservation laws
* Coulomb’s law
* Principle of superposition
* Continuous charge distribution
* Electric field and field lines
* Electric dipole
* Torque on a dipole
* Electric flux and Gauss’s theorem
* Electric field due to an infinite wire
* Equipotential surfaces
* Electrical potential energy

**Capacitors**

* Dielectrics and electric polarization
* Capacitors in series and parallel
* Capacitance of parallel plate capacitor (with/without dielectric)
* Energy stored in a capacitor

**Unit 4: Current Electricity**

* Electric current, drift velocity, mobility
* Ohm's law
* V-I characteristics
* Electrical energy and power
* Electrical resistivity and conductivity
* Temperature dependence
* Internal resistance of a cell
* Potential difference and EMF of a cell

**Kirchhoff’s Laws and Applications**

* Wheatstone bridge
* Meter bridge
* Potentiometer: Comparison of EMF, internal resistance measurement
* Thermoelectric current

**Unit 5: Magnetism and Magnetic Effects of Current**

* Earth’s magnetic field and elements
* Tangent law
* Tangent galvanometer
* Deflection magnetometer
* Biot-Savart law
* Moving coil galvanometer
* Galvanometer to voltmeter/ammeter conversion
* Ampere’s law

**Unit 6: Electromagnetic Induction**

* Faraday’s laws
* Lenz’s law
* Eddy currents
* Self and mutual induction

**Alternating Currents**

* Peak and RMS values
* Reactance and impedance
* LC oscillations
* LCR series circuit
* Resonance
* AC generator
* Transformer

**Electromagnetic Waves**

* Characteristics and spectrum

**Unit 7: Optics**

* Reflection and refraction of light
* Total internal reflection
* Optical fibers
* Spherical surfaces and lenses
* Thin lens and lens maker’s formula
* Magnification and power of a lens
* Combination of lenses
* Refraction through a prism
* Huygen’s principle
* Young's double slit experiment
* Diffraction (single slit)
* Polarization

**Unit 8: Dual Nature of Radiation and Matter**

* Photoelectric effect
* Einstein’s photoelectric equation
* Particle nature of light
* de-Broglie relation

**Atomic Physics**

* Alpha particle scattering experiment
* Rutherford’s model
* Bohr model
* Hydrogen spectrum

**Unit 9: Nuclear Physics**

* Nuclear radius, mass, binding energy
* Isotopes, mass defect
* Bainbridge mass spectrometer
* Nuclear forces and neutron discovery
* Artificial radioisotopes, radiocarbon dating
* Radiation hazards
* Nuclear fission and fusion
* Nuclear reactors
* Hydrogen bomb
* Cosmic rays
* Elementary particles

**Unit 10: Electronic Devices**

* Semiconductors (doping, intrinsic, extrinsic)
* PN junction diode (biasing, rectifier)
* Special diodes (LED, photodiode, solar cell)
* Transistors and their characteristics
* Logic gates (NOT, OR, AND, NOR, NAND)
* De Morgan’s theoremBottom of Form