

## **General Electrostatics**

Derivation, interpretation, and applications of: Gauss' Law, Poisson and Laplace Equations, Green's Theorem, Forces, Energy, Capacitance, Method of Images, Multipole Expansion.

## **Boundary Value Methods in Electrostatics**

Solution using Green Functions, Separation of Variables in cartesian, cylindrical, and spherical coordinates.

## **Electrostatics in Matter**

Polarization, Bound Charges, Electrostatic Boundary Value Methods, Forces, Torques, Energy, and Capacitance

## **Magnetostatics**

Derivation, interpretation, and applications of: Ampere's Law, Vector Potential, Forces, Torques, Energy, Inductance, Multipole Expansion.

## **Magnetostatics in Matter**

Magnetization, Bound Currents, Magnetostatic Boundary Value Methods, Forces, Torques, Energy, and Inductance.

## **Boundary Value Methods in Magnetostatics**

Separation of Variables in cartesian, cylindrical, and spherical coordinates.

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Suggested literature: Classical Electrodynamics, 3rd Edition by J.D. Jackson, 1999.