Chapter 21

- What is electric charge
- Coulomb Force
- Superposition of forces
- Electric Field
  - system of charges
  - continuous distribution
    - linear charge density
    - surface charge density
    - volume charge density
      - Must know how to derive the expression for electric field for various distributions
- particle in uniform electric field
- electric dipole moment
- torque

Chapter 22

- Electric Flux
- Gauss's Law
  - various gaussian surfaces
  - finding the electric field for infinite long rod
  - finding the electric field for charged surface
  - finding the electric field for charged sphere
  - finding the electric field for metal sphere
  - finding the electric field for insulating sphere
- conductors with cavities

Chapter 23

- work done by electric force
- electric potential energy: total electric potential energy
- electric potential energy: work done found using the change in potential energy
- conservation of energy
- electric potential (potential)
  - potential as a potential energy per unit charge
  - change potential as a line integral of electric field
  - voltage as change in potential energy
  - total potential energy for a system of particles
  - potential due to continuous distribution
- equipotential surfaces
- potential gradient
  - finding the electric field as a partial derivative of the potential as a function of position