Test 2 Study Guide: Lectures 4-7

General topics:

- Electric fields
  - Relationship between fields and forces
  - Fields created by point charges
  - Drawing and interpreting electric field lines
  - Electric field inside a conductor
- Gauss' Law
  - Relating electric flux through an enclosing (imaginary) surface to charge enclosed by that surface
  - Determining electric flux through an enclosing surface passing through a location where the E-field is constant
- Electric potential energy
  - Between pairs of charges
  - Conservation of mechanical energy
  - Work done **by you**
- Electric potential
  - Relationship to electric potential energy

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Be prepared to deal with the following situations:

- Finding magnitude and direction of force on a charge in an electric field
- Interpreting electric field lines to determine information about the field or how a test charge is affected by the field
- Using enclosed charge to determine electric flux (including sign)
- Using a constant electric field to determine electric flux
- Using conservation of mechanical energy to relate initial or final velocity of charges to initial or final separation distance
- Determining electric potential energy of a collection of charges
- Finding work done **by you** to bring a charge in from infinity to a position near other charges
- Finding change in electric potential energy for a charge experiencing a change in electric potential or vice-versa