

# Test 1 Study Guide: Lectures 1-3

General topics:

- Behavior of charges in insulators and conductors
- Methods (and processes) of charging insulators and conductors
- Mutual force between electric charges
- Total force exerted on a charge of interest by other charges
  - In 1D
  - In 2D, including visual and numerical vector addition

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Be prepared to deal with the following situations:

- Processes of charging conductors and insulators
  - Inducing charge polarization in conductors
  - Draining charge off to ground
  - Charging by conduction
- Force between charges in 1D:
  - Two charges on a line exerting net force on a charge of interest on the same line
  - Conditions for a charge of interest to be in equilibrium
- Force between charges in 2D:
  - Total force (magnitude or a component) from two or more charges on a square grid exerting force on a charge of interest
  - Total force (magnitude or a component) from two or more charges arranged in a circle around a charge of interest
- Electric force mixed with other forces: charged spheres hanging from a string