

# Electrostatics

After completing this section, students should be able to do the following.

- distinguish between the distance vector and
- vector at a point whose length describes strength of the field
- Identify charge of electron, neutron and proton
- State and explain Coulombs law
- Apply Coulombs law using vector algebra to find electrostatic force at a point due to several point charges
- Explain definition of electric field
- Derive and calculate electric field due to several point charges using vector algebra
- Define conditions under which Gausss law can be used.
- Outline steps necessary to apply Gausss law
- Derive electric field due to line and sphere of charge
- Discuss analogy of circuits with water pipes
- Define potential as difference in potential energy per charge
- Derive potential of point charge
- Find electric field from potential and vice versa
- Define capacitance
- Derive capacitance of simple symmetrical structures.
- Explain displacement current
- Describe how materials affect electric fields.