

# Sri Bhagawan Mahaveer Jain First Grade College

Geetha Road, Robertsonpet, Kolar Gold Fields.

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## ADVANCED SOLID STATE PHYSICS

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### On successful completion of course student will:

- Acquire knowledge in different experimental approaches to study Fermi surfaces in different materials.
- Understand macroscopic electrostatics as an approach to calculate local electric fields and dielectric response functions.
- Understand piezo-, pyro- and Ferro electricity, ferroelectric domains and hysteresis.
- Be introduced to diamagnetic and paramagnetic response in solids through a semi-classical approach.
- Understand basic theories of magnetic materials (ferromagnetism, ferrimagnetism, anti-ferromagnetism).
- Understand phenomena related to magnetic phase transitions, such as domain formation, and hysteresis.
- Acquire basic knowledge on (low temperature) superconductivity in type I and type II super conductors,
- and receive and introduction in
- different theoretical approaches to super conductivity (BCS).
- Understanding of various phenomena related to super conductivity, such as the Meissner effect,
- flux quantization, Giæver- and Josephson tunneling.