

## Unit 4: MAGNETIC MATERIALS, CONDUCTORS AND SUPERCONDUCTORS

### Magnetic Materials

**Topics:** Magnetic materials: Definition of terms, Classification of magnetic materials and properties, Domain theory of ferromagnetism, Hard and soft magnetic materials,

#### Links:

1. <https://www.youtube.com/watch?v=t2LwAiA2PVw&list=PLNsppmbLKJ8KeElxy81OIC-AGIWJAG8gL&index=40>
2. <https://www.youtube.com/watch?v=QQZ6EGf0Ju8&list=PL090DAFDD7A36E27B&index=36>

### Free electron theory

**Topics:** Conductors: Classical free electron theory (Lorentz–Drude theory), Electrical conductivity,

#### Links:

1. <https://www.youtube.com/watch?v=UsIS1KhiX7k&list=PLNsppmbLKJ8KeElxy81OIC-AGIWJAG8gL&index=41>
2. <https://www.youtube.com/watch?v=jHT42z9dcOA&list=RDCMUCAvOBYcmktdCaz8XhvPC1zw&index=1>
3. <https://www.youtube.com/watch?v=kpyuqXZ9Ifk>
4. <https://www.youtube.com/watch?v=vXROQoosiB0>
5. <https://www.youtube.com/watch?v=QvPSVwzU-8A&list=PL090DAFDD7A36E27B&index=7>
6. <https://www.youtube.com/watch?v=OJPK9fvgAgY&list=PL090DAFDD7A36E27B&index=8>
7. <https://www.youtube.com/watch?v=osZa29v7sKk&list=PL090DAFDD7A36E27B&index=9>
8. <https://www.youtube.com/watch?v=RuBzYg5-is4&list=PL090DAFDD7A36E27B&index=10>

## **Superconductors**

**Topics:** Superconductors: Definition, Meissner effect, Type I & II superconductors

### **Links:**

1. <https://www.youtube.com/watch?v=tfqNaZgRx0w&list=RDCMUCA7OQkX9AEIVQ6j9i0OSQhA&index=1>
2. <https://www.youtube.com/watch?v=D-9M3GWoBrw&list=PL090DAFDD7A36E27B&index=38>