

## **E-344 Section 9: The Electrical Properties of Materials**

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### Conductivity and Resistivity

Ohm's law and electrical conductivity

Sections 18.1, 18.2, 18.3, 18.4

Energy band diagrams: section 18.5, 18.6

Skim section 18.7 on electron mobility

Resistivity of metals: section 18.8, skim 18.9

Conduction in ionic materials and polymers: skim sections 18.16 and 18.17

### Dielectric Materials and Insulators

Capacitance section 18.18 and 18.19 (fig. 18.31 is conceptually valuable)

Skim 18.20, 18.21, 18.22, 18.23, 18.24, 18.25

### Semiconductors and Devices

Section 18.10 on intrinsic semiconductors

Section 18.11 on extrinsic semiconductors

Skim section 18.12 and 18.13 on carrier mobility

Skim section 18.14 on the Hall effect

Section 18.15 on semiconductor devices