

**LECTURES**

Lecture 1: Introduction, Special Theory of Relativity

Giancoli: chapter 37

Lecture 2: Special Relativity continued

Lecture 3: Electric Charge, Coulomb's Law, Electric Field

Giancoli: chapter 21

Lecture 4: Superposition and Symmetry, more E fields

Lecture 5: Gauss's Law, Flux (surface integrals)

Giancoli: chapter 22

Lecture 6: Electric Potential, Gradient, Conductors and Insulators

Giancoli: chapter 23

Lecture 7: Capacitance, Electric Field Energy, Dielectric Materials

Giancoli: chapter 24

Lecture 8: Current, Resistance, Kirchhoff's Rules, Series and Parallel Networks

Giancoli: sections 25-1 through 25-4, 26-1 through 26-3

Lecture 9: Electric Power, RC Circuits

Giancoli: rest of chapters 25 and 26

Lecture 10: Magnetic Force, Magnetic Field, Hall Effect

Giancoli: chapter 27

Lecture 11: Biot-Savart Law, Permanent Magnets

Giancoli: sections 28-6 through 28-8

Lecture 12: Ampere's Law, Solenoids

Giancoli: sections 28-1 through 28-5

Lecture 13: catch-up day

Lecture 14: EMF, Electromagnetic Induction, Faraday's Law, Lenz's Law

Giancoli: chapter 29

Lecture 15: Mutual Inductance, Self-Inductance, Magnetic Field Energy

Giancoli: sections 30-1 through 30-3

Lecture 16: DC Circuits with Inductors (LC, LR, LRC)

Giancoli: sections 30-4 through 30-6

Lecture 17: Displacement Current, Maxwell's Equations (integral and differential forms)

Giancoli: sections 32-1 through 32-3, plus some supplemental material not in Giancoli

Lecture 18: Electromagnetic Waves

Giancoli: sections 32-4 through 32-7, plus some background material on waves from chapter 15

Lecture 19: Optics, Refraction and Reflection

Giancoli: chapters 33 and 34 (highlights)

Lecture 20: TBA

## **EXAMS**

Exam 1 will emphasize the material from Problem Sets 1 and 2 (Lectures 1 through 4).

Exam 2 will emphasize the material from Problem Sets 3 and 4 (Lectures 5 through 8).

Exam 3 will emphasize the material from Problem Sets 5 and 6 (Lectures 9 through 13).

Exam 4 will emphasize the material from Problem Sets 7 and 8 (Lectures 14 through 18).

The final exam will emphasize the material from Problem Sets 1 through 8 (Lectures 1 through 18), and may also include very simple questions about the material from Lectures 19 and 20.