MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Department of Physics

Physics 8.02 **Spring 2012**

Class Schedule and Reading Assignments

Text: Liao, Dourmashkin, Belcher; Introduction to E & M MIT 8.02 Course Notes
This text is available for purchase at the COOP, and is also on the web at
http://web.mit.edu/8.02t/www/coursedocs/current/guide.htm

Week One Introduction to Teal,
Coulomb's Law and Electric Fields

W01D1 T Feb 7	Tuesday Classes Only: Special Class on Flux and Faraday's Law (repeated for W/R on Feb 21)
Reading	Course Notes: Chapter 1.1-1.7
W01D2 W/R Feb 8	Introduction to Teal, Fields, Coulomb's Law, Electric Fields, Discrete Charge Distributions
Reading	Course Notes: Chapter 1.1-1.7, 2.1-2.3
W01D3 F Feb 10	PS01: Electric Fields, Discrete Charge Distributions
Reading	Course Notes: Sections 2.3-2.6, 1.8

Week Two: Gauss's Law	**Problem Set 1 Due Tuesday Feb 14 at 9 pm**
W02D1 M/T Feb 13/14	Electric Dipoles and Continuous Charge Distributions
Reading	Course Notes: Sections 2.7-2.10, 2.12, 2.13.4-2.13.6
W02D2 W/R Feb 15/16	Gauss's Law Electric Fields
Reading	Course Notes: Sections 4.1-4.2, 4.7 Virtual Experiment 1: Gauss's Law Java 3D applet
W02D3 F Feb 17	PS02: Gauss's Law
Reading	Course Notes: Sections 4.1-4.2, 4.7

Week Three: **Electric Potential**	**Problem Set 2 Due Tuesday Feb 21 at 9 pm**
W03D1 T Feb 21	MONDAY CLASSES ON TUESDAY Special Class on Flux and Faraday's Law
W03D2 W/R Feb 22/23	Electric Potential, Discrete and Continuous Charges; Configuration Energy
Reading	Course Notes: Sections 3.1-3.4
W03D3 F Feb 24	PS03: Electric Potential
Reading	Course Notes: Sections 3.5, 3.7-3.8, 4.8.4

Week Four: Equipotentials and Energy; Exam 1	**Problem Set 3 Due Tuesday Feb 28 at 9 pm**
W04D01 M/T Feb 27/28	Equipotential Lines and Electric Fields; Potential and Gauss's Law, Configuration Energy
Reading	Course Notes: Sections 3.5, 4.3
W04D2 W/R Feb 29/Mar 1	Exam 1 Review
Exam 1 Thursday Mar 1	**7:30 pm –9:30 pm**
W04D3 F Mar 2	No Class
Week Five Capacitors and Capacitance	**Problem Set 4 Due Tuesday Mar 6 at 9 pm**
W05D1 M/T Mar 5/6	Conductors and Insulators; Conductors as Shields; Capacitance & Capacitors; Energy Stored in Capacitors;
Reading	Course Notes: Sections 4.3-4.4, 5.1-5.5, 5.9-5.10
W05D2 W/R Mar 7/8	Capacitance & Capacitors; Expt. 1: Faraday Ice Pail;
Reading	Course Notes: Sections 4.3-4.4, 5.1-5.5, 5.9-5.10 Experiment 1: Faraday Ice Pail
W05D3 F Mar 9	PS04: Capacitance
Reading	Course Notes: Sections 5.9-5.10
Add Date Mar 9	
Week Six Current, Magnetic Fields and Forces	**Problem Set 5 Due Tuesday Mar 13 at 9 pm**
W06D1 M/T Mar 12/13	Current, Current Density, and Resistance and Ohm's Law, Magnetic Fields and Forces
Reading	Course Notes: Sections 6.1-6.5, 8.1-8.3,
W06D2 W/R Mar 14/15	Magnetic Forces, Currents & Dipoles; Expt. 2: Force, Torque on Dipole
Reading	Course Notes: Sections 8.4-8.6, Expt. 2: Force, Torque on Dipole

W06D3 M/T Mar 16	PS05: Calculating Magnetic Fields and Magnetic Force
Reading	Course Notes: Sections 8.8-8.9
Week Seven Magnetic Fields and Exam 2	**Problem Set 6 Due Tuesday Mar 20 at 9 pm**
W07D1 M/T Mar 19/20	Creating Fields: Biot-Savart Law,
Reading	Course Notes: Sections 9.1-9.2, 9.5; suggested 9.8-9.9
W07D2 W/R Mar 21/22	Creating Fields: Ampere's Law
Reading	Course Notes: Sections 9.3-9.4, 9.6
Exam 2 Thursday Mar 22	**7:30 pm –9:30 pm**
W7D3 F Mar 23	No Class
Week Eight Spring Break	
Week Nine Faraday's Law	**Problem Set 7 Due Tuesday April 3 at 9 pm**
W09D1 M/T Apr 4/5	Faraday's Law I;
Reading	Course Notes: Sections 10.1-10.3; Expt.4: Faraday's Law
W09D2 W/R Apr 4/5	Faraday's Law II; Expt.4: Faraday's Law
Reading	Course Notes: Sections 10.3-5, 10.8-10.9, 11.1-11.3
W09D3 F Apr 6	PS07: Faraday's Law
Reading	Course Notes: Sections 10.8-10.9
Week Ten DC Circuits	**Problem Set 8 Due Tuesday April 10 at 9 pm**
W10D1 M/T Apr 9/10	DC Circuits & Kirchhoff's Loop Rules; Phet 01: Building a Circuit
Reading	Course Notes: Sections 7.1-7.4
W10D2 W/R Apr 11/12	DC Circuits & Kirchhoff's Loop Rules;
Reading	Course Notes: Sections 7.1-7.4
W10D3 F Apr 13	PS08: DC Circuits Sections 7.8-7.9, 11.10-11.11

Week Eleven Exam 3	**Problem Set 9 Due Tuesday April 17 at 9 pm**
W11D1 M/T Apr 16/17	**Patriot's Day Holiday**
W11D2 W/R Apr 18/19	Exam 3 Review

Exam 2 Thursday April 19 7:30 pm –9:30 pm

W11D3 F Apr 20	No Class
Week Twelve AC Circuits	**Problem Set 10 Due Tuesday April 24 at 9 pm**
W12D1 M/T Apr 23/24	RC and LR Circuits; Expt. 4: RC and RL Circuits
Reading	Course Notes: Sections 7.5-7.6, 11.1-11.4, Expt. 3: RC and RL Circuits
W12D2 W/R Apr 25/26	Undriven RLC Circuits; Expt. 5: Undriven RLC Circuits
Reading	Course Notes: Sections 11.4-11.6 Expt. 4: Undriven RLC Circuits

Drop Date Thurs Apr 21

W12D3 F Apr 27	PS09: Undriven RLC Cirucits
Reading	Course Notes: Sections 12.8-12.9
Week Thirteen EM Waves	**Problem Set 11 Due Tuesday May 1 at 9 pm**
W13D1 M/T Apr 30/May1	Maxwell's Equations and Displacement Current; One Dimensional Wave Equation
Reading	Course Notes: Sections 13.1-13.4
W13D2 W/R May 2/3	Maxwell's Equations, EM Waves
Reading	Course Notes: Sections 13.4-13.7
W13D3 F May 4	PS10: Maxwell's Equations; Displacement Current; EM Waves
Reading	Course Notes: Sections 13.11, 13.12.1-13.12.2

Week Fourteen Interference and Diffraction	**Problem Set 12 Due Tuesday May 8 at 9 pm**
W14D1 M/T May 7/8	Polarization Expt 6 MW; Interference
Reading	Course Notes: Sections 13.8, 14.1-14.3
W14D2 W/R May 9/10	Diffraction; Expt. 7: Interference and Diffraction
Reading	Course Notes: Sections 14.4-14.8
W14D3 F May 11	PS11 Interference and Diffraction
Reading	Course Notes: Section 14.11

Week Fifteen Poynting Vector and Energy Flow; Final Review

W15D1 M/T May 14/15	Poynting Vector and Energy Flow
Reading	Course Notes: Sections.13.6, 13.12.3-13.12.4
W15D2 W/R May 16/17	Final Review

Final Exam Date and Room TBA
(Most Likely Monday Morning May 21 from 9 am-12 noon)