Class Schedule and Reading Assignments

Text: Liao, Dourmashkin, Belcher; Introduction to E & M MIT 8.02 Course Notes.

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

W01D1 T Feb 5 Faraday’s Law Exploration
W01D2 W/R Feb 6 Introduction to Teal, Fields, Coulomb’s Law, Electric Fields, Discrete Charge Distributions
W01D3 F Feb 8 PS01: Coulomb’s Law
Reading Course Notes: Chapter 1.1-1.7, 2.1-2.7

Week Two: Gauss’s Law

Problem Set 1 Due Tuesday Feb 12 at 9 pm

W02D1 M/T Feb 11/12 Electric Dipoles and Continuous Charge Distributions
Reading Course Notes: Sections 2.9-2.13, 2.14.5-2.14.6
W02D2 W/R Feb 13/14 Gauss’s Law
Reading Course Notes: Sections 3.1-3.2, 3.6, 3.7, 3.10
W02D3 F Feb 15 PS02: Gauss’s Law
Reading Course Notes: Sections 3.6, 3.7, 3.10

Week Three: Electric Potential

Problem Set 2 Due Tuesday Feb 19 at 9 pm

W03D1 T Feb 19 Monday Schedule: Faraday Law Exploration
W03D2 W/R Feb 20/21 Electric Potential, Discrete and Continuous Charges; Configuration Energy
Reading Course Notes: Sections 4.1-4.3
W03D3 F Feb 22 PS03: Electric Potential
Reading Course Notes: Sections 4.7-4.10
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<th>Date</th>
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<tr>
<td>W04D01 M/T</td>
<td>Feb 26/27</td>
<td>Potential and Gauss’s Law; Equipotential Lines and Electric Fields</td>
<td>Course Notes: Sections 3.3-3.4, 4.4-4.6, 4.10.5</td>
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<td>W04D2 W/R</td>
<td>Feb 27/28</td>
<td>Exam 1 Review</td>
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<td>W04D3 F</td>
<td>Mar 1</td>
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<tr>
<td>W05D1 M/T</td>
<td>Mar 4</td>
<td>Conductors and Insulators; Capacitance &amp; Capacitors; Energy Stored in Capacitors;</td>
<td>Course Notes: Sections 3.3, 4.5, 5.1-5.4</td>
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<td>W05D2 W/R</td>
<td>Mar 7</td>
<td>Dielectrics; Conductors as Shields: Expt.1: Faraday Ice Pail.</td>
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<td>W05D3 F</td>
<td>Mar 9</td>
<td>PS04 Friday Problem Solving: Capacitance, Stored Energy, Capacitors in Parallel and Series, Dielectrics</td>
<td>Course Notes: Sections 5.6, 5.8-5.9</td>
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<tr>
<td>W06D1 M/T</td>
<td>Mar 11</td>
<td>Current, Current Density, and Resistance and Ohm’s Law, Magnetic Fields and Forces</td>
<td>Course Notes: Sections 6.1-6.3, 8.1-8.3, 8.5</td>
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Exam 1 Thursday Feb 28: 7:30 pm – 9:30 pm

Week Five: Capacitors and Capacitance, Dielectrics

Problem Set 4 Due Tuesday Mar 5 at 9 pm

Problem Set 5 Due Tuesday Mar 12 at 9 pm

4/29/13
W06D3 F  PS05: Calculating Magnetic Fields and Magnetic Force  
Reading  
Course Notes: Sections 8.9, 8.10, 9.10.1, 9.11.1-.3, 9.11.7-.8

Week Seven Magnetic Fields and Exam 2  Problem Set 6 Due Tuesday Mar 19 at 9 pm  
W07D1 M/T Mar  Magnetic Dipoles, Torque and Force on a Dipole,  
Experiment 2: Magnetic Dipole in a Helmholtz Coil  
Reading  
Course Notes: Sections 8.4, 8.6.4, 8.10.4, 8.13, 9.5, 9.9

W07D2 W/R Mar  Test 2 Review

Exam 2 Thursday Mar 21  7:30 pm –9:30 pm 
W7D3 F  No Class

Week Eight Spring Break

Week Nine Faraday’s Law

W09D1 M/T Apr 1/2  Creating Fields: Ampere’s Law  
Reading  
Course Notes: Sections 9.3-9.4, 9.7, 9.10.2

W09D2 W/R Apr 3/4  Faraday’s Law; Expt.3: Faraday’s Law,  
Reading  
Course Notes: Sections 10.1-10.4

W09D3 W F Apr 5  PS06: Ampere’s Law and Faraday’s Law Problem Solving Faraday’s Law;  
Reading  
Course Notes: Sections 9.10.2; 10.7, 10.9-10

Week Ten Magnetic Induction and Energy; DC Circuits  Problem Set 7 Due Tuesday April 9 at 9 pm  
W10D1 M/T Apr 8/9  Inductance & Magnetic Energy,  
Reading  
Course Notes: Sections 11.1-3

W10D2 W/R Apr 10/11  DC Circuits & Kirchhoff’s Loop Rules;  
Reading  
Course Notes: Sections 7.1-7.5

W10D3 F Apr 12  PS07: PhET: Building a Circuit 7.1-7.5, 7.10
Week Eleven Exam 3 Problem Set 8 Due Tuesday April 16 at 9 pm
W11D1 M/T Apr 15/16 Patriot’s Day Holiday
W11D2 W/R Apr 17/18 Exam 3 Review

Exam 3 Thursday April 18 7:30 pm –9:30 pm
W11D3 F Apr 19 No Class

Week Twelve Undriven RLC Circuits
W12D1 M/T Apr 22/23 RC and LR Circuits;
Reading Course Notes: Sections 7.7-7.8, 7.11.3, 11.4-11.6,
11.12.2, 11.13.4-11.13.5

W12D2 W/R Apr 24/25 Undriven RLC Circuits; Expt. 4: Undriven RLC Circuits
Reading Course Notes: Sections 11.7-11.9, 11.10, 11.13.6

Drop Date Thurs Apr 20
W12D3 F Apr 26 PS08: Undriven RLC Circuits
Reading Course Notes: Sections 11.8-9, 11.12-11.13

Week Thirteen EM Waves Problem Set 9 Due Tuesday April 30 at 9 pm
W13D1 M/T Apr 29/30 Maxwell’s Equations and Displacement Current; One
Reading Dimensional Wave Equation
Course Notes: Sections 13.1-13.4

W13D2 W/R May 1/2 Maxwell’s Equations and One Dimensional Wave
Reading Equation
Course Notes: Sections 13.5-13.7

W13D3 F May 3 PS09: Maxwell’s Equations; Displacement Current; EM
Reading Waves
Course Notes: Sections 13.9, 13.11, 13.12
### Week Fourteen Interference and Diffraction

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<td>W14D1 M/T</td>
<td>May 6/7</td>
<td>Polarization Expt 5 MW; Interference</td>
<td>Course Notes: Sections 13.8, 13.10, 14.1-14.3</td>
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<td>W14D2 W/R</td>
<td>May 8/9</td>
<td>Diffraction; Expt. 6: Interference and Diffraction</td>
<td>Course Notes: Sections 14.4-14.9</td>
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<td>W14D3 F</td>
<td>May 10</td>
<td>PS10 Interference and Diffraction</td>
<td>Course Notes: Section 14.9-14.11</td>
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### Week Fifteen Poynting Vector and Energy Flow; Final Review

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<td>W15D1 M/T</td>
<td>May 13/14</td>
<td>Poynting Vector and Energy Flow</td>
<td>Course Notes: Sections 13.6, 13.12.3-13.12.4</td>
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**Final Exam Monday Morning May 20 from 9 am-12 noon**  
Johnson Athletic Center Track 2nd floor