• Getting ready•

Prerequisites• You must have completed Phys 121, and Math 152 (or at least be enrolled in it this semester.)

Workload• Experience shows that success requires at least 8-10 hours per week of intensive effort outside of class - more for those lacking strong preparation and study techniques. Be sure that you can dedicate the time and concentration required for success.

The book and other required items• SmartPhysics access by Gary Gladding et al, ISBN: 9781429272438. Turning Technologies clicker RFC-03. Scientific calculator. If you desire a large textbook as an additional resource, the UMBC bookstore stocks Physics for Scientists and Engineers by Tipler; alternatively, any old calculus-based intro physics text may serve the same purpose.

Registering your clicker• From Blackboard, go to Tools/Turning Point Registration Tool. The Response Device ID is the 6-digit code below the bar code on your clicker. Register your clicker once, and you’re good to go for all your classes that use clickers.

Class• MWF 1-1:50 PM in Engineering 027 and weekly discussion (check your schedule).

• Goals and methods•

Learning goals• Introductory Physics II is designed as a second course for those who will use physics in their future studies and careers. We focus on thermodynamics and electricity and magnetism (E&M), making use of calculus. You’ll learn to (1) extend energy principles to the analysis of energy transfers including heat, (2) determine the electric field created by distributions of charge and the effect of electric fields on charged particles and matter, (3) determine the magnetic field created by distributions of electric current and the effect of magnetic fields on moving charged particles and matter, and (4) determine the electric current associated with electric fields and changing magnetic fields. This course is also designed to help you improve your scientific reasoning ability and skill at solving quantitative problems.

Blackboard (BB)• Access between classes for course materials, discussion forums, your grades, helpful advice, and announcements.

Prelectures and checkpoints• Access multimedia learning modules (MLMs) through the SmartPhysics website, generally before each Mon and Wed class. Complete checkpoints – multiple-choice questions checking your understanding of the MLM content - no later than one hour before class.

Lecture• Find the pdf lecture outline before each class on BB under Course Documents. Print it out and take notes or annotate it on your tablet. Bring your clicker to each class. Your clicker grade is based on the number of days in which you respond to clicker questions. Course content is delivered via MLMs; lectures offer opportunities for you to deepen your understanding.

Discussion• Expect collaborative problem solving practice and feedback in your weekly discussion session, followed by a short quiz at the end.

Homework• HW assignments are designed to build conceptual understanding, develop scientific reasoning skills, and provide practice and feedback with systematic problem solving. Due (online, through SmartPhysics) Thursdays at midnight. Keep a careful written record of your work for future studying.

Exams• 3 class exams and a comprehensive final. Expect to solve problems and respond to multiple-choice items. Needed quantitative relationships will be provided (see BB/Course Documents). Calculator allowed.
Policies

Grading•5% (20 pts) for prelectures/checkpoints, 5% (20 pts) for discussion quizzes, 10% (40 pts) for homework, 5% (20 pts) for clickers, 15% (60 pts) for each of 3 exams, 30% (120 pts) for final exam. 360 pts (out of 400 possible) required for A, 320 pts for B, 280 pts for C, and 240 pts for D.

Reclaiming and reviewing work•Discussion quizzes and exams are returned to you in discussion. Exam solutions are posted in BB/Course Documents at 5 PM after each exam. Please review graded work right away, and check that we enter your grades in BB correctly. Notify us of any grading mistakes within a week: Contact your discussion TA about discussion quiz grade mistakes. Get exams to me directly, or through the Physics Department office (Physics 221), along with a note describing the mistake. (For errors in assigning partial credit, make sure that you’ve examined the posted solutions and the grading scheme revealed therein, and that your note explicitly addresses the discrepancy. Your entire exam will be regraded.)

Making up work•If you must miss an exam due to officially sanctioned UMBC activities, illness, family emergency, detention by authorities, or another difficulty, contact me as soon as possible. At my discretion, I’ll request written verification of the cause of your absence and arrange a makeup over the same material. No discussion makeup exams; we count only your best 10 discussion quiz grades. No late prelectures/checkpoints; get an early start in case of technical or other difficulties. Your participation grade allows 5 free days to account for absences for any reason and clicker malfunctions. No individual accommodations are possible.

Academic integrity•All instances of academic misconduct will be addressed according to the UMBC Policy on Academic Integrity (http://www.umbc.edu/integrity/students.html). Examples include attempting to make use of disallowed materials on quizzes and exams, attempting to communicate with anyone other than the instructor or TA during a quiz or exam, altering graded work and submitting it for regrading, asking someone else to take a quiz or exam in your place, copying another’s work on homework, asking someone else to do homework and representing it as your own, and permitting or assisting another student to carry out any of the above. Penalties range from a grade of 0 on a homework or exam to an F in the course (at my discretion), and from denotation of academic misconduct on the transcript to expulsion (as determined by official hearing of the Academic Conduct Committee.)

Courtesy•Cell phones, ipods, gaming consoles, and radio-controlled airplanes turned off during class please.

Getting help

Contact me•Eric C. Anderson, Physics 320, Office hours MW 2:00-2:50, Th 12:30-1:50 through 8 Dec. Phone 455-5823, email andersoe@umbc.edu. Best to email me through Blackboard. Or if through your UMBC email, please be sure to give your full name and your class. If you seek HW help or have a general course question, please post to the appropriate discussion forum on Blackboard, so that others might benefit. (I check as frequently as email.)

Form or join a study group•Perhaps with the help of the Forming study groups forum on Blackboard.

Troll the discussion board•Post a question to a forum on Blackboard, or post an answer to another’s question.

Attend the help sessions (HS)•Offered before each class exam (see day-by-day guide below) in ITE104.

Contact the Learning Resource Center•At http://www.umbc.edu/lrc/ or 455-2444 and inquire about small group tutoring.
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<thead>
<tr>
<th>Week of:</th>
<th>Monday</th>
<th>Discussion</th>
<th>Wednesday</th>
<th>Friday</th>
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<tr>
<td>24-28 Aug</td>
<td></td>
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<td>Introduction to the course</td>
<td><em>Thermodynamics</em></td>
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<td>Unit 27 Introduction to thermodynamics</td>
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<td>31 Aug-4 Sep</td>
<td>Unit 28 Heat and temperature</td>
<td>Thermo 1</td>
<td>Review</td>
<td>Unit 29 Ideal gas</td>
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<td>7-11 Sep</td>
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<td>Unit 30 Equipartition, heat capacity, and conduction</td>
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<td>14-18 Sep</td>
<td>Unit 31 Heat engines</td>
<td>Thermo 2</td>
<td>Unit 32 Reversible processes</td>
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<td>Help session 12-12:50 in ITE 104</td>
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<td>21-25 Sep</td>
<td><strong>Exam 1</strong> <em>(Thermodynamics, 8 AM in assigned room and seat; see BB)</em></td>
<td>Mechanics review</td>
<td>Unit 2 Electric fields</td>
<td>Review</td>
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<td><em>Electricity</em></td>
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<td>Unit 1 Coulomb's law</td>
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<td>28 Sep-2 Oct</td>
<td>Unit 3 Electric flux and field lines</td>
<td>Field lines and Coulomb's law</td>
<td>Unit 4 Gauss' law</td>
<td>Review</td>
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<td>5-9 Oct</td>
<td>Unit 5 Electric potential energy</td>
<td>Gauss's law</td>
<td>Unit 6 Electric potential</td>
<td>Review</td>
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<td>12-16 Oct</td>
<td>Unit 7 Conductors and capacitance</td>
<td>Electric potential</td>
<td><em>DC Circuits</em></td>
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<td>Unit 8 Capacitors</td>
<td>Help session 12-12:50 in ITE 104</td>
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<td>19-23 Oct</td>
<td><strong>Exam 2</strong> <em>(Electricity, 8 AM in assigned room and seat; see BB)</em></td>
<td>Capacitors</td>
<td>Unit 10 Kirchoff's rules</td>
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<td>Unit 9 Electric current</td>
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<td>Date</td>
<td>Unit 11: RC circuits</td>
<td>Unit 12: Magnetism</td>
<td>Magnetism</td>
<td>Review</td>
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<td>26-30 Oct</td>
<td><strong>Kirchoff's rules</strong></td>
<td><strong>Unit 12 Magnetism</strong></td>
<td><strong>Magnetism</strong></td>
<td><strong>Review</strong></td>
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<td>2-6 Nov</td>
<td>Unit 13: Forces and torques on currents</td>
<td>RC circuits and Lorentz force</td>
<td>Unit 14: Biot Savart law</td>
<td>Review</td>
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<td>9-13 Nov</td>
<td>Unit 15: Ampere's law</td>
<td>Biot Savart law and magnetic dipoles</td>
<td>Faraday’s law and AC Circuits</td>
<td>Review</td>
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<td>16-20 Nov</td>
<td>Exam 3 (DC circuits and Magnetism, 8 AM in assigned room and seat; see BB)</td>
<td>Faraday’s law</td>
<td>Unit 18: Induction and RL circuits</td>
<td>Review</td>
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<td>23-27 Nov</td>
<td>Unit 19: LC and RLC circuits</td>
<td>RL circuits</td>
<td>Unit 20: AC circuits</td>
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<td>30 Nov-4 Dec</td>
<td>Review</td>
<td>LC and RLC circuits</td>
<td>Unit 21: AC circuits resonance and power</td>
<td>Review</td>
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<td>7-11 Dec</td>
<td>Review</td>
<td>Conceptual inventory (ungraded, attendance required)</td>
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<td>14-18 Dec</td>
<td>Final exam (First half: Faraday’s law and AC circuits; second half: comprehensive, location TBA, 1-3 PM 16 Dec)</td>
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