PHYS 1112: Introductory Physics — Optics, Electricity & Magnetism

Section: 27-144; TH 9:30 A.M. - 10:45 A.M.
Office hours: T 11:00 A.M. - 12:00 P.M.  Problem Session: H 5:00 P.M. - 6:00 P.M.
Instructor: Professor Henning H. Meyer
Office: Room 223B, Physics Building
Email: phys1112hhm@physast.uga.edu (no individual communication via ELC!!!)

ELC: General announcements, posting of homework or exam solutions, etc.

I. GENERAL INFORMATION

• Primary method of communication: during office hours;
• Email through: phys1112hhm@physast.uga.edu
• Text: James S. Walker, Physics, Volume II 5th edition (2010). (3rd or 4th editions are fine, but you will be responsible for knowing about any changes in content.) The bookstore describes the text as: Physics (Vol 2)(w/MasteringPhysicsetext VP Acc).
• Make sure you get a copy that says: w/MasteringPhysics.
• Mastering Physics: To register use Course Code: MPMeyer2018PRD2 – You will need to enter your 81X number. Enter 9 digits only – do not enter the last digit.

II. ACADEMIC HONESTY

• The University of Georgia has a comprehensive policy on academic honesty, described in a document entitled “A Culture of Honesty.”
• The document is available through the Office of the Vice President for Instruction or online at https://ovpi.uga.edu/academic-honesty.
• The policy covers all academic work. As a UGA student, you are responsible for knowing and understanding this policy.
• If you have any question about the appropriateness of your actions or your work, you are obligated to ask me for clarification.

III. IN-CLASS RULES

• No laptops, pagers, cell phones, iPads, iPods, or any other electronic/communication devices are permitted in the classroom.
• Students must attend the sections they are assigned to. No attendance credit will be given if you attend a “wrong” section.

IV. GRADING POLICY

• Overall grade will be determined as follows:

20% LAB grade (attendance mandatory; see Section V for details)
20% HOMEWORK (no makeup; working in groups OK; must be submitted individually)
60% EXAM 1 (no makeup; must be taken with the section you are registered for)
   EXAM 2 (no makeup; must be taken with the section you are registered for)
   EXAM 3 (no makeup; must be taken with the section you are registered for)
   EXAM 4 (no makeup; must be taken with the section you are registered for)
Worst of 4 exams dropped

100% TOTAL
• Letter grades will be assigned in accordance with the following cut-offs (for additional rules see below):

F: [0, 55)
D: [55, 65)
C−: [65, 68)  C: [68, 72)  C+: [72, 75)
B−: [75, 78)  B: [78, 82)  B+: [82, 85)
A−: [85, 90)  A: [90, 100]

NOTE: There is no rounding; 64.99 = “D”, etc.

V. LABS (20%)

• All students are required to attend LABS.
• Students who are not assigned a lab grade due to non-attendance will automatically receive a failing grade (“F”) for the course.
• PLEASE NOTE:
  ▪ Labs will be meeting next week—January 8-12
  ▪ Lab syllabus: Use the link below from the Department’s web site, then scroll down to your particular lab section. https://www.physast.uga.edu/courses

VI. HOMEWORK (20%)

• There will be a number of HOMEWORK assignments posted online (on the Mastering Physics website).
• All assignments count towards your grade.
• All assignments must be submitted on time.
• No makeup, no late submission.
• Rules:
  ▪ You may work in groups.
  ▪ You submit your work individually.

VII. EXAMS (60% TOTAL)

• There will be a total of four (4) EXAMS on selected chapters.
• Worst of the four exam grades will be dropped (such as, e.g., a “0” due to non-attendance), so, technically, each exam is worth 20%.
• No makeups or re-scheduling is permitted.

• Rules for the EXAMS:
  ▪ ONE (1) STANDARD SHEET of paper containing anything you want (e.g., physical constants, formulae, diagrams, problem solutions, etc.) ALL HANDWRITTEN. You may write on both sides
  ▪ A simple (non-graphing, non-symbolic, non-programmable) scientific calculator.
  ▪ No other electronic device(s) permitted.
  ▪ Must work individually.
VIII. INCOMPLETES

• You may be assigned an “I” (incomplete) for the course in accordance with the UGA Regulations, provided all of the following applies:
  
  ▪ You received a non-failing grade in LABS (> 70)
  ▪ You received a non-failing grade (> 55%) on at least one EXAM,
  ▪ No violation of the Academic Honesty Policy took place during the course of the semester.

IX. ABSENCES

• Class attendance is mandatory and will be monitored regularly. You are responsible for obtaining any announcements/materials/information that were given out in a class that you missed.

X. WITHDRAWALS

• The Undergraduate Bulletin and the Registrar’s Office website describe the University policies regarding withdrawals and incompletes. The deadline for withdrawal is Monday, March 19th.

XI. TUTORS

• Tutors are available through the following:
  ▪ Department of Physics and Astronomy: https://www.physast.uga.edu/tutors/
  ▪ UGA Tutoring Program: http://tutor.uga.edu/arc/tutoring/ Please remember: the goal is to learn from your tutor, not for them to do your homework for you.

XII. HOW TO DO WELL IN THIS CLASS

• Read each chapter before it is discussed in class.
• Attend every lecture.
• Participate actively in discussions.
• Re-read chapter carefully after class. Rework the notes taken during lecture.
• Do assigned homework.
• Solve as many end-of-chapter problems as possible.
• Concepts first. Do NOT plug-and-chug.
• Use a buddy system: find a friend with whom to discuss physics.
• Think about physics on a regular basis.
• If everything fails, consider dropping the class before the deadline and retaking it at a later time.
**TABLE I: Spring 2018 Master Schedule**

**ATTENTION:** This schedule is preliminary. It is subject to modification, possibly including exam dates.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Reading</th>
<th>Topics</th>
<th>Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 4</td>
<td></td>
<td>Intro to this course; Principles of GO</td>
<td>H</td>
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<tr>
<td>2</td>
<td>Jan 9</td>
<td>26.1-4</td>
<td>GO: Reflection; Plane mirrors; Spherical mirrors</td>
<td>T</td>
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<tr>
<td></td>
<td>Jan 11</td>
<td>26.5-7</td>
<td>GO: Refraction; Total internal reflection; Ray tracing for lenses; thin lens equation</td>
<td>H</td>
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<tr>
<td>3</td>
<td>Jan 16</td>
<td>27.1-2</td>
<td>OI: Human eye, camera; Corrective optics</td>
<td>T</td>
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<tr>
<td></td>
<td>Jan 18</td>
<td>27.3-5</td>
<td>OI: Magnifying glass; Microscope; Telescope</td>
<td>H</td>
</tr>
<tr>
<td>4</td>
<td>Jan 23</td>
<td>28.1-2</td>
<td>WO: Superposition &amp; interference, two-slit experiment</td>
<td>T</td>
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<tr>
<td></td>
<td>Jan 25</td>
<td>28.4-6</td>
<td>WO: Single-slit diffraction; Diffraction gratings</td>
<td>H</td>
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<tr>
<td>5</td>
<td>Jan 30</td>
<td></td>
<td>Review; Problem Solving</td>
<td>T</td>
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<tr>
<td></td>
<td>Feb 1(E1)</td>
<td></td>
<td><strong>EXAM 1 (Chap26-28)</strong></td>
<td>H</td>
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<tr>
<td>6</td>
<td>Feb 6</td>
<td>19.1-3</td>
<td>EF: Electric charge</td>
<td>T</td>
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<tr>
<td></td>
<td></td>
<td>19.4-5</td>
<td>EF: Insulators &amp; conductors; Coulomb’s Law</td>
<td>H</td>
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<tr>
<td>7</td>
<td>Feb 13</td>
<td>19.6-7</td>
<td>EF: Shield. &amp; charge. by induction, Electric flux &amp; Gauss’ Law</td>
<td>T</td>
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<tr>
<td></td>
<td>Feb 15</td>
<td>20.1-2</td>
<td>REVISITING: Energy, WE-Theorem &amp; Law-CE;</td>
<td>H</td>
</tr>
<tr>
<td>8</td>
<td>Feb 20</td>
<td>20.3-4</td>
<td>EP: Electric potential of point charges; Equipot. surfaces &amp; E-field</td>
<td>T</td>
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<tr>
<td></td>
<td>Feb 22</td>
<td>20.5-6</td>
<td>EP: Capacitors &amp; dielectrics; Electric energy storage</td>
<td>H</td>
</tr>
<tr>
<td>9</td>
<td>Feb 27</td>
<td>21.1-4</td>
<td>Review; Problem Solving</td>
<td>T</td>
</tr>
<tr>
<td></td>
<td>Mar 1 (E2)</td>
<td></td>
<td><strong>EXAM 2 (Chap19-20)</strong></td>
<td>H</td>
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<tr>
<td>10</td>
<td>Mar 6</td>
<td>21.5</td>
<td>DC: El. current; Ohm’s Law; Energy &amp; pow in El.Circ.</td>
<td>T</td>
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<tr>
<td></td>
<td>Mar 8</td>
<td></td>
<td>DC: Resistors in series &amp; parallel; Kirchhoff’s Rule</td>
<td>H</td>
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<tr>
<td>11</td>
<td>Mar 12 – 16</td>
<td></td>
<td><strong>Spring Break</strong></td>
<td>M</td>
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<td></td>
<td>Mar 19</td>
<td></td>
<td><strong>Withdrawal Deadline</strong></td>
<td></td>
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<tr>
<td>12</td>
<td>Mar 20</td>
<td>22.1-2</td>
<td>MF: Magnetic field; Magn. force on moving charges</td>
<td>T</td>
</tr>
<tr>
<td></td>
<td>Mar 22</td>
<td>22.3-4</td>
<td>MF: Motion of charged particles in magnetic field; Magnetic force on current-carrying wire</td>
<td>H</td>
</tr>
<tr>
<td>13</td>
<td>Mar 27</td>
<td>22.5</td>
<td>MF: Magnetic force on current loops &amp; magn. torque</td>
<td>T</td>
</tr>
<tr>
<td></td>
<td>Mar 29</td>
<td>22.6-8</td>
<td>MF: Ampere’s Law; loops &amp; solenoids; Magnetism in matter</td>
<td>H</td>
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<tr>
<td>14</td>
<td>Apr 3</td>
<td></td>
<td>Review; Problem Solving</td>
<td>T</td>
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<tr>
<td></td>
<td>Apr 5 (E3)</td>
<td></td>
<td><strong>EXAM 3 (Chap21-22)</strong></td>
<td>H</td>
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<tr>
<td>15</td>
<td>Apr 10</td>
<td>23.1-4</td>
<td>EMI: Induced EMF; Magnetic flux; Faraday’s Law; Lenz’s Rule</td>
<td>T</td>
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<tr>
<td></td>
<td>Apr 12</td>
<td>23.5-6</td>
<td>EMI: Work &amp; E. Energy; Generators</td>
<td>H</td>
</tr>
<tr>
<td>16</td>
<td>Apr 17</td>
<td>23.5-10</td>
<td>EMI: Inductance; RL circuits; Energy in a B-field;</td>
<td>T</td>
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<tr>
<td></td>
<td>Apr 19</td>
<td>25.1-2</td>
<td>EMW: EM waves; spectrum</td>
<td>H</td>
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<tr>
<td>17</td>
<td>Apr 24</td>
<td></td>
<td>Review; Problem Solving</td>
<td>T</td>
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<tr>
<td>18</td>
<td>May 3(E4)</td>
<td></td>
<td><strong>EXAM 4 (8:00 A.M. - 11:00 A.M.) (Chap22-23,25)</strong></td>
<td>H</td>
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