PHYS 1112: Introductory Physics — Optics, Electricity & Magnetism

Section: 25676; TH 9:35 A.M. - 10:50 A.M.
Lectures will be given F2F at regular class times. No recordings!
Attendance will not be monitored!

Instructor: Professor Henning H. Meyer
Office hours: T, H 11:00 A.M. - 12:00 Noon
Q&A Zoom Session: Day before exam 5:00 P.M. - 6:00 P.M.
Office: Room 217, Physics Building
Email: hmeyer@uga.edu, add ‘PHYS1112 Period2’ to subject line.

No individual communication via ELC!!!
ELC: General announcements; Posting of lecture slides/comments, homework or exam solutions, practice exams.

I. GENERAL INFORMATION

- Primary method of communication: during office hours;
- Email through: hmeyer@uga.edu
- Text: James S. Walker, Physics, 5th edition (2017). (3rd or 4th editions are fine, but you will be responsible for knowing about any changes in content.) The bookstore usually describes the text as: Physics & VP AC MOD MST.
- Make sure you get a copy that says: w/MasteringPhysics.
- Mastering Physics: To register look for Course Name: PHYS1112-Fall2021-MeyerPeriod2 with Course ID: meyer94207 – You will need to enter your UGA ID, i.e. 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 online at https://honesty.uga.edu/_resources/documents/academic_honesty_policy_2017.pdf.
- 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. GRADING POLICY

- Overall grade will be determined as follows:
  - 20% LAB grade (completion mandatory; see Section V for details)
  - 15% HOMEWORK (no makeup; working in groups OK; must be submitted individually)
  - 45% 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
- 20% Final EXAM (no makeup, unless required by University Rules)

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.

IV. LABS (20%)

• All students are required to complete the LAB part of the class.
• Students who are not assigned a lab grade due to non-completion will automatically receive a failing grade ("F") for the course.
• PLEASE NOTE:
  ▪ Labs will start week of August 31.
  ▪ 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

V. HOMEWORK (15%)

• 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.

VI. EXAMS (45% TOTAL)

• There will be a total of four (4) in-class EXAMS on selected chapters.
• Worst of the four exam grades will be dropped (such as, e.g., a “0” due to non-completion), so, technically, each exam is worth 15%.
• Depending on the development of the pandemic, exams might be moved online requiring the Lockdown Browser.
• No makeups or re-scheduling is permitted.

VII. FINAL EXAM (20% TOTAL)

• Final Exam is mass exam, date and time: Tuesday, Dec. 9; 7:00 - 10:00 P.M.
• Comprehensive final exam (20% of overall grade): All chapters covered in class.
• No makeups or re-scheduling unless required by University rules.

• Rules for the EXAMS (Exams might be online given through ELC):
  ▪ Recommendation: Prepare 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

- 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, October 25th.

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.
- 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: Fall 2021 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>Aug 19</td>
<td>–</td>
<td>Intro to this course; Principles of GO</td>
<td>H</td>
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<tr>
<td>2</td>
<td>Aug 24</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>Aug 26</td>
<td>26.5-7</td>
<td>GO: Refraction; Total internal reflection; Ray tracing for lenses; thin lens equation</td>
<td>H</td>
</tr>
<tr>
<td>3</td>
<td>Aug 31</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>Sep 2</td>
<td>27.3-5</td>
<td>OI: Magnifying glass; Microscope; Telescope</td>
<td>H</td>
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<tr>
<td>4</td>
<td>Sep 7</td>
<td>–</td>
<td>Review; Problem Solving</td>
<td>T</td>
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<tr>
<td></td>
<td>Sep 9(E1)</td>
<td></td>
<td>EXAM 1 (Chap26,27)</td>
<td>H</td>
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<tr>
<td>5</td>
<td>Sep 14</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>Sep 16</td>
<td>28.4-6</td>
<td>WO: Single-slit diffraction; Diffraction gratings</td>
<td>H</td>
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<tr>
<td>6</td>
<td>Sep 21</td>
<td>19.1-3</td>
<td>EF: Electric charge</td>
<td>T</td>
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<tr>
<td></td>
<td>Sep 23</td>
<td>19.4-5</td>
<td>EF: Insulators &amp; conductors; Coulomb's Law</td>
<td>H</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>EF: Electric field; field lines; capacitor</td>
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<tr>
<td>7</td>
<td>Sep 28</td>
<td>19.6-7</td>
<td>EF: Shield. &amp; charge by induction, Electric flux &amp; Gauss' Law</td>
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<tr>
<td></td>
<td>Sep 30</td>
<td></td>
<td>Review; Problem Solving</td>
<td>H</td>
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<tr>
<td>8</td>
<td>Oct 5</td>
<td>20.1-2</td>
<td>EXAM 2 (Chap28,19)</td>
<td>T</td>
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<tr>
<td></td>
<td>Oct 7</td>
<td></td>
<td>REVISITING: Energy, WE-Theorem &amp; Law-CE;</td>
<td>H</td>
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<tr>
<td></td>
<td></td>
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<td>EP: Electric potential &amp; energy; Energy conservation</td>
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<tr>
<td>9</td>
<td>Oct 12</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>Oct 14</td>
<td>20.5-6</td>
<td>EP: Capacitors &amp; dielectrics; Electric energy storage</td>
<td>H</td>
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<tr>
<td>10</td>
<td>Oct 19</td>
<td>21.1-4</td>
<td>DC: El. current; Ohm's Law; Energy &amp; pow in El.Circ.</td>
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<td></td>
<td>Oct 21</td>
<td>21.5-7</td>
<td>DC: Resistors in series &amp; parallel; Kirchhoff's Rule, RC-circ.</td>
<td>H</td>
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<tr>
<td>11</td>
<td>Oct 25</td>
<td></td>
<td>Withdrawal Deadline</td>
<td>T</td>
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<tr>
<td></td>
<td>Oct 26</td>
<td></td>
<td>Review; Problem Solving</td>
<td>H</td>
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<td></td>
<td>Oct 28 (E3)</td>
<td></td>
<td>EXAM 3 (Chap20,21)</td>
<td></td>
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<tr>
<td>12</td>
<td>Nov 2</td>
<td>22.1-4</td>
<td>MF: Magnetic field; Magn. force on moving charges</td>
<td>T</td>
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<tr>
<td></td>
<td>Nov 4</td>
<td>22.4-5</td>
<td>MF: Magnetic force on current-carrying wire</td>
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<td></td>
<td></td>
<td></td>
<td>MF: Magnetic force on current loops &amp; magn. torque</td>
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<tr>
<td>13</td>
<td>Nov 9</td>
<td>22.6-8</td>
<td>MF: Ampere's Law; loops &amp; solenoids; Magnetism in matter</td>
<td>T</td>
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<tr>
<td></td>
<td>Nov 11</td>
<td>23.1-4</td>
<td>EMI: Ind. EMF; Magnetic flux; Faraday's Law; Lenz's Rule</td>
<td>H</td>
</tr>
<tr>
<td>14</td>
<td>Nov 16</td>
<td>23.5-6</td>
<td>EMI: Work &amp; E. Energy; Generators</td>
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<tr>
<td></td>
<td>Nov 19</td>
<td></td>
<td>Review; Problem Solving</td>
<td>H</td>
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<tr>
<td>15</td>
<td>Nov 23 (E4)</td>
<td></td>
<td>EXAM 4 (Chap22,23)</td>
<td>T</td>
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<tr>
<td>16</td>
<td>Nov 30</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>Dec 2</td>
<td></td>
<td>Review; Problem Solving</td>
<td>H</td>
</tr>
<tr>
<td>17</td>
<td>Dec 9</td>
<td></td>
<td>FINAL EXAM (Chap19-23,26-28) Time: 7-10pm</td>
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