Fall 9-1-2000

PHYS 341.01: Fundamentals of Modern Physics

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*University of Montana, Missoula*

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FUNDAMENTALS OF MODERN PHYSICS

LECTURES: MWF 1:10-2:00, Science Complex 231

INSTRUCTOR: Dr. Carla Riedel
Office: SC 122 / 243-5179 / riedel@selway.umt.edu
Office hours: M 11:10, T 3:10, W 2:10, R 9:10, F 10:10,
and by appointment

DESCRIPTION: Includes historical background for development of modern physics,
and an introduction to special relativity, quantum mechanics,
atomic physics, and subatomic physics.

PREREQUISITES: One year of general physics (preferably Phys 221/222);
One year of differential and integral calculus (Math 152/153).

TEXT: A Traveler's Guide to Spacetime, Moore (McGraw-Hill 1995) and

ONLINE: Class website: http://www.physics.umt.edu/phys341

HOMEWORK: Plan to spend at least 6 hours on homework each week.
Homework will be assigned one to three times a week.
Working with others on homework is encouraged, but
the work you turn in must be your own.
Due at beginning of class on due date.
20% per day late-homework fee.

EXAMS: Closed book.
Simple calculator (without symbolic manipulation) required.
Three in-class midterms (one 3"x5" note card allowed).
One two-hour, comprehensive final (one 8.5"x11" sheet allowed).
Help sessions will be scheduled prior to each exam.
Make-up exams allowed only in extreme situations, and
only when arranged in advance.

GRADING: Midterms 40%
Homework 35%
Final Exam 25%
All grading will be based on correctness, completeness, and clarity.

Students with disabilities requiring accommodations, please, see the instructor.
## Tentative Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Chapter</th>
<th>Topic</th>
<th>Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/5 - 9/8</td>
<td>M1</td>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>9/11 - 9/15</td>
<td>M2,M3</td>
<td>M4 Synchronization, Spacetime, Nature of Time, Metric Equation</td>
<td></td>
</tr>
<tr>
<td>9/18 - 9/22</td>
<td>M6,M7</td>
<td>M5,M8 Coordinate Transformations, Contractions Proper time, Velocity Transformations</td>
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</tr>
<tr>
<td>9/25 - 9/29</td>
<td>M9,M10</td>
<td>K14 Four-Momentum</td>
<td></td>
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<tr>
<td>10/2 - 10/6</td>
<td>K14</td>
<td></td>
<td>F 10/6</td>
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<tr>
<td>10/9 - 10/13</td>
<td>K3</td>
<td>K4 Photons as Particles Particles as Waves</td>
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<tr>
<td>10/16 - 10/20</td>
<td>K4</td>
<td>K5 The Schrödinger Equation</td>
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<tr>
<td>10/23 - 10/27</td>
<td>K5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10/30 - 11/3</td>
<td>K5</td>
<td></td>
<td>F 11/3</td>
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<tr>
<td>11/6 - 11/8</td>
<td>K6</td>
<td>K6 The Rutherford-Bohr Atom</td>
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<tr>
<td>11/13 - 11/17</td>
<td>K6</td>
<td>K7 The Hydrogen Atom</td>
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<tr>
<td>11/20 - 11/21</td>
<td>K7</td>
<td></td>
<td></td>
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<tr>
<td>11/27 - 12/1</td>
<td>K8</td>
<td>K8 Many-Electron Atoms</td>
<td></td>
</tr>
<tr>
<td>12/4 - 12/8</td>
<td>K8</td>
<td>K12 Nuclear Physics</td>
<td>F 12/8</td>
</tr>
<tr>
<td>12/11 - 12/15</td>
<td>K12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/21</td>
<td>1:10-3:10</td>
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<td>FINAL</td>
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</tbody>
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M = Moore; K = Krane

Subject coverage may vary, but exam dates are firm.

Reminder: September 25 is No Penalty Drop Deadline.