SYLLABUS – PHYSICS 222: Modern Physics
Fall 2018

Course Description: Modern Physics covers Relativity, Models of the Atom, an Introduction to Quantum Mechanics, Atomic Physics, and Nuclear physics.

Course Objectives: Conceptual student learning outcomes: (1) Understanding of the physical laws of the topics described above. (2) Learning about the historic context of the physical developments and their implications for science and technology today. (3) Learning to think critically/scientifically and developing the skills needed to attack complex problems.

Instructor Information:
Name: Prof. Hans Schuessler
E-mail: schuessler@physics.tamu.edu (please start subject line with PHYS222)
Class times: MWF 12:40 - 1:30.
Class location: Mitchell Physics Building, r. 213
Office hours: Please talk to me after class. All interactions outside class will be electronic. Please email me with questions (I will try to answer speedily) or if you need to make a physical appointment.

Web Pages of interest:
My Physics 222 course has as the major webpage http://sibor.physics.tamu.edu/teaching/phys222/. There are lecture notes, video recordings and grades. ecampus.tamu.edu will have homework (through WEBASSIGN link in Course Materials tab), and messages. I recommend to print out lecture notes (two slides/page) before class and to add your notes during class and solved problems to it.

Pre-Requisites: PHYS 208. You must have a working knowledge of geometry, algebra and calculus. You should be proficient in the use of vectors.

Text and required materials:
Textbook: Modern Physics for Scientists and Engineers (Fourth Edition)
By Thornton and Rex

Expected Material to be covered (schedule changes possible):
Week of:
August 27 Chapter 1,2
September 3 Chapter 2
September 10 Chapter 2,15
(Midterm Exam 1, September 17)
September 19 Chapter 3
September 24 Chapter 4
Midterm Exam 2, October 1
October 3 chapter 5
October 8 Chapter 5+6
October 15 Chapter 6
October 22 Chapter 6
October 29 Chapter 7
(Midterm Exam 3, November 5)
November 7  Chapter 8
November 12  Chapter 8
November 19  Chapter 12  (November 21 - 23, Reading day and Thanksgiving holiday)
November 26  Chapter 12
December 3  Chapter 12

(Comprehensive Exam, Monday December 10, 10:30-12:30)

**Homework:**
Homework consists of:
(1) Reading the relevant material ahead of class. This means that you should complete reading of the following chapters by the following due dates (in case we significantly deviate from the schedule, I will let you know):

<table>
<thead>
<tr>
<th>Due date</th>
<th>Reading material</th>
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<tbody>
<tr>
<td>August 27</td>
<td>Chapter 1</td>
</tr>
<tr>
<td>September 3</td>
<td>Chapter 2</td>
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<tr>
<td>September 12</td>
<td>Chapter 15</td>
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<tr>
<td>September 19</td>
<td>Chapter 3</td>
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<td>September 24</td>
<td>Chapter 4</td>
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<td>October 3</td>
<td>Chapter 5</td>
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<td>October 8</td>
<td>Chapter 6</td>
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<td>October 29</td>
<td>Chapter 7</td>
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<tr>
<td>November 7</td>
<td>Chapter 8</td>
</tr>
<tr>
<td>November 19</td>
<td>Chapter 12</td>
</tr>
</tbody>
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(2) After reading each chapter, taking the relevant interactive Chapter Quiz at the publisher student companion site [https://www.cengage.com/c/modern-physics-for-scientists-and-engineers-4e-thornton#overview](https://www.cengage.com/c/modern-physics-for-scientists-and-engineers-4e-thornton#overview). For this you need to create a separate, free Cengage account. These quizzes will not be graded, but constitute homework.

(3) Completing homework assignments on WebAssign. Please log in through the WEBASSIGN tab in the Physics 222 E-campus course. Please do so early, so you do not miss the first deadline (to enroll use the class key: tamu 4432 3020, and you will need a WebAssign access code, which you can purchase either with a book or standalone at the E-campus WebAssign link; you may qualify for a 2-week free trial). For each wrong answer, 20% of that problem’s score will be deducted, up to 3 possible attempts, then you get zero. You may want to think about each problem with the help of a piece of paper first. Also watch significant figures!

While homework “only” contributes 10% to the grade, it is crucially important and there will be lots of it. It may seem like an excessive amount of work for the points given, but diligent and successful effort on problems is your ticket to get high scores in the exams! This has been shown again and again! In addition to the assigned homework problems, you should do as many as you can from the back of the chapter. Also, I have seen a lot of students who get close to full homework points by scheming or not doing the homework themselves diligently and then wondering why they do so poorly on the exams. Not a smart move at all, considering the way I am allocating points … just saying.

Homework 0: due 09/16/2018 11:59pm
Homework 1: due 09/16/2018 11:59pm
Homework 2: due 09/16/2018 11:59pm
Homework 3: due 09/30/2018 11:59pm
Homework 4: due 09/30/2018 11:59pm
Homework 5: due 10/04/2018 11:59pm
Homework 6: due 10/04/2018 11:59pm
Homework 7: due 10/04/2018 11:59pm
Homework 8: due 12/09/2018 11:59pm
Homework 9: due 12/09/2018 11:59pm
Homework 10: Special Assignment of making 5 PowerPoint slides on a listed research topic. Please send to me by email any time during the semester but before the final exam. The grade for this assignment will contribute up to 10% of the maximum Homework score.

**Exams:**
Midterm Exam 1 (Chapter 1-2): Monday, September 17,
Midterm Exam 2 (Chapter 3-4): Monday, October 1,
Midterm Exam 3 (Chapter 5-7): Monday, November 5,

Exams generally consist of problems similar in content and difficulty to the homework, and they may include both multiple-choice and free response questions. A formula sheet will be provided for each exam. You need to bring your TAMU ID, a pen/pencil, a ruler and a memory wiped hand-held calculator. Any contestations regarding the grading of an exam must be brought to my attention within 1 week of being returned to the class.

**Absences:** If you miss an exam due to an authorized excused absence as outlined in the University Regulations (Rule 7.1.6.2a is not acceptable), you should attempt to contact me prior to the exam but no later than the following day to arrange for a way to make up the score. Note: Only few conditions qualify as an authorized excused absence, so you must avoid missing exams except for extremely serious circumstances.

**Identification:** You must bring your TAMU student ID with you to all exams.

**Course Grade:**

<table>
<thead>
<tr>
<th>Course Score</th>
<th>Final Letter Grade</th>
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<tbody>
<tr>
<td>≥ 90 %</td>
<td>A</td>
</tr>
<tr>
<td>≥ 80 %</td>
<td>B</td>
</tr>
<tr>
<td>≥ 70 %</td>
<td>C</td>
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<tr>
<td>≥ 60 %</td>
<td>D</td>
</tr>
<tr>
<td>&lt; 60 %</td>
<td>F</td>
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In case of unusually difficult, low-average exams, these boundaries MAY be lowered at the instructor’s discretion at the end of the semester. The numerical score is computed as a weighted average over all different components of the course with the weights as determined in the table below.

| Homework       | 100 |
| Midterm Exams  | 3\times 200=600|
| Final Exam     | 300 |
| Total Points   | 1000|

**ADA Policy:** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call (979)845-1637. For additional information visit [http://disability.tamu.edu](http://disability.tamu.edu). All information and documentation concerning a disability is kept confidential.

**Honor Code:** The Aggie Honor Code states, “An Aggie does not lie, cheat, or steal or tolerate those who do.” Further information regarding the Honor Council Rules and Procedures may be found on the web at [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu).