Syllabus for Physics 240, Spring 2012

Instructor: Dr. John D. Shaw **Office: Merion Science Center 120**
e-Mail: jshaw2@wcupa.edu **Office Hours: MWF 3:00p – 5:00p*** **or by appointment**

Lectures: **MF 11:00 – 11:50** **SSL150** **W 11:00 – 11:50** **MER 122**

Class webpages: Found on West Chester University's D2L site.
You need to be registered to see the course website!

Text & Resources:

Required textbook:

Kenneth S. Krane, *Modern Physics*, 2nd Edition. John Wiley and Sons, 1996, ISBN 9780471828723 (K)

Supplementary texts:

Modern Physics for Scientists and Engineers, by Stephen T. Thornton and Andrew Rex, ISBN0-534-41781-7 (TR)

Spacetime Physics by Edwin F. Taylor & John Archibald Wheeler, ISBN 978-0-375-71345-3 (TW)

The Discoveries: Great Breakthroughs of 20th-Century Science, by Alan Lightman, ISBN 978-0716723271 (L)

An introductory level textbook, e.g., Halliday, Resneck, and Walker, *Fundamentals of Physics*, 8th Edition. Volume 1. John Wiley & Sons, 2008; or *Physics for Scientists and Engineers* 8th Edition, by Raymond A. Serway, John W. Jewett, or many others.

Media: *The Mechanical Universe and Beyond* (MU) is a series of 52, ½ hour episodes on fundamental physics. A web address to view them and which episodes are pertinent will be provided on D2L

Krane (K) and is a traditional textbook and will be the basis of most of the homework assignments. Thornton & Rex's book (TR) is similar to Krane. Taylor & Wheeler's book (TW) is an introduction to special relativity going beyond the single chapter in TR. Lightman's book (L) is a series of essays on great scientific discoveries along with the original scientific papers.

Desire2Learn (D2L) *Website:*

This course has a Desire2Learn website associated with it, where announcements and course documents will be posted. Report any problems with Desire2Learn by emailing d2l@wcupa.edu or visiting the ACC student helpdesk in 20 Anderson Hall (610-436-3065).

* Subject to change, check the course website (D2L) for current office hours.

Course Description and Content:

An atomic view of electricity and radiation, atomic theory, special relativity theory, X-rays, radioactivity, nuclear fission, and introductory quantum mechanics **Prerequisites**: MAT 162 (although Calculus III recommended), and PHY 140 or 180 (PHY180 preferred).

Course Objectives:

- Be able to use special relativity.
- Understand the experimental basis for quantum mechanics.
- Be able to apply quantum mechanics to a particle in a box and the hydrogen atom.
- Gain an overview of atomic physics and nuclear physics.
- Understand the basic principles of elementary particles and forces.

As such we will cover the majority of the first eight chapters of Krane's text and selections from the later chapters.

Grading of the Course:

The weight of each portion of the course is as follows:

Take Home Quizzes:	30%
Midterm Exams:	45% (3 x 15% each)
Final Exam:	25%

At the end of the semester, your total numerical course grade is converted into a letter course grade as follows:

A:	93 and above	C:	73 – 77
A-:	90 – 93	C-:	70 – 72
B+:	87 – 90	D+:	67 – 70
B:	83 – 87	D:	63 – 67
B-:	80 – 83	D-:	60 – 63
C+:	77 – 80	F:	Below 60

Course Requirements:

Exams:

There will be **three midterm exams,** whose dates will be determined as the course progresses. There will be a cumulative **final exam,** two hours long, given during finals week at a date TBD (check D2L later in the semester). The final exam will be cumulative.

Examinations will be **closed book**, i.e. memory aids, class notes, textbooks, etc. are not allowed. Simple scientific calculators may be used in exams (although should not be necessary). If you have other than a simple scientific calculator, you must obtain approval to use it and clear its memory before any quiz or exam.

The first exam will *most likely* cover chapters 1-3, the second exam will *most likely* be given on Monday 3/26 and *most likely* cover chapters 4-6, and the third midterm will *most likely* cover chapters 7, 8 and one other chapter towards the end of April.

Homework:

Reading: All students should read ahead in the text(s) to familiarize themselves with ideas that will be presented in lecture. This will allow you to formulate questions about the material and seek clarification during lecture if a concept or technique is unclear.

There will be about ten to fifteen problems posted at least one week before the due date and these homework solutions will be posted on *D2L* the afternoon/evening of the "due date". Homework will not be collected or graded.

Take Home Quizzes:

Most weeks, there will be a take home quiz given at the end of lecture on the day of the homework "due date". The quiz must be submitted in person or electronically by the beginning of the following lecture. **Late submissions will not be accepted.** The quiz will consist of one or two problems. Altogether there will be about 10 to 14 such quizzes throughout the semester, your worst quiz grade will be dropped. *The quizzes will count for a total of 30% of the course grade.*

Partial credit will be given for quiz and exam solutions, provided the correct logical steps of the solution can be identified (neatness helps). No credit will be given if only the final answer is written without the steps leading up to it.

COURSE POLICIES:

Attendance in Lecture

All students are expected to attend all lectures unless officially excused. If you are absent, **it is your responsibility to find out from other students what you missed.** Missing lectures **will not excuse you from any material** covered nor excuse homework, quizzes or exams. In cases of extreme illness or emergency that require prolonged absence, you are responsible for contacting the appropriate Dean whose office will contact your professors and make appropriate recommendations.

Missed Exams

Exams cannot be taken at any other than the prescribed time, as such there are no "make-ups" and a zero will be recorded. Absences for those religious holy days that are not in the university's Academic Calendar and absences for university athletic competitions are excused absences only if the instructor is notified in the first two weeks of class. There are some emergency situations where it is impossible to inform the instructor in advance and will be dealt with according to University policy. If you have ANY questions or concerns about this particular point, please come take to me and get clarification BEFORE it is too late!

Academic Honesty and Other General Policies

You are **required** to read and comply with the University's Policy on Academic Dishonesty. We reserve the right to photocopy exam papers before returning them to you after they are graded. During exams you are only allowed to have out writing utensils and simple calculators. You are not to have out any other kinds of devices or any pieces of paper other than those provided. We will supply both the test papers and an adequate supply of writing and scrap paper.

For questions regarding Academic Dishonesty, the No-Grade Policy, Sexual Harassment, or the Student Code of Conduct, students are encouraged to refer to their major department's handbook, the Undergraduate Course Catalogue, the Rams Eye View, or the University Web Site. Please understand that improper conduct in any of these areas will not be tolerated and may result in immediate ejection from the class.

Intellectual Property Statement

The instructor for this course utilizes copyrighted materials under the "Freedom and Innovation Revitalizing United States Entrepreneurship Act of 2007" (Fair Use Act). Apart from such copyrighted materials, all other intellectual property associated with this course is owned and copyright protected by the instructor, including, but not limited to, lectures, course discussions, course notes and supplementary materials posted or provided to students authored by the instructor, assessment instruments such as quizzes and exams, and Power Point presentations. No recording, copying, storage in a retrieval system, or dissemination in any form, whether electronic or other format, by any means of the intellectual property of the instructor, either in whole or in part, is permitted without the prior written permission of the instructor. When such permission is granted, it must specify the utilization of the intellectual property and all such permissions and waivers shall terminate on the last day of finals in the semester in which this course is held.

Links and references to on-line resources provided by the instructor may lead to other sites. The instructor does not sponsor, endorse or otherwise approve of any information appearing in those sites, nor is responsible for the availability of, or the content located on or through, external sites. Apart from materials used in accordance with the Fair Use Act, the instructor takes no responsibility for material that is otherwise offered at web sites and makes no warranty that such material does not infringe any third party rights. However, should any of this type of material be present and this fact is brought to the attention of the instructor, they will remove references to it from course materials.

ADA Policy Statement.

West Chester University will make accommodations for persons with disabilities. Consult the Office of Services for Students with Disabilities (ext. 3217) and bring the resulting documentation to the instructor.

Withdrawal Notice

A syllabus constitutes a contract between student and instructor. Your continued enrollment after the January 28 drop deadline indicates that you accept all instructional practices, requirements, and policies. If you find the standards to which you will be held accountable too rigorous, if you are unable to reliably access the internet to use Desire2Learn, or if an ongoing scheduling conflict prevents you from attending

regularly and punctually, you should officially withdraw (grade "W") through the Registrar's Office by the March 30 course withdrawal deadline. You are responsible for checking your grades before this withdrawal deadline so you aren't surprised by your standing as the end of the course approaches. Ceasing participation in class (i.e. attendance, homework, exams and quizzes) will constitute an unofficial withdrawal and result in a grade of "Z".

Working Together

You are encouraged to study together and work on homework together. Homework is for the purpose of learning to do problems. If you just copy someone else's homework answers *without having tried to do the problems yourself*, you will learn very little from the homework, and you will be at a disadvantage on the tests, where you will have to rely on your own understanding. My suggestion is that you try the problems yourself before asking someone for help. If you get stuck, please post it on the discussion forum on Desire2Learn (and/or come to my office hours); please do not email me. Other students will very likely share your question, and you can learn this material much faster if you work with your peers. Again, I will read and respond in the Desire2Learn discussions. By getting stuck, and then being shown how to overcome that obstacle, you learn more, and what you learn sinks in much better.

Please make use of my office hours, and don't hesitate to email me about any of the following:

- To schedule a time to meet if you cannot make it to any of my office hours
- Questions/feedback related to class organization, syllabus, and grading
- Notification of upcoming excused absences
- Other course-related matters you do not wish to share with your classmates

If you want to ask me a question directly, please do the following: (1) Formulate a proper question and put it in writing. (2) Search for the answer to that question in the information that is already available to you (all documents will be posted on Desire2Learn in electronic form). (3) If you cannot find the answer to your question in a reasonable amount of time, then determine the best method to contact me (email, or visit). This will result in the most efficient use of your time and mine.

Additional help with physics is available through three different forums: the Learning Assistance & Resource Center, the Department of Physics, and private tutors. More information about tutoring will become available during the second week of the semester.