

Physics 100-07 Physical Science

COURSE AND INSTRUCTOR INFORMATION

Meeting Time: Monday, Wednesday, Friday 10:00 – 11:00

Meeting Location: Merion 119

Instructor: William H. Sawyer, Ph.D.

Office Location: Merion Hall Room 132

Office Hours: As posted or by appointment

Email: wsawyer@wcupa.edu

COURSE DESCRIPTION

An entirely new approach to Physics 100, this course is designed to stimulate your imagination, challenge your preconceived notions about the world around you, and help you develop real world decision-making skills. It uses a modified case study approach to examine some of the critical decisions to be faced by tomorrow's leaders. Although input from all the disciplines from anthropology to zoology could and probably will affect these decisions in one way or another we will focus on the decision-making process and the critical role the techniques and concepts of physics will play in them.

The emphasis is on what we know, what we need to know and how we get there. Mathematics is an important tool if you are doing Physics. This course assumes you are not planning to be a physicist, (if you are you are in the wrong course) but all of you will be decision-makers. Some of you will be leaders making decisions that affect not only your lives and those of your family but the lives of many others as well. Mathematics will not be important but concepts, facts, and how to integrate them to make an informed decision will be. So put your calculators away, prepare to challenge your preconceived ideas, and think.

EXPECTATIONS

Since there is no textbook for this class (there is a required reading list however, see below), class attendance is mandatory. If you have to be absent for some reason please let me know ahead of time, refer to the **ATTENDANCE POLICY** below.

I. Class work

- a. It will be assumed that you have read the material to be covered in class and are prepared to use the information you have learned in class.
- b. If you have questions on the material to be covered in class you should be prepared to ask them and assist in providing answers to your fellow students questions.
- c. Assume that from time to time you will be called upon to answer questions about the material being discussed.
- d. Random quizzes can be expected just to make sure you are keeping up.

II. Homework

- a. You *may work together* to develop your solutions to the homework assignments but the work you turn in must be your own. **If two assignments are close copies of each other both students will receive a zero (0) for that assignment.** If the same student receives a zero (0) for this reason 3 times during the semester they will receive a zero for the homework section of the course.
- b. Homework is due at the beginning of class every Friday. *If you will not be in class, have someone else deliver your paper for you. Absence from class is not an excuse for not turning in your homework.* **LATE HOMEWORK WILL NOT BE GRADED**

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III. Quizzes

- a. From time to time, there will be short unannounced quizzes over the assigned reading material. Your total quiz score will represent 20% of your final course grade so it is to your benefit to keep up with the reading assignments

IV. Exams

- a. There will be three semester exams. Each one will cover the material from the previous exam up until the current exam. Each exam will be worth 10% of your final grade.
- b. The final exam will cover all of the material we have discussed during the semester. It will be worth 30% of your final grade.

ASSESSMENT

- **Valuation**
 1. Homework 25%
 2. Quizzes 20%
 3. 3 Semester Exams 30% (10% each)
 4. Final Exam 25%
- **Grade Range**
 1. 93% - 100% A
 2. 85% - 92% B
 3. 75% - 84% C
 4. 65% - 74% D

REQUIRED COURSE MATERIALS

Fear of Physics (A guide for the Perplexed) Author: Lawrence M. Kraus

Publisher: Basic Books, 2007;

ISBN-13 978-0-465-00218-4 (pbk. : alk. Paper)

ISBN-10: 0-465-00218-8 (pbk. : alk. paper)

This is available only in paperback or as in eBook for kindle software. The software is available as a free download from Amazon.com

Physics for Future Presidents: The Science Behind the Headlines; Author: Richard A. Muller (Sep 21, 2009)

Publisher: W. W. Norton & Company, a Norton paperback, 2009

ISBN 978-0-393-33711-2 pbk

This is available only in paperback or as in eBook for kindle software. The software is available as a free download from Amazon.com

SPECIFIC COURSE OBJECTIVES

- Develop the ability to identify the critical factors that influence an issue
- Develop a practical understanding of the scientific method and how to use it
- Develop a practical understanding of the basic principles of physics and how to use them to make informed real world decisions

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CONTACT POLICY

- Email: WSawyer@wcupa.edu (please include your name, the course number, and one or two words indicating the purpose of your email in the subject line.
- Office Phone: 610 436 2897

ATTENDANCE POLICY

More than 15 minutes late, you will not be seated

The Pennsylvania Department of Health has noted a significant increase in the incidence of influenza (flu) and the norovirus (responsible for severe vomiting and diarrhea) in our region this winter. Influenza is now becoming widespread through much of the country. Both of these viruses can be easily spread from person to person.

West Chester University Student Health Services will follow CDC recommendations directed towards reducing the burden of the disease and minimizing its spread. The CDC recommends that individuals with flu stay at home for at least 24 hours after fever is gone without the use of a fever-reducing medicine. The CDC also recommends that individuals with unexplained vomiting or diarrhea should be advised to stay home until they are completely well.

The University is strongly urging students with flu or norovirus to go home to rest and recover. Students who are unable to go home should not attend classes or any public gatherings.

I understand absenteeism can have an impact on your semester. If you miss class due to flu or the norovirus I will make every reasonable effort to enable you to complete your course work.

- If you miss an exam because you were sick, you will be required to present a note from the University Health Service or a physician in order to take a make-up exam.
- If you are sick on the day that a homework assignment is due, arrange for someone to deliver what you have been able to complete or email me a scanned copy of your work. I will not give you credit for late homework.

You may find the following links helpful <http://www.cdc.gov/flu/> and <http://www.cdc.gov/norovirus/>

DISABILITY 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 me as soon as possible.

ELECTRONIC DEVICES POLICY

Use of cell phones and texting in class is not allowed. Please arrange for all electronic devices to be turned off and put away.

- **If you use your cell phone for any reason during class you will be asked to leave immediately and you will not be given the opportunity make up work you miss.**
- If you need to use a device to accommodate a disability, please see tell me at the beginning of class and refer to the DISABILITY STATEMENT above.

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D2L

- This course has a D2L web page. Homework assignments will be posted on or before the Friday before the week before they are due.
- From time to time other important information may also be posted there.

ACADEMIC INTEGRITY & CONDUCT

I have a zero tolerance policy for breaches of academic integrity. Breaches of academic integrity will be investigated and sanctions imposed to the full extent available under University policy. For questions regarding the university 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.

UNIVERSITY SANCTIONED EVENTS

If you will be participating in a University-sanctioned event during a class, **please notify me in advance.**

PUBLIC SAFETY

The Emergency Communications Committee recommends that the number of WCU's Department of public safety be available on every course syllabi.

WCU Department of Public Safety: (610) 436-3311.

INTELLECTUAL PROPERTY STATEMENT

Please note in this course from time to time I will utilize 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.

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LECTURE SCHEDULE (Subject to the vicissitudes of reality)

Physics 100-07 (Tentative Schedule)		
Day	Week	Topics
		<u>Unit I - A Little Background</u>
Monday	August 26th	Consider A Cow
Wednesday	August 28th	Aristotle to the Renaissance - a Big Jump
Friday	August 30th	Building on the shoulders of giants - Lex Parsimoniae
Monday	September 2nd	Labor Day - No Class
Wednesday	September 4th	Theory and Fact
Friday	September 6th	Language
		<u>Unit II - Combating Terrorism</u>
Monday	September 9th	Inspection - how, what, and how effective
Wednesday	September 11th	Rogue Nukes and Home-made A-Bombs
Friday	September 13th	What can we expect?
Monday	September 16th	Biological Terrorism
Wednesday	September 18th	So where are we?
Friday	September 20th	First Exam
		<u>Unit III - Energy, What are the choices?</u>
Monday	September 23rd	A Few Basics
Wednesday	September 25th	A Love Affair
Friday	September 27th	If Not Her Then Who Else
Monday	September 30th	A False Suitor
Wednesday	October 2nd	The End of the Affair
Friday	October 4th	A Fling in the Sun
Monday	October 7th	Fall Break - no class
		<u>Unit IV - Nuclear.....</u>
Wednesday	October 9th	Radiation - The Double Edged Sword
Friday	October 11th	Decay
Monday	October 14th	Weapons and Madness
Wednesday	October 16th	Power, Promise, and Waste
Friday	October 18th	Second Exam
		<u>Unit V - Why Space</u>
Monday	October 21st	Spy Satellites and Things That Go Bump In The Night
Wednesday	October 23rd	Why We Stand Up and Why We Fall Down
Friday	October 25th	Humans in Space
Monday	October 28th	Seeing with Invisible Light
		<u>Unit VI - Global Warming: Fact, Myth, Don't know</u>
Wednesday	October 30th	The Past 14,000 Years

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Friday	November 1st	The Green House Affect
Monday	November 4th	A Very Likely Cause
Wednesday	November 6th	Distortion and Exaggeration
Friday	November 8th	Cherry Picking and New Bias
Monday	November 11th	The Hockey Stick , Carbon Dioxide,
Wednesday	November 13th	The Ancient Climate, Science and Propaganda
Friday	November 15th	Third Exam
-	-	<u>Unit VII - What Can We Do, Non-solutions</u>
Monday	November 18th	Electric Automobiles
Wednesday	November 20th	and Hydrogen
Friday	November 22nd	The Fruit on the Ground
Monday	November 25th	New Technologies
Wednesday	November 27th	<i>Thanksgiving Break</i>
Friday	November 29th	
-	-	<u>Unit VIII - The Beginning and the End</u>
Monday	December 2nd	Puzzles, The Solar System, and Galaxies
Wednesday	December 5th	Looking Back in Time
Friday	December 7th	In the Beginning, Expansion, Dark Energy