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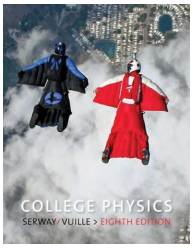
This document may be revised.

PHYS 204
Phenomena of Physics
Mount Holyoke College – Spring 2009

Meeting Times:
(LECTURE) **Cleveland 003L, TTh 8:35a – 9:50a,** (4th-HOUR) **F 1:15p-2:15p ,** (LAB) **Carr G12, 1:15p-4:05p (01 on W) or (02 on Th)**

Instructor: **Rob Salgado** **Visiting Assistant Professor of Physics** Office: **Kendade 215** Voice: **(413)-538-2816**	Email (the best way to contact me): **rsalgado@mtholyoke.edu** Instant-Messengers: AOL, MSN[hotmail], Yahoo: **mhcphyrob** (do *not* email here)	Office hours: **-to be announced**

Lab Instructor: **Christine DeRunk (cderunk@mtholyoke.edu), Kendade 207, (413)-538-2029**



Catalog Description:

PHYS 204 – Phenomena of Physics (4 credits) - [66940]
This course studies a variety of topics in physics, drawn from the MCAT syllabus, including thermodynamics, acoustics, wave optics, electricity, magnetism, and nuclear phenomena. As in Physics 103f, the applicable mathematics is geometry, proportion, and dimensional analysis. *[Prerequisite: PHYS 103 or 115.]*

Required Textbook:

"College Physics (8th ed)", Raymond A. Serway and Chris Vuille [Brooks-Cole/Cengage (2008), ISBN 978-0495386933]

Optional supplements that may be useful to you:
"Math Smart" and "Math Smart II" [Princeton Review, ISBN 978-0375762161 and 978-0679783831] by Marcia Lerner (MH Library reserve)
"Schaum's Outline of Physics for Biology and Pre-Med, Biology, and Allied Health Students" [McGraw-Hill, ISBN 978-0070254749] by George J. Hademenos (There is a similar online reference: "Schaum's Easy Outlines: College Physics" [McGraw-Hill, ISBN: 978-0070527119] by Frederick Bueche.
http://proxy.mtholyoke.edu:2048/login?url=http://site.ebrary.com/lib/mtholyoke/Doc?id=10015302)

Electronic Materials:

I will maintain a website (**http://www.mtholyoke.edu/courses/rsalgado/204/**)
that links to homework assignments, pre-class assignments (via **ella**), worked-solutions (on **ella**), electronic-whiteboard notes, and handouts. (These materials are not a substitute for regular attendance, participation, and problem-solving.)

Course Goals:

A. To further develop concepts in physics, beyond that of Newtonian physics for a few particles.
B. To reinforce important concepts in physics and mathematics.
C. To further develop physical intuition, mathematical reasoning, and problem solving skills.
D. To help students prepare for the MCAT. (While MCAT preparation is an important goal, it is not the primary goal of this course.)

Course Requirements:

Come to class **ON TIME, AWAKE, and ALERT (to the physics topic under discussion)**.
Attendance is **REQUIRED** for Lectures, for Labs, and for Exams given during a 4th-hour.
Attendance for 4th-hour-Tutorials (where hints and strategies for homework are discussed) is optional, but counts toward *Extra-Credit*.
Come to class PREPARED and EQUIPPED, having read or written any assignments.

Grades are roughly weighted as follows: * means that *"You cannot earn a passing grade without this item"*

10% EXAM #1 (in-class, during a fourth-hour)	30% HOMEWORK (including pre-class assignments)
10% EXAM #2 (in-class, Thursday-before-Break)	20% LAB (required*, at most one-excused and one-unexcused missing-lab)
10% EXAM #3 (in-class, during a fourth-hour)	20% CUMULATIVE FINAL EXAM (required*)

Grades will be maintained on **ella**, and you will be alerted when a new item is posted. ***You have one (1) week to contest (by email) any grade or any missing item.*** Requests for re-grading must be accompanied by a written explanation on the item which concisely identifies what is being is contested and concisely explains (in physical or mathematical terms) why your answer is correct or why the grading is wrong. The entire assignment or exam may then be subject to re-grading, and may result in a higher total score, a lower total score, or an unchanged total score.

Homework (assigned periodically, is due in "THE BOX" by the end of class on Tuesdays):

Homework will be assigned, collected, and graded. (Late homework (penalized 15% daily, starting at the end of Tuesday's class) must be submitted under my door or sent as a legible scan to **mhcphyrob@gmail.com** (which is only to be used for large emails).)
Most of the learning you do in this course is done by your doing homework problems outside of class! (I am merely a guide for you.)
You are strongly encouraged to discuss the homework with other students. However, be sure that you can do the homework *by yourself* and that you present your own work. You can always ask me or my teaching-assistants for help after you have made an honest effort.

Missed exams or labs:

There are no makeup exams or labs. There are no exceptions.
If you are absent for an exam or a lab, ***within one (1) week, you must send me an email with your excuse.*** Only if that excuse is valid, your final exam will carry the weight of a missed exam, or your lab will be declared as an "excused missing lab" [which won't be averaged in to your lab grade]. Otherwise, you will get zero credit for the missed exam or lab. You are, of course, responsible for the content of any missed exam or lab. ***Be aware that some exam questions may make reference to what was done in an earlier lab!***

Alternate arrangements:

Requests for alternate arrangements must be ***made in advance*** and ***must be accompanied by an email addressed to me***.
I will reply by email with my decision on your request.

Sequence of PHYS 204 topics from selected sections of these chapters:

Introduction and "Quiz 0"		
(Ch 10) Thermal Physics	**10.1-10.3**	**10.4-10.5**
(Ch 11) Energy in Thermal Processes	**11.1-11.4**	**11.5**
(Ch 12) The Laws of Thermodynamics	**12.1-12.3**	**12.4-12.6**
(Ch 13) Vibrations and Waves	**13.1-13.4**	**13.7-13.11**
(Ch 14) Sound	**14.1-14.5**	**14.6-14.8**
(Ch 15) Electric Forces and Electric Fields	**15.1-15.3**	**15.4-15.9**
(Ch 16) Electrical Energy and Capacitance	**16.1-16.4**	**16.6-16.9**
(Ch 17) Current and Resistance	**17.1-17.7**	**18.1-18.3**
(Ch 18) Direct-Current Circuits	**18.4**	**(18.5)**
(Ch 19) Magnetism	**19.1-19.6**	**19.7-19.10**
(Ch 20) Induced Voltages and Inductance	**20.1-20.8**	**21.8-21.12**
(Ch 21) Electromagnetic Waves		
(Ch 22) Reflection and Refraction of Light	**[aspects in LAB]**	
(Ch 23) Mirrors and Lenses	**[aspects in LAB]**	
(Ch 24) Wave Optics	**[aspects in LAB]**	
(Ch 29) Nuclear Physics	**[aspects in LAB]**	

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Su Mo Tu We Th Fr Sa
           [29 30     JAN
       3    5  6     FEB
      10   12 13
      17   19 [20]
      24   26 27
       3    5  6     MAR
      10  [12] 13
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      24   26 27
      31    2  3     APR
       7    9 10
Ea    14   16 [17]
      21   23 24
      28   30  1     MAY
       5   ]     [=9=
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Presentation at the AAPT National Meeting (Chicago, Feb 14-16)

Exam #1

Exam #2

Exam #3

Final Exam
scheduled through the college

Some advice:

Physics is a **challenging** subject that requires your dedicated attention, but rewards you with skills that you can apply in ***any*** discipline!

Physics is **cumulative**: For example, understanding Ch 17 requires that you understand many of the chapters before it.

You must not fall behind! If you find yourself falling behind, you must get some help.

Physics is written and spoken in a **Mathematical** language.

At this stage, Algebra, Trig, Geometry and Pre-Calculus are more important than Calculus. *Review your basic mathematics NOW!*

Physics is about "understanding **relationships** between physical quantities",

which we uncover by experiment and by mathematical reasoning.

Physics is **NOT about formulas** and merely plugging-in numbers.

Formulas are often only "special cases of expressions of those relationships".

"Knowing a formula without knowing when it applies" is generally useless.

The act of "plugging-in numbers" measures your ability to do Arithmetic or to use a calculator.

The resulting number is only useful when you interpret it physically. *"The right number with the wrong physics" is just plain wrong.*

YOU CAN understand and succeed in Physics only if YOU put in the required work.

Just attending lectures and labs is not enough. Just taking good notes is not enough.

Just reading the textbook is not enough. Just memorizing formulas and definitions is not enough.

Just doing the homework is not enough. Just reading the solutions is not enough.

There are no shortcuts. ***YOU HAVE TO DO IT ALL.***