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PHYS 063
Physics of the Twentieth Century
Bowdoin College – Spring 2011

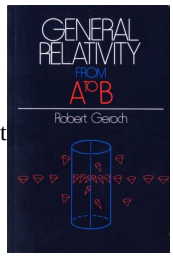
Meeting Times:
(LECTURE) **Searles 313, MW 2:30p – 3:55p**

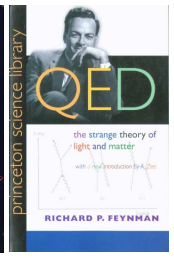
Instructor: **Rob Salgado** **Visiting Assistant Professor of Physics** Office: **Searles 304** Voice: **(207)-725-3170**	Email (the best way to contact me): **rsalgado@bowdoin.edu** Instant-Messengers: AOL, WindowsLive[hotmail], Yahoo, Google, Skype: **robowphy** (IM only… do *not* email here—I won't read it)	Office hours: **-to be announced**

Departmental Coordinator: **Dominica Lord-Wood** (**dlord@bowdoin.edu**) (M-F 9:30-5:00), **Searles 319 (207)-725-3308**

Catalog Description:

PHYS 063 – Physics of the Twentieth Century
Explores the growth of twentieth-century physics, including theoretical developments like relativity, quantum mechanics, and symmetry-based thinking, and the rise of new subdisciplines such as atomic physics, condensed-matter physics, nuclear physics, and particle physics. Some attention is given to the societal context of physics, the institutions of the discipline, and the relations between 'pure' and 'applied' physics. Students who have taken or are concurrently taking any physics course numbered over 100 will not receive credit for this course. Familiarity with standard secondary school mathematics is required.





Required Materials:
"General Relativity from A to B" by R.P. Geroch [(U. Chicago Press, 1978), 978-0226288642]
"QED: the strange theory of light and matter" by R.P. Feynman [(Princeton U. Press, 1985), 978-0691125756]

Electronic Materials:
I will maintain a Blackboard website (**http://blackboard.bowdoin.edu/**) that links to homework assignments, electronic-whiteboard notes, and handouts. (These materials are not a substitute for regular attendance, participation, and problem-solving.)

Course Goals:
A. To develop relativistic and quantum concepts in modern physics, with an emphasis on conceptual understanding.
B. To reinforce important concepts in physics and mathematics.
C. To further develop physical intuition, mathematical reasoning, and problem solving skills (including scientific modeling and computational thinking).

Course Requirements:
Come to class **ON TIME, AWAKE, and ALERT (to the physics topic under discussion)**.
Come to class PREPARED and EQUIPPED, having read or written any assignments. You are expected to familiarize yourself with the material before class by reading the assigned chapters in the textbooks.

Grades are roughly weighted as follows:
~~40% IN-CLASS ACTIVITIES
~~30% HOMEWORK
~~20% GROUP RESEARCH PROJECT (Poster and Class Presentation)
~~10% FINAL HOMEWORK SET (partially related to the Group Projects) – in place of a final exam.
Final letter-grades are based on a modification of the scale **A [95 90] B [87 84 80] C [77 74 70] D [67 64 60] F[59 and below].**
Your final grade will be no worse than this scale.

ACTIVITIES AND HOMEWORK:
You are strongly encouraged to discuss the activities and 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 for help after you have made an honest effort. You are always welcome to stop by my office hours, send an email, or an IM.

On each assignment, be sure to include your name, the due date of the assignment, and the names of any fellow students from whom you received assistance. Please use 8.5" x 11" paper without ragged edges.

Explain your problem-solving procedure in words, in addition to diagrams and equations. How you do a problem is more important than obtaining the correct numerical answer. If you are confused about some aspect of the problem, identify that aspect. If you make any assumptions, state them. Hand in as much as you can accomplish on each problem. Again, the thought process is more important than the final answer, so even unfinished problems are worth handing in. Solutions will be collected in a folder in the department office (319 Searles).