Physics 1240/1250, Spring 2023

Instructor: Prof. A.T. Charlie Johnson, Jr.
Office: DRL 2N13D but also at home… **Cell**: 215-850-1496
Email: cjohnson@physics.upenn.edu. Email is a great way to contact me.
Meetings: T/Th 1:45 – 3:15; W 12-1 (lectures). Office hours TBD.
The plan: As of this date, the course will be given in person beginning Jan 25. My plan is to record all the lectures using Zoom and make them available for later viewing through Canvas Course Recordings. I will lecture with an iPad for "blackboard notes" and do the same for Office Hours. All content will be recorded and published on Zoom ("Course Recordings) for you to view asynchronously. I am open to suggestions on this now or at any time during the term. Feel free to email me and we can set up a phone call or Zoom to discuss.

Textbook: **Quantum Physics: A Fundamental Approach to Modern Physics**, Townsend. (2010 Edition).

Laboratory: TBD. (You will hear from the lab staff)

Other Texts: **Modern Physics**. Krane, 3RD edition.
Modern Physics for Scientists and Engineers. Thornton and Rex (2013).
Modern Physics. Tipler and Llewellyn, 5TH edition

The 3 above are more traditional Modern Physics texts that cover a lot of the historical developments that are *not* the focus of my course. Other intro texts will also work.

Feynman Lectures in Physics, Vol. 3. An advanced but stimulating book. If you understand the contents of Feynman's 3 volumes, then you are quite a physicist!

It is definitely useful to consult multiple texts. A different presentation of the same topic can be very helpful in clearing up confusion. And, of course, ask questions!

Questions: I am VERY happy to have questions in class. Any question you would like to ask in private is likely in the minds of many students in the class, so ask away!

Homework: There will be homework assignments roughly every week. You may find them difficult – the goal is to help you master the material and to stretch your horizons. You should get started early!! You can work together if you like but everyone must hand in their own HW solutions. Your goal should be to learn how to do all the problems because the midterms and final exam will consist of problems that are related to the homework. **Word-for-word copying of someone else's homework or solutions found online is a violation of Penn's Code of Academic Integrity.**

Exams: There will be 2 midterms and a final exam. I plan for exams to be taken during class time. Tentative midterm dates are **Thurs Feb 23 and Thurs Mar 30**.

Final Exam: I also plan that the Final Exam will be taken in person following the Penn Final Exam Schedule (not yet published).

Grades: Problem Sets 30%. Midterm (x2) 20% each. Final exam 30%. The laboratory component is pass/fail. *You must complete and pass the laboratory portion in order to pass PHYS 1250.*

WWW: There is a Canvas page for this class.

Physics 240/250, Course Outline (approx.)

Week of	Text	Topic
Jan 9	Ch 1	Wave and Particle Nature of Light
Jan 16	Ch1	Wave and Particle Nature of Light
Jan 23	Ch. 2	Particle and Wave Nature of the Electron
Jan 30	Ch. 2	Wave Mechanics
Feb 6	Ch2	Wave Mechanics (cont)
Feb 13	Ch 3	Time Independent Schrödinger Eq
Feb 20		TISE (cont)
Feb 23		**Midterm 1 (In Class)**
Feb 27	Ch. 4	1-D Potentials
Mar 4-12		**Spring Break**
Mar 13	Ch 4	1-D Potentials
Mar 20	Ch 5	Principles of QM
Mar 27	Ch 5	Principles of QM
Mar 30		**Midterm 2 (In Class)**
Apr 3	Ch 6	QM in 3D
Apr 10	Ch 7	Identical Particles
Apr 17	Ch 8	Solid State Physics
Apr 26		**End of Classes**
TBD		**Final Exam**