

Physics 3740 Introduction to Relativity and Quantum Theory Summer 2009

University of Utah (3 credits, 8 June – 5 August, MWF 10.00 – 11.45 a.m., 102 JFB)

Instructor: Dr Christopher Stone, Associate Professor (Lecturer)

Office: B-2 JFB (telephone 801–581–3690, with an answering machine)

Office hours: MWF 9.00 – 9.50 a.m., or by appointment. You may leave a message in my pigeon-hole at the Physics Department office: 201 JFB (phone 801–581–6901). e-mail: cstone@physics.utah.edu

Secretary: Mary Ann Woolf, 205 JFB, telephone 801–581–4246, woolf@physics.utah.edu

Course web page: www.physics.utah.edu/~woolf/3740_stone.html

Textbook: *Modern Physics* (5th ed.) by Paul Tipler and Ralph Llewellyn (W. H. Freeman, 2008)

Recommended Prerequisites: Physics 2210 and 2220, Mathematics 2250

Course Description:

We shall cover Part 1 of our textbook (essentially the first 7 chapters), some sections in more detail than others. The lectures will follow the book fairly closely, but supplementary information may also be discussed in class, and you will be held responsible for it as well as for textbook material on the examinations. Therefore, regular class attendance and participation are strongly encouraged.

There will be a set of homework problems due each week (usually on Wednesday; see pp 2 and 3). The lowest *two* of your homework scores will be dropped when computing your total for the course. If you wish, you may work together on homework, provided that each of you writes up his or her own solutions and does not merely copy from someone else. You may find that you learn more by discussing concepts and collaborating with other students of approximately the same level as yourself than you would by simply working alone. Homework solutions will be posted on the course web page, along with past examination problems for review.

To get the most you can from this course, it will behave you to study your textbook and notes carefully till the material makes sense to you. If it does not seem to make sense, talk to the TA who marks your papers (Jacqueline Butterfield; jacquedee@gmail.com) or to me. We shall be glad to help you. Please seek assistance as soon as you have a significant problem, so as not to fall behind in a subject that is unavoidably cumulative in nature. I urge you to read the relevant sections of your textbook at least once *before* we get to them in the lectures (and again afterwards), as we shall not have enough time to discuss in class all the textbook material that is relevant to the course. Also, feel free to ask questions or raise points of concern during the lectures. That way we can use our class time as efficiently as possible by concentrating on those parts of the subject that you find most difficult.

There will be three in-class examinations during the term (see page 2 for probable dates and coverage), testing you on both the information in the textbook and that discussed in class. You may use one standard sheet of paper (front and back) with formulas and notes during the exam. The lowest one of your three exam scores will be dropped when computing your total marks for the course. The Final Examination (for which you may use four note sheets), on **Thursday 6 August**, will be comprehensive, but weighted somewhat towards Chapter 7, since that chapter will not have been covered on the previous exams. The total marks for the term will consist of 24 per cent (the sum of your best six homework scores), plus 48 per cent (the sum of your best two ordinary exams), plus 28 per cent (Final Exam), for a total of 100 per cent. Depending upon the difficulty of the exams, as well as other factors, the grading scale for the course is expected to be approximately as follows (in per cent):

E	50	D–	54	D	60	D+	64	C–	68	C	74
74	C+	78	B–	81	B	87	B+	90	A–	93	A

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 801–581–5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations.

Physics 3740**Timetable for Summer 2009****Stone**

(subject to change, with notice given in class)

Monday 8 June: Chapter 1

Wednesday 10 June: Chapter 1

Friday 12 June: Chapter 1

Monday 15 June: Chapters 1 and 2

Wednesday 17 June: Chapter 2; **HW 1 due**

Friday 19 June: Chapter 2

Monday 22 June: Chapter 3

Wednesday 24 June: Chapter 3; **HW 2 due**Friday 26 June: **First Exam** (Chapters 1 and 2)

Monday 29 June: Chapter 3

Wednesday 1 July: Chapter 4; **HW 3 due**

Friday 3 July: Holiday (no classes held today)

Monday 6 July: Chapter 4

Wednesday 8 July: Chapter 5; **HW 4 due**Friday 10 July: **Second Exam** (Chapters 3 and 4)

Monday 13 July: Chapter 5

Wednesday 15 July: Chapters 5 and 6; **HW 5 due**

Friday 17 July: Chapter 6

Monday 20 July: Chapters 6

Wednesday 22 July: Chapter 7; **HW 6 due**

Friday 24 July: Holiday (no classes held today)

Monday 27 July: **Third Exam** (Chapters 5 and 6)

Wednesday 29 July: Chapter 7

Friday 31 July: Chapter 7; **HW 7 due**

Monday 3 August: Chapter 7

Wednesday 5 August: **HW 8 due**; Revision for Final Exam**Thursday 6 August: Final Exam** (comprehensive) 10.00 a.m. to noon

Beginning Wednesday 12 August, you may pick up your Final Exam paper from my secretary, Mary Ann Woolf (205 JFB, telephone 801–581–4246), or from the receptionist at 201 JFB (801–581–6901). Be prepared to show some form of picture identification.

Summer Term 2009

Physics 3740

Stone

Homework Problems from *Modern Physics* (5th ed.) by Tipler and Llewellyn:

<u>HW Set</u>	<u>Problems</u>	<u>Date Due</u>
1	Ch. 1: 15, 23, 30, 34, 42, 45, 51, 53, 56, 57 (assume that the personified observers of this problem are located at the <i>origins</i> of their frames), 59	Wednesday 17 June
2	Ch. 2: 3, 11, 14, 18, 21, 26, 27, 29, 45, 46, 48	Wednesday 24 June
3	Ch. 3: 15, 18, 22, 25, 32, 37, 38, 42, 46, 50 53, 54, 55, 56 (use the result of 49)	Wednesday 1 July
4	Ch. 4: 3, 13, 19, 20, 24, 27, 32, 36, 37, 43, 45, 48, 52	Wednesday 8 July
5	Ch. 5: 6, 8, 15, 17, 20, 25, 29, 30, 35, 37, 45, 49, 51	Wednesday 15 July
6	Ch. 6: 3, 6, 10, 16, 19, 23, 26, 33, 36, 39, 44, 48	Wednesday 22 July
7	Ch. 6: 55, 57 Ch. 7: 5, 9, 14, 15, 17, 19, 21, 22, 24, 25, 28	Friday 31 July
8	Ch. 7: 30, 33, 36, 39, 40, 41, 42, 48, 58, 61, 63, 66, 67 71 (use the result of problem 60, not 57), 73	Wednesday 5 August