SYLLABUS

Physics 2053: Contemporary Physics: Relativity and Quantum Phenomena

Spring 2016

Instructor: Prof. Charlotte Elster
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Class Info: M,W,F 9:40 - 10:35 am, Clippinger 131
Group work (F) in Clippinger 259 or Clip 043B according to announcement

Office Hours: M 10:45-11:45 am, and by appointment

Course Web-Site: *www.phy.ohiou.edu/˜ elster/phys2053/*

Text: Modern Physics for Scientists and Engineers by John C. Morrison, 1st edition Academic Press, 2010

Lecture Plan:

Week 1	1/11	Ch. 0	Review of Mechanics and Waves
Week 2	1/18	Ch. 1	Wave and Particle Duality
Week 3	1/25	Ch. 2	The Schrödinger Equation
Week 4	2/1	Ch. 2	and Applications
Week 5	2/8	Ch. 3	Operators and Waves
Week 6	2/15	Ch. 3+4	Potential Barriers and Tunneling
Week 7	2/22	Ch. 4	The Hydrogen Atom **and Midterm Exam**
Week 8	2/29		Spring-break
Week 9	3/7	Ch. 5	The Hydrogen Atom Cont'd
Week 10	3/14	Ch. 6	Electron Spin
Week 11	3/21	Ch. 7	Many Electron Atoms
Week 12	3/28	Ch. 7	Relativistic Physics I
Week 13	4/4	Ch. 8	Relativistic Physics II
Week 14	4/11	Ch. 11	Introduction to Nuclear Physics
Week 15	4/18	Ch. 11	Forces, Fission, Fusion

Attendance: You are expected to attend every class, and are responsible for all material presented there. At the class sessions, you should be prepared to discuss the assigned reading material. There is also a participation component of the grade which will be discussed below and which could be affected by lack of attendance.

Assignments: A key component is the ability to apply ideas to conceptual as well as mathematical problems. Each week there will be 4-10 problems to be solved. The solutions to the problems will be due in the Wednesday class.

In grading homework I will be mainly focus if you understand how to solve the problems. Therefore, partial credit will be given for incomplete solutions, and conversely, a correct answer without adequate explanation will not lead to full credit. All steps used in reaching the solution must be properly explained and justified. Specifically, mathematical reasoning should be quite rigorous. In addition, the solution should be readable as coherent English discussion of the problem. That means, explanatory sentences should be inserted into the mathematical reasoning. If appropriate, you should illustrate the physical situation with a sketch or diagram as you describe the solution of the problem.

The course has a group work component, in which you are expected to solve the assigned work as group. However, each student is expected to be in full control of each part of the group work. The group is allowed to turn in a 'group work', which will be graded.

Exams: There will be a midterm (1 hour) and a final exam (2 hours), which will be closed book. The **Midterm** will take place on February 27 from 9:40 - 10:40 am (location to be determined), and the **Final** will take place April 29 from 1:00 - 3:00 pm (location to be determined). The final exam will be comprehensive.

Electronic Devices in Exams: You are allowed a dedicated calculator for exams. All other electronic devices are forbidden. This includes music players, electronic dictionaries, tablets and cell phones. Simple scientific calculators can be purchased for as little as $10. Make sure that the calculator will handle scientific notation and trigonometric functions.

Participation: Since the success of a class relies on the active participation of the student and the preparation for the class, 10% of the grade are reserved to reflect this part of the class. You are required to participate in the group work, since any group will not function if its members are absent.

Summary of Grading:

Homework	35%
Midterm Exam	25%
Final Exam	30%
Group Work / Lab Portfolios	10%

Final Grades: will be assigned according to the following scale. (I reserve the option of shifting it **downward** if it turns out that exams were particularly difficult, but will never shift it upward.)

A- to A	90% or better
B- to B+	80 - 89%
C- to C+	70 - 79%
D- to D+	60 - 69%
F	below 60%

Contingency Plans: In the event of a major campus emergency, course requirements, deadlines, and grading percentages are subject to changes that may be necessitated by a revised calender or other circumstances beyond he instructor's control. I will make sure this information is communicated through e-mail.

Drop/Add: See the *Changing Class Schedule* policy in the OU Undergraduate Catalog. Makeup work may not be provided for past-due assignments when adding after the first day of classes.

Misconduct: I am required to remind you that academic misconduct is a Code A violation of the Ohio University Code of Student Conduct. If you are found to be involved in academic misconduct regarding this course, you will receive **F** on the pertinent work and possibly for the entire course, and possibly also a referral to the Director of Community Standards. Procedures for judicial actions will be invoked as described in the Student and Faculty Handbooks. See the OU Undergraduate Catalog.