TEXAS A&M UNIVERSITY

SYLLABUS

Course title and number	PHYS 606: Quantum Mechanics I
Term	Spring 2016
Meeting times and location	TR 12.45-14.00, MPHY 109

Course Description and Prerequisites

An introduction to quantum mechanics for students in physics and other fields of science and engineering.

Prerequisite: MATH 311 and MATH 412 or equivalent, PHYS 412 or equivalent, concurrent registration in PHYS 615.

Learning Outcomes or Course Objectives

Starting from the failure of classical mechanics in the microscopic world we develop the fundamental concepts of wave mechanics. We will proceed to solve a variety of quantum mechanical problems analytically before we discuss several techniques for solving the Schrodinger equation approximately. Afterwards we will explore the abstract formulation of quantum mechanics based on Hilbert Spaces. We end with the important theory of angular momentum in quantum theory and discuss solutions of problem with spherical symmetry.

Instructor Information

Name	Rainer J Fries
Telephone number	845-1411
Email address	rjfries@comp.tamu.edu
Office hours	Tue, Wed 10.30 am -12 noon
Office location	MPHY 309

Textbook and/or Resource Material

Primary textbook: Quantum Mechanics, 3rd edition by E. Merzbacher.
You will find many other books covering the same topics e.g. Sakurai, Landau-Lifshitz Vol. III. They can be useful but are not required. Copies of the lectures will be posted online as the semester progresses.

Website: http://cyclotron.tamu.edu/fries/teach

Grading Policies

The course grade will be determined from the various components of the course in the following way:
    (a) Homework (50%)
    (b) Midterm exam (20%)
    (c) Final exam (30%)

Make-up exams will only be granted in case of a university recognized absence (university business, doctor's note etc.). Make your absence known to the instructor as soon as you know about it.

Course Topics, Calendar of Activities, Major Assignment Dates

Midterm Exam and Final Exam: TBD

Tentative Schedule (chapters in Merzbacher in parentheses):

Week	Topic
1: Jan 19	Introduction to Wave Mechanics (1, 2)
2: Jan 26	The Schrodinger Equation (3)
3: Feb 2	The Formalism of Wave Mechanics (4)
4: Feb 9	The Formalism of Wave Mechanics (4)
5: Feb 16	Simple Problems in Wave Mechanics (5,6)
6: Feb 23	Simple Problems in Wave Mechanics (5,6)
7: Mar 1	Approximative Methods and Perturbation Theory (7,8)
8: Mar 8	Approximative Methods and Perturbation Theory (7,8)
9: Mar 15	*Spring Break*
10: Mar 22	Quantum Theory (9,10)
11: Mar 29	Quantum Theory (9,10)
12: Apr 5	Angular Momentum (11)
13: Apr 12	Angular Momentum (11)
14: Apr 19	Spherically Symmetric Potentials (12)
15: Apr 26	Spherically Symmetric Potentials (12)

Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

Academic Integrity
For additional information please visit: http://aggiehonor.tamu.edu

"An Aggie does not lie, cheat, or steal, or tolerate those who do."