

Syllabus (updated: 8/1/20)

Applied Quantum Mechanics, Phys709 (3 hours) – fall 2020

Instructor: Professor Chii-Dong Lin
Office: Cardwell Hall 230 Email: cdlin@phys.ksu.edu
Help Hours: to be decided
 Help by ZOOM can be arranged for evenings

Lectures: TT 2:30 p.m.-3:45 p.m.
Will do online instruction using ZOOM until face-to-face lecture is safe

Text: D. J. Griffiths, Introduction to Quantum Mechanics, 2nd or 3rd edition.
Lecture notes will be distributed via Canvas and will be available before the class.

Learning outcomes: Learn the techniques of solving physics problems using quantum mechanics

Prerequisite: PHYS 662 – Introductory Quantum Mechanics; PHYS 532 – E&M I

Course Website: K-State Canvas (log on and you will have access to the website if you are enrolled). Check this website for important messages.

Lectures: In this course you will learn different theoretical and computational techniques of solving quantum problems.

Tentatively, I intend to cover:

1. Time-independent perturbation theory and applications
2. Time-dependent perturbation theory and applications
3. Interaction of charged particles with electromagnetic fields
4. Radiation
5. Building up of atoms, molecules and solids
6. Quantum statistical mechanics
7. Scattering theory—partial wave expansion and integral equations methods
8. Miscellaneous applications

I will adopt the materials from Griffiths (ed. 2) whenever possible. Summarized lecture notes will be distributed.

Team work: Students are encouraged to discuss homework problems but not to copy from each other.

Homework (HW): Homework is a great method to hone in your problem-solving skills. Any mathematical and computational tools can be used in homework or examinations. All the examinations are open book. You can use any references in solving each problem.

I will read your homework myself so I can tell what you do not know. All the homework should be submitted to me in PDF format and make sure that I can edit or make remarks on the file which will be returned back to you. I will try to go over the homework with you in an evening session after it is graded.

Exams: There will be a mid-term exam and a final exam. The format of the exam will be announced later.

Grade calculation: homework (40%), mid-term (30%), Final (30%).

University-wide Syllabi Statements

1. Statement Regarding Academic Honesty

Kansas State University has an Honor and Integrity System based on personal integrity, which is presumed to be sufficient assurance that, in academic matters, one's work is performed honestly and without unauthorized assistance. Undergraduate and graduate students, by registration, acknowledge the jurisdiction of the Honor and Integrity System. The policies and procedures of the Honor and Integrity System apply to all full and part-time students enrolled in undergraduate and graduate courses on-campus, off-campus, and via distance learning. A component vital to the Honor and Integrity System is the inclusion of the Honor Pledge which applies to all assignments, examinations, or other course work undertaken by students. The Honor Pledge is implied, whether or not it is stated: "On my honor, as a student, I have neither given nor received unauthorized aid on this academic work." A grade of XF can result from a breach of academic honesty. The F indicates failure in the course; the X indicates the reason is an Honor Pledge violation.

2. Statement Regarding Students with Disabilities

Students with disabilities who need classroom accommodations, access to technology, or information about emergency building/campus evacuation processes should contact the Student Access Center and/or their instructor. Services are available to students with a wide range of disabilities including, but not limited to, physical disabilities, medical conditions, learning disabilities, attention deficit disorder, depression, and anxiety. If you are a student enrolled in campus/online courses through the Manhattan or Olathe campuses, contact the Student Access Center at accesscenter@k-state.edu, 785-532-6441; for K-State Polytechnic campus, contact Julie Rowe, Diversity, Inclusion and Access Coordinator, at jarowe@ksu.edu or call 785-826-2971

3. Statement Defining Expectations for Classroom Conduct

All student activities in the University, including this course, are governed by the Student Judicial Conduct Code as outlined in the Student Governing Association By Laws, Article V, Section 3, number 2. Students who engage in behavior that disrupts the learning environment may be asked to leave the class.

4. Statement Regarding Wearing of Face Coverings

To protect the health and safety of the K-State community, students, faculty, staff and visitors must wear face coverings over their mouths and noses while on K-State campuses in all hallways, public spaces, classrooms and other common areas of campus buildings, and when in offices or other work spaces or outdoor settings when 6-foot social distancing cannot be maintained. In addition, all students, faculty, and staff are required to take the COVID-19 and Face Mask Safety training. Employees who need reasonable accommodations and assistance related to required face coverings may contact the ADA coordinator at charlott@k-state.edu, and students needing accommodations may contact the Student Access Center at accesscenter@k-state.edu.

In classrooms, faculty have the right to deny a student entry into the room if the student is not wearing a face covering. Students not wearing a face covering will be reminded to do so and offered a clean face covering, if one is available. If the student does not comply, the faculty member will ask the student to leave the space, and if available, join the class remotely. As a last resort, campus police will be called. The faculty members will complete the Code of Conduct form and the Office of Student Life will look further into the issue and take the non-compliance with the request to leave into consideration of further accountability measures.

At no point should the professor or other students put themselves into an unsafe situation while attempting to enforce the face-covering policy. Manhattan campus police: 785-532-6412