

# Course Syllabus

## Phys 503: Advanced Quantum Mechanics 1

### Koç University, Fall 2023

**Instructor:** Ali Mostafazadeh (Office: Sci.154; Office Hours: Tuesdays & Thursdays 17:30-18:30)

**Main Textbook:** “Quantum Mechanics,” G. Auletta, M. Fortunato, and G. Parisi (Cambridge University Press, 2009)

**Topics to be covered:** Review of the mathematical tools used in classical and quantum mechanics, kinematical and dynamical aspects of quantum mechanics, quantum-to-classical correspondence and coherent states, pilot-wave interpretation of quantum mechanics and semiclassical approximation, elements of quantum scattering theory, perturbation theory, angular momentum and spin\*

**Website:** TBA

**Objective:** This course aims at providing the student with an in-depth knowledge of the structural properties and methods of quantum mechanics and some of their basic consequences and applications.

**Evaluation method:** Students’ progress will be evaluated according to their performance in homework assignments (15%), two midterm exams (25% each), and a final exam (35%). If a student fails the course and takes the remedial exam, his/her grade in this exam will be substituted for his/her grade in the final exam and his/her letter grade will be determined accordingly.

**Policy for homework assignments:** The homework papers should be uploaded to Blackboard before their due time. Late homework submissions will not be accepted. To reduce the workload of the course’s teaching assistant not all the homework problems will be graded. Illegible homework papers will not receive any credit.

**Eligibility to take the final exam:** In order to become eligible to take the final exam, a student must not miss more than 8 of the lectures, must take at least one of the midterm exams, and his/her average grade in the midterm exams must not be below 30 out of 100.

**Attendance & bonus:** Students who do not attend more than 8 of the lectures (for any reason) will not be eligible to take the final exam and will fail the course. If a student misses  $n$  lectures and  $n < 8$ ,  $8 - n$  bonus points will be added to his/her final exam grade.

**Auditing Students:** In order to get an AU, a student must attend at least 20 of the lectures.

**Make-ups & Remedial Exams:** If a student misses a midterm exam and has a valid excuse, his (her) grade in the final exam will be substituted for the grade in the missed midterm exam(s). If (s)he also misses the final exam, (s)he will be given zero in the midterm exam(s) that (s)he has missed regardless of whether (s)he has a valid excuse or not. If a student misses the final exam and has a valid excuse, (s)he will be given a make-up exam. Students who fail the course but have a chance of passing it by taking the remedial exam will be allowed to take this exam.

**Suggested Method of Study:** Students are advised to study the subjects covered in class immediately after the lectures. Reading the lecture notes and the book is necessary for grasping the subject, but it is by no means sufficient. Students must try to reproduce the derivations of the results covered in class on their own. They are expected to spend an average of three hours per week on studying the material covered in class in addition to the time spent on homework assignments.

\* This topic will be covered depending on the progress of class.