SYLLABUS

Time: Mon./Wed. 5:30-6:45 pm
Location: PS F462
Instructor: Prof. Dmitry Matyushov
Office: PS F348
Phone: (480)9650057
E-mail: dmitrym@asu.edu
Office hours: Mon. 3-5 pm, Wed. 2 - 3:30 pm, or by e-mail appointment

Text: Quantum Physics (3rd edition), by Stephen Gasiorowicz

Web page: http://theochemlab.asu.edu/teaching/phy571/phy571.html


GRADING:
Homework: Five homework assignments will be given during the semester. Each of homework assignments must be turned in at the beginning of the class on the due date (see the class web site for the dates). The homework assignments and will make 50% of the grade.
Mid-term exam: A one-hour mid-term exam (open-book and open-notes, 25% of the grade).
Final exam: A cumulative exam (open-book and open-notes, 25% of the grade, Dec. 15, 4:50–6:40 pm).

ABSTRACT:
This course is for several sets of students, including Physics, Astronomy, Chemistry/Biochemistry, Electrical Engineering, Materials Science and Engineering students, and can take its character to some extent from those who join the course. It is a core course for the new Professional Science Masters’ degree in Nanoscience. It may also interest other graduate students across Science and Engineering disciplines. It can be taken as a ‘final’ course in Quantum Physics, or in preparation for the PHY 576-577 course Quantum Theory series in the following year. For EEE students, it is a complementary or parallel course to EEE 434/591.

LIST OF MODULES:
1. Background information (Chs. 1-2)
2. 1-dimensional Eigenvalue problems (Chs. 3-4)
3. Operator and Matrix methods (Chs. 6-9)
4. Atomic and Molecular Physics: Spin and Statistics (Chs. 10-14)
5. QM in Biology, Chemistry, and Nanoscience:
   QM in Chemistry: molecular absorption and emission
   QM in biology: electron transfer, energy transfer, light harvesting
   QM in nanoscience: quantum dots