

PHYSICS 511 QUANTUM MECHANICS

Fall 2020

Tuesday, Thursday, 11:30 AM -- 12:50 PM,

Instructor: Dmitri Averin, dmitri.averin@stonybrook.edu

office hours: Wednesday 2:00-4:00 PM

Office hours are by skype. Questions can be asked and additional skype appointments made through email. Lectures will follow closely presentation in Sakurai. Notes on any additional material will be posted on the webpage.

Teaching assistant: tbd

office hour: tbd

Textbook: J.J. Sakurai and Jim Napolitano, "Modern quantum mechanics"

Supplementary L.D. Landau and E.M. Lifshitz, "Quantum mechanics",

reading: R. Shankar, "Principles of quantum mechanics".

This is a course in graduate quantum mechanics. It will cover the material discussed in Sakurai and some selection of additional topics related to modern developments in quantum information and quantum measurements. Approximate outline of the course:

1. Basic concepts: Hilbert space, quantum dynamics, measurements.
2. One-dimensional problems.
3. Angular momentum, spin.
4. Symmetry in quantum mechanics.
5. Hydrogen atom.
6. Elements of quantum information and computation.

Grading	Homework	25%
	Midterm	25%
	Final	50%

Exams will be given electronically, and as well as all homework assignments, will need to be submitted electronically through Blackboard.

Learning outcomes

Students who complete this course should

- Have a deep understanding of the foundations of quantum mechanics and methods of solution of the one-dimensional problems.
- Have a basic understanding of ideas underlying quantum information theory and quantum measurements
- Have a deep understanding of the role of symmetries in quantum mechanics, of the angular momentum and methods of solution of the three-dimensional Schrödinger equation with central potentials

Everyone participating in this class, must wear a mask/face covering at all times. Any student not in compliance with this will be asked to leave the class.

Student Accessibility Support Services (SASC):

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Student Accessibility Support Center, ECC (Educational Communications Center) Building, Room 128, (631)632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential. <https://www.stonybrook.edu/commcms/studentaffairs/sasc/facstaff/syllabus.php>

Academic Integrity Statement:

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website

at: http://www.stonybrook.edu/commcms/academic_integrity/index.html

Critical Incident Management Statement

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.