PHYSICS 251 MODERN PHYSICS

Fall 2024

Lectures Tuesday, Thursday 11:00 AM -- 12:20 PM, Room P-118, Grad. Physics

Recitations

Section 1: Tuesday 2:00 -- 2:55 PM, Room P-116, Grad. Physics

Section 2: Thursday 2:00 -- 2:55 PM, Room W-4530, Melville Library

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

office hours: Tuesday, 12:30—1:30 PM, Thursday, 12:30—1:30 PM; Room B-140, Grad. Physics; also by appointment.

Textbook/ Homework access: Webassign;

S.T. Thornton; A. Rex; C. Hood. `` Modern physics for scientists and engineers'' Ed. 5.

Outline

This is the basic introduction to foundations of modern physics focused on

- Special Relativity (electromagnetism)
- Non-relativistic Quantum Mechanics
- Statistical Mechanics

and some examples of their applications:

- Classical and quantum information theory
- Solid-state physics
- Physics of semiconductor devices

Grading will be based on

Homework assignments (submitted online through Webassign) 20%,
Recitation grade (attendance and quizzes) 20%
Midterm 25%
Final exam 35%.

A passing grade will require not less than 50% of the total.

Student Learning Outcomes: Students who successfully complete this course

- will have a basic understanding of the foundations of relativity theory, quantum and statistical mechanics;
- should be able to perform elementary calculations in these areas
- will have some knowledge of current research topics in classical and quantum information theory, and solid-state physics.

Student Accessibility Support Center statement:

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, Stony Brook Union Suite 107, (631) 632-6748, or at sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and the Student Accessibility Support Center. For procedures and information go to the following website: https://ehs.stonybrook.edu//programs/fire-safety/emergency-evacuation/evacuation-guide-disabilities and search Fire Safety and Evacuation and Disabilities.

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 members are required to report any suspected instance of academic dishonesty to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at:

http://www.stonybrook.edu/uaa/academicjudiciary/

Critical Incident management:

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, and/or inhibits students' ability to learn.

http://www.stonybrook.edu/uaa/academicjudiciary/