

PHY 303/572: Mechanics

Spring 2025 Syllabus

Instructor: Jennifer Cano

1 Instructor and TA

Instructor: Jennifer Cano
Office: PHY B-147
Email: jennifer.cano@stonybrook.edu
Office hours: TBD

TA: Jonathan Tekverk
Email: jonathan.tekverk@stonybrook.edu
Office hours: TBD

2 Lectures

Lectures will be held in-person Mondays and Wednesdays from 5-6:20 in Frey 105.

3 Blackboard

The course administration will be done mainly via Blackboard. Course announcements will be posted there or sent to via class email.

4 Course description

PHY 303/573 is a rigorous introduction to classical mechanics, from the Newtonian to the Lagrangian and Hamiltonian formulations. It requires students to have a working command of algebra and calculus. You should expect to spend a significant amount of time reading the textbook and solving the homework problems.

Prerequisites: PHY 251 and PHY 277; MAT 303 or MAT 305 or AMS 361 or MAT 308.

5 Textbook and topics

The primary textbook for the class is “Classical Dynamics” by Marion and Thornton. The course will follow the general framework of this book. The following is a tentative list of topics that may be covered:

- Mathematical review: vector calculus
- Newtonian mechanics

- Oscillations
- Gravitation
- Calculus of variations
- Lagrangian and Hamiltonian dynamics
- Central-force motion
- Dynamics of a system of particles
- Noninertial reference frames
- Dynamics of rigid bodies
- Coupled oscillators

There are many other references in print and online. You may find it useful to consult other textbooks for complementary perspectives.

6 Homework and grading

Homework will be assigned weekly. A hard copy will be due at the start of class. The homework may be challenging. You should expect to spend several days studying the theory and working on the problems.

Homework submission deadlines will be strict. However, to accommodate for unforeseen events, the lowest homework score will be dropped from the final grade calculation. Discussing the homework with your classmates is encouraged, but your submissions must be entirely your own work. For full credit, show the details of the derivations, not just the end results. Copying blocks of text or equations from online sources is prohibited.

There will be one midterm, to take place during a class period near the middle of the semester. The final exam will take place during the final exam period (Weds May 14, 5:30-8pm). The intended grading scheme is as follows: homework 30%, midterm 30%, final 40%.

Letter grades for the course will be assigned on a curve, which will be determined at the end of the semester depending on the difficulty of the exams.

7 University Policies

Student Accessibility Support Center (SASC) 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 is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Professions, 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 Student Conduct and 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.