Math 402 - Spring 2026
Seminar on Mathematical Methods of Classical Mechanics

Course Syllabus

Lecturer: **Dror Varolin**

Office	4-111 Math Tower
Office Hrs	Tuesdays 11:00am-2:00pm or by appointment
EMAIL	dror@math.stonybrook.edu
Phone	631-632-8273

Prerequisites: A solid knowledge in vector calculus, linear algebra and basic ordinary differential equations is required. Some rudimentary knowledge of abstract algebra is helpful, especially the basic notions of hroup theory. Permission from instructor is required.

Text: This semester we will follow the book of Vladimir Arnol'd entitled

Mathematical Methods of Classical Mechanics

There will sometimes be supplementary notes as well.

Course webpage: http://www.math.stonybrook.edu/~dror/402-s26.html

Holidays: Holidays are listed in the university calendar. See
http://www.stonybrook.edu/registrar/index.shtml

Presentations: Students will be required to give at least one presentation to the class. The length and format will be decided after it is clear how many people are attending.

Homework: Problem sets will be provided periodically. Approximately six to eight problem sets are to be expected. Students can work together on these problems, but every student has to write their own solutions, and these should not be copies of other solutions.

Examinations: There will be no exams.
Math Learning Center (MLC): The location of the MLC is S-235 in the math tower. The MLC is open every day and most evenings. A schedule is posted on the door.

Drop/Add dates: Can be found **here**

For more details, click the following link to the SBU registrar

The following general topics will be discussed in seminar style.
Preliminary reading should be done before class, following the book.

Particular topics will be assigned for presentations at certain points of the semester to be determined.

1. Experimental Facts and Their Mathematical Formulation
2. Investigation of Newton's Equations of Motion
3. Variational Formulation of Classical Mechanics
4. Lagrangian Mechanics on Manifolds
5. Oscillations and the Linearization of Nonlinear Phenomena
6. The Motion of a Rigid Body
7. Cartan's Calculus of Differential Forms
8. Symplectic Manifolds
9. Canonical Formalism

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.

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

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 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. Until/unless the latest COVID guidance is explicitly amended by SBU, during Fall 2021"disruptive behavior" will include refusal to wear a mask during classes.