Syllabus Subject to Modification

SYLLABUS PHYS 3210

Mechanics, Fall 2026

Dr. Yuri Rostovtsev
Office: GAB 525I
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Office Hours: M 11:00 pm-12:30 pm or by appointment.

Lecture: MWF 10:10 – 11:00 AM
Matthews Hall Room 112
Recitation: M 2:15-4:05 PM
Wooten Hall Room 216

Text: *Classical Mechanics*, by John R. Taylor, University Science Books, Mills Valley, CA 2005

Topics and General Information: This course will cover the motion of a particle in one, two, and three dimensions, conservation laws, mechanical oscillations, Lagrange's equations, central forces, noninertial reference frames, and rotation of rigid bodies.

Attendance: Attendance of all lectures and recitations is strongly encouraged. Please inform the professor if you are unable to attend class meetings because you are ill, in mindfulness of the health and safety of everyone in our community.

Exams: There will be three exams during the semester and a comprehensive final exam. Exams will be delivered in recitation class. Exam questions will be based on material covered in the lecture, contained in the text, and in the homework assignments.
Make-up: There will be no makeup exams.

Homework: Homework sets will be assigned each week. Each completed assignment will be submitted through Canvas, in the form of either image files, a scanned file, or a typeset electronic document. If images or scanned files are submitted of handwritten work, the solutions must be legible. Solutions must be complete to receive full credit.

Grading:

Exam I, Exam II, Exam III	15 %, 15%, 15%
Homework	15 %
Comprehensive final exam	40 %
Bonus problems	
	100%

(A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: less than 60)

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time, however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information see the Office of Disability Accommodation website at http://www.unt.edu/oda. You may also contact them by phone at 940.565.4323.

UNT's policy on Academic Dishonesty can be found at: http://www.vpaa.unt.edu/academic-integrity.htm

Key dates: https://registrar.unt.edu/registration/fall-registration-guide

SPOT Evaluation: Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13, 14 and 15 of the semester to provide students with an opportunity to evaluate how this course is taught.

Students will receive an email from "UNT SPOT Course Evaluations via IASystem Notification" (no- reply@iasystem.org) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the SPOT website (http://spot.unt.edu/) or email spot@unt.edu.

Fall 2026, Physics 3210.001
Tentative Lecture Schedule

Session	Date	Day	Chapter, Lecture Topic
1	Aug. 17	M	Ch. 1, Fundamentals
2	Aug. 19	W	Ch. 1, Newton's laws
3	Aug. 21	F	Ch. 1, Coordinate systems
4	Aug. 24	M	Ch. 2, Projectile motion with air resistance
5	Aug. 26	W	Ch. 2, Projectile motion with air resistance, cont'd.
6	Aug. 28	F	Ch. 2, Charged particle motion in a magnetic field
7	Aug. 31	M	Ch. 3, Conservation of linear momentum, center of mass
8	Sept. 2	W	Ch. 3, Angular momentum, moment of inertia
9	Sept. 4	F	Ch. 4, Kinetic and potential energy
---	Sept. 7	M	*No class Monday, Sept. 7 – Labor Day*
10	Sept. 9	W	Ch. 4, Force from potential energy; test for conservative force
11	Sept. 11	F	Ch. 4, Energy in one-dimensional systems
12	Sept. 14	M	Ch. 4, Central forces; energy in multiparticle systems **Exam 1—Chapters 1–4.4**
13	Sept. 16	W	Ch. 4, Simple harmonic motion
14	Sept. 18	F	Ch. 5, Simple harmonic motion
15	Sept. 21	M	Ch. 5, Damped oscillations
16	Sept. 23	W	Ch. 5, Driven oscillations, resonance
17	Sept. 25	F	Ch. 5, Fourier series
18	Sept. 28	M	Ch. 6, Calculus of variations and the Euler-Lagrange equation
19	Sept. 30	W	Ch. 6, Applications of the Euler-Lagrange equation
20	Oct. 2	F	Ch. 7, Lagrange's equations for unconstrained motion
21	Oct. 5	M	Ch. 7, Lagrange's equations for constrained motion
22	Oct. 7	W	Ch. 7, Examples of Lagrange's equations
23	Oct. 9	F	Ch. 8, Two-body central-force problem – basics
24	Oct. 12	M	Ch. 8, Equation of orbit; Kepler orbits **Exam 2—Chapters 4.6–7**
25	Oct. 14	W	Ch. 8, Kepler orbits, cont'd.
26	Oct. 16	F	Ch. 8, Kepler orbits, cont'd.
27	Oct. 19	M	Ch. 9, Linearly accelerating frames; tides
28	Oct. 21	W	Ch. 9, Time derivatives and Newton's 2nd law in rotating frames
29	Oct. 23	F	Ch. 9, Fictitious forces in rotating frames
30	Oct. 26	M	Ch. 10, Rotation of a rigid body about a fixed axis
31	Oct. 28	W	Ch. 10, Rotation of a rigid body about an arbitrary axis

32	Oct. 30	F	Ch. 10, Principal axes of inertia
33	Nov. 2	M	Ch. 10, Euler's equations
34	Nov. 4	W	Ch. 11, Spring-coupled masses; normal modes of oscillation
35	Nov. 6	F	Ch. 11, Weakly-coupled masses; Lagrangian approach
36	Nov. 9	M	Ch. 11, Lagrangian approach, cont'd. **Exam 3—Chapters 8–10**
37	Nov. 11	W	Ch. 12, Nonlinearity and chaos
38	Nov. 13	F	Ch. 12, Nonlinearity and chaos
39	Nov. 16	M	Ch. 12, Driven damped pendulum example
40	Nov. 18	W	Ch. 12, Sensitivity to initial conditions
41	Nov. 20	F	Ch. 13, Hamilton's equations
---	Nov 22-28	M-F	*No class – Thanksgiving Break*
41	Nov. 30	M	Ch. 13, Hamiltonian mechanics, cont'd.
42	Dec. 2	W	Last day of class—Review

FINAL EXAM—Comprehensive—Wednesday, Dec. 9, 08:00 a.m‑10:00 a.m.