

COURSE SYLLABUS
PHYS 5306: "Classical Dynamics"
Fall 2020

Instructor: Joseph D. Romano

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Lectures: PHYS 5306: TTh 12:30 PM - 1:50 PM, (online)

Office hours: TTh 2:00 PM - 3:30 PM, and by appointment (online)

Recommended textbooks:

"Mechanics" (3rd edition) by L.D. Landau and E.M. Lifshitz

"Classical Mechanics" by M.J. Benacquista and J.D. Romano

Course Description: Lagrangian dynamics and variational principles. Kinematics and dynamics of two-body scattering. Rigid body dynamics. Hamiltonian dynamics, canonical transformations, and Hamilton-Jacobi theory of discrete and continuous systems. M.S. and Ph.D. core course.

Learning Outcomes: Students should be able to thoroughly understand the concepts and methods of classical mechanics. Students are expected to be able to apply key physics principles to explain and solve problems, at the graduate level, in this area of physics.

Outcome assessment: The expected course outcomes will be assessed through problem solving in class and on exams.

Course website: Blackboard <https://ttu.blackboard.com/>.

Class participation: Solving problems is probably the most important part of this course. Although you won't have graded homework assignments, you will work on suggested problems throughout the semester. There will be unannounced "pop" quizzes in class from time to time to make sure that you are up-to-date with the material.

Exams: There will be two written midterm exams and a comprehensive oral final (see 'Course Calendar' for dates). No make-up examinations will be given. In the case of a serious emergency, please see me to discuss how the final grade will be determined.

Grading:

Class participation: 20%

Midterm x 2: 60%

Final (oral): 20%

Total: 100%

Number grades will be converted to letter grades as follows:

A: 100-80; B: 79-60; XX: 59-50; C: 49-30; F: 29-0

with the XX borderline case determined primarily by class participation.

REQUIRED SYLLABUS LANGUAGE:

Required Use of Masks/Facial Coverings by Students in Class: The Texas Tech University System has implemented a mandatory Facial Covering Policy to ensure a safe and healthy classroom experience. Current research on the COVID-19 virus suggests that there is a significant reduction in the potential for transmission of the virus from person to person by wearing a mask/facial covering that covers the nose and mouth areas. Because of the potential for transmission of the virus, and to be consistent with the University's requirement, students in this class are to wear a mask/facial covering before, during, and after class. Observing safe distancing practices within the classroom

by spacing out and wearing a mask/facial covering will greatly improve our odds of having a safe and healthy in-person class experience. Any student choosing not to wear a mask/facial covering during class will be directed to leave the class and will be responsible to make up any missed class content or work.

COVID-19 related items:

- a. If Texas Tech University campus operations are required to change because of health concerns related to the COVID-19 pandemic, it is possible that this course will move to a fully online delivery format. Should that be necessary, students will need to have access to a webcam and microphone for remote delivery of the class.
- b. Policy on absences resulting from illness (see Attachment A.).
- c. Policy statement on positive test (to be available soon).
- d. Requesting accommodations as a result of personal health concerns (see Attachment B.).

Academic Honesty (OP 34.12): It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension.

“Scholastic dishonesty” includes, but it not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act.

The full policy is available at <http://www.depts.ttu.edu/opmanual/OP34.12.pdf>

Special Accommodation for Students with Disabilities (OP 34.22): Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor’s office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in West Hall or call 806-742-2405.

The full policy is available at <http://www.depts.ttu.edu/opmanual/OP34.22.pdf>

Student Absence for Observance of a Religious Holy Day (OP 34.19):

1. “Religious holy day” means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code §11.20.
2. A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.
3. A student who is excused under section 2 may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

The full policy is available at <http://www.depts.ttu.edu/opmanual/OP34.19.pdf>

TTU Resources for Discrimination, Harassment, and Sexual Violence: Texas Tech University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from gender and/or sex discrimination of any kind. Sexual assault, discrimination, harassment, and other Title IX violations are not tolerated by the University.

Report any incidents to the Office of Student Rights & Resolution, 806-742-SAFE (7233) or file a report online at <http://www.depts.ttu.edu/titleix/>.

Faculty and staff members at TTU are committed to connecting you to resources on campus. Some of these available resources are:

- **TTU Student Counseling Center**

Phone: 806-742-3674

Website: <https://www.depts.ttu.edu/scc/>

(Provides confidential support on campus.)

- **TTU 24-hour Crisis Helpline**

Phone: 806-742-5555

(Assists students who are experiencing a mental health or interpersonal violence crisis. If you call the helpline, you will speak with a mental health counselor.)

- **Voice of Hope Lubbock Rape Crisis Center**

Phone: 806-742-7273

Website: <http://voiceofhopelubbock.org>

(24-hour hotline that provides support for survivors of sexual violence.)

- **The Risk, Intervention, Safety and Education (RISE) Office**

Phone: 806-742-2110

Website: <http://www.depts.ttu.edu/rise/>

(Provides a range of resources and support options focused on prevention, education, and student wellness.)

- **Texas Tech Police Department**

Phone: 806-742-3931

Website: <http://www.depts.ttu.edu/ttupd/>

(To report criminal activity that occurs on or near Texas Tech campus.)

- **LGBTQIA:** Within the Center for Campus Life, the Office of LGBTQIA serves the Texas Tech community through facilitation and leadership of programming and advocacy efforts. This work is aimed at strengthening the lesbian, gay, bisexual, transgender, queer, intersex, and asexual (LGBTQIA) community and sustaining an inclusive campus that welcomes people of all sexual orientations, gender identities, and gender expressions.