

COURSE SYLLABUS  
PHYS 5306: "Classical Dynamics"  
Fall 2021

**Instructor:** Joseph D. Romano

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**Lectures:** PHYS 5306: TTh 12:30 PM - 1:50 PM, (EDUC 370)

**Office hours:** Virtual (preferred) and in-person office hours by appointment.

**Recommended textbooks:**

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

"Classical Mechanics" by M.J. Benacquist 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:** <https://josephromano.github.io/PHYS5306/> with announcements circulated via 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 or illness, please contact 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:**

**Vaccinations:** Texas Tech University strongly recommends students adhere to CDC guidelines on COVID-19, including obtaining COVID-19 vaccinations. If you were unable to obtain a vaccination prior to your arrival on campus, the COVID-19 vaccine is available at Student Health Services by appointment. You can find additional information about the vaccine here, and about the recently announced incentive program here.

**Face Covering Policy:** As of May 19, 2021, face coverings are optional in TTU facilities and classrooms but, based on CDC guidelines, are recommended and welcome, especially for those who have not been vaccinated for COVID-19 or who may have susceptibilities to the virus. Face coverings are required in public transportation (e.g., Citibus) and in the Student Health Clinic.

**Seating Charts and Social Distancing:** There is no longer a mandated social distancing protocol for classroom seating, but using a seating chart and taking attendance are recommended in support of campus contact tracers if needed. Social distancing is recommended in rooms that will enable it.

**Illness-related Absences:** In general student absences due to illness are to be considered as they were prior to the pandemic, with consideration given to the fact that students who are isolating with COVID-19 and students who are quarantining for symptoms or direct exposure may have extended days of absence. Thus, it is to everybody's advantage to stay healthy and avoid getting sick or getting other people sick. Guidance for students is provided at <https://ttucovid19.ttu.edu/User/Consent>.

**In-Person Office Hours:** In-person office hours will be provided upon request if a virtual (online) meeting is not feasible, for whatever reason. For in-person office visits, I strongly recommend that students wear masks and practice social distancing to help reduce the spread of COVID-19. Outdoor meeting venues (weather permitting) is also an option.

**Personal Hygiene:** We all should continue to practice frequent hand washing, use hand sanitizers after touching high-touch points (e.g., door handles, shared keyboards, etc.), and cover faces when coughing or sneezing.

**Potential Changes:** The University will continue to monitor CDC, State, and TTU System guidelines in continuing to manage the campus implications of COVID-19. Any changes affecting class policies or delivery modality will be in accordance with those guidelines and announced as soon as possible. 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 on-line delivery format. Should that be necessary, students will be advised of technical and equipment requirements, such as web cam, microphone, and remote proctoring software.

**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 is 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/tttd/>

(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.