

# Physics 385K: classical mechanics

## Course description

Physics 385K (56385) is the graduate course in classical mechanics. It develops the key tools of modern dynamic analysis, including Lagrange's equations, Hamilton's principle, Hamilton-Jacobi theory, Hamiltonian perturbation theory, and nonlinear dynamics. It also introduces mathematical tools, including differential manifolds, Lie derivatives, tangent and co-tangent bundles and differential forms, that are used broadly in theoretical physics.

## Instructors

Professor Richard Hazeltine

rdh@austin.utexas.edu

Office hours: 2:00 - 3:00 PM Monday and Tuesday, RLM 11.226,  
or by appointment.

Teaching Assistant: To be determined

## Text

*Classical Dynamics: a contemporary approach*, José and Saletan

Comment: The lectures will roughly follow selected topics in the text, and homework will be assigned from the text. However, 385K is a lecture course rather than a textbook course. Students are responsible for lecture material exclusively, and this may differ in content and emphasis from the text.

## Coursework and grading

**Web site:** [utexas.instructure.com](https://utexas.instructure.com) (Canvas)

Syllabus, homework assignments and other class materials will be found under the link "Files."

**Homework** is due on the Thursday of the week after it is assigned. Late homework is not accepted. While you are encouraged to discuss homework with classmates, all written work must be prepared independently. All questions concerning homework and homework grades should be addressed to the Teaching Assistant.

Homework solutions will be posted on the Canvas site.

**Exams:** one hour exam and a final exam. All exams are closed book. There are no make-up exams. With a documented excuse (e.g., note from MD), I will replace a missed hour exam grade by an appropriate average of other work. The hour exam is scheduled for October 27, at the usual class time and place. The final is scheduled for Monday, December 12, 2:00-5:00 PM.

**Grade:** 30% homework, 30% hour exam, 40% final.

### **Disabilities and safety**

The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-6641 TTY.

Safety and Security: - Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.

- Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.

- Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.

- In the event of an evacuation, follow the instruction of faculty or class instructors.

- Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.

- Behavior Concerns Advice Line (BCAL): 512-232-5050

- Link to information regarding emergency evacuation routes and emergency procedures can be found at: [www.utexas.edu/emergency](http://www.utexas.edu/emergency)