

Physics 3102 Mechanics II

Course Description: Physics 3102 *Mechanics II* proceeds along two tracks: physics of continuous media and Lagrange's and Hamilton's formulation of classical mechanics.

Continuum physics describes the macroscopic physical world around us. Whereas a course of analytical mechanics is almost a standard part of physicists' education, physics of continuous media is a course much harder to come by. The enormous progress of quantum physics has almost eliminated macroscopic phenomena from the physics curriculum. Nonetheless, research in engineering, geophysics, materials science, and biology demands increased mastery of its methodology.

The course aims to offer a modern, unified introduction to the basic concepts and phenomenology of continuous macroscopic systems. Emphasis is placed equally on intuition and formalism with examples from geophysics, astrophysics and other fields.

The course is intended for physics, biology, mathematics, chemistry, engineering and geophysics advanced undergraduate students. The mathematical prerequisites are modest and are developed further as the need arises.

Prerequisites: A basic background in calculus, ordinary differential equations and Newtonian mechanics. Familiarity with a programming language is a plus but not required.

Course Webpage: <http://www.phys.uconn.edu/phys3102/>

Lectures: Monday, Wednesday, and Friday 11:15 AM — 12:05 PM in room P103A, Physics Building.

Instructor: Michael Rozman

email: rozman@phys.uconn.edu
phone: 860 486 5827
office: P327, Physics Building
office hours: TBA and by arrangement

Textbook: The course is based on the following books which are not required but highly recommended:

- David Morin, *Introduction to Classical Mechanics With Problems and Solutions*, Cambridge University Press 2008
- B. Lautrup, *Physics of Continuous Matter; Exotic and Everyday Phenomena in the Macroscopic World*, CRC Press 2011

Computer Lab: Physics Computer Lab P122, time to be arranged.

Communications: talking in person is the preferred method to contact the instructor; email to `mailto:rozman@phys.uconn.edu` is the next best option.

- please include the tag “[*phys3102*]” (without quotes, no spaces) in the subject of your email, e.g. “[*phys3102*] midterm II retake”
- please no emails larger than 10K without instructor’s explicit permission or request. Use *UConn File DropBox* <https://dropbox.uconn.edu/dropbox> or *UConn FileLocker* <http://web2.uconn.edu/filelocker/> for submitting large files

Homework: Weekly homework assignments

Highly recommended: make copies of homework assignments for your own files. (A copy machine is in the main physics office. It is available for you for free.)

Exams: Two midterm exams and a *cumulative* final exam. Networked devices are not allowed during the tests.

Course project: may be assigned individually as a partial or full replacement of the final exam

Use of \LaTeX is strongly encouraged. Extra points will be assigned for homework prepared in \LaTeX

Grading scheme: The course grade will be calculated using the following scheme.

Homework	40%
Midterms	30%
Final exam	30%