COURSE DETAIL

CLASSICAL MECHANICS
Country Iceland
Host Institution University of Iceland
Program(s) University of Iceland
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Physics
UCEAP Course Number 130
UCEAP Course Suffix
UCEAP Official Title CLASSICAL MECHANICS
UCEAP Transcript Title CLASSICAL MECHANICS
UCEAP Quarter Units 5.00
UCEAP Semester Units 3.30

Course Description

The course covers the following topics. Newtonian dynamics of a particle in various coordinate systems. Harmonic, damped, and forced oscillations of a pendulum. Nonlinear oscillations and chaos. Gravitation and tidal forces. Calculus of variations. Lagrangian and Hamiltonian dynamics, generalized coordinates and constraints. Central force motion and planetary orbits. Dynamics of a system of particles, collisions in a center-of-mass coordinate system and in a lab system. Motion in a non-inertial reference frame, Coriolis and centrifugal forces. Motion relative to the Earth. Mechanics of rigid bodies, inertia tensors and principal axes of inertia. Eulerian angles, and Euler's equations for a rigid body. Precession, motion of a symmetric top and stability of rigid body rotations. Coupled oscillations, eigenfrequencies and normal modes.

Language(s) of Instruction
English

Host Institution Course Number
EDL302G

Host Institution Course Title
CLASSICAL MECHANICS

Host Institution Course Details
https://ugla.hi.is/kennsluskra/index.php?tab=nam&chapter=namskeid&id=09213420256

Host Institution Campus

Host Institution Faculty
Faculty of Physical Sciences/Engineering and Natural Sciences

Host Institution Degree

Host Institution Department

Course Last Reviewed

2025-2026

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