אוניברסיטת
בן-גוריון בנגב

The Department of Mathematics

2024–25–A term

Course Name Classical Mechanics 2

Course Number 203.1.2281

Course web page
https://math.bgu.ac.il//en/teaching/fall2025/courses/classical-mechanics-2

Office Hours https://math.bgu.ac.il/en/teaching/hours

Abstract

Requirements and grading[1]

Course topics

Review of Newton laws. Generalized coordinates. The principle of least action, constraints. The Lagrangian for free particle and for a system of particles. Conservation laws (energy, momentum, angular momentum). The virial theorem. Motion in one dimension. The two body problem. Motion in a central field and Kepler's problem. Scattering, total and dffierential cross sections. Rutherford's formula. Small oscillations, forced and damped oscillations. Motion of a rigid body, the Inertia tensor. Space and body frames the Coriolis effect. 1The rotation group, infinitesimal and finite rotations. Euler's angles, and Euler's equations. Symmetric and asymmetric tops. The Hamiltonian and Hamilton's equations. Canonical transformations and the Poisson brackets. Liouville's theorem. The Hamilton-Jacobi equation.

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[1]Information may change during the first two weeks of the term. Please consult the webpage for updates