Dynamics of Mechanical Systems

<u>Finalità</u>
The course introduces some elements of system dynamics based on energy approach. It gives methods of solution for lumped and continuous linear systems; it is the basis for further courses on dynamics and finite element method.

<u>Programma</u>
Introduction and definitions
Examples of mechanical systems
Different approaches to the dynamical study of mechanical systems
Lagrange equations for lumped and continuous systems
Rayleigh-Ritz method
Linearization of the equations of motion
Nonlinear problems
Matrix representation of physical systems
Eigenvalues and eigenvectors of real matrices
Physical meaning of eigenvectors
Modal coordinates
Eigenfunctions of linear differential operators

<u>Modalità d'esame</u>
Oral exam

<u>Propedeuticità</u>
None

<u>Testi consigliati</u>
L. Meirovitch 1986 Elements of Vibration Analysis, 2nd edition, McGraw Hill.
C. Lanzcos 1986 The Variational Principles of Mechanics, Dover.