

Format for Dynamics Qualifiers

Written Exam, 1 or 2 questions, 60 minutes, closed book

Oral Exam, 1 question, 20 minutes preparation, 20 minutes interview

Material for Dynamics Qualifiers

PRINCIPAL COURSES: 2.003, 2.032

OTHER COURSES: 18.03, 2.034, 2.036, 2.037, 2.062

Sample listing (not definitive) based on 2.003/2.032 course listings:

Three-dimensional particle and rigid body kinematics.

Force-momentum formulation for systems of particles and rigid bodies in 3D motion.

Work-energy concepts. D'Alembert's principle, Hamilton's principle, virtual displacements and virtual work. Lagrange's equations for systems of particles and rigid bodies in 3D motion.

Linearization of equations of motion. Linear stability analysis of mechanical systems.

Nonlinear oscillations and the phase plane.

Free and forced vibrations lumped-parameter and continuous mechanical systems.

Wave propagation in continuous systems.