

Mécanique

Lecturer

Mélanie BERTELSON (Coordinator)

Course mnemonic

MATH-F215

ECTS credits

5 credits

Language(s) of instruction

French

Course period

Second term

Campus

Plaine

Course content

Mechanics of a particle: equations of motion, conservation theorems, central forces.

Mechanics of a system of particles: equations of motion, center of mass, conservation theorems, two body problem.

Lagrangian formulation: systems with constraints, virtual displacements method, Lagrange equations.

Small oscillations: equilibrium positions, frequencies, normal modes, resonance.

Mechanics of the rigid body: moving frames, inertia tensor, Euler angles, equations of motion.

Objectives (and/or specific learning outcomes)

Study of mechanical systems with several particles, holonomic constraints and rigid bodies.

Pre-requisites and co-requisites

Pre-requisites courses

MATH-F112 | Mathématiques 1 | 10 crédits and MATH-F115 | Compléments d'analyse et algèbre linéaire | 5 crédits

Co-requisites courses

PHYS-H101 | Connaissances fondamentales et éléments de physique | 10 crédits

Course having this one as co-requisit

MATH-H302 | Introduction à l'analyse complexe et au calcul numérique | 5 crédits

Teaching method and learning activities

Theory (24hrs), exercises (24hrs)

References, bibliography and recommended reading

- ¹ H. Goldstein, 1980. *Classical Mechanics*. Second edition. Addison-Wesley Series in Physics.
- ² L. D. Landau, E. M. Lifschitz, 1960. *Mechanics*. Pergamon Press, Addison-Wesley Publishing Co.

Course notes

Syllabus

Other information

Place(s) of teaching

Plaine

Contact(s)

Mélanie Bertelson (2.07.111) - Melanie.Bertelson@ulb.be - 02 650 58 28

Evaluation method(s)

written examination

Determination of the mark (including the weighting of partial marks)

Grade based on the written exam.

Main language(s) of evaluation

French

Programmes

Programmes proposing this course at the faculty of Sciences

BA-IRBI | Bachelor in Bioengineering | unit 2

Programmes proposing this course at the Brussels School of Engineering

BA-IRBI | Bachelor in Bioengineering | unit 2

