Mécanique analytique

Lecturers
Frank FERRARI (Coordinator) and Glenn BARNICH

Course mnemonic
MATH-F204

ECTS credits
10 credits

Language(s) of instruction
French

Course period
First and second terms

Campus
Plaine

Course content

First semester: Calculus, elements of vector analysis; kinematics, kinetics and dynamics of systems of point particles and applications (two-body problem, central force, ...); kinematics of rigid bodies, application to non-inertial frames; kinetics and dynamics of rigid bodies.

Second semester: Lagrangian and Hamultonian formulations of mechanics; motion of charged particles in an electromagnetic field.

Objectives (and/or specific learning outcomes)

Introduction to vector analysis. Teaching of the foundations and methods of mechanics (Newtonian mechanics and analytical mechanics in the Lagrangian and Hamiltonian formalisms), the mathematical theory of the motion of material bodies and, more generally, of the temporal evolution of dynamical systems.

Pre-requisits and co-requisits

Pre-requisites courses

MATH-F101 | Calcul différentiel et intégral I | 15 crédits

Teaching method and learning activities

Q1: Lectures given online and exercices

Contribution to the teaching profile

Learn basic skills in a related domain: physics. Understand the role played by mathematics in this context.

References, bibliography and recommended reading

second semester: lecture notes available on the web site "L'Université Virtuelle"

Other information

Place(s) of teaching

Plaine

Contact(s)

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Glenn Barnich (gbarnich@ulb.ac.be)

Programmes

Programmes proposing this course at the faculty of Sciences

BA-MATH | Bachelor in Mathematics | unit 2 and BA-PHYS | Bachelor in Physics | unit 2