

Analytical Mechanics

Mechanism and transmission system

IDENTIFICATION

CODE : GM-4-S1-EC-IPMST
ECTS : 4.0

HOURS

Lectures : 16.0 h
Seminars : 44.0 h
Laboratory : 0.0 h
Project : 0.0 h
Teacher-student
contact : 60.0 h
Personal work : 24.0 h
Total : 84.0 h

ASSESSMENT METHOD

2 test of 1 hour, 1 exam of 2 hours

TEACHING AIDS

Moodle e-learning

TEACHING LANGUAGE

French

CONTACT

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AIMS

At the end of this course the student will be able to:

- To modelize, design and integrate a mechanically complex system from a kinematic point of view
- Determine the combination of actuators at a lower cost allowing the realization of a target kinematic function
- Analyze the power chain and choose the mechanical transmission components (brakes, clutches, belts, chains, gears)
- Analyze the power chain and choose hydraulic transmission components (pumps and motors, accumulators, cylinders, pressure and flow components, load sensing and coupler)

CONTENT

COURSE:

- Modeling of poly-articulated systems, position and trajectory generators as well as plane kinematics (base-rolling, developed, developing, envelope)

TD:

- Determination of mechanical transmission elements such as chain, belt, clutch, brakes and gears. For the gears, a deepening will allow to determine the possible corrections in order to optimize their implantation in simple and epicycloidal trains.
- Determination of fluid transmission elements such as pumps, motors, accumulators, cylinders, pressure and flow components, load sensing and coupling
- Kinematics applications oriented special machines types press, packaging machine, opening and access, handling ...

BIBLIOGRAPHY

Lecture notes

Bone J.C., Morel J., Boucher M., Mécanique generale : cours et applications, Ed. Dunod Université, 1994, 507 p.

Lassia R., Mécanique générale des solides indéformables - Cinématique : Cours et exercices corrigés, Ed. Ellipse, 2000

PRE-REQUISITE

CAD Practical works (4 GM basic core curriculum), Mechanical Design (3GM CONAN & CDIM)
Static, kinematic and dynamic of rigid bodies.