

Tribology

Contact Mechanics

IDENTIFICATION

CODE : GM-4-S1-EC-CEMCO
ECTS : 3.0

HOURS

Lectures : 18.0 h
Seminars : 22.0 h
Laboratory : 8.0 h
Project : 0.0 h
Teacher-student
contact : 48.0 h
Personal work : 24.0 h
Total : 72.0 h

ASSESSMENT METHOD

2 short written tests (2h00), 1
summary report

TEACHING AIDS

TEACHING LANGUAGE

French

CONTACT

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AIMS

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*Knowledge:

Contact Mechanics, mechanical systems, contact stresses, fatigue life, friction, lubrication

*Capacities:

¿To analyze contacts in conventional mechanical systems (gears, bearings, cams ...).

¿To control the stresses in the mechanical links.

¿To know how to dimension and optimize the lubrication of the connections.

¿To numerically simulate the mechanical behavior of a link

CONTENT

- . Contact mechanics - généralité
- . Semi-infinite domain, stress-strain relations
- . Normal contact - Hertz theory
- . Tangential loading, fretting, rolling and sliding contacts
- . Non Hertzien contacts (edge effect, conformity, dissimilar materials, coatings, adhesion, viscoelasticity, plasticity)
- . Lubricated contacts
- . Numérical methods
- . Surface roughness effects

BIBLIOGRAPHY

Contact Mechanics (K.L. Johnson)
Mechanics of Elastic Contacts (Hills, Nowell, Sackfield)

PRE-REQUISITE

Solid Mechanics