

Solid Mechanics

Energetic Methods and Plates Modelling

IDENTIFICATION

CODE : GMCIP-4-S2-EC-MSEL
ECTS : 3.0

HOURS

Lectures :	14.0 h
Seminars :	16.0 h
Laboratory :	8.0 h
Project :	0.0 h
Teacher-student contact :	38.0 h
Personal work :	30.0 h
Total :	68.0 h

ASSESSMENT METHOD

2H test final + note TP

TEACHING AIDS

Course complements

TEACHING LANGUAGE

French

CONTACT

M. BLAL Nawfal
nawfal.blal@insa-lyon.fr
MME SANDIER Celine
celine.sandier@insa-lyon.fr

CONTENT

"Curved beams, planes and straight. Frenet axes, curvature, main tensor of quadratic moments / Beam hypotheses : definitions, hypotheses on materials, St-Venant hyp / Kinematics: mean line, displacements, rotations Cohesion, link with stress tensor / Energy methods: calculation of deformation energy, problem solving.
Plates: Thin and thick plates, Kirchhoff hypotheses, Mindlin, axi-symmetric systems. Finite elements modelling of beams and plates"

BIBLIOGRAPHY

"Timoshenko et Goodier, 'Theory of Elasticity', Mc Graw-Hill
Saada, 'Elasticity. Theory and Applications', Krieger
Serge Laroze, 'POUTRES', I.S.B.N. : 2854287126, 2015, Cépadues Edition
Serge Laroze, 'SOLIDES ELASTIQUES / PLAQUES ET COQUES', I.S.B.N. : 9782854287103, 2015, Cépadues Edition "

PRE-REQUISITE

GMCIP-3-MSOL2, GMCIP-4-MSOL3