UCLouvain

lmeca2830

2017

Aerospace dynamics.

5 credits	30.0 h + 30.0 h	Q1

Teacher(s)	Chatelain Philippe ;Schrooyen Pierre (compensates Chatelain Philippe) ;
Language :	English
Place of the course	Louvain-la-Neuve
Main themes	• Universal gravitation and applications. • Aircraft dynamics and performance: equilibrium, stability and control. • Launchers. • Satellite orbits and attitude stability.
Aims	1 In consideration of the reference table AA of the program "Masters degree in Mechanical Engineering", this course contributes to the development, to the acquisition and to the evaluation of the following experiences of learning: • AA1.1, AA1.2, AA1.3 • AA2.1, AA2.2, AA2.3 • AA3.1, AA3.3 • AA5.1, AA5.2, AA5.4 • AA6.1, AA6.2 Introduce students to the specific issues of aircraft dynamics, launcher systems and dynamics, and satellite dynamics. - - - - *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".*
Evaluation methods	3 homeworks to be performed individually Written exam in 2 parts: • theoretical questions exercises
Content	• Summary of rigid body mechanics. • Aircraft dynamics and performance : aerodynamic loads, translational and rotational dynamics, steady state motion, propulsion, stability, controls. • Launcher dynamics and staging optimisation. • Satellite dynamics : orbits, transfers, rendezvous, attitude stability.
Inline resources	http://moodleucl.uclouvain.be/enrol/index.php?id=8369
Bibliography	• J.D. ANDERSON, Introduction to Flight • B. ETKIN Dynamics of Flight - Stability and Control • L. GEORGE, J-F VERNET, J-C WANNER La mécanique du vol • J.W. CORNELISSE, H.F.R. SCHÖYER, K.F. WAKKER Rocket Propulsion and Spaceflight Dynamics
Faculty or entity in charge	MECA

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Electro-mechanical Engineering	ELME2M	5		
Master [120] in Mechanical Engineering	MECA2M	5		