UCLouvain

# lmeca2550

*2019*

# Aircraft propulsion systems.

In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

| 5 credits | 30.0 h + 30.0 h | Q1 |
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| Teacher(s) | Chatelain Philippe ;Marichal Yves ; |
| Language : | English |
| Place of the course | Louvain-la-Neuve |
| Main themes | 1. Fundamentals of air-breathing propulsion<br>1.1) Dynamical and energetic aspects<br>1.2) Concepts and domains of use<br>2. Analysis of propulsion systems<br>2.1) The airscrew<br>2.2) The jet engine<br>2.3) The Ramjet and Scramjet engines<br>2.4) Inlets and nozzles<br>2.5) Technological aspects<br>3. Advanced concepts and future trends |
| Aims | 1<br>In consideration of the reference table AA of the program " Master's degree civil engineer mechanics ", this course contributes to the development, to the acquisition and to the evaluation of the following experiences of learning:<br>• AA1.1, AA1.2, AA1.3<br>• AA2.1, AA2.2, AA2.3<br>• AA3.1, AA3.2<br>• AA5.4, AA5.5, AA5.6<br>• AA6.3, AA6.4<br>Aims to provide an analytical description of systems used in aircraft propulsion, to model their behaviour and to introduce students to performance evaluation and component dimensioning.<br>- - - -<br>*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 | **Due to the COVID-19 crisis, the information in this section is particularly likely to change.**<br>Written exam in 2 parts:<br>• theoretical questions<br>• exercises |
| Teaching methods | **Due to the COVID-19 crisis, the information in this section is particularly likely to change.**<br>Course notes are being prepared and will be made available in electronic format during the term.<br>Lecture slides will also be available |
| Content | 1. Fundamentals of air-breathing propulsion<br>1.1) Dynamical and energetic aspects<br>1.2) Concepts and domains of use<br>2. Analysis of propulsion systems<br>2.1) The airscrew<br>2.2) The jet engine<br>2.3) The Ramjet and Scramjet engines<br>2.4) Inlets and nozzles<br>2.5) Technological aspects<br>3. Advanced concepts and future trends |

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| Inline resources | http://moodleucl.uclouvain.be/enrol/index.php?id=8367 |
| Faculty or entity in charge | MECA |

| Programmes containing this learning unit (UE) | | | | |
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| Program title | Acronym | Credits | Prerequisite | Aims |
| Master [120] in Electro-mechanical Engineering | ELME2M | 5 | | |
| Master [120] in Mechanical Engineering | MECA2M | 5 | | |