

Aeroplanes (E061960)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size	<i>(nominal values; actual values may depend on programme)</i>		
Credits 3.0	Study time 90 h	Contact hrs	20.0 h

Course offerings and teaching methods in academic year 2022-2023

A (semester 1)	English	Gent	lecture	12.5 h
			online lecture	7.5 h

Lecturers in academic year 2022-2023

Marinus, Benoît	TW08	lecturer-in-charge
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Offered in the following programmes in 2022-2023

	crdts	offering
Master of Science in Electromechanical Engineering (main subject Control Engineering and Automation)	3	A
Master of Science in Electromechanical Engineering (main subject Electrical Power Engineering)	3	A
Master of Science in Electromechanical Engineering (main subject Maritime Engineering)	3	A
Master of Science in Electromechanical Engineering (main subject Mechanical Construction)	3	A
Master of Science in Electromechanical Engineering (main subject Mechanical Energy Engineering)	3	A

Teaching languages

English

Keywords

Aerodynamics, performance, systems, airframe

Position of the course

Introductory course about aeroplanes: gain insights in the working of aeroplanes and discussion of the essential components and structural aspects.

Contents

- Aerodynamics: lift, drag, planforms, high lift apparatus, drag reduction, supersonic flight
- Propulsion: characteristics, altitude dependency
- Performance: aircraft equations of motion, available propulsion power, performance parameters
- Stability and control: flight manoeuvres, static stability, dynamic stability, equations of motion
- Aeroelasticity: structure, wing divergence, aileron reversal
- Navigation systems: instruments for position, height, velocity, attitude, principles of radio navigation
- Discussion of some aeroplane systems: structure, climate-pack, hydraulic, electric, fuel, propulsion, oxygen, pneumatic, fly by wire, etc.

Initial competences

Transport phenomena, Classical mechanics

Final competences

- 1 To understand and distinguish drag and drag reduction mechanisms
- 2 To understand and distinguish lift and lift augmentation mechanisms
- 3 To understand and explain stability characteristics
- 4 To understand and explain performance parameters
- 5 To understand the principles of the instruments for visual and instrumental flight conditions

- 6 To understand the principles of the most important aircraft systems
- 7 To understand and explain the principles of aeroelasticity applied to a wing

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

Access to this course unit via an exam contract is unrestricted

Teaching methods

Lecture, online lecture

Learning materials and price

Course notes
Copy of transparencies

References

- R. Barnard. Philpott. Aircraft flight: A description of the physical principles of aircraft flight. Addison-Wesley. ISBN 0582236568
- R. Nelson. Flight stability and automatic control. McGraw-Hill ISBN 0070462739
- J. Anderson: Introduction to flight. McGraw-Hill. ISBN 0071160345
- DP. Raymer. Aircraft Design: A Conceptual Approach. ISBN 9781600869112
- JR. Wright. JE. Cooper. Introduction to Aircraft Aeroelasticity and Loads, ISBN 9780470858400

Course content-related study coaching**Evaluation methods**

end-of-term evaluation

Examination methods in case of periodic evaluation during the first examination period

Oral examination

Examination methods in case of periodic evaluation during the second examination period

Oral examination

Examination methods in case of permanent evaluation**Possibilities of retake in case of permanent evaluation**

not applicable

Extra information on the examination methods

During examination period: oral closed-book exam, written preparation

Calculation of the examination mark

Main question 12pt
Side question 1 4pt
Side question 2 4pt