GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2026-2027

Aeroplanes (E061960)

Course size *(nominal values; actual values may depend on programme)*

Credits 3.0 **Study time 90 h**

Course offerings and teaching methods in academic year 2026-2027

A (semester 2)	English	Gent	lecture

Lecturers in academic year 2026-2027

Marinus, Benoît	TW08	lecturer-in-charge

Offered in the following programmes in 2026-2027	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
Master of Science in Electromechanical Engineering	3	A
Master of Science in Mechanical and Electrical Systems Engineering	3	A

Teaching languages

English

Keywords

Aerodynamics, aircraft performance, aircraft 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, the challenge of hydrogen, electric propulsion
- 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

- Physics I (E020061)
- Dynamics of Rigid Bodies (E040030)
- Fluid Mechanics (E040560)
- Transport Phenomena (E045120)

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

This course unit cannot be taken via an exam contract

Teaching methods

Lecture

Study material

Type: Syllabus

Name: Aeroplanes by Prof. Benoît MARINUS
Indicative price: € 20
Optional: no
Language : English
Number of Pages : 434
Oldest Usable Edition : 2025
Available on Ufora : Yes
Online Available : No
Available in the Library : No
Available through Student Association : Yes

Type: Slides

Name: Aeroplanes
Indicative price: Free or paid by faculty
Optional: yes
Language : English
Number of Slides : 528
Oldest Usable Edition : 2024
Available on Ufora : Yes
Online Available : No
Available in the Library : No
Available through Student Association : No
Additional information: Slides are design as a support to education and do not contain all elements of the discussion. The reference is the syllabus.

Type: Audiovisual Material

Name: Aeroplanes - Course recordings
Indicative price: Free or paid by faculty
Optional: no
Language : English
Available on Ufora : Yes
Online Available : No
Available in the Library : No
Available through Student Association : No
Usability and Lifetime within the Course Unit : regularly
Usability and Lifetime within the Study Programme : regularly
Usability and Lifetime after the Study Programme : not

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

Interactive support by electronic appointment (email).

Assessment moments

end-of-term assessment

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

Oral assessment

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

Oral assessment

Examination methods in case of permanent assessment

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

During examination period: oral closed-book exam (20pt), written preparation.
Main question 8pt
Side question 1 4pt
Side question 2 4pt
Side question 3 4pt

Calculation of the examination mark

Facilities for Working Students

Course recordings are available and the syllabus is comprehensive.