GHENT UNIVERSITY

Course Specifications

Valid in the academic year 2023-2024

Avionics: Electronics (E030320)

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

Credits 4.0 **Study time 120 h**

Course offerings and teaching methods in academic year 2023-2024

A (semester 2)	English	Gent	seminar

Lecturers in academic year 2023-2024

Vande Ginste, Dries	TW05	lecturer-in-charge

Offered in the following programmes in 2023-2024	crdts	offering
Master of Science in Electrical Engineering (main subject Communication and Information Technology)	4	A
Master of Science in Electrical Engineering (main subject Electronic Circuits and Systems)	4	A

Teaching languages

English

Keywords

Terrestrial radionavigation and landing systems (NDB/ADF, CVOR, DVOR, DME, TACAN, ILS, MLS, FMCW altimeter, GPWS), satellite navigation (GPS), radar, HF&VHF/UHF communication

Position of the course

Students will gain insight in the operational principles of the most important electronic systems as applied in aircraft and space technology.
Multidisciplinary approach based on electrotechnical basics, as applied in avionics

Contents

- Introduction to Avionics
- Radio Propagation for Avionics Systems
- Terrestrial En Route Radio Navigation
- Terrestrial Landing Aids
- Satellite navigation: Global Positioning System (GPS)
- Radar systems: Radar systems
- Communication systems: Communication systems
- Technical visit: Visit to the national airport (Belgocontrol - Zaventem)

Initial competences

Applied electromagnetics or Electromagnetics II; Analog electronics or Electronic systems and instrumentation; Communication theory

Final competences

1 To be able to describe, understand and discuss wave propagation in the atmosphere for avionics applications.
2 To be able to describe, understand and discuss terrestrial navigation and landing systems.
3 To be able to describe, understand and discuss satellite-based navigation and landing systems.

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

Seminar, Excursion, Lecture, Independent work

Extra information on the teaching methods

The course consists of lectures about theory and exercises, without making a strict, traditional distinction between them. All lectures are seminars which require interaction with and input from the students.
If circumstances permit (e.g., COVID-dependent cirumstances), a mandatory company visit takes place.

Learning materials and price

- Book "Principles of Avionics", Avionics Communications Inc., Leesburg, VA, USA van Albert Helfrick, in English (85 EUR)
- Chapter on Radio Propagation for Avionics Systems (written and provided by the professor for free)
- Slides (made and provided by the professor for free)

References

Course content-related study coaching

The docent or his/her collaborators are available for explanations.

Assessment moments

end-of-term assessment

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

Oral assessment open-book

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

Oral assessment open-book

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 open-book exam

Calculation of the examination mark