

## Avionica integrata

### Obiectiv principal

Insusirea de catre masteranzi a problemelor specifice care apar in implementarea sistemelor de avionica in general si a sistemelor de avionica integrata in special. Cursul reprezinta o continuare a cursului de Calculatoare de Bord din cadrul ciclului de licenta si urmareste prezentarea si insusirea de catre masteranzi a celor mai noi tendinte si tehnologii din domeniul avionicii.

### Course Objective

Mastering the mastering of the specific problems that arise in the implementation of the avionics systems in general and the integrated avionics systems in particular. The course represents a continuation of the Bachelor's Degree course within the license cycle and aims at presenting and mastering the latest trends and technologies in avionics.

### Curs

1 ora/săptămână, total 14 ore

- Arhitecturi de sisteme de avionica
- Functionarea in timp real a sistemelor de Avionica
- Asigurarea tolerantei la defectiuni
- Cerinte privind certificarea sistemelor de avionica digitala

### Course

1 hour weekly, 14 hours total

- Aircraft systems architectures
- Real-time operation of Avionics
- Ensure fault tolerance
- Certification requirements for digital avionics systems

### Laborator

2 ore/săptămână, total 28 ore

- Arhitecturi de sisteme de avionica integrata
- Avantaje si dezavantaje ale implementarii conceptului de avionica integrata
- Probleme specifice legate de functionarea in timp real a sistemelor de avionica
- Partitionarea temporala in cadrul sistemelor de avionica integrata
- Partitionarea resurselor hardware in cadrul sistemelor de avionica integrata
- Magistrale de date de sistem la bordul la aeronavelor – magistrala de date AFDX
- Magistrale de date de sistem la bordul la aeronavelor – magistrala de date ARINC 629
- Magistrale de date de sistem la bordul la aeronavelor – magistrala de date STANAG 3910
- Alte magistrale de date utilizate in industria aerospatiale si cea a transporturilor – Magistralele CAN, TTP
- Magistrale de date de instrumentatie utilizate in industria aerospatiale si cea a transporturilor – Magistralele SPI, I2C
- Afisarea informatiei in cadrul sistemelor de avionica integrata
- Cerinte privind certificarea sistemelor de avionica integrata

### Laboratory

2 hours weekly, 28 hours total

- Integrated avionics systems architectures
- Advantages and disadvantages of implementing the integrated avionics concept
  - Specific issues related to the real-time operation of avionics systems
  - Time division in integrated avionics systems
  - Partitioning of hardware resources within integrated avionics systems
- System data buses on board aircraft - AFDX data bus
- System data buses on board aircraft - ARINC 629 data bus
- System data buses onboard aircraft - STANAG 3910 data bus
- Other data buses used in the aerospace and transport industries -
  - CAN, TTP buses
  - Instrument data buses used in the aerospace and transport industry - SPI, I2C
- Information display in integrated avionics systems
- Requirements for the certification of integrated avionics systems