

## t.FLSY2 - Aircraft Systems 2

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**Person responsible for the course:** Leonardo Manfriani, mani

**Credits:** 4

**Valid for:** 2010/2011

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### Learning objectives:

The course objectives of the dual course "Aircraft Systems" are the following :

- the students shall be able to identify the various components and subsystems of the system "aircraft". They will understand and be able to explain their technical principles, function and interaction;
  - interested students shall at the same time gain basic information for the ATP theoretical examination "Aircraft General Knowledge" according to JAR-FCL 1.470, Subjects 21 and 22.
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### Course content:

The structure and systems of a modern aircraft will be explained on the basis of practical examples (turboprop business aircraft, large jet transport aircraft). Particular attention will be given to the construction, the basic technical principles and the interaction between the various components and systems of an aircraft.

The course provide a basic understanding for design methods, technologies, performance and certification requirements and maintenance concepts. It will be shown how every aircraft is the result of compromises between efficiency, safety, comfort, economy and environmental impact.

This course is in two parts: the first part (FLSY1) deals with the general design and the structure of the aircraft, propulsion and mechanical systems; the second part (FLSY2) concerns electrical systems, instruments, avionics and on-board software.

Selected topics will be treated in more detail in the courses ETEK2 (Elektrotechnik und Elektronik, fourth Semester) and MRO (Maintenance, Repair & Overhaul, fifth Semester).

The following JAR-FCL 1.470 topics are integrated in the FLSY2 course:

021 00 AIRCRAFT GENERAL KNOWLEDGE - AIRFRAME AND SYSTEMS, ELECTRICS, POWERPLANT, EMERGENCY EQUIPMENT

021 09 Electrics

021 12 Protection and detection systems

021 13 Oxygen systems

022 00 AIRCRAFT GENERAL KNOWLEDGE - INSTRUMENTATION

022 01 Sensors and instruments

022 02 Measurements of air data parameters

022 03 Magnetism - Direct reading compass and flux valve

022 04 Gyroscopic instruments

022 05 Inertial navigation and reference systems

022 06 Automatic flight control systems

022 08 Trims - Yaw damper - Flight envelope protection  
022 09 Autothrottle - Automatic thrust control system  
022 10 Communication systems  
022 11 Flight Management System (F.M.S.)  
022 12 Alerting systems, proximity systems  
022 13 Integrated instruments - Electronic displays  
022 14 Maintenance, monitoring and recording systems  
022 15 Digital circuits and computers

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**Previous knowledge:**

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**Teaching method:**

| Type of lesson:    | Number of lessons per week: |
|--------------------|-----------------------------|
| Lecture            | 13*3                        |
| Tutorial/Practicum | 13*1                        |
| Group teaching     |                             |
| Block instruction  |                             |
| Seminar            |                             |

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**Assessment:**

According to the table or as specified in writing by the lecture at the beginning of the semester!

| Number | Type                       | Weighting |
|--------|----------------------------|-----------|
| 1      | End of term exam           | 80%       |
| 1      | Midterm test (facultative) | 20%       |
|        | Further assessments        |           |

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**Language of instruction:**

Englisch

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**Instruction material:**

Lecture notes and presentation slides.

Complementary literature:

- Ian Moir, Allan Seabridge: Civil Avionics Systems, AIAA Education Series
- Electrics, Nordian ATS
- Instrumentation, Nordian ATS

The titles from the NORDIAN Aviation Training System series are recommended for those students who intend to take the ATP theoretical knowledge examinations.

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**Comments:**

The course is obligatory for candidates to the ATP licence. Attendance to the course will correspondingly be checked.