Zurich University of Applied Sciences

School of Engineering

t.AEFM - Aerodynamics and Flight Mechanics

Person responsible for the course:	Leonardo Manfriani, mani
Credits:	4
Valid for:	2009/2010
Last saved:	23.08.2010 17:09

Learning objectives:

The main objectives of the dual course "Aerodynamics and Flight Mechanics" are the following :

- the students hello understand and can apply the fundamental principles of aircraft aerodynamics and flight mechanics;
- at the same time, interested students also receive basic knowledge for the ATP theoretical examination "Aircraft General Knowledge" according to JAR-FCL 1.470.

Course content:

fundamental concepts of aerodynamics

- airspeed measurement
- aerodynamic forces: lift and drag
- inviscid and viscous flow; boundary layers
- characteristics of wing sections
- wings: induced drag
- high lift devices
- flow separation on a wing; stall characcteristics
- transonic and supersonic flow; shock waves and wave drag
- static and dynamic longitudinal stability
- static and dynamic directional and lateral stability
- flight controls

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

- 080 00 PRINCIPLES OF FLIGHT
- 081 01 Subsonic aerodynamics
- 081 02 Transonic aerodynamics
- 081 03 Supersonic aerodynamics
- 081 04 Stability
- 081 05 Control
- 081 08 Flight mechanics

Previous knowledge:

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Teaching method:

Type of lesson:	Number of lessons per week:
Lecture	29*45min
Tutorial/Practicum	27*45min
Group teaching	
Block instruction	
Seminar	

Assessment:

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

Number	Type	Weighting
1	Final exam	60%
2	Tests	40%
	Further assessments	

Language of instruction:

English

Instruction material:

Lecture notes "Prinzipien des Fluges" by Hans Kandlbauer; presentation slides.
The NORDIAN book is recommended for those students who intend to take the ATP theoretical knowledge examination.

Complementary literature:
Introduction to Flight, John D. Anderson, Jr., McGraw-Hill, 5th Edition, 2005
Understanding Flight, David F. Anderson, McGraw-Hill, 1st Edition, 2001
Aerodynamics for Naval Aviators, Hugh H. Hurt, Aviation Supplies&Academics, Reprint, 2001
Introduction to Flight, John D. anderson, Jr., McGraw-Hill, 5th Edition, 2005
Understanding Flight, David F. Anderson, McGraw-Hill, 1st Edition, 2001
Aerodynamics for Engineering Students, Houghton, E. L., Carpenter, P. W., Elsevier, 5th Edition, 2001
Principles of Flight, Nordian, 2nd Edition, 2005

Comments:

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