

<b>Module description: Principles of Flight</b>			
<b>Module Code</b>	t.BA.AV.POF-EN.16HS		
<b>ECTS Credits</b>	4		
<b>Language of Instruction/Examination</b>	English		
<b>Organizational Unit</b>	ZAV		
<b>Module Coordinator</b>	Wilm Friedrichs		
<b>Legal Framework</b>	The module description is part of the legal basis in addition to the general academic regulations. It is binding. During the first week of the semester a written and communicated supplement can specify the module description in more detail.		
<b>Module Characteristic</b>	Type 3c***  2 lecture lessons per semester week each yearly starting-class + 2 lab lessons per semester week and class		
<b>Module Description</b>	Fundamental principles of aircraft aerodynamics and basic concepts of flight mechanics, with exercises, practical laboratory sessions and wind tunnel demonstration.		
<b>Module Content</b>	<ul style="list-style-type: none"> <li>• Fundamentals of aerodynamics</li> <li>• - Airspeed measurement</li> <li>• - Aerodynamic forces: lift and drag</li> <li>• - Inviscid and viscous flow; boundary layers</li> <li>• - Characteristics of wing sections</li> <li>• - Wings: induced drag</li> <li>• - Flow separation on a wing; stall characteristics</li> <li>• - High lift devices</li> <li>• - Compressible flow; shock waves</li> <li>• Basic concepts of flight mechanics</li> <li>• - Longitudinal static stability and neutral point</li> <li>• - Static lateral and directional stability</li> <li>• - Control and trim</li> <li>• - Dynamic stability: short period, phugoid, Dutch roll</li> <li>• - Spinning</li> <li>• The following JAR-FCL 1.470 topics are integrated in the POF course</li> <li>• - 081 00 PRINCIPLES OF FLIGHT - AEROPLANE</li> <li>• - 081 01 Subsonic aerodynamics</li> <li>• - 081 02 Transonic aerodynamics</li> <li>• - 081 03 Supersonic aerodynamics</li> <li>• - 081 04 Stability</li> <li>• - 081 05 Control</li> </ul>		
<b>Prerequisite Knowledge</b>	<a href="https://gpmpublic.zhaw.ch/GPMDocProdDPublic/2_Studium/2_02_Grundlagen_Studium/T_C_L_Modulauspraegungen_SM2025.pdf">https://gpmpublic.zhaw.ch/GPMDocProdDPublic/2_Studium/2_02_Grundlagen_Studium/T_C_L_Modulauspraegungen_SM2025.pdf</a>		
<b>Learning Objectives (Competences)</b>	<b>Students...</b>	<b>Competencies</b>	<b>Taxonomies</b>
	Students know and understand the fundamental principles of aerodynamics and the basic concepts of flight mechanics.	F	K1, K2
	They can apply these principles and concepts to solve basic technical problems.	M	K3
	They acquire basic knowledge for the ATPL theoretical examination "Aircraft General Knowledge" according to JAR-FCL 1.470.	F	K1

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<b>Performance Assessment</b>	<b>End-of-module exam</b>	<b>Assessment</b>	<b>Length (min.)</b>	<b>Weighting</b>	<b>Form</b>
	written exam	Grade	90	100	acc. to module agreement
	<b>Performance assessment during the semester</b>		<b>Assessment</b>	<b>Length (min.)</b>	<b>Weighting</b>
	Lab <i>Preparation of, active participation in, and dissemination of two lab sessions, including preparation and submission of reports</i>	predicate		0	acc. to module agreement
<b>Classroom Attendance Requirement</b>	None Participation in two labs				
<b>Learning material</b>					
<b>Comments</b>					