

Module description: Fluidynamics			
Module Code	t.BA.XX.FTH1.19HS		
ECTS Credits	4		
Language of Instruction/Examination	German		
Organizational Unit	IEFE		
Module Coordinator	Frank Tillenkamp		
Legal Framework	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.		
Module Characteristic	Type 3b 2 lecture lessons per semester week and class+ 4 lab bi-weekly lessons per semester and half-class		
Module Description	In the Fluid Dynamics module, which forms part of the Fluid and Thermodynamics (FTH) series, students learn the basics of fluid dynamics at UAS Bachelor level. The overriding goal is the selection of pumps for the design of piping systems.		
Module Content	<ul style="list-style-type: none"> • Class: • - Properties of Fluids • - hydrostatics • - Bernoulli equation with loss and work term • - Conservation of momentum for stationary flow • - Stationary internal flows with friction • - Pumps and pipework circuits • - Stationary external flows with friction • - Similarity and dimensional analysis • Practical training: • - Viscosity measurement • - Measurement technology (temperatures and pressures) • - Flow phenomena (visualization) • - Flow measurements (nozzle, orifice) • - Pipe friction with water • - pump characteristics 		
Prerequisite Knowledge	https://gpmpublic.zhaw.ch/GPMDocProdDPublic/2_Studium/2_02_Grundlagen_Studium/T_C_L_Modulauspraegungen_SM2025.pdf		
Learning Objectives (Competences)	Students...	Competencies	Taxonomies
	(1) You learn the basics of hydrostatics and can calculate forces on surfaces.	M, F	K2, K3
	(2) You master the conservation laws of mass, energy and momentum and can use them to calculate one- or two-dimensional flows.	M, F	K4
	(3) You have become acquainted with further application areas of fluid mechanics and know how to classify the terms boundary layer and external flow. You know how to deal with dimensionless parameters.	M, F	K2, K3
	(4) You can design pumps for piping systems.	M, F	K4

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Performance Assessment	End-of-module exam	Assessment	Length (min.)	Weighting	Form	
	written exam	Grade	90	80	acc. to module agreement	
	Performance assessment during the semester		Assessment	Length (min.)	Weighting	Form
	written exam		Grade	60	20	acc. to module agreement
Classroom Attendance Requirement	None					
Learning material	<ul style="list-style-type: none"> • Gersten, K. Einführung in die Strömungsmechanik. Vieweg-Verlag. ISBN .. • Bohl, W. & Elmendorf, W. Technische Strömungslehre. Vogel-Verlag. ISBN .. 					
Comments	The lessons are accompanied by a group practicum with 4 experiments (compulsory). Details are regulated in the module agreement.					