



	HTWK Leipzig, Leipzig University of Applied Sciences			
	Module Course code	Applied Physics aPh (DVM1400)		
	Semester	Summer semester		
	ECTS, level	5 points, Master's (graduate)		
	Language of instruction	English		
	Teaching staff	Prof. Dr. rer. nat. habil. Christian Weickhardt		
Prerequisites	Basics of physics			
Learning outcomes	<p>The students have engineering knowledge of the mechanics of gases, liquids and multiphase systems. The students are able to apply the skills they have acquired to real-life problems in the industry.</p> <p>The students have knowledge of modern laser based technologies and their physical principles including applications in measuring and information technology derived from them. They are able to identify potential applications in the industry and to assess their application potentials from a technical point of view.</p>			
Course contents	<p><b>Mechanics and thermodynamics of fluids:</b> Statics of fluids: characteristics of the fluid state, pressure, buoyancy, surface tension, capillarity, vapour pressure, multi-component systems</p> <p>Flowing fluids: kinematics, current filament theory of incompressible fluids, conservation laws, flow from vessels, flow in tubes, forces acting on solid objects, theory of similitude</p> <p><b>Technical optics:</b> Optical calculation methods (matrix methods, ray tracing), laser technology, optical measuring techniques</p>			
Workload	150 hours, of which 56 hours attendance (14 weeks x 4 hours)			
Pre-examination requirements	Exercises			
Mode of instruction and assessment	Lecture	Seminar	Laboratory Course	Assessment
	2 hours per week	2 hours per week		Written examination
Recommended reading	<p>BÖCKH, Peter von: <i>Fluidmechanik</i>, Springer</p> <p>BÖSWIRTH, Leopold: <i>Technische Strömungslehre</i>, Vieweg Fachbücher der Technik</p> <p>SCHADE, Heinz; KUNZ, Ewald; PASCHEREIT, Oliver; KRAMEIER, Frank: <i>Strömungslehre</i>, de Gruyter</p> <p>LITFIN, Gerd: <i>Technische Optik in der Praxis</i>, Springer</p>			