

Fluid Mechanics (English)

Module Title		Fluid Mechanics (English)					
Module Title in English		Fluid Mechanics					
Module Leader		Prof. Dr. Dinan Wang					
Teaching Staff		Prof. Dr. Dinan Wang					
Courselanguage/		English					
Code	Workload	Credits	Semester	Semester Offered		Duration	
STL	180 h	6	3rd semester	Every Winter semester		1 semester	
1	Type of Course		Scheduled Learning		Independent Study	Approx. Number of Participants	
	Lecture:	3 h/week	5 h/week (= 75 h)		Total: 105 h	Lecture	max. 150 bzw. 120
	Exercise:	1 h/week				Exercise	max. 30
	Practical	1 h/week				Practical	max. 15
	Course:					Course	
2	Learning Outcomes / Competences						
	<p>The students should be able to identify and solve the simple technical fluid flow problems; (A2 K1 E3 R2)</p> <p>They should be able to describe the internal flow behaviour and calculate the related pipe flow problems, such as the pressure loss. (A3 K2 E3 R2)</p> <p>The should be able to estimate the forces exerted by the external flow on the immersed bodies. (A3 K3 E3 R3)</p> <p>The students should know the validity of the equations and recognize the limit of their applications. (A3 K2 E4 R4)</p> <p>The students should be able to apply their knowledge from the lecture to understand the working principles of the fluid machines as well as to describe and evaluate the different kinds of machines. (A2 K2 E5 R4)</p>						
3	Contents						
	<p>The physical characters of fluid, the fluid statics and buoyancy, the fluid kinematics, the conservation laws (mass, momentum, and mechanical energy): derivation and application, the characters and difference of laminar and turbulent flows, internal pipe flows , external flow over immersed bodies.</p> <p>Construction, working principle and design of the different fluid machines.</p>						
4	Teaching Methods						
	Lecture, Exercises (one group in German + one group in English) and Lab work.						
5	Content-Related Module Prerequisites						
	Math and natural science modules (e.g. Math 1 +2, fundamental Mechanics)						
6	Formal Module Prerequisites						

	NA.														
7	<p>Type of Exams</p> <p>Written exam (100%, 90 minutes)</p> <p>Successful completion of the practical reports (pass / fail)</p>														
8	<p>Prerequisite for the Granting of Credits</p> <p>Pass of the required exams.</p>														
9	<p>This Module Appears in:</p> <table border="0"> <thead> <tr> <th>Course of Studies</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>Energie- und Umwelttechnik_BPO 2014</td> <td>Compulsory Module</td> </tr> <tr> <td>Energie- und Umwelttechnik_BPO 2015</td> <td>Compulsory Module</td> </tr> <tr> <td>Modules in English at HRW</td> <td>Compulsory Module</td> </tr> <tr> <td>Wirtschaftsingenieurwesen-Energiesysteme_BPO 2010</td> <td>Compulsory Module</td> </tr> <tr> <td>Wirtschaftsingenieurwesen-Energiesysteme_BPO 2013</td> <td>Compulsory Module</td> </tr> <tr> <td>Wirtschaftsingenieurwesen-Energiesysteme_BPO 2017</td> <td>Compulsory Module</td> </tr> </tbody> </table>	Course of Studies	Status	Energie- und Umwelttechnik_BPO 2014	Compulsory Module	Energie- und Umwelttechnik_BPO 2015	Compulsory Module	Modules in English at HRW	Compulsory Module	Wirtschaftsingenieurwesen-Energiesysteme_BPO 2010	Compulsory Module	Wirtschaftsingenieurwesen-Energiesysteme_BPO 2013	Compulsory Module	Wirtschaftsingenieurwesen-Energiesysteme_BPO 2017	Compulsory Module
Course of Studies	Status														
Energie- und Umwelttechnik_BPO 2014	Compulsory Module														
Energie- und Umwelttechnik_BPO 2015	Compulsory Module														
Modules in English at HRW	Compulsory Module														
Wirtschaftsingenieurwesen-Energiesysteme_BPO 2010	Compulsory Module														
Wirtschaftsingenieurwesen-Energiesysteme_BPO 2013	Compulsory Module														
Wirtschaftsingenieurwesen-Energiesysteme_BPO 2017	Compulsory Module														
10	<p>Weighting of Grade in Relationship to Final Grade</p> <p>Weighting equals the proportion of module credits in relationship to the total number of grade-relevant credits</p>														
11	<p>Additional Information / Literature</p> <ul style="list-style-type: none"> • Literatur: <ul style="list-style-type: none"> • Introduction to fluid mechanicsAutor: Young, Donald F. Ort, Verlag: Hoboken, NJ, WileyUmfang: XIX, 474, 9 S.: Ill., graph. Darst.Signatur: 10/WDA49(5)ISBN: 978-0-470-90215-8 • Fluid mechanicsfundamentals and applicationsAutor: Çengel, Yunus A., Cimbala, John M. Ort, Verlag: s.l., McGraw-Hill Higher Education • Kuhlmann, H.; Strömungsmechanik; Pearson Studium; München; 2007. • Böswirth, L.; Technische Strömungslehre - Ein Lehr- und Arbeitsbuch; Vieweg Verlag; Wiesbaden; 2007. 														