

DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGIES
COURSE SYLLABUS

Course Details						
Code			Academic Year		Semester	
EWT303			4		8	
Title			T	A	L	ECTS
Hydrogen Energy and Fuel Cells			2	2	0	6
Language	German					
Level	Undergraduate	X	Graduate		Postgraduate	
Department / Program	Energy Science and Technologies					
Forms of Teaching and Learning	Face to face					
Course Type	Compulsory		Elective		X	
Objectives	Principles of the modern hydrogen technology is given: material science, chemical and physical material data, hydrogen production by rearranging the hydrocarbons, hydrogen production from other sources, hydrogen deposition, hydrogen purification processes, liquefaction and technical use.					
Content	Hydrogen as an energy vector: Introduction to hydrogen technology; Fundamentals of fuel cells, fuel cell types and functionality; Fuel cell based CHP systems, Classification, mode of operation, application examples					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement	No					
Recommended or Required Reading						
Books / Lecture Notes	Vielstich, W., Lamm, A., Gasteiger, H. (Eds): Handbook of Fuel Cells: Fundamentals, Technology, Applications Wiley, 2003					
Other Sources	John Twidel, Tony Weir: Renewable Energy Resources. Edition , SPON, 1700 M. Kaltschnmidt, W.Streicher, A. Wiese: Erneuerbare Energien. Edition , Springer, 1700					
Additional Course Material						
Documents						
Assignments						
Exams						
Course Composition						
Mathematics und Basic Sciences					%	
Engineering					20%	
Engineering Design					20%	
Social Sciences					%	

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Educational Sciences			%
Natural Sciences			20%
Health Sciences			%
Expert Knowledge			40%
Assessment			
Activity	Count		Percentage (%)
Midterm Exam	1		40
Quiz			
Assignments			
Attendance			
Recitations			
Projects			
Final Exam	1		60
		Total	100
ECTS Points and Work Load			
Activity	Count	Duration	Work Load (Hours)
Lectures	15	2	30
Self-Study	15	6	90
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations	15	2	30
Laboratory			
Projects	1	30	30
Final Exam	1	2	2
		Total Work Load	184
		ECTS Points (Total Work Load / Hours)	6
Learning Outcomes			
1			
2			
3			
4			
5			
6			
7			

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8	
9	
10	
11	
12	

Weekly Content

1	
2	
3	
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12	
13	
14	
15	

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	P2	P3	P4	P5	P6	P7
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

Contribution Level

1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High



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Compiled by:	
Date of Compilation:	