Module Computer Aided Techniques in Design

Module Name: Computer Aided Techniques in Design

Module Number	**X4M 2310**	Level	Master	Short Name	CAD
Responsible Lecturers	Prof. Dr.-Ing. Dieter Warnack				
Department, Facility	THL, Mechanical Engineering				
Course of Studies	Biomedical Engineering, Master				
Compulsory/elective	Elective	ECTS Credit Points		5	
Semester of Studies	2	Semester Hours per Week		4	
Length (semesters)	1	Workload (hours)		150	
Frequency	SuSe	Presence Hours		60	
Teaching Language	English	Self-Study Hours		90	
Consideration of Gender and Diversity Issues	☒ Use of gender-neutral language (THL standard) ☐ Target group specific adjustment of didactic methods ☐ Making subject diversity visible (female researchers, cultures etc.)				
Applicability	Biomedical Engineering				
Remarks	None				

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Course 1: Computer Aided Techniques in Design Lecture

Course Number		Short Name	CADL
Course Type	Lecture	Form of Learning	Presence
Mandatory Attendance	no	ECTS Credit Points	5
Participation Limit	None	Semester Hours per Week	3
Group Size (practical training, exercises, …)	None	Workload (hours)	90
Teaching Language	English		**45**
Study Achievements („Studienleistung", SL)		Self-Study Hours	45
SL Length (minutes)	n. a.	SL Grading System	n. a.
Exam Type	Written Exam	Exam Language	English
Exam Length (minutes)	90	Exam Grading System	One-third Grades
Learning Outcomes	The students should be able to understand the underlying physics of different computational methods as named under the contents of lecture below. They should be able to have a critical view on the applicability of the methods. These outcomes are achieved by attending the lecture and the practical training.		
Participation Prerequisites	• CAD • Fluid Mechanics • Mechanics of Solids • Mathematics		
Contents	• virtual design loop containing fluids and solids design virtual testing of flow features and structure with simplified models geometry definition with CAD virtual testing with 3D models - FEM, CFD outlook • further steps - rapid prototyping - experiments		
Literature	Course packs and/ or literature as recommended in class Computer software in the laboratory		
Remarks	None		

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Course 2: Computer Aided Techniques in Design (Practical Training)

Course Number		Short Name	CADP
Course Type	Practical Training	Form of Learning	Presence
Mandatory Attendance	☒	ECTS Credit Points	2
Participation Limit	n. a.		1
Group Size (practical training, exercises, …)	n. a.	Workload (hours)	60
Teaching Language	English	Presence Hours	15
Study Achievements („Studienleistung", SL)	Practical Training	Self-Study Hours	45
SL Length (minutes)	n. a.	SL Grading System	Pass
Exam Type	n. a.	**Exam Language**	n. a.
Exam Length (minutes)	n. a.	**Exam Grading System**	n. a.
Learning Outcomes	The students should be able to understand the underlying physics of different computational methods as named under the contents of lecture below. They should be able to have a critical view on the applicability of the methods. These outcomes are achieved by attending the lecture and the practical training.		
Participation Prerequisites	None		
Contents	A virtual design is applied to a model wind turbine or an axial pump The underlying methods correspond to the methods as described in contents of lecture.		
Literature	as recommended in class		
Remarks	None		