

Module: Instrumentation and Measurement

Level	Bachelor	Short Name	IM
Responsible Lecturers	Huhn, Martin, Prof. Dr.-Ing.		
Department, Facility	Mechanical Engineering and Business Administration		
Course of Studies	Mechanical Engineering, Bachelor		
Compulsory/elective	Compulsory	ECTS Credit Points	4
Semester of Studies	5	Semester Hours per Week	4
Length (semesters)	1	Workload (hours)	150
Frequency	WiSe	Presence Hours	60
Teaching Language	English	Self-Study Hours	90

The following section is filled only if there is **exactly one** module-concluding exam.

Exam Type	Portfolio Exam	Exam Language	English
Exam Length (minutes)		Exam Grading System	One-third Grades
Learning Outcomes	<p>The students know the basics and practical applications of industrial measurement technology.</p> <p>The students know different measurement principles and can select sensors according to a measurement task.</p> <p>The students know the basics of measurement data processing and measurement data analysis.</p> <p>The students can</p> <ul style="list-style-type: none"> • plan and carry out a measurement task • acquire and transmit measurement data with different devices • process measurement data with different methods • calculate measurement results incl. measurement uncertainties • prepare a measurement report. 		
Participation Prerequisites			

The previous section is filled only if there is **exactly one** module-concluding exam.

Consideration of Gender and Diversity Issues	<p>✓ Use of gender-neutral language (THL standard)</p> <p>✗ Target group specific adjustment of didactic methods</p> <p>✗ Making subject diversity visible (female researchers, cultures etc.)</p>
Applicability	
Remarks	

Module Course: Instrumentation and Measurement (Lecture)

(of Module: Instrumentation and Measurement)

Course Type	Lecture	Form of Learning	Presence
Mandatory Attendance	no	ECTS Credit Points	2
Participation Limit		Semester Hours per Week	3
Group Size		Workload (hours)	90
Teaching Language	English	Presence Hours	45
Study Achievements ("Studienleistung", SL)	Practical Training	Self-Study Hours	45
SL Length (minutes)		SL Grading System	

The following section is filled only if there is a course-specific exam.

Exam Type		Exam Language	
Exam Length (minutes)		Exam Grading System	
Learning Outcomes			
Participation Prerequisites			

The previous section is filled only if there is a course-specific exam.

Contents	<ul style="list-style-type: none"> • Fundamentals of industrial metrology • Physical effects, measurement principles and sensors • Measurement data acquisition, transmission and processing • Methods of measurement data analysis
Literature	Literature list will be presented in the lecture.
Remarks	

Module Course: Instrumentation and Measurement (Practical Training)

(of Module: Instrumentation and Measurement)

Course Type	Practical Training	Form of Learning	Presence
Mandatory Attendance	yes	ECTS Credit Points	2
Participation Limit		Semester Hours per Week	1
Group Size	12	Workload (hours)	60
Teaching Language	English	Presence Hours	15
Study Achievements ("Studienleistung", SL)	Practical Training	Self-Study Hours	45
SL Length (minutes)		SL Grading System	

The following section is filled only if there is a course-specific exam.

Exam Type		Exam Language	
Exam Length (minutes)		Exam Grading System	
Learning Outcomes			
Participation Prerequisites			

The previous section is filled only if there is a course-specific exam.

Contents	<ul style="list-style-type: none"> • Measurement of bending stresses, temperatures and other physical quantities • Transfer and evaluation of the measurement data, calculation of the measurement results including measurement uncertainties • Preparation of a measurement report
Literature	Literature list will be presented in the practical training.
Remarks	