Course Description: Environmental and Process Metrology

Department	Industrial Engineering
Degree programme	• Environmental Technology & Development • Environmental Technology
Module name	Environmental and Process Metrology
Module number	WI-B.731
Compulsory/ optional/ elective module	Compulsory module
Module coordinator	Prof. Dr. Andreas Schleicher
Learning objectives	• Overview of the fundamental methods of online measurement in processes and environment, • Understanding of fundamentals of metrology, • Ability of a statistical evaluation of measuring data and error estimation, • Overview of the most important methods for continuous measurement in industrial process and environment, Understanding of the measuring principles, • Ability of a critical evaluation and of a well-founded selection of methods and instrumentation, skills in the handling with instrumentation.
Module content	• Basic terminology of metrology, • Statistical measuring errors, statistical distributions, confidence intervals, error propagation, • Characteristics and assessment criteria od sensors and instrumentation, • Output signals and data acquisition, • Methods for measurement of pressure, flow, level, temperature and air humidity, • Methods for continuous measurement of gases Dust and aerosol measurement,
Course type (lecture, exercises, seminar, practical course)	3L - 0E - 0S - 2P
Recommended literature	/1/ DIN 1319: Fundamentals of metrology part 1,2 and 3 /2/ Weichert, N. und Wülker, M. Messtechnik und Messdatenerfassung. Oldenbourg Verlag, 2. Auflage 2011 /3/ Profos/Pfeifer: Grundlagen der Messtechnik, Oldenburg 1993 /4/ Douglas O.J. deSá: Instrumentation Fundamentals for Process Control Taylor Francis, New York 2001 /5/ Oesterle, G: . Prozessanalytik, Oldenbourg Verlag München 1995 Oldenburg 2001; Staab, J.: Industrielle Gasanalyse Oldenbourg Verlag; 1994 /6/ Willeke, K; Baron, A. (Hrsg): Aerosol Measurement; Principles, Techniques and Applications; Van Nostrand

	Reinhold, 1992
Learning materials	Power Point-presentation as download on department server
Method(s) of instruction/ media being used	Interactive lecture
Level/ category	Bachelor
Which semester (winter/ summer term)	Winter term
Which semester during the programme	5th. semester → Environmental Technology 7th. semester → Environmental Technology & Development
Requirements for attendance	physics, physical chemistry, electrical engineering
Assessment (written/ oral test, paper, etc.)	written examination 90 min
ECTS credits	6
Work load in:	75 h of contact hours 105 h of self-study
Usability of this module	• Environmental Technology & Development • Environmental Technology
Frequency of offer	yearly
Duration of module	1 semester
Place/ room	EAH Jena
Time	According to schedule
Language(s)	English