

Module: Environmental Process Engineering I

Level	Bachelor	Short Name	UVT I
Responsible Lecturers	Heymann		
Department, Facility	Applied Natural Sciences		
Course of Studies	Environmental Engineering and Management, Bachelor		
Compulsory/elective	Compulsory	ECTS Credit Points	10
Semester of Studies	4	Semester Hours per Week	8
Length (semesters)	2	Workload (hours)	240
Frequency	WiSe	Presence Hours	120
Teaching Language	German/English	Self-Study Hours	120

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

Exam Type	Written Exam	Exam Language	German/English
Exam Length (minutes)	120	Exam Grading System	One-third Grades
Learning Outcomes	<p>The students can apply or transfer the basics of the subjects thermodynamics and fluid mechanics, thermal and mechanical process engineering, instrumental analysis, measurement and control technology in processes for environmental protection and evaluate and design exemplary relevant process technologies in environmental protection. The students learn the basics of process engineering simulations, the implementation of theoretical principles of environmental technology in plant engineering practice and the assessment and critical analysis as well as the optimization of environmental engineering processes in industrial applications.</p>		
Participation Prerequisites			

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

Consideration of Gender and Diversity Issues	<ul style="list-style-type: none"> ✓ Use of gender-neutral language (THL standard) ✗ Target group specific adjustment of didactic methods ✓ Making subject diversity visible (female researchers, cultures etc.)
Applicability	
Remarks	

Module Course: Lecture Environmental Process Engineering I

(of Module: Environmental Process Engineering I)

Course Type	Lecture	Form of Learning	Presence
Mandatory Attendance	no	ECTS Credit Points	5
Participation Limit		Semester Hours per Week	4
Group Size		Workload (hours)	150
Teaching Language	German/English	Presence Hours	60
Study Achievements ("Studienleistung", SL)		Self-Study Hours	90
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"> • Importance of environmental process engineering; areas of application; classic processes • Systematics of environmental process development • Process engineering principles <ul style="list-style-type: none"> • heat transfer • balancing of process engineering processes • Selected areas of environmental process engineering - from the areas of: <ul style="list-style-type: none"> • exhaust air treatment • remediation of contaminated sites and soil treatment • groundwater treatment • industrial wastewater treatment • industrial production • case studies and problem analyses
Literature	<ol style="list-style-type: none"> 1. Schwister, K. (2010). <i>Taschenbuch der Umwelttechnik</i>. Leipzig: Hanser. 2. Schwister, K. (Ed.). (2005). <i>Taschenbuch der Verfahrenstechnik</i>. Fachbuchverlag Leipzig im Carl Hanser Verlag. 3. Kraume, M. (2004). <i>Transportvorgänge in der Verfahrenstechnik</i>. Springer Berlin Heidelberg.
Remarks	Further literature will be announced topic-related at the beginning of each lecture.

Module Course: Environmental Process Engineering I-A (Practicals)

(of Module: Environmental Process Engineering I)

Course Type	Practical Training	Form of Learning	Presence
Mandatory Attendance	yes	ECTS Credit Points	2,5
Participation Limit		Semester Hours per Week	2
Group Size		Workload (hours)	45
Teaching Language	German/English	Presence Hours	30
Study Achievements ("Studienleistung", SL)	Practical Training	Self-Study Hours	15
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	Practical experiments on environmental process engineering topics, e.g. <ul style="list-style-type: none"> • Thermodynamics and fluid dynamics • Mechanical process engineering • Measurement and control technology
Literature	
Remarks	

Module Course: Environmental Process Engineering I-B (Practicals)

(of Module: Environmental Process Engineering I)

Course Type	Practical Training	Form of Learning	Presence
Mandatory Attendance	yes	ECTS Credit Points	2,5
Participation Limit		Semester Hours per Week	2
Group Size		Workload (hours)	45
Teaching Language	German/English	Presence Hours	30
Study Achievements ("Studienleistung", SL)	Practical Training	Self-Study Hours	15
SL Length (minutes)		SL Grading System	Pass

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	<p>Practical experiments on environmental process engineering topics, e.g.</p> <ul style="list-style-type: none"> • Thermal process engineering • Instrumental analysis • Bio-process engineering • Heat and mass transport <p>Example task: Dimensioning, design, operation and analysis (if necessary simulation) of a system for exhaust gas purification by absorption/adsorption/catalysis</p>
Literature	
Remarks	