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Degree Program

Sustainable Engineering and Future Technologies (SET)

(1) Intended Learning Outcomes

The Sustainable Engineering and Future Technologies (SET) degree program teaches fundamental engineering skills and a basic understanding of the necessity and implementation of sustainable technology and processes. In addition, in-depth engineering knowledge in future-relevant subject areas is taught. Students can choose between different areas of specialization that are continuously adapted to current technological and social issues.

The degree program prepares students for the international labor market with a focus on Germany and is designed for both German and international applicants. English proficiency is a prerequisite, and additional language skills will be acquired, especially German proficiency for non-native speakers.

(2) Pre-Degree Internship

No pre-degree internship is required in the SET degree program.

(3) Curriculum Outline

The degree program is divided into foundational studies and main studies. The duration of the foundational studies is two semesters, and the duration of the main studies is five semesters. The integrated internship semester takes place in the fourth semester and may be postponed upon application, see para. (6). Areas of specialization are offered from the fifth semester onward, see para. (7).

(4) Required Coursework

The SET degree program is a full-time degree program. The regular period of study is seven semesters. The total number of compulsory, specialization, and elective modules required to successfully complete the degree program amounts to 210 ECTS points. The courses as well as the module and/or submodule exams can be found in the Study Program and Exam Plan (para. 24).

(5) Assessment Semester

There are no regulations that go beyond the rules laid out in § 2 para. 3 and § 18 para. 2 in the General Part of the Study and Examination Regulations for the Bachelor's Degree Programs (SPOBa).

(6) Integrated Internship Semester (PSS)

In accordance with the regulations in § 8 of the General Part of the SPOBa, training in the integrated internship semester takes place in a suitable institution of professional practice for a duration of at least 95 days of attendance. In addition, block courses will be held in Module 19 on a separate schedule to prepare and follow up on the integrated internship semester.

The PSS is planned for the fourth semester. Upon application, the PSS may be completed in the fifth or sixth semester. The Head of Internship Office decides on the application.

Admission to the PSS is possible once admission to main studies has been granted.

(7) Areas of Specialization

There are five areas of specialization: "Energy Science and Technology," "Sustainable Mobility," "Environmental Engineering," "Data Based Engineering," and "Robotics and Cyberphysical Systems."

One of the five areas of specialization must be chosen by the beginning of the fifth semester. The area of specialization forms a module group. A catalog of possible specialization modules will be published for each area of specialization.

The Program Development Committee regularly proposes suitable module combinations for the various areas of specialization.

Overall, modules with a total of at least 25 ECTS points must be taken in each area of specialization.

The selection must contain a minimum of four modules and should contain a maximum of seven modules, depending on the size of the individual modules.

At the beginning of the semester, a binding agreement on the selection must be entered into with the dean of degree program for the respective semester.

A one-time change of area of specialization is possible upon application by the student. The application must be submitted to the Central Examination Office.

(8) Elective Courses

In the module group “Elective courses,” students can freely choose modules from a catalog of elective courses. This area of the curriculum allows students to supplement their competence profile from a selection of modules of their choice. As long as the selection is made from the catalog of elective courses of the SET degree program, approval by the dean of degree program is not required, unlike in the areas of specialization. The selection of modules that are not included in the catalog of elective catalog of the SET degree program must be approved by the dean of degree program.

The catalog of elective courses of the SET degree program is published at the beginning of each semester. Registration for the module and/or submodule exams of the elective modules is carried out in accordance with § 14 para. 1 of the General Part of the SPOBa at the Central Examination Office. If a module exam is failed, repetition of the exam is mandatory.

(9) Social Skills/General Studies

For the Social Skills submodule, coursework totaling at least two ECTS points must be completed. Options for completing the coursework will be announced at the beginning of the semester. Possible forms of coursework are: work as a tutor or participation in the buddy program for international students. The dean of degree program decides on the recognition of other comparable achievements.

In the General Studies/Language Courses submodule, courses totaling at least two ECTS points must be selected from the offerings of Extracurricular Studies (CCL), and the proofs of performance specified for the selected courses must be provided.

This module is passed with a total of six ECTS points.

(10) Language Modules

With Language Modules 1 and 7, students whose mother tongue is not German achieve language proficiency at level B1.

German native speakers or students who acquired their university entrance qualification at a German-speaking institution must choose and provide proof of language modules carrying the same number of ECTS points in an alternative language that is neither German nor their respective mother tongue, for example from the offerings of Extracurricular Studies.

(11) Teaching and Exam Languages

Courses are usually taught in English. Some compulsory courses are held in German to foster integrated language acquisition. Both English-language and German-language courses can be chosen in the areas of specialization and as elective subjects.

In the Study Program and Exam Plan, English-language courses are marked with (EN), and German-language courses accordingly with (DE). The exams are taken in the language of instruction.

The bachelor's thesis can be written in either German or English.

(12) Subject-Related Admission Requirements for the Module and/or Submodule Exams

In addition to the regulations in § 14 para. 2 of the General Part of the SPOBa, the following applies: Admission to the exams of the main studies may also be granted upon application in justified exceptional cases if a maximum of four module and/or submodule exams of the foundational studies have not yet been completed. The written application with specified reasons must be submitted to the responsible Examination Board within 14 days of the announcement of the exam results. The decision of the Examination Board will be forwarded together with the application to the Office of Student Affairs for formal notification.

(13) Scheduled Module and/or Submodule Exams

There are no regulations that supersede the regulations in the General Part of the SPOBa. In particular, the regulations in § 3, § 18, § 21, and § 22 of the General Part of the SPOBa apply.

(14) Oral Supplementary Exam

If the second repeat exam in an exam from the foundational studies or the main studies is graded fail (5.0), an oral supplementary exam (M30) shall take place in close connection with this second repeat exam in accordance with § 21 para. 4 sentence 4. The regulations of § 17 for oral exams apply accordingly. The date for this oral supplementary exam will be announced by the Chair of the Examination Board in an appropriate manner. Passing the oral supplementary exam improves the grade of the second repeat exam to sufficient (4.0).

(15) Weighting of Submodule Exams

The weighting of the graded submodule exams in the calculation of the module grades is proportional to the number of ECTS points of the associated courses.

(16) Weighting of Module Exams

For modules for which the proof of performance or the exam is entered in the row of the module title in the Study Program and Exam Plan (para. 24), the following regulation applies: The module exam covers all courses of the module. In accordance with § 26 para. 2 sentence 6 and § 33 para. 2 sentence 4 of the General Part of the SPOBa, the result of a graded module exam is included in the calculation of the overall grade of the bachelor's examination with the weight of the number of ECTS points assigned to the module in the Study Program and Exam Plan (para. 24).

(17) Types of Courses

Unless otherwise indicated in the Study Program and Exam Plan (para. 24), modules consist of lectures, tutorials, and/or labs, (which are often integrated with each other).

(18) Other Written or Practical Exams or Assignments

Other written or practical exams or assignments (SP) in accordance with § 15 para. 1 no. 4 in conjunction with § 39 of the General Part of the SPOBa may be:

B = other written report,
L = lab work, lab report, practical work,
PR = presentation,
S = term paper, project work,
W = workshop.

In the case of other written or practical exams or assignments of types B, L, PR, S, and W, the examiner shall determine the scope and time of the required work at the beginning of the semester in accordance with § 18 para. 3 of the General Part of the SPOBa.

(19) Study Trips

Study trips may be carried out as part of courses.

(20) Engineering Project:

The Engineering Project is usually carried out jointly by a team of students and is supervised by a professor. The focus of the project work may be experimental or practical, as well as theoretical. The project topic may be developed independently or assigned by a professor.

As part of the module, students may also work over two semesters on one of the projects offered at the university or in the field of applied research.

The project may also be carried out at an institution outside the university. In such cases, there must be a clear thematic distinction from the topic of the bachelor's thesis.

(21) Bachelor's Thesis

In addition to the regulations in § 30 of the General Part of the SPOBa, the following applies: If prerequisites are missing because courses are offered only annually, the Chair of the Examination Board decides on admission to the bachelor's thesis.

(22) Oral Bachelor's Exam

An oral bachelor's exam in accordance with § 31 of the General Part of the SPOBa is not planned.

(23) Bachelor Degree

The Bachelor of Engineering degree (abbreviated: B.Eng.) will be awarded.

A bachelor's degree in engineering, applied technologies, or natural sciences entitles the holder to use the professional title of "engineer" alone or in combination with other words according to the Engineers Act of the state of Baden-Württemberg.

(24) Study Program and Exam Plan

Basic study period (semester 1-2)							Abbreviations: see footnote	
	Module no. / Module / Course	Type of module	Contact hours	ECTS credits	Pass/fail coursework	Module or submodule exam		
						pass/fail	graded	
Semester 1	1 Language Basics (DE) Language Basics (DE)	PM	4	5			K90/S/R	
	2 Hands-on Experience (EN/DE) Hands-on Experience (EN/DE)	PM	4	5		L		
	3 Machine Design and CAD (EN) Machine Design and CAD (EN)	PM	4	5	SP		S	
	4 Mathematics I (EN) Mathematics I (EN)	PM	4	5		SP		
	5 Electrical Engineering (EN) Electrical Engineering (EN)	PM	4	5	SP		K90	
	6 Basic Concepts of Sustainability (EN) Basic Concepts of Sustainability (EN)	PM	4	5			S	
Semester 2	7 Communication and Intercultural Competences (DE) Communication (DE) Intercultural Competences (DE)	PM	4-6 2-4 2	5 3 2		S/R S/R		
	8 Physics - Concepts and Methods (EN) Physics - Concepts and Methods (EN)	PM	4	5			K90	
	9 Technical Mechanics (EN) Technical Mechanics (EN)	PM	4	5			K90	
	10 Mathematics II (EN) Mathematics II (EN)	PM	4	5			K90	
	11 Programming (EN/DE) Programming (EN/DE)	PM	4	5		SP		
	12 Electrical Engineering and Electronics (EN) Electrical Engineering and Electronics (EN)	PM	4	5		SP		
Sum	Basic study period (semester 1-2)		48-50	60				

Abbreviations: ECTS = European Credit Transfer System; PM = Compulsory module;

WPM = Elective module; DE = German-language course; EN = English-language course.

Types of exams: Kx = Written exam (x = duration in minutes); R = class presentation; L = lab work, lab report, practical work;

PR = presentation; S = term paper, exercises; SP = other written or practical exam / assignment;

X = type of examination depends on the selected course.

Main study period (semester 3-7)						Abbreviations: see footnote	
	Module no. / Module / Course	Type of module	Contact hours	ECTS credits	Pass/fail coursework	Module or submodule exam	
						pass/fail	graded
Semester 3	13	Process and Material Technologies (EN)	PM	5	5		K90, SP
		Process and Material Technologies (EN)		4	4		
		Process and Materials lab (EN)		1	1	SP	
	14	Machine Dynamics (EN)	PM	4	5		K90
		Machine Dynamics (EN)		4	5		
	15	Signals and Systems (DE/EN)	PM	4	5		K90
		Signals and Systems (DE/EN)		4	5	SP	
	16	Mathematics III (EN)	PM	4	5		K90
	Statistics and Probability Calculus (EN)		2	3			
	Multivariable Calculus (EN)		2	2			
	17	Microprocessor Systems (EN)	PM	4	5	SP	
	Microprocessor Systems (EN)						
	18	Interdisciplinary Lab Electronics and Physics (DE/EN)	PM	4	5	SP/R	
	Interdisciplinary Lab		4	5			
Semester 4	19	Internship	PM	1	30		
		Industrial Internship		0	26	S	
		Seminar		1	4	R	
Semester 5	20	Control Systems (DE/EN)	PM	4	5		K90
		Control Systems (DE/EN)		4	5	SP	
	21	Software Engineering and Object-Oriented Programming (EN)	PM	4	5		K90
		Software Engineering and Object-Oriented Programming (EN)		4	5	SP	
	22	Sensors and Drives (EN)	PM	4	5		K90
	Sensors and Data Acquisition		2	3			
	Electric Drives		2	2			
	23	Lab Project (DE)	PM		5	S	
	Lab Project (DE)			5			
Semester 5-6	Area of specialization according to section 7 (modules amounting to at least 25 ECTS credits)			x	25		
	3x	Specialization module 1-7	WPM	x	x	X	X
		Course in specialization module		x	x		
Semester 6	Area of compulsory electives according to section 8 (modules amounting to at least 10 ECTS credits)			x	10		
	4x	Compulsory elective module 1-n	WPM	x	x	X	X
		Course in compulsory elective module		x	x		
	50	Project & Quality Management	PM	4	5		K90/S/R
	Project and Quality Management (EN)		4	5	S		
Semester 7	51	Scientific Writing (DE)	PM	2	2	S	
		Scientific Writing (DE)		2	2		
	52	Social Skills/General Studies	PM	x	6		
		Social Skills		x	≥2	SP	
	General Studies/Language Courses		x	≥2	SP		
	53	Engineering Project	PM		10	R	S
	54	Bachelor Thesis	PM		12		
Sum	Main study period (semester 3-7)				44	150	
Sum	Complete study period (semester 1-7)				44	210	