

Framework of the M.Sc. *Sustainable Systems Engineering* (Subject-Specific Examination Regulations 2021)

Technical Concentration Areas*				
	Energy Systems Engineering (min. 18, max. 42 ECTS)	Resilience Engineering (min. 18, max. 42 ECTS)	Sustainable Materials Engineering (min. 18, max. 42 ECTS)	Interdisciplinary Profile* (min. 6, max. 24 ECTS)
Term/ Semester 1	Mandatory Elective Modules (min. two out of four, min. 12 ECTS) Solar Energy (Winter term) Energy System Operations (Winter term)	Mandatory Elective Modules (min. two out of three, min. 12 ECTS) Fundamentals of Resilience (Winter term)	Mandatory Elective Modules (min. two out of three, min. 12 ECTS) Material Life Cycles (Winter term) Materials Selection for Sustainable Engineering (Winter term)	Module(s) <u>related</u> to the Subject Area and/or Module <u>outside</u> the Subject Area (max. one, max. 6 ECTS)
Term/ Semester 2	Energy Efficient Power Electronics (Summer term) Energy Storage (Summer term) Further Selection	Design and Monitoring of Large Infrastructures (Summer term) Dynamics of Materials: Material Characterization (Summer term) Further Selection	Computational Materials' Engineering (Summer term) Further Selection	
Term/ Semster 3	Master's Project (6 ECTS)			
Term/ Semster 4	Master's Thesis + Defense (27 + 3 ECTS)			

*In all areas together –Technical Concentration Areas and the Interdisciplinary Profile – a maximum of 84 ECTS credits can be earned!

ECTS is a standard for comparing the study attainment and performance of students of higher education across the European Union and other collaborating European countries. For successfully completed studies in the master's program *Sustainable Systems Engineering* 120 ECTS credits are awarded. One ECTS credit equals on average 30 hours of workload. For more information, see the **Subject-Specific** and **General Examination Regulations**. They both set the legal framework for the studies. The available modules/courses are listed and described in detail in the **Module Handbook**.

RECOMMENDED TERM	CYCLE	AREA AND MODULE	TYPE OF MODULE	PL/SL	SWS	ECTS
Energy Systems Engineering						min. 18, max. 42*
<p><i>Within this Technical Concentration Area, a minimum of 18 and a maximum of 42 ECTS credits need to be achieved. In addition to this, a minimum of two out of the four below mentioned Mandatory Elective Modules need to be completed.</i></p> <p>Example: Students can choose two of the below mentioned modules (= 12 ECTS) and at least 6 ECTS from the Further Selection catalog in this Module Handbook (= 18 ECTS); alternatively, students can choose three or even four of the below mentioned modules (= 18/24 ECTS) and if wanted, additional modules from the Further Selection (up to an overall maximum of 42 ECTS).</p>						
1	Winter term	Solar Energy	Mandatory Elective	SL+ PL	4	6
1	Winter term	Energy System Operations		PL	4	6
2	Summer term	Energy Efficient Power Electronics		PL	4	6
2	Summer term	Energy Storage		PL	4	6
Resilience Engineering						min. 18, max. 42*
<p><i>Within this Technical Concentration Area, a minimum of 18 and a maximum of 42 ECTS credits need to be achieved. In addition to this, a minimum of two out of the three below mentioned Mandatory Elective Modules need to be completed.</i></p> <p>Example: Students can choose two of the below mentioned modules (= 12 ECTS) and at least 6 ECTS from the Further Selection catalog in this Module Handbook (= 18 ECTS); alternatively, students can choose even all three below mentioned modules (= 18 ECTS) and if wanted, additional modules from the Further Selection (up to an overall maximum of 42 ECTS).</p>						
1	Winter term	Fundamentals of Resilience	Mandatory Elective	PL	4	6
2	Summer term	Design and Monitoring of Large Infrastructures		PL	4	6
2	Summer term	Dynamics of Materials: Material Characterization		PL	4	6
Sustainable Materials Engineering						min. 18, max. 42*
<p><i>Within this Technical Concentration Area, a minimum of 18 and a maximum of 42 ECTS credits need to be achieved. In addition to this, a minimum of two out of the three below mentioned Mandatory Elective Modules need to be completed.</i></p> <p>Example: Students can choose two of the below mentioned modules (= 12 ECTS) and at least 6 ECTS from the Further Selection catalog in this Module Handbook (= 18 ECTS); alternatively, students can choose even all three below mentioned modules (= 18 ECTS) and if wanted, additional modules from the Further Selection (up to an overall maximum of 42 ECTS).</p>						
1	Winter term	Material Life Cycles	Mandatory Elective	PL	4	6
1	Winter term	Materials Selection for Sustainable Engineering		PL	4	6
2	Summer term	Computational Materials' Engineering		SL+PL	4	6
Interdisciplinary Profile						min. 6, max 24*
<p><i>Within the Interdisciplinary Profile, a minimum of 6 and a maximum of 24 ECTS points need to be achieved. All Modules <u>related</u> to the Subject Area within the Interdisciplinary Profile can be found within this Module Handbook. Within the Interdisciplinary Profile, a maximum of 6 ECTS points <u>can</u> be assigned to one Module <u>outside</u> the Subject Area. The respective list can also be found within the Module Handbook.</i></p>						
1 – 3	Winter/ Summer term	Module(s) <u>related to the Subject Area</u>	Elective	SL		
1 – 3	Winter/ Summer term	Module <u>outside the Subject Area</u> (Just one!)		SL		max. 6
Master's Section						36
3	Winter/ Summer term	Master's Project	Mandatory	SL		6
4	Winter/ Summer term	Master's Module: Master's Thesis + Defense		PL		27 + 3

Abbreviations:

PL=Prüfungsleistung/graded assessment; SL= Studienleistung/pass/fail assessment; V=Vorlesung/lecture; Ü=Übung/exercise; S=Seminar/seminar; Pr=Praktikum/practical exercise; SWS=Semesterwochenstunden/hours per week per semester

***IN ALL AREAS TOGETHER –TECHNICAL CONCENTRATION AREAS AND THE INTERDISCIPLINARY PROFILE – A MAXIMUM OF 84 ECTS CREDITS CAN BE EARNED.**