

Module Handbook

M.Sc. SUSTAINABILITY MANAGEMENT AND TECHNOLOGIES (SPO SS 26)

Faculty of Sustainable Infrastructure

Study and examination regulation SS 26

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1 Overview

This handbook describes the study programme and individual modules of the Master's programme in Sustainability Management and Technologies offered at the Neuburg campus of TH Ingolstadt (THI) **according to the [Study and Exam Regulations as of Oct. 13, 2025](#)**, applicable to the summer semester intake 2026 and thereafter.

The descriptions of the modules contain explanations about the requirements and types of module examinations. In addition to the course content, the objectives of the course, career profiles and opportunities that arise from studying Sustainability Management and Technologies are described.

Programme name	Sustainability Management and Technologies
Type of programme & Degree	Consecutive M. Sc. [Master of Science] full-time
Initial start date	Summer semester 2025 (yearly intake, only summer semester)
Standard period of study	4 semesters (120 ECTS)
Studienort	THI Campus Neuburg
Languages(s) of instruction	English (some electives might be offered in German)
Cooperation §19 – 20 BayStudAkkV	none
Admission requirements	Bachelor of Arts / Bachelor of Science (180 ECTS) + language skills (English B2, German A1)

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2 Introduction

2.1 Overall objective of the programme

Sustainability management and Corporate Social Responsibility (CSR) penetrate all areas of a company and reveal connections between technological and management-orientated aspects of sustainable transformation. As a graduate of the Master's programme, you will develop action plans, design new business models under the maxims of sustainability and circularity and develop their implementation in technology-oriented companies or public organisations. You will be able to read the values, cultures and management structures of a company or organisation, design them regarding their ecological, social and economic characteristics and identify potential for improvement. Graduates will have the potential to revolutionise companies and organisations at the interface of sustainability and technology application!

Figure 1 summarizes the key elements of the study programme: sustainability management and economics combined with insights into technologies for a sustainable future within a global framework with a focus on practical application in the form of cases and field work. The programme's objective is to train personalities who manage technology-oriented businesses and organisations responsibly, to enable a sustainable development for people and the planet.



Figure 1.: Elements of the programme

2.2 Admission requirements

For the Master's degree programme, the general admission requirements for studying at Master level at universities of applied sciences must be met.

The **binding regulations** for this study plan can be found in:

- [Study and Exam Regulations for the Master's degree program in Sustainability Management and Technologies in the version dated October 13, 2025](#) including its [Annex](#)
- [General examination regulations \(APO\) of the Ingolstadt University of Technology](#)
- [Matriculation regulations of the Ingolstadt University of Technology](#). The relevant provisions of the study and examination regulations influence the course of study.

The **admission criteria** are as follows:

- Proof of English language skills at level B2 (to be provided with the application)
- Proof of German language skills at level A1 (to be provided with the application or, at the latest, by the end of the first semester)
- The successful completion of an academic study programme in business/economics, engineering or natural sciences, in each case with a business/economics focus or related fields, at a German university with at least 180 ECTS credit points or an equivalent domestic or foreign degree
- Basic knowledge of management theory or business administration as well as the ability to think abstractly and system-oriented and to formalize approaches and solutions
- Knowledge/experience relevant to the degree program, be it of a scientific or practical nature

From 2026, a **two-step selection procedure with online interviews** is applicable to **applicants from third countries (i.e., non-German citizens or persons with equivalent status)**, following the [Statutes for International Orientation and Selection Procedures as of September 22, 2025](#).

Applications will be assessed against the following criteria:

- GPA of the Bachelor's degree
- GRE or GMAT test score (optional, but recommended)
- Knowledge and (practical) experience relevant to the degree program
- Quality of a short essay stating the candidate's interest and motivation for a career path in sustainability management

For shortlisted candidates, short selection interviews will be conducted (online) before deciding about admission.

2.3 Target group

The study programme is aimed at

- Bachelor graduates from different backgrounds (engineering, management, sciences) with (at least) basic knowledge in management/business administration who want to deepen their knowledge in the fields of sustainability, management and (transformative) technologies and who seek an interdisciplinary approach towards these topics
- International students who aim to use their acquired skills in companies in Germany or abroad
- National students who want to get a more international perspective & training on the topics of sustainability, management and technology.

2.4 Structure of the programme

The programme covers four semesters, starting in spring (mid-March) and leads to the degree Master of Science. The first three semesters are focusing on course work, the fourth semester focuses on the completion of the Master thesis, which is usually connected to solving a practical problem rather than conducting purely theoretical research.

Figure 2 displays the curriculum of the programme. The programme starts with some foundations, such as in the module *Sustainability in Business and Economics*, which is an important prerequisite for those students who have a background in science or engineering and therefore have only basic knowledge in business administration and economics. It also introduces the students to the various aspects of economic, social and environmental sustainability, such as, for example, represented in the [UN's Sustainable Development Goals](#). The students are further introduced into several aspects of sustainability management, such as *Metrics and Analytics for Sustainability* and *Sustainable Business Strategy and Entrepreneurship*. It also familiarizes students with the principles of *Circular Economy and Life Cycle Management* and raises the students' awareness for the complex interrelationships between *Technology and Society*.

The following semesters offer various opportunities to dive deeper into different transformative technologies (such as AI, urban building technologies, energy and decarbonization technologies, sustainable materials and recycling technologies) but also to learn more about sustainable leadership, supply chain sustainability and sustainable investment and finance.

	Sustainability Management and Technologies (SPO SS 26)
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<i>1. Semester</i>		
Circular Economy and Life Cycle Management	Sustainability Business Basics and Economics	Sustainable Business Strategy and Entrepreneurship
Metrics and Analytics for Sustainability	Technology and Society	Research Skills (from SS 2026 onwards)
<i>2. Semester</i>		
Artificial Intelligence and Sustainability	Sustainable Materials and Recycling- Technologies	Natural Resources Management and Supply Chain Sustainability
Values and Ethics for Sustainable Leadership	Elective I	
<i>3. Semester</i>		
Urban Ecology and Sustainable Building Technologies	Climate Change and De-Carbonization Technologies	Sustainable Investments and Finance Policies
Sustainability Project and Field Trip	Elective II	
<i>4. Semester</i>		
Master-Thesis	Master- Colloquium	

Figure 2: Curriculum

The students can further shape their profiles through the selection of two electives in the 2nd and 3rd semesters. A list of possible electives that will be offered (subject to changes) is:

Topic area 1: Business / Management / Economics / Law:

- Sustainable Market Communication
- Corporate Venturing and Innovation
- Management Accounting & International Taxation
- Global Business Model Design
- Social Entrepreneurship & Sustainable Innovations
- Global Business and Economics
- Environmental Law, Policies and Institutions
- Social Impact, Sustainability and Compliance
- Innovation Management Methods
- Strategic Foresight and Trend Analysis
- Advanced Economics
- Future Business Modelling
- Business Analytics and Artificial Intelligence

- Agile Project Management

Topic area 2: Engineering and Sciences:

- Innovation and New Technologies
- Hydrogen in Energy Technology and Energy Markets
- Energy Management and Energy Efficiency
- Data Engineering and Analytics
- Technology Design and Evaluation

Topic area 3: Personal Development and Interpersonal Skills:

- Intercultural Competencies
- Inner Capacities for Personal Strength and Regenerative Change
- Rhetorics (including Storytelling)

Please note that this is a list of potential electives and that not all electives will be on offer each semester. Some of the electives listed here will be offered at the Ingolstadt campus of THI. For details about the electives, please see the separate module manual for electives.

Sustainability project and Master thesis

The 3rd semester is also marked by a *Sustainability project and field trip* that challenges the students to apply their newly developed knowledge and skills and prepares for the *Master thesis*, which is completed with a presentation in the *Master colloquium* and is usually completed in the 4th semester.

2.5 Conception and expert advisory board

The course was designed by THI experts with the involvement of practitioners and is continually being developed further.

3 Qualification profile

3.1 Mission statement

The course of study directly addresses the general mission statement of the THI “Personalities and innovations – for a future worth living.” and its concept is aimed at the individual focal points:

- We develop personalities for the professional world of the future.
- We create innovations and live sustainability – technology and business are our focus.
- We shape the transfer in the economy and society.
- We teach, research and work internationally and in an interdisciplinary manner.
- We act humanely, passionately and open to the world.

3.2 Study objectives

The aim of the study programme is to prepare young professionals for career paths that involve the transformation of (tech-oriented) businesses and organisations for sustainable development - innovatively, creatively and with a high sense of responsibility. The course content is adapted to constantly advancing technical developments. This increases the career prospects of our graduates.

During their studies, students are trained to become independent personalities with strong analytical, communication and leadership skills.

3.2.1 Competencies developed during the programme

We expect that graduates will have developed the following competencies after successful completion of the programme:

- Recognise connections between management-oriented and technological aspects of a sustainable transformation and develop action plans for their implementation (and accompany the implementation)
- Conceptualise, design, establish and lead sustainability management in companies as a (strategic) manager or expert
- Understand the requirements of sustainable development for companies in an international context and apply them to company specifics
- Identify the technical and technological levers for realizing transformation needs and estimate their potentials, while at the same time classifying the economic impact on the company
- Read and shape the values, culture & management structure of a company
- Evaluate value chains regarding their ecological, social and economic properties, identify and realise potential for improvement
- Optimise and transform business processes with a focus on sustainability
- Design new sustainable & circular business models and/or adapt existing business models
- Analyse, understand and integrate data into management processes

- Develop operational functions and make them fit for a sustainable future
- Identify existing and potential requirements for sustainability and translate them in a business context

3.2.2 Interdisciplinary Skills of the Program

Upon completion of the program, students will be able to

- Communicate results clearly and precisely
- Use their analytical skills and technical abstract thinking in a reflective manner within a team to develop sustainable solutions
- Evaluate solutions from different perspectives and, as a team, weigh ecological, economic, ethical, and social aspects
- Apply their theoretical knowledge and practical experience in a transformative way in businesses and organizations

3.3 Possible career fields

Graduates of the course are prepared for specialist and management positions in the following areas:

- Expert and leadership positions, especially trained to manage the transformation and restructuring of companies and organizations for sustainable development
- Management positions in technology-oriented companies at the interface of business administration and technology application, bringing in the sustainability perspective
- Management positions in public administration or international organisations in the field of sustainability and environmental protection

Graduates are expected to pursue careers in

- Technology companies
- Manufacturing industry
- Public administration/Municipalities
- Management consultancies
- Project management companies and financial service providers related to sustainability and environmental protection
- Public institutions and international sustainability and environmental policy organisations
- Start-ups with a focus on sustainability and the environment

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4 Description of Modules

4.1 Compulsory Modules

Sustainability in Business and Economics

Module abbreviation	SMT_SustBusEco	Reg.-Nr.	1
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Compulsory Subject	1
Module frequency	only summer term	Module duration	1 semester
Responsible for module	Blasch, Julia		
Lecturer(s)	Blasch, Julia; Krause, Marcus; Uhde, Julia		
Language of instruction	English	Language of exams	English
Credit points / SWS	6 ECTS / 4 SWS		
Workload	Contact hours	47 h	
	Self-study	103 h	
	Total	150 h	
Subjects of the module	Sustainability in Business and Economics		
Lecture types	SU/Ü - lecture with integrated exercises		
Examinations			
schrP90 - written exam, 90 minutes			
Additional explanations regarding examinations			
Written assignment, combined with a (voluntary) essay as well as classroom presentations and discussion			
Prerequisites according examination regulation			
None			
Recommended prerequisites			
None			
Objectives			
After completion of the module, the students will... • have a thorough understanding of sustainable corporate management and a basic understanding of the principles of sustainable economics. • understand and critically analyze sustainable development and its entrepreneurial and economic relevance. • know methods and instruments of corporate sustainability management. • analyse sustainability problems from an economics point of view and identify appropriate measures to solve them. • identify and communicate necessary changes for sustainable development, explaining connections and impacts. • recognize relationships, analyze independently, draw conclusions, and present findings systematically. • have developed and presented a class-related topic in a team. • have practiced their writing skills by developing a short essay on a class-related topic.			
Content			
• Origin and definition of the concept of sustainable development, e.g. Brundtland report			

- Global challenges of sustainable development (social, ecological, economic) its current status, and inter-linkages among sustainability dimensions
- Introduction to scientific basics of climate change and planetary boundaries, and its implications for economics
- Position of companies in relation to sustainable development (ethical principles and theories of integration)
- Global framework conditions of sustainable development with relevance for companies based on the structures of the stakeholder model and the extended task environment of companies (e.g. UN sustainability goals)
- Overview on methods, standards and instruments of corporate sustainability management: materiality, strategy formulation, performance management, internal and external reporting
- Basics of environmental and ecological economics
- Weak and strong sustainability in economics
- Economic instruments and policies for sustainability in the context of climate change, clean energy and conservation of biodiversity
- Economics of technological innovation
- Alternative economic systems and alternative welfare measures

Literature

- SKENE, Keith, MURRAY, Alan, 2017. *Sustainable Economics: Context, Challenges and Opportunities for the 21st-Century Practitioner* [online]. Saltire: Routledge. PDF e-Book. ISBN 9781351286206. Available via: <https://doi.org/10.4324/9781351286206>.
- HAHN, Rüdiger, 2022. *Sustainability management: global perspectives on concepts, instruments, and stakeholders*. Fellbach: Rüdiger Hahn. ISBN 978-3-9823211-0-3, 3-9823211-0-7

Additional remarks

Up to 9 bonus points can be awarded for handing in a short essay and participating in classroom presentations and discussions.

Circular Economy and Life Cycle Management

Module abbreviation	SMT_CirEcoLifeCyMgm	Reg.-Nr.	2
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Compulsory Subject	1
Module frequency	only summer term	Module duration	1 semester
Responsible for module	Hutner, Petra		
Lecturer(s)	Hutner, Petra		
Language of instruction	English	Language of exams	English
Credit points / SWS	6 ECTS / 4 SWS		
Workload	Contact hours	47 h	
	Self-study	103 h	
	Total	150 h	
Subjects of the module	Circular Economy and Life Cycle Management		
Lecture types	SU/Ü - lecture with integrated exercises		
Examinations			
schrP90 - written exam, 90 minutes			
Additional explanations regarding examinations			
SPO 2026 Written exam 90 minutes SPO 2025 Portfolio examination (PP) consisting of Seminar paper (SA): Presentation of approximately 15-20 pages done in groups, including an oral presentation Written exam (schrP) with a duration of 60 minutes Weighting: 1) 50% and 2) 50% The dates for the individual assessment components will be announced by the lecturers at the beginning of the semester. If a student does not attend one of the partial examinations, points will be recorded for that component, which will negatively affect the overall grade. There is no minimum passing requirement for individual components. If the overall examination is not passed, the portfolio examination must be retaken. The structure and dates of the partial examinations for the retake in non-regular semesters will be determined at the beginning of the semester and may differ from those in the regular semester.			
Prerequisites according examination regulation			
None			
Recommended prerequisites			
None			

Objectives

After having completed the module, students are able to ...

- understand and explain the fundamental principles and frameworks of the Circular Economy and Life Cycle Management.
- assess actors and systems in the waste and resource management sector.
- analyze and map material flows using process mapping techniques to identify opportunities for circularity and life cycle optimization.
- apply and compare sustainability assessment methods (e.g., LCA, circularity indicators) and assess their suitability for different sustainability challenges.
- examine products and derive recommendations for circularity by systematically evaluating repairability, reusability, and recyclability in practical exercises.
- integrate and transfer practical insights from field work, assignments, and exercises into strategic decision-making.

Content

- Fundamental concepts and principles of Circular Economy
- Circular business models and their integration into sustainable business model innovation
- Principles of circular product design, including eco-design, cradle-to-cradle, and design for disassembly
- An introduction to life cycle concepts and sustainable assessment methodologies such as Life Cycle Assessment, Social Life Cycle Assessment or Life Cycle Costing
- Detailed exploration of Life Cycle Assessment, including methodology, critical evaluation, and practical application using software tools
- Hands-on experience on Life Cycle Assessment

Literature

- GRAEDEL, Thomas and Braden R. ALLENBY, 2010. *Industrial ecology and sustainable engineering*. Boston, Munich: Prentice Hall. ISBN 978-0-13-600806-4, 0-13-600806-2

Additional remarks

Up to 9 bonus points can be rewarded for participating in class room presentations and discussions.

Metrics and Analytics for Sustainability

Module abbreviation	SMT_MetAnSust	Reg.-Nr.	3
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Compulsory Subject	1
Module frequency	only summer term	Module duration	1 semester
Responsible for module	Müller, Marvin		
Lecturer(s)	Busche, Annika; Müller, Marvin		
Language of instruction	English	Language of exams	English
Credit points / SWS	6 ECTS / 4 SWS		
Workload	Contact hours	47 h	
	Self-study	103 h	
	Total	150 h	
Subjects of the module	Metrics and Analytics for Sustainability		
Lecture types	SU/Ü - lecture with integrated exercises		
Examinations			
mdIP - oral exam, 15-20 minutes			
Additional explanations regarding examinations			
Only relevant for students with a start of studies in summer 2025: The portfolio examination will consist of two parts: 1. a seminar paper (15 pages), deadline for submitting the seminar paper December 20, 2026, weighted 50 %, 2. an oral exam (15 min), in the examination period, weighted 50 %. Failure to take one of the partial assessments will result in a score of zero being recorded for that specific component, thereby lowering the overall grade. The format and scope of the retake exam in the following semester will correspond to those of the regular exam. Detailed information regarding the retake exam will be published in the module handbook for the subsequent semester and on Moodle at the beginning of the semester.			
Prerequisites according examination regulation			
None			
Recommended prerequisites			
None			
Objectives			
The students: - understand the coverage and the limits of traditional performance management systems as cost and management accounting - understand the concept of external costs and their relevance for sustainability - know the state-of-the-art of nonfinancial reporting in the EU - understand the concept of ESG and other measurement approaches for sustainability - are able to use different sustainability metrics to assess technologies, products, companies etc.			

- understand the basic concepts and applications of Business Intelligence.
- utilize Excel tools for data analysis and create interactive dashboards to visualize trends and key performance indicators (KPIs).
- apply Power Query, Power Pivot, and DAX for data modeling and conduct BI projects based on case studies to support business decisions.
- provide feedback on the selection and application of analysis methods.
- communicate data analyses effectively within the team, tailored to the target audience.

Content

- Traditional Performance Management Systems
- Concept of external costs and their relevance for sustainability
- Nonfinancial Reporting in the EU
- Environment, Social and Governance (ESG) Criteria
- Introduction to Sustainability Life Cycle Assessment
- Basics of Business Intelligence (BI)
- Data management and analysis in Excel
- Visualization and dashboards
- Data modeling:
 - Introduction to Power Query and Power Pivot for data modeling (and automation)
 - Implementation of BI projects based on case studies and real-world examples

Literature

Will be specified at the beginning

Additional remarks

None

Natural Resources Management and Supply Chain Sustainability

Module abbreviation	SMT_NatResMgmSupChSust	Reg.-Nr.	4
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Compulsory Subject	2
Module frequency	only summer term	Module duration	1 semester
Responsible for module	Hutner, Petra		
Lecturer(s)	Herreiner, Fabian; Hutner, Petra		
Language of instruction	English	Language of exams	English
Credit points / SWS	6 ECTS / 4 SWS		
Workload	Contact hours	47 h	
	Self-study	103 h	
	Total	150 h	
Subjects of the module	Natural Resources Management and Supply Chain Sustainability		
Lecture types	SU/Ü - lecture with integrated exercises		
Examinations			
mdIP - oral exam, 15 minutes			
Additional explanations regarding examinations			
None			
Prerequisites according examination regulation			
None			
Recommended prerequisites			
None			
Objectives			
Upon successful completion of this module, students will be able to... • know the different types of natural resources, their distribution and significance. • explain the principles of natural resource management and analyze their role in sustainable development. • evaluate the environmental and social implications of supply chain decisions. • develop strategies to improve resource efficiency and circularity in supply chains. • synthesize interdisciplinary knowledge to propose innovative solutions for sustainable resource use and supply chain transformation. • work with practical case studies and gain experience through interactive discussions.			
Content			
• Introduction to Natural Resources theory, types of natural resources, their distribution, and their importance • Sustainable Resource Management & management of renewable and non-renewable resources • Resource efficiency, and resource productivity. • Global supply chains and transportation • Supply chain disruptions			

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• Supply chain resilience and recovery • Sustainable practices in supply chains • Act on corporate due diligence obligations in supply chains / Corporate Sustainability Due Diligence Directive
Literature
• BOUCHERY, Yann, CORBETT, Charles J., FRANSOO, Jan C., TAN, Tarkan, 2024. <i>Sustainable Supply Chains: A Research-Based Textbook on Operations and Strategy</i> [online]. Cham: Springer. PDF e-Book. ISBN 978-3-031-45565-0. Available via: https://doi.org/10.1007/978-3-031-45565-0. • KING, Alexander, 2021. <i>Critical materials</i>. Amsterdam: Elsevier. ISBN 978-0-12-818789-0
Additional remarks
None

Technology and Society

Module abbreviation	SMT_TechSoc	Reg.-Nr.	5
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Compulsory Subject	1
Module frequency	only summer term	Module duration	1 semester
Responsible for module	Blasch, Julia		
Lecturer(s)	Kamlage, Jan-Hendrik		
Language of instruction	English	Language of exams	English
Credit points / SWS	6 ECTS / 4 SWS		
Workload	Contact hours	47 h	
	Self-study	103 h	
	Total	150 h	
Subjects of the module	Technology and Society		
Lecture types	SU/Ü - lecture with integrated exercises		
Examinations			
Seminar paper 10–20 pages, presentation 15–20 minutes			
Additional explanations regarding examinations			
Seminar paper and seminar presentation			
Prerequisites according examination regulation			
None			
Recommended prerequisites			
None			
Objectives			
After active participation in this module, students will be able to: - understand the interrelationships between societal change and technological developments. - reflect and discuss the role of technology in society and the mutual impacts of science, technology, and society. - describe key theories on the relationship between technology and society. - understand and critically assess why in past technology development certain technologies have been prioritised over others, and how these insights can be predictive for future technology development. - assess ongoing societal developments and debate preconditions for a supportive role of technology in sustainable development. - develop and present a class-related topic. - position themselves in the debate about the role of technological innovation for sustainable development.			
Content			
- Role of technology in society and the mutual impacts of science, technology, and society - Foundations of human and scientific knowledge, and the history of technological advances - Humanity-technology relationships - Technological determinism and solutism			

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• Social construction of knowledge and technology • Human and social values and their embeddedness in technological choices • Impact of technological advances on humans and society • Role of technology for a sustainable transformation of economy and society
Literature
Will be specified at the beginning
Additional remarks
None

Research skills			
Module abbreviation	SMT_ReaserchSkills	Reg.-Nr.	6
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Compulsory Subject	1
Module frequency	only summer term	Module duration	1 semester
Responsible for module	Blasch, Julia		
Lecturer(s)	Blasch, Julia		
Language of instruction	English	Language of exams	English
Credit points / SWS	2 ECTS / 1 SWS		
Workload	Contact hours	12 h	
	Self-study	38 h	
	Total	50 h	
Subjects of the module	Research skills		
Lecture types	SU/Ü - lecture with integrated exercises		
Examinations			
Seminar paper 10–20 pages, presentation 15–20 minutes			
Additional explanations regarding examinations			
Research methods will be applied in a short seminar paper and a short research presentation.			
Prerequisites according examination regulation			
None			
Recommended prerequisites			
None			
Objectives			
By the end of the course, students will be able to • develop clear, feasible, and theoretically grounded research questions and objectives appropriate for Master-level academic or applied research contexts. • identify, evaluate, and integrate relevant academic sources using systematic search strategies and appropriate referencing standards. • choose and justify qualitative, quantitative, or mixed-methods approaches aligned with the research question, disciplinary standards, and practical constraints. • identify appropriate techniques for data collection and basic data management while adhering to ethical principles, data protection regulations, and principles of research integrity. • critically interpret results in relation to the research question, theoretical framework, and methodological limitations. • present research designs, results, and implications clearly and coherently in written and oral form. • give and receive constructive feedback to/from their peers.			
Content			
• Drafting research questions and aligning research objectives • Matching research questions to research methods			

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• Systematic literature search (databases, keywords, snowballing) • Critical review and synthesis of scholarly literature • Justification of research design and methods • Research ethics, data protection (e.g. GDPR), and integrity • Basic data management practices (file structure, documentation) • Interpretation of research data and results • Structuring research reports • Academic writing • Code of conduct for use of AI in research projects • Giving and receiving feedback
Literature
• BELL , E., B. HARLEY and A. BRYMAN, 2022. <i>Business research methods</i>. Oxford, UK: Oxford University Press. ISBN 978-0198869443
Additional remarks
None

Urban Ecology and Sustainable Building Technologies

Module abbreviation	SMT_UrbEcoSustBuTech	Reg.-Nr.	7
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Compulsory Subject	3
Module frequency	only winter term	Module duration	1 semester

Responsible for module	Angerer, Ludwig		
Lecturer(s)	Sonawane, Aishwarya		
Language of instruction	English	Language of exams	English
Credit points / SWS	6 ECTS / 4 SWS		
Workload	Contact hours	47 h	
	Self-study	103 h	
	Total	150 h	
Subjects of the module	Urban Ecology and Sustainable Building Technologies		
Lecture types	Seminar-based instruction with accompanying discussions, case examples, and independent study phases.		

Examinations

PF - Portfolio Exam (with exams during the examination period)

Additional explanations regarding examinations

The portfolio examination consists of two partial examinations. A written examination lasting 60 minutes, accounting for approximately 50% of the overall grade, will be held mid-semester during the regular semester in the scheduled lecture time for the module. In addition, a second written partial examination lasting 60 minutes, also accounting for approximately 50% of the overall grade, will take place at the end of the semester during the regular examination period.

If a student does not attend one of the partial examinations, 0 points will be recorded for that component, which will negatively affect the overall grade. There is no minimum passing requirement for individual components. The final grade is determined by the total number of points achieved across both partial examinations offered during the semester. The exact examination dates will be published on Moodle at the beginning of the semester.

If the overall examination is not passed, the portfolio examination must be retaken. The structure and dates of the partial examinations for the retake in non-regular semesters will be determined at the beginning of the semester and may differ from those in the regular semester.

Prerequisites according examination regulation

None

Recommended prerequisites

None

Objectives

After successful completion of the module, students are able to:

- Classify and contextualize key concepts and terminology related to sustainability in the urban and built environment.
- Analyze interactions between ecological, technical, and organizational aspects of urban systems at a conceptual level.
- Comparatively assess approaches to sustainable urban and building development.
- Critically reflect on sustainability-related challenges in urban contexts and relate them to broader sustainability management frameworks.
- Apply basic assessment and indicator-based approaches to urban sustainability issues.
- Examine sustainability challenges across different spatial scales, from building to city level.
- Integrate interdisciplinary perspectives in the analysis of urban sustainability topics.

Content

- Overview of fundamental sustainability-related issues in the urban and built environment
- Introduction to selected concepts, approaches, and frameworks for analyzing urban and building systems
- Examination of urban sustainability from multiple perspectives and scales
- Comparative analysis of urban sustainability in contexts of the Global North and the Global South
- Conceptual analysis of sustainability-related challenges in urban contexts
- Critical reflection on sustainability-related challenges in urban contexts
- Green building rating and certification systems in sustainable urban and building development, with an orientation-focused treatment without in-depth disciplinary or methodological specialization

Literature

- VERMA, Pramit , Pardeep SINGH and Rishikesh Singh SINGH, . *Urban Ecology - Emerging Patterns and Social-Ecological Systems*. [s.l.]: Elsevier.
- DORIAN , Lucas, . *Sustainable Buildings: Environmental Awareness in Architecture* . [s.l.]: Braun Publishing .
- FORMAN, RICHARD T. T., . *Urban Ecology: Science of Cities*. [s.l.]: Cambridge University Press.

Additional remarks

None

Values and Ethics for Sustainable Leadership

Module abbreviation	SMT_ValEthSustLeadersh	Reg.-Nr.	8
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Compulsory Subject	2
Module frequency	only winter term	Module duration	1 semester
Responsible for module	Risi, Annette		
Lecturer(s)	Orth, Sadik; Risi, Annette		
Language of instruction	English	Language of exams	English
Credit points / SWS	6 ECTS / 4 SWS		
Workload	Contact hours	47 h	
	Self-study	103 h	
	Total	150 h	
Subjects of the module	Values and Ethics for Sustainable Leadership		
Lecture types	SU/Ü - lecture with integrated exercises		
Examinations			
PF - Portfolio-Exam (all exams before the examination period)			
Additional explanations regarding examinations			
For SPO 2026, the module assessment is a portfolio examination consisting of two components (winter term): - SA (term paper) with oral presentation, 45 points, outside the examination period: 1500-3000 words and 8 min presentation - Proj (project work) with oral presentation, 45 points, outside the examination period: 1000-4500 words and 8 min presentation per person - The retake exam (summer term) will be a portfolio exam consisting of a written exam 45 points and a project work 45 points For SPO 2025, the module assessment is a project examination with oral presentation, 90 points, outside the examination period. 2500-7500 words and 15 min presentation per person. The exact dates, deadlines, group allocation, assessment criteria and submission requirements will be announced at the beginning of the semester in the lecture and/or on Moodle. If a student does not attend an assessment component or does not submit the required work without valid justification, zero points will be awarded for the respective component. This will contribute to a lower overall grade. Participation in a replacement date is only possible upon presentation of a valid medical certificate submitted within the applicable deadline to the examination office. Individual alternative dates are not provided.			
Prerequisites according examination regulation			
None			
Recommended prerequisites			
None			

Objectives

After completing this module, students will be able to

- apply ethical reasoning to management decisions in sustainability-related technology contexts.
- analyze sustainability trade-offs along technology value chains, in an applied business case.
- compare leadership approaches regarding responsibility, transformation and organizational impact.
- assess corporate practices in ESG, CSR, governance and compliance about credibility and accountability.
- use life-cycle thinking and evidence-based reasoning to critically examine sustainability claims.
- develop ethical leadership recommendations for complex organizational and technological transformation challenges, employee engagement and organizational practices.
- communicate assessments and recommendations in a clear, structured and professionally appropriate way.
- collaborate in teams, integrate different perspectives, use scientific sources, and provide constructive feedback in sustainability-related project work.
- Reflect on own strengths, values and intercultural sensitivities.

Content

- Foundations of business ethics and technology ethics
- Leadership styles, responsible management and transformation
- Corporate values, purpose, culture and integrity
- ESG, CSR, governance, compliance and sustainability reporting
- ISO-based management systems and organizational roles
- Relationship between sustainability, ethics, leadership, ESG and CSR
- Social learning, employee engagement and collaboration in transformation processes
- Applied ethical risks and human rights responsibilities in life-cycle thinking within system boundaries, e.g., in raw materials, supply chains, data quality and interpretation
- Integrated case work on business leaders and ethical leadership brief

Literature

- NORTHOUSE, Peter G., 2025. *Introduction to leadership: concepts and practice*. London ; New Delhi ; Singapore: Sage. ISBN 978-1-0719-4225-3
- CRANE, Andrew and others, 2019. *Business ethics: managing corporate citizenship and sustainability in the age of globalization*. Oxford: Oxford University Press. ISBN 978-0-19-881007-0
- RASCHE, Andreas and others, 2023. *Corporate sustainability: managing responsible business in a globalised world*. Cambridge, United Kingdom ; New York, NY ; Port Melbourne, VIC ; New Delhi ; Singapore: Cambridge University Press. ISBN 978-1-00-910040-3, 1-009-10040-8
- MURPHY, Clarke, 2022. *Sustainable leadership: lessons of vision, courage, and grit from the CEOs who dared to build a better world*. Newark: Wiley. ISBN 9781119872160
- FLOWER, Lorraine, 2023. *Heartful Business: Leading with the World in Mind*. Chicago: Austin Macauley Publishers. ISBN 978-1-398-48726-0
- KEMPSTER, Steve, Thomas MAAK and Ken PARRY, 2019. *Good dividends: responsible leadership of business purpose*. New York ; London: Routledge. ISBN 978-1-138-10352-8, 978-0-367-49735-4
- BRENKERT, George G. and Tom L. BEAUCHAMP, 2012. *The Oxford handbook of business ethics*. Oxford: Oxford University Press. ISBN 978-0-19-991622-1, 978-0-19-530795-5
- CRANE, Andrew, MATTEN, Dirk, MCWILLIAMS, Abigail, MOON, Jeremy, SIEGEL, Donald S., 2008. *The Oxford handbook of corporate social responsibility* [online]. Oxford: Oxford University Press. PDF e-Book. ISBN 978-0-19-157699-7. Available via: <https://doi.org/10.1093/oxfordhb/9780199211593.001.0001>.
- MALLIN, Chris A., 2019. *Corporate governance*. Oxford: Oxford University Press. ISBN 978-0-19-880676-9
- MURPHY, Clarke, 2022. *Sustainable leadership: lessons of vision, courage, and grit from the CEOs who dared to build a better world*. Newark: Wiley. ISBN 9781119872153
- OWEN, Richard, BESSANT, John R., HEINTZ, Maggy, 2013. *Responsible innovation: managing the responsible emergence of science and innovation in society* [online]. Chichester: Wiley. PDF e-Book. ISBN

978-1-118-55140-0, 978-1-118-55139-4. Available via: <https://online-library.wiley.com/doi/book/10.1002/9781118551424>.

- VAN DEN HOVEN, Jeroen, VERMAAS, Pieter E., VAN DE POEL, Ibo, 2019-. *Handbook of Ethics, Values, and Technological Design: Sources, Theory, Values and Application Domains* [online]. Dordrecht: Springer Netherlands. PDF e-Book. ISBN 978-94-007-6994-6. Available via: <https://doi.org/10.1007/978-94-007-6994-6>.
- PLESS, Nicola, 2012. *Responsible leadership*. Dordrecht [u.a.]: Springer. ISBN 978-94-007-3994-9, 978-94-007-3995-6

Additional remarks

Students may earn up to 9 additional bonus points, which will be credited toward the examination performance, for example by explaining, designing and facilitating practical exercises, or by engaging in initiatives. Opportunities are time-limited and require timely sign-up. Details will be announced in the lecture.

Sustainable Business Strategy and Entrepreneurship

Module abbreviation	SMT_BusStrEntrprsh	Reg.-Nr.	9
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Compulsory Subject	1
Module frequency	only winter term	Module duration	1 semester
Responsible for module	Risi, Annette		
Lecturer(s)	Risi, Annette		
Language of instruction	English	Language of exams	English
Credit points / SWS	6 ECTS / 4 SWS		
Workload	Contact hours	47 h	
	Self-study	103 h	
	Total	150 h	
Subjects of the module	Sustainable Business Strategy and Entrepreneurship		
Lecture types	SU/Ü - lecture with integrated exercises		
Examinations			
Proj - Project work (5-25 pages) with oral presentation (15 minutes)			
Additional explanations regarding examinations			
For SPO 2026: project exam of 15 minutes (100%, 60 points), outside the examination period. For SPO 2025: portfolio exam of written exam of 30 minutes (35%, 21 points) and project exam of 10 minutes (65%, 39 points), outside the examination period. The exact dates for the assessments will be announced in the lecture. For each assessment component, one regular date and one common replacement date are offered. Participation in the replacement date is only possible upon presentation of a valid medical certificate submitted within 2 working days to the examination office. Individual alternative dates are not provided. If a student does not attend without valid justification or does not pass an assessment component, no points will be awarded for the respective component; this will lead to a lower overall grade. The examination can be repeated in the following semesters in accordance with the examination regulations. Students may earn up to 5 additional bonus points, e.g., by designing and facilitating practical exercises or case studies, or by engaging in social or community initiatives; opportunities are time-limited and require timely sign-up, see lecture.			
Prerequisites according examination regulation			
None			
Recommended prerequisites			
None			
Objectives			
After completing the module, students are able to:			

- explain and contextualise key concepts of strategy, entrepreneurship and sustainability.
- analyse and develop sustainable business models and strategic approaches.
- assess entrepreneurial opportunities, risks and impacts.
- critically reflect on innovation and start-up approaches in the context of societal challenges.
- work collaboratively on complex problem-solving tasks.
- integrate diverse perspectives.
- present results clearly and convincingly.

Content

- Foundations of sustainable strategy and entrepreneurship
- Strategic analysis and design tools
- Sustainable business models and value creation
- Innovation and start-up approaches
- Scaling and impact of entrepreneurial activities
- The role of companies and entrepreneurship in societal transformation
- Presentation techniques

Literature

- POLMAN, Paul and Andrew S. WINSTON, 2021. *Net positive: how courageous companies thrive by giving more than they take*. Boston, Massachusetts: Harvard Business Review Press. ISBN 978-1-64782-130-2, 978-1-64782-473-0
- OSTERWALDER, Alexander and others, 2014. *Value proposition design: how to create products and services customers want : get started with* Hoboken, New Jersey: John Wiley & Sons. ISBN 978-1-118-96807-9, 978-1-118-96806-2
- ANKERSEN, Christopher and Waheguru Pal Singh SIDHU, 2021. *The future of global affairs: managing discontinuity, disruption and destruction*. Cham, Switzerland: palgrave macmillan. ISBN 978-3-030-56472-8, 978-3-030-56469-8
- ADAMS, Richard, GRICHNIK, Dietmar, PUNDZIENE, Asta, VOLKMANN, Christine K., 2023. *Artificiality and sustainability in entrepreneurship: exploring the unforeseen, and paving the way to a sustainable future* [online]. Cham, Switzerland: Springer. PDF e-Book. ISBN 978-3-031-11371-0. Available via: <https://doi.org/10.1007/978-3-031-11371-0>.
- FREITAG, Philipp Michael, 2019. *Digital disruption: conceptualization, strategy, and transformation*. [Aachen]: Apprimus.
- RIES, Eric, 2019. *The lean startup: how constant innovation creates radically successful businesses*. London [u.a.]: Penguin Business. ISBN 978-0-670-92160-7
- OSTERWALDER, Alexander and Yves PIGNEUR, 2010. *Business model generation: a handbook for visionaries, game changers, and challengers*. Hoboken, NJ: Wiley. ISBN 978-0-470-87641-1, 0-470-87641-7

Additional remarks

Students may earn up to 5 additional bonus points, for example by designing and facilitating practical exercises or case studies, or by engaging in social or community initiatives; opportunities are time-limited and require timely sign-up.

Sustainable Materials and Recycling Technologies

Module abbreviation	SMT_SustMatRecTech	Reg.-Nr.	10
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Compulsory Subject	2
Module frequency	not specified	Module duration	1 semester
Responsible for module	Blask, Oliver		
Lecturer(s)	Blask, Oliver; Hutner, Petra		
Language of instruction	English	Language of exams	English
Credit points / SWS	6 ECTS / 4 SWS		
Workload	Contact hours	47 h	
	Self-study	103 h	
	Total	150 h	
Subjects of the module	Sustainable Materials and Recycling Technologies		
Lecture types	SU/Ü - lecture with integrated exercises		
Examinations			
PF - Portfolio Exam (with exams during the examination period)			
Additional explanations regarding examinations			
Portfolio examination: - written examination 60 min in the exam period, weighted 60% - Project work with 15 min oral presentation before the exam period, weighted 40% A retake exam in the summer semester will be offered to students who have registered for a project group for the project work (Part 1) via Moodle by April 30.			
Prerequisites according examination regulation			
None			
Recommended prerequisites			
None			
Objectives			
After completing the module, students will be able to... - select sustainable building materials for an application. - use sustainable building materials optimally according to their properties. - to select construction methods that are suitable with regard to economic recycling. - to select an ecologically and economically sensible recycling process for demolition. - to prepare and present a given topic related to the lecture content in groups.			
Content			
- Concepts of sustainable materials - Principles of material criticality - Principles of material substitution, efficiency and innovation - Sustainable material production			

- Waste management
- Reuse and recycling

Literature

- TAYLOR, G. D., 2013. *Materials in Construction*. Abingdon: Routledge. ISBN ISBN-13: 978-0-582-36889-7 (pbk)
- BENVENUTO, Mark Anthony, 2023. *Materials Chemistry* [online]. Berlin/Boston: de Gruyter. PDF e-Book. ISBN e-ISBN (PDF) 978-3-11-065677-0. Available via: <https://doi.org/10.1515/9783110656770-202>.
- SCHROEDER, Horst, 2016. *Sustainable Building with Earth* [online]. Cham: Springer International Publishing. PDF e-Book. ISBN 978-3-319-19491-2. Available via: <https://doi.org/10.1007/978-3-319-19491-2>.
- BLASS, Hans Joachim and Carmen SANDHAAS, 2017. *Timber Engineering*. Karlsruhe: KIT Scientific Publishing. ISBN ISBN 978-3-7315-0673-7

Additional remarks

None

Artificial Intelligence and Sustainability

Module abbreviation	SMT_ArtIntSust	Reg.-Nr.	11
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Compulsory Subject	2
Module frequency	only winter term	Module duration	1 semester
Responsible for module	Blasch, Julia		
Lecturer(s)	Akmal, Muhammad Uzair		
Language of instruction	English	Language of exams	English
Credit points / SWS	6 ECTS / 4 SWS		
Workload	Contact hours	47 h	
	Self-study	103 h	
	Total	150 h	
Subjects of the module	Artificial Intelligence and Sustainability		
Lecture types	SU/Ü - lecture with integrated exercises		
Examinations			
schrP90-120 written examination 90-120 minutes			
Additional explanations regarding examinations			
Written assignment, combined with (voluntary) classroom presentations and discussions			
Prerequisites according examination regulation			
None			
Recommended prerequisites			
None			
Objectives			
After having completed this module, students will... - understand how technologies based on artificial intelligence are reshaping our society and several dimensions of sustainability. - have explored practical applications of AI to make businesses more sustainable. - be able to describe and evaluate the current and potential uses of AI to further a sustainable development. - be able to define the potentials and limitations of AI technologies for promoting sustainable development. - be able to reflect on and critically evaluate the ethical, social and environmental implications of AI and other digital applications. - have effectively solved problems in teams. - have positioned themselves on ethical questions related to AI in classroom discussions.			
Content			
- Foundations of AI including fundamental principles of machine learning, deep learning, and big data analytics, and the limitations of AI. - AI in business and society to answer how AI helps companies and societies addressing sustainability challenges (ESG and SDG framing).			

- Sustainability and ESG data to explore where sustainability data comes from and why data quality decides everything.
- Generative AI for sustainability work (e.g. AI for reporting, analysis, communication, spotting hallucinations and AI-assisted greenwashing)
- AI applied to real sustainability problems (case studies): renewable energy, waste and the circular economy, sustainable cities and mobility, natural disaster prediction, and biodiversity conservation.
- Sustainability concerns of AI (environmental and social): energy and water use of large models, carbon, hardware and e-waste, and the rebound effect, together with impacts on employment, privacy, and global inequality.
- Inclusivity of AI development (e.g. who builds AI and who benefits — diverse teams, accessibility, data justice, and participatory design)
- Responsible AI and evaluation (e.g. model evaluation, explainability, decision support, and human-in-the-loop oversight)
- AI governance and regulation (e.g. managing risk and ensuring transparency through the EU AI Act, NIST AI Risk Management Framework, ISO/IEC 42001, and the OECD AI Principles)

Literature

- CROWTHER, David and Shahla SEIFI, 2024. *Social Responsibility, Technology and AI*. Leeds: Emerald Publishing Limited. ISBN 978-1-83608-497-6
- DAUVERGNE, Peter, 2020. *AI in the wild : sustainability in the age of artificial intelligence*. [online]. PDF e-Book. ISBN 978-0-262-35957-3. Available via: <https://ieeexplore-ieee-org.thi.idm.oclc.org/servlet/opac?bknumber=9205177>.
- ALLOGHANI, Mohamed Ahmed, 2024. *Artificial Intelligence and Sustainability*. [online]. PDF e-Book. ISBN 978-3-031-45214-7. Available via: <https://doi-org.thi.idm.oclc.org/10.1007/978-3-031-45214-7>.
- DUA, Ishneet Kaur, PATEL, Parth Girish, 2024. *Optimizing Generative AI Workloads for Sustainability*. [online]. PDF e-Book. ISBN 979-8-8688-0916-3. Available via: <https://doi-org.thi.idm.oclc.org/10.1007/979-8-8688-0917-0>.

Additional remarks

Most lectures come in two parts: Students first learn the basic idea of how AI works and why it matters for sustainability. The lecture then moves into hands-on activities where students use simple tools to explore AI systems, examine the environmental footprint of AI, and test generative AI tools such as chatbots. They will critically evaluate whether these tools genuinely support sustainability, where they may produce inaccurate information, and how they may exaggerate “green” claims. Students will also take part in game-based classroom activities using a simple web application provided by the instructor, without needing to install or configure any software.

Voluntary Group Presentation (9 Bonus Points): Students may voluntarily participate in a group presentation to earn up to 9 bonus points. For the group presentation, students will deliver a **“Dragon’s Den” style pitch**. Each team finds a real problem where AI and sustainability meet, then makes the case for the most responsible solution — whether that’s full AI, lighter automation, or no AI at all. Pitches are judged on three things: how technically sound the idea is, its sustainability impact, and how well it handles governance and risk.

Sustainable Investments and Finance Policies

Module abbreviation	SMT_SustInvFinPol	Reg.-Nr.	12
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Compulsory Subject	3
Module frequency	only winter term	Module duration	1 semester
Responsible for module	Blasch, Julia		
Lecturer(s)	Biehl, Christoph		
Language of instruction	English	Language of exams	English
Credit points / SWS	6 ECTS / 4 SWS		
Workload	Contact hours	47 h	
	Self-study	103 h	
	Total	150 h	
Subjects of the module	Sustainable Investments and Finance Policies		
Lecture types	SU/Ü - lecture with integrated exercises		
Examinations			
schrP90-120 written examination 90-120 minutes			
Additional explanations regarding examinations			
Written exam of 90 minutes in the exam period.			
Prerequisites according examination regulation			
None			
Recommended prerequisites			
None			
Objectives			
After having completed this module, students will be able to...			
• explain the concepts of sustainable finance, ESG (environmental, social, governance), and impact investing. • analyze international and national financial policies and regulatory approaches to promoting sustainable investments. • identify and assess sustainability risks and opportunities in portfolios. • critically assess financial instruments (e.g., green bonds, ESG funds) and their effects. • develop strategies for integrating sustainability into investment decisions and present them in class.			
Content			
• Introduction to Sustainable Investment • Sustainability reporting and materiality • ESG-criteria, data and ratings • Microfinance • Regulatory frameworks • Sustainable financial instruments			

- Corporate Governance and sustainability
- Risk management in times of polycrisis
- Global perspectives
- Sustainability in portfolio management, ESG and Impact Investing

Literature

- NAIFAR, Nader and Ahmed ELSAYED, 2023. *Green Finance Instruments, FinTech, and Investment Strategies: Sustainable Portfolio Management in the Post-COVID Era*. Cham: Springer International Publishing AG. ISBN 978-3-031-29031-2
- SCHOENMAKER, Dirk and Willem SCHRAMADE, 2022. *Principles of Sustainable Finance*. Oxford: Oxford University Press. ISBN 978-0198869818
- THOMPSON, Simon, 2023. *Green and sustainable finance: principles and practice in banking, investment and insurance*. London ; New York, NY ; New Delhi: Kogan Page. ISBN 978-1-3986-0924-2, 978-1-3986-0926-6

Additional remarks

Up to 9 bonus points can be awarded for classroom presentations and discussions.

Climate Change, Clean Energy and Decarbonization Technologies

Module abbreviation	SMT_ClimChangeClnEn-DecztTech	Reg.-Nr.	13
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Compulsory Subject	3
Module frequency	only summer term	Module duration	1 semester
Responsible for module	Hoppe, Holger		
Lecturer(s)	Hoppe, Holger; Kornreiter, Daniel Christian		
Language of instruction	English	Language of exams	English
Credit points / SWS	6 ECTS / 4 SWS		
Workload	Contact hours	47 h	
	Self-study	103 h	
	Total	150 h	
Subjects of the module	Climate Change, Clean Energy and Decarbonization Technologies		
Lecture types	SU/Ü - lecture with integrated exercises		
Examinations			
PF - Portfolio-Exam (all exams before the examination period)			
Additional explanations regarding examinations			
The portfolio examination consists of two partial examinations. A written examination lasting 60 minutes, accounting for 50% of the overall grade, will be held mid-semester during the regular semester in the scheduled lecture time for the module. In addition, as the second partial examination a Student research project, accounting for 50% of the overall grade, needs to be handed in until the 18th of June 2026. If a student does not participate in one of the partial examinations, 0 points will be recorded for that component, which will negatively affect the overall grade. There is no minimum passing requirement for individual components. The final grade is determined across both partial examinations. The exact examination dates for the written exam will be published on Moodle at the beginning of the semester. If the overall examination is not passed, the portfolio examination must be retaken. The structure and dates of the partial examinations for the retake in non-regular semesters will be determined at the beginning of the semester and may differ from those in the regular semester.			
Prerequisites according examination regulation			
None			
Recommended prerequisites			
None			
Objectives			
In this module, students will... - understand the fundamentals of climate change and its impacts on ecosystems and human societies. - analyze the history and importance of energy in industrialization and economic development.			

- evaluate non-renewable and renewable energy sources, including their advantages, disadvantages, and applications.
- examine decarbonization technologies and their role in reducing carbon emissions.
- understand carbon capture and storage technologies and their applications.
- explore sustainable transportation solutions and urban planning for decarbonization.
- promote energy efficiency and conservation practices.
- understand climate policy and international agreements and their impact on climate action.
- evaluate climate finance and economics, including financing mechanisms for climate action.
- understand the basics of corporate carbon accounting
- apply knowledge through case studies and practical applications.

Content

- Introduction to Climate Change
- History and Importance of Energy
- Non-Renewable Energy
- Renewable Energy
- Energy Efficiency and Conservation
- Non-Energy Greenhouse Gas Emissions
- DeCarbonization Technologies
- Carbon Capture and Storage Technologies:
- Sustainable Transportation
- Climate Policy and International Agreements
- Climate Finance and Economics
- Corporate Carbon accounting
- Case Studies and Practical Applications

Literature

- WHITE, John K., 2024. *The truth about energy: our fossil-fuel addiction and the transition to renewables* [online]. Cambridge: Cambridge University Press. PDF e-Book. ISBN 978-1-009-43318-1. Available via: <https://doi.org/10.1017/9781009433181>.
- DIVAN, Deepak, SHARMA, Suresh, 2024. *ENERGY 2040: aligning innovation, economics and decarbonization* [online]. Cham, Switzerland: Springer. PDF e-Book. ISBN 978-3-031-49417-8. Available via: <https://doi.org/10.1007/978-3-031-49417-8>.
- RISSMAN, Jeffrey, 2024. *Zero-Carbon Industry: Transformative Technologies and Policies to Achieve Sustainable Prosperity* [online]. New York, NY: Columbia University Press. PDF e-Book. ISBN 978-0-231-55542-5. Available via: <https://doi.org/10.7312/riss20420>.

Additional remarks

None

Sustainability Project

Module abbreviation	SMT_SustProj	Reg.-Nr.	14
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Compulsory Subject	3
Module frequency	only winter term	Module duration	1 semester
Responsible for module	Blasch, Julia		
Lecturer(s)	Hutner, Petra		
Language of instruction	English	Language of exams	English
Credit points / SWS	6 ECTS / 4 SWS		
Workload	Contact hours	47 h	
	Self-study	103 h	
	Total	150 h	
Subjects of the module	Sustainability Project		
Lecture types	SU/Ü - lecture with integrated exercises		
Examinations			
Project report and oral presentation 15 min.			
Additional explanations regarding examinations			
Group work with written report (per group) and individual oral presentations.			
Prerequisites according examination regulation			
None			
Recommended prerequisites			
None			
Objectives			
After having completed the module, students will be able to... • combine and apply the knowledge, theories and methods acquired throughout the Master's programme. • successfully design, execute and evaluate a sustainability project. • analyse complex sustainability-related challenges and define a project scope using Design Thinking and stakeholder-centred exploration methods. • apply advanced disciplinary and interdisciplinary knowledge acquired throughout the Master's programme to address the project's sustainability challenge in a scientifically sound and practice-oriented manner. • apply appropriate project management approaches (classical, agile, hybrid) and implement structured planning, coordination and monitoring processes. • collaborate effectively in interdisciplinary teams, manage communication, facilitation and conflict resolution, and perform defined project roles. • synthesize and evaluate project results, and communicate findings clearly to professional audiences in written and oral formats.			
Content			
• Combination of classroom learning with hands-on experience in the field by engaging in real-world sustainability projects			

- Performance of sustainability and environmental stewardship
- Field trip that allows students to apply what they have learned in a real-world setting
- Effective interaction with experts in the field
- Project initiation & Design Thinking: challenge exploration, stakeholder analysis, problem reframing, ideation techniques, early concept testing
- Sustainability knowledge: acquisition and integration of topic-specific environmental, social and/or economic expertise (topic varies each semester)
- Team & communication skills: facilitation, mediation, conflict management, role distribution, negotiation strategies
- Field work & excursion: empirical data collection, stakeholder integration, and/or and practical implementation of project-related actions developed in the classroom (e.g. small interventions, pilot activities, or on-site testing of concepts)
- Deliverables & reflection: preparation of professional reports and presentations, critical evaluation of project processes, methodological reflection, lessons learned

Literature

Will be specified at the beginning

Additional remarks

Up to 10 bonus points can be awarded for participating in classroom presentations and discussions.

Master Thesis

Module abbreviation	SMT_MA	Reg.-Nr.	16
Curriculum	Study Programme	Module type	Semester
	Sustainability Management and Technologies (SPO SS 26)	Einsetzungstext ist leer!	
Module frequency	only winter term	Module duration	1 semester
Responsible for module	Blasch, Julia		
Lecturer(s)			
Language of instruction	English	Language of exams	English
Credit points / SWS	30 ECTS / 0 SWS		
Workload	Contact hours	30 h	
	Self-study	720 h	
	Total	750 h	
Subjects of the module	16.1: Master Thesis 16.2: Master Thesis Colloquium		
Lecture types	16.1: MA - Master's Thesis 16.2: MA - Master's Thesis		
Examinations			
16.1: Master's Thesis 16.2:			
Additional explanations regarding examinations			
Written document of 60-80 pages; oral presentation of 15-30 minutes.			
Prerequisites according examination regulation			
Before the topic of the Master thesis can be issued, students must have successfully completed at least 60 ECTS credits in academic studies and examinations.			
Recommended prerequisites			
None			
Objectives			
After having completed their Master thesis, the students will have - identified a research problem in their area of interest, either by own reflection or in collaboration with an external partner (e.g. company, public authority, NGO, etc.). - demonstrated that they can independently create insights and solutions for complex problems in a comprehensive, applied, and scientifically sound manner within a specified period. - shown their ability to independently understand, apply, and create scientific theory. - proven that they can analyze and process complex problems, applying the theories and methods acquired during the Master's programme. - have developed a research design and selected suitable research methods. - will have generated new scientific insights and will have drawn conclusions on their findings, that are relevant both for scientific research but also for practical application. - created a well-structured and well-formatted written document summarizing their research questions, their approach, their findings and their conclusions.			

- presented their research results to supervisors, peers and external partners.
- communicated professionally with supervisors, partners and collaborators.

Content

- Identification of a research topic that is relevant for both scientific insights and practical applications
- Definition of boundaries for the research
- Specification of clear and precise research questions
- Structuring and planning the work on the Master thesis
- Project realization by applying the acquired scientific skills and methods
- Project controlling and interaction with primary supervisor, collaborators and external partners
- Presentation of the results in the form of a written document and an oral presentation

Literature

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Additional remarks

None