

Module 693 Smart Building und Mobility

1	Module number 693	Study program WNB	Semester 6	Offered in ☒WS ☒ SS	Duration 1 semester	Module type Compulsory/ Elective	Workload (h) 150	ECTS points 5
2	Courses		Teaching and learning form		Contact time		Self-study	Language
	a) Smart Building and Mobility		Lecture		(SWS) 2	(h) 30	(h) 90	English
	b) Smart Building and Mobility Lab		Lab		2	30		
3	<p>Learning outcomes and competences After successfully completing the module, students can...</p> <p>Knowledge and understanding</p> <ul style="list-style-type: none"> ... explain the basic approach in the area of IoT applications and understand the connections. ... recognize the importance of intelligent devices. ... demonstrate basic knowledge in the area of networking of intelligent devices. ... recognize the importance of digital responsibility and put it in context with the 17 goals for sustainable development <p>Use, application and generation of knowledge</p> <p><i>Use and transfer</i></p> <ul style="list-style-type: none"> ... use sensors and actuators and apply them to intelligent systems. ... analyze concepts for smart solutions in the field of building and mobility. ... create monitoring solutions. ... analyze concepts for automated/autonomous solutions in the private and industrial sectors. ... program models for smart applications in the field of building and mobility. ... analyze problems in the field of mobility infrastructure and derive or develop solutions. ... adopt different perspectives and viewpoints with regard to sustainable mobility concepts, weigh them up against each other and make an assessment. ... familiarize with new ideas and subject areas based on basic knowledge. <p><i>Scientific innovation</i></p> <ul style="list-style-type: none"> <p>Communication and cooperation</p> <ul style="list-style-type: none"> ... actively communicate within an organization and obtain information. ... present applications from the field of smart building and mobility and discuss them in technical terms. ... communicate and discuss digital responsibility in technical terms. ... justify the developed solution theoretically and methodically. ... communicate and cooperate in a group to find sustainable solutions for the task at hand. <p>Scientific self-conception/professionalism</p> <ul style="list-style-type: none"> ... based on the analyses and evaluations carried out, derive decision recommendations from a social and ethical perspective with reference to the 17 sustainability goals. ... present findings from the field of smart building and mobility and draw valid conclusions. ... use the knowledge, skills and competencies learned to evaluate smart solutions and interpret them from other perspectives 							
4	<p>Content</p> <p>a) Course:</p> <ul style="list-style-type: none"> Basics of IoT applications, sensors and actuators Monitoring and networking of intelligent devices Recording of environmental data (air quality, humidity, ...) Digitization of commercial buildings (... in contrast to private households) Demand-based building control (space/room occupancy, lighting, air conditioning, access restrictions, ...) Mobility infrastructure (parking space monitoring, sharing models, charging stations, traffic routes, sector coupling (e.g. intelligent, bi-directional charging of e-vehicles)) Optimization of mobility offers in favor of energy-efficient, low-emission, comfortable and cost-effective mobility (networked systems) Prerequisites/opportunities/risks of autonomous driving in private and industrial environments Automation in industry: driver of sustainability? Digital responsibility (digital responsibility goals) 							

	<p>b) Lab:</p> <ul style="list-style-type: none"> • Programming of exemplary applications in the area of smart building and mobility • Monitoring applications (what does that mean when you scale) • Concept study for exemplary applications in the area of smart building and mobility
5	<p>Participation requirements</p> <p>obligatory: none</p> <p>recommended:</p> <ul style="list-style-type: none"> • 612 Informatics 1 • 660 Sustainability 1 • 618 Informatics 2 • 681 Digitalization • 614 Electrical Engineering • 689 Sociotechnology and Technology Acceptance
6	<p>Forms of examination and requirements for awarding credit points</p> <p>a) and b) written exam 60 minutes [graded]</p> <p>b) attestation [ungraded]</p>
7	<p>Further use of the module</p>
8	<p>Module manager and full-time lecturer</p> <p>Prof. Dr.-Ing. Ulrich Nepustil</p>
9	<p>Literature</p> <ul style="list-style-type: none"> • Lecture Script
10	<p>Last updated 07.02.2025</p>