Module number	**Module name**	**Module coordinator**
BIW-MA-AC-E-12	Zero Carbon Building Design using BIM and Digital Twins	Prof. Dr. Karsten Menzel bauinformatik@tu-dresden.de
Learning goals	Students understand the concepts of Zero Carbon Building Design and Cyber-Physical Systems in the context of the holistic application of information modeling, management and analysis. Students can use information technology to identify, model, monitor and optimize complex engineering systems and processes executed on related system's components. Students are able to link systems for building information modeling with monitoring and control systems. They can critically evaluate created simulation models and calibrate such simulation models using sensor data.	
Content	The teaching and learning content emphasizes on: (1) Concepts and methods for Zero Carbon Building Design, (2) Concepts and methods to design and implement cyber-physical systems, (iii) Methods for information modeling.	
Teaching and learning methods	2 SWS Lectures, 1 SWS Seminar, self-directed studies. (SWS…contact hour)	
Prerequisites	Knowledge and expertise in „*Bauinformatik*" at the level of Bachelor degree programs. Knowledge and skills acquired in the following Modules: Energiemethoden, Finite-Element-Methode und Numerische Methoden.	
Applicability	Elective Module of the ACCESS MSc-degree program. A total of twelve electives are offered. Students must choose five out of the twelve electives.	
Requirements for earning credit points	Credit points are awarded after successful completion of the examination. Written examination of 90 minutes' duration. Language of instruction: English.	
Credit points and grades	Five credit points can be acquired through the module. Grading: 100% written examination.	
Module frequency	The module is exclusively offered in the Summer Term.	
Workload	Total workload is: 150 hours.	
Module duration	The module is delivered over one term.	
Recommended reading list	L. Jankovic: Designing Zero Carbon Buildings Using Dynamic Simulation Methods: Routledge, 2. Ausgabe. 2017.	