

Title: blockchain and distributed ledger technologies
Type: elective master class for specialization in energy and information science

responsible	Prof. Dr.-Ing. Volker Skwarek
lecturer	Prof. Dr.-Ing. Volker Skwarek, external lecturers
description	Students acquire knowledge about basics of blockchain and distributed ledger technologies. They know about the history, basic technological principles of the BC/DLT protocol, different implementations and applications for BC/DLT.
content	<ul style="list-style-type: none"> 1 introduction into BC/DLT 1.1 Decentralization 1.2 Consensus 1.3 Shared Ledger 1.4 Verification and audit of each transaction is possible 1.5 history 1.6 introduction into cryptocurrency 1.7 basic functionality of blockchains 1.8 fundamental applications 2 BC/DLT basics 2.1 blockchain protocol 2.2 participants 2.3 security 2.4 proof-of 2.5 mining 3 Implementations 4 Automation of BC/DLT 4.1 oracles 4.2 sensors 4.3 smart contracts 5 Programming of Smart Contracts 5.1 methodology 5.2 languages 5.3 implementations/applications of SCs
Lecture type	lectures (2 SWS)
language	English (in exceptional semester also in German language possible)
precondition	Basic programming skills
max. number of students	25
module syllabus	The module is part of the syllabus for the elective studies in energy and information technology
type of examination	Written exam: 60 minutes. Alternatively: oral exam.
effort	90 h, thereof 28 h presence study, 28h practical exercises, 34 h lecture and exam preparation
ECTS	3 ECTS lecture
frequency of repetition	Every summer semester
planned regular semester	-
duration	1 Semester