COURSE DESCRIPTION CARD - SYLLABUS

Course name
Blockchain [S1DSwB1>BLOCK]

Course

Field of study
Data Science in Business

Year/Semester
3/6

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
0

Other
0

Tutorials
15

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

Basic knowledge of digital technologies, information systems, and data management. Basic understanding of cryptography and digital economy is welcome.

Course objective

Students will acquire knowledge and skills in blockchain technology and its applications across various industries, such as finance, e-commerce, marketing, and data management. They will gain practical experience in programming smart contracts, analyzing blockchain platforms, and designing decentralized applications (dApps).

Course-related learning outcomes

Knowledge:
Characterizes key Web 3.0 technologies, DeFi, dApp, Token Economy, and their impact on business and analytical processes [DSB1_W01].

Describes the principles of blockchain technology, differences between public and private blockchains, and consensus mechanisms [DSB1_W03].
Explains legal regulations related to blockchain technology, including Markets in Crypto-Assets (MiCA) and the concept of central bank digital currencies (CBDC) [DSB1_W06].
Analyzes case studies of blockchain implementations in various sectors, such as finance, healthcare, and gaming [DSB1_W08].

Skills:
Designs and implements decentralized applications and smart contracts using blockchain technology [DSB1_U03].
Applies Design Thinking and Scrum methodologies in designing and managing blockchain projects [DSB1_U05].
Analyzes and compares blockchain platforms, evaluating their functionalities and business applications [DSB1_U09].
Effectively collaborates in interdisciplinary teams, designing and implementing blockchain solutions [DSB1_U14].

Social competences:
Critically analyzes their own competencies in blockchain technology and strives for continuous improvement in the context of the dynamically evolving market [DSB1_K01].
Engages in initiatives related to the use of blockchain in business and data analysis, aiming for innovative implementations [DSB1_K03].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Formative Assessment: short discussions during lectures to assess the effectiveness of the learning process, adjust teaching to the students' level, and help students understand the extent of the material mastered within the course. A test-based colloquium conducted between the 3rd and 4th lecture, containing a minimum of 5 questions; maximum score: 15 points. Summative Assessment: The level of acquired knowledge is evaluated through an exam during the examination session. The comprehensive test consists of 15 questions; maximum score: 85 points. The final grade is based on the total points from the colloquium and the exam test. Passing threshold: minimum of 51 points, i.e., 51%.
Exercises: Formative Assessment: skills acquired during practical classes are verified based on partial assignments completed by students. Formative assessment is conducted based on: A report from the first phase of project work; maximum score: 50 points, the implementation project; maximum score: 50 points. Summative Assessment: the final grade is based on the total points obtained from both tasks. Maximum score: 100 points. Passing threshold: minimum of 51 points, i.e., 51%.

Programme content

The program covers topics related to the marketing management of blockchain technology, focusing on its applications in business, finance, and marketing.

Course topics

Lecture: Introduction to modern technologies: Web 3.0, P2P, dApp, Token Economy, DeFi, NFT, Metaverse, IDO, DEX/CEX, IoT; opportunities and risks of emerging technologies in business and analytical processes; potential of blockchain technology, initial characteristics of blockchain-based solutions; Blockchain use cases: analysis of blockchain implementations in various fields (e.g., finance, healthcare, and gaming); EU regulations (Markets in Crypto-Assets), overview of DeFi products and services; CBDC: history and future of Central Bank Digital Currencies; Blockchain platforms - comparison and analysis of different platforms (e.g., Ethereum, Binance Smart Chain, Hyperledger Fabric); Public blockchain (BSV, ETH) vs. Private blockchain (HLF); Proof of Concept (PoC), smart contracts, and decentralized applications; Design Thinking in blockchain projects: empathy, problem definition, idea generation, prototyping, testing; Agile project management for blockchain: Scrum, sprints, backlog, product owner; Building a blockchain business model: from idea to investor presentation (Adobe Kickbox methodology).
Exercises/Tutorials: In the project, students will develop and implement their own blockchain solution.

Teaching methods

lecture: informational lecture - multimedia presentation illustrated with examples provided on the board.
exercises: project-based method, tasks carried out in teams.

Bibliography

Basic:
Szafrański, M., Szafrański, D. (2024), Wykorzystanie AI w opracowaniu programów kształcenia marketingowego, dla kierunków menedżerskich, w: Marketing. Koncepcje i doświadczenia, Mruk, H., Sawicki, A. (red.), Wydawnictwo bernardinum, s. 191-221.
Kotler, P., Kibria, S., Soltanifar, M., Mróz-Gorgoń, B. (2024), Podstawy Nowoczesnego Marketingu: Polskie Wydanie. Polskie Wydawnictwo Marketingowe, Warszawa.
Hunt, S. (2023), Web3 Marketing: A Handbook for the Next Internet Revolution.
Mougayar, W. (2016), The Business Blockchain: Promise, Practice, and Application of the Next Internet Technology.
Graczyk-Kucharska, M., Olszewski, R., & Weber, G. W. (2023). The use of spatial data mining methods for modeling HR challenges of generation Z in greater Poland Region. Central European Journal of Operations Research, 31(1), 205-237.
Nakamoto, S. (2008), Bitcoin: A Peer-to-Peer Electronic Cash System (https://www.ussc.gov/sites/default/files/pdf/training/annual-national-training-seminar/2018/Emerging_Tech_Bitcoin_Crypto.pdf)

Additional:
Antonopoulos, A. M. (2017), Mastering Bitcoin. Unlocking Digital Cryptocurrencies.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00