OSTIM TECHNICAL UNIVERSITY
FACULTY OF ECONOMICS AND ADMINISTRATIVE SCIENCES
MANAGEMENT INFORMATION SYSTEMS DEPARTMENT
COURSE SYLLABUS FORM

MIS 455- Blockchain Technology and Cryptocurrencies							
Course Name	**Course Code**	**Period**	**Hours**	**Application**	**Laboratory**	**Credit**	**ECTS**
Blockchain Technology and Cryptocurrencies	MIS 455	7	3	0	0	3	4

Language of Instruction	English
Course Status	Elective
Course Level	Bachelor
Learning and Teaching Techniques of the Course	Lecture, Question-Answer, Problem Solving, Teamwork, Case study, Project Development

Course Objective

The aim of this course is for students to have knowledge about blockchain and cryptocurrencies, which have started to take place in our lives with the developing technology, learn the differences between classical, digital and cryptocurrencies, create their own cryptocurrencies with blockchain technology and to develop skills.

Learning Outcomes

The students who succeeded in this course will be able;

1. Knowledge of blockchain technology and cryptocurrencies,
2. To learn how cryptocurrencies are produced with blockchain technology,
3. To learn where and how Bitcoin and similar cryptocurrencies are used,
4. Having an idea about how cryptocurrencies can change our lives in the future,
5. To have an idea about the trend of trade in the world towards cryptocurrencies,
6. They are expected to gain skills in creating and developing their own cryptocurrencies.

Course Outline
The blockchain is regarded as the next revolutionary technology after the Internet, which will transform every part of life. This course will introduce the fundamental building blocks of blockchain technology as well as its application in cryptocurrencies, stablecoins, decentralized finance and non-fungible tokens (NFTs). Blockchain technology within the scope of the course, network types, consensus algorithms, security and attacks, blockchain platform examples in the world and in Turkey, things to know about cryptocurrencies, cryptocurrency mining, production and development of cryptocurrencies, digital literacy, digital wallet, the place of cryptocurrencies in international trade, ICO (Initial Coin Offering), digital currency supply applications will be made. Within the scope of the course, students will be told how to produce their own crypto money, project tasks will be given to produce and develop their own tokens, and the lessons will be supported with cases.

Weekly Topics and Related Preparation Studies		
Weeks	**Topics**	**Preparation Studies**
1	Blockchain history, definition, stages and operation Peer-to-Peer Electronic Cash System	– Introduction to the course – Course Syllabus and requirements – Blockchain network structure – Blockchain 1.0, 2.0, 3.0 – Blockchain features
2	Blockchain consensus algorithms, Smart Contracts	– Proof of Work – Proof of Stake – Proof of Burn – Proof of History – Proof of Authority – Delegated proof of stake – Byzantine fault tolerance
3	Blockchain network types, hash value, Merkle trees	– Public Blockchain – Private Blockchain – Consortium
4	Blockchain advantages and disadvantages and risks	– Digital identity – Decentralization – Immutability – Traceability – Scalability – Data storage

5-6	Application areas of blockchain technology case examples	– Education – Business management – Operation and production management – Logistics and supply chain – Manufacturing – Energy – Robotics – Tourism – Accounting, auditing and finance
7	Decentralized finance and economics Currency and cryptocurrencies, token and coin differences, Fintech Stablecoins and oracles	– Bitcoin – Decentralized Apps, EVM, and the Ethereum blockchain – Ripple – Corda – Hyperledger – EOS, – IOTA – Monero
8	**MIDTERM EXAM**	
9	Obstacles encountered in blockchain technology, security, privacy and attacks	– Computing power – Application mechanisms – DDOS – Sybil attack – Distributed service attack – Finney attack – Vector76 attack – Brute force attack etc.
10-11	Trends and opportunities in blockchain technology, Programming in solidity, social tokens and online communities	– NFT – WEB 3.0 – DEFİ, – DEX, – ICO, – Metaverse – Tokenization
12	Passive income earning methods, Cryptocurrency trading considerations Programming in solidity,	– Staking – Farming – Digital literacy – Technical analysis of stock market – Exchange formations
13	Cryptocurrency exchanges, Programming in solidity,	– Opening an account on exchanges from scratch, – Making transfers between exchanges – Applications of trading on different exchanges

		– Examples of secure wallets and vaults – Examples of payment processing tools – How to accept payments in cryptocurrencies?
14-15	Whitepaper writing and project development Programming in solidity	– Developing projects to create a blockchain platform for different sectors – ICO examples developed by students – Student presentations of their final projects
16	**FINAL EXAM**	

Textbook(s)/References/Materials:
Textbook: Vigna P., Casey J., Michael (2016), The Age of Cryptocurrency: How Bitcoin and the Blockchain Are Challenging the Global Economic Order P, Picadur.
Supplementary References: Bitcoin: A Peer-to-Peer Electronic Cash System, by Satoshi Nakamoto https://bitcoin.org/bitcoin.pdf Bitcoin Developer Guide section: Wallets https://decentralizedthoughts.github.io/2020-12-22-what-is-a-merkle-tree/
Other Materials: https://docs.soliditylang.org/en/latest/

Assessment		
Studies	**Number**	**Contribution margin (%)**
Attendance		
Lab		
Class participation and performance	1	5
Field Study		
Course-Specific Internship (if any)		
Quizzes / Studio / Critical		
Homework		
Presentation		
Projects	1	10
Report	1	5
Seminar		
Midterm Exam/Midterm Jury	**1**	**30**
General Exam / Final Jury	**1**	**50**
Total		**100**
Success Grade Contribution of Semester Studies		**50**
Success Grade Contribution of End of Term		**50**
Total		**100**

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Course hours (Including the exam week): 16 x total course hours)	14	3	42
Laboratory			
Application			
Course-Specific Internship (if any)			
Field Study			
Study Time Out of Class	14	1	14
Presentation / Seminar Preparation			
Projects	1	5	5
Reports	1	5	5
Homework			
Quizzes / Studio Review			
Preparation Time for Midterm Exams / Midterm Jury	1	14	14
Preparation Period for the Final Exam / General Jury	1	40	40
Total Workload	**(120/30 = 4)**		**120**

Course' Contribution Level to Learning Outcomes						
Nu	**Learning Outcomes**	**Contribution Level**				
		1	**2**	**3**	**4**	**5**
LO1	To learn blockchain technology and cryptocurrencies,					X
LO2	To learn how cryptocurrencies are produced with blockchain technology,					X
LO3	To learn where and how Bitcoin and similar cryptocurrencies are used,					X
LO4	Having an idea about how cryptocurrencies can change our lives in the future,					X
LO5	To have an idea about the trend of trade in the world towards cryptocurrencies,					X
LO6	To gain the ability to create and develop their own Cryptocurrencies.					X

	Relationship Between Course Learning Outcomes and Program Competencies (Department of Management Information Systems)							
Nu	**Program Competencies**	**Learning Outcomes**						**Total Effect (1-5)**
		LO1	**LO2**	**LO3**	**LO4**	**LO5**	**LO6**	
1	Recognize and distinguish the basic concepts such as data, information, and knowledge in the field of Management Information Systems and know the processes to be followed for data acquisition, storage, updating, and security.				x		x	4
2	Develop and manage databases suitable for collecting, storing, and updating data.		x				x	4
3	As a result of his/her ability to think algorithmically, easily find solutions to the problems concerning the basic business functions.		x	x	x	x	x	5
4	Learn programming logic, have information about current programming languages.						x	3
5	Be able to use up-to-date programming languages.						x	3
6	Be able to take part in teamwork or lead a team using knowledge of project management processes.		x				x	4
7	Know ethical and legal rules, use professional field knowledge within the scope of ethical and legal rules.							
8	Have knowledge in the fundamental areas of business administration namely management and organization, production, finance, marketing, numerical methods, accounting, etc., and have the knowledge and skills to work in-depth in at least one of them.							
9	Be able to solve the problems encountered in the field of internet programming by designing web applications.						x	3
10	Develop and manage logistics and supply chain management activities					x	x	4
11	Adapt his/her theoretical knowledge and the experience he/she will gain through practice at the departments of businesses such as information technologies, R&D, and management to real life.					x	x	3
12	Be able to develop strategies that will provide a competitive advantage with his/her advanced knowledge of							

	management strategies and management functions.							
13	Develop a business idea, commercialize the business idea, and design and manage his/her own venture using entrepreneurial knowledge.		x				x	5
14	By using English effectively, they can follow, read, write, speak and communicate universal information in the field of management information systems in a foreign language with professional competence.							
Total Effect								38

Policies and Procedures

Web page: https://www.ostimteknik.edu.tr/management-information-systems-english-1241/915

Exams: The exams aim at assessing various dimensions of learning: knowledge of concepts and theories and the ability to apply this knowledge to real-world phenomena, through analyzing the situation, distinguishing problems, and suggesting solutions. The written exams can be of two types, ie. open-ended questions, which can also be in the form of problems or multiple-choice questions. The case could also be carried to the Dean's Office for additional disciplinary action.

Assignments: Quizzes and Homework (Assignments) might be applicable. Scientific Research Ethics Rules are very important while preparing assignments. The students should be careful about citing any material used from outside sources and reference them appropriately.

Missed exams: Any student missing an exam needs to bring an official medical report to be able to take a make-up exam. The medical report must be from a state hospital.

Projects: Applicable.

Attendance: Attendance requirements are announced at the beginning of the term. Students are usually expected to attend at least 70% of the classes during each term.

Objections: If the student observes a material error in his/her grade, he/she has the right to place an objection to the Faculty or the Department. The claim is examined and the student is notified about its outcome.