<table>
<tr><th colspan="2">COURSE DESCRIPTION FORM</th></tr>
<tr><td>Course Code and Name</td><td>CENG457 BLOCKCHAIN TECHNOLOGIES (TECH. ELECT.)</td></tr>
<tr><td>Course Semester</td><td>7</td></tr>
<tr><td>Catalogue Data of the Course (Course Content)</td><td>Foundations of blockchain technology</td></tr>
<tr><td>Course Textbooks</td><td>1.Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction by Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, Steven Goldfeder, 2017

2.Mastering Blockchain: Unlocking the Power of Cryptocurrencies, Smart Contracts, and Decentralized Applications 1st Edition by Lorne Lantz, Daniel Cawrey, 2020</td></tr>
<tr><td>Supplementary Textbooks</td><td>1.Blockchain Basics: A Non-Technical Introduction in 25 Steps 1st ed. Edition by Daniel Drescher, 2017

2.Blockchain for Dummies by Tiana Laurence, 2019</td></tr>
<tr><td>Credit (ECTS)</td><td>6</td></tr>
<tr><td>Prerequisites for the Course (Attendance Requirements)</td><td>Attendance mandatory</td></tr>
<tr><td>Course Type</td><td>Technical Elective</td></tr>
<tr><td>Language of Instruction</td><td>English</td></tr>
<tr><td>Course Objectives</td><td>Comprehension of fundamental concepts and recent advancements in blockchain and cryptocurrencies.</td></tr>
<tr><td>Course Learning Outcomes</td><td>1. Understanding the fundamental concepts and recent developments in blockchain and digital currency technologies.
2. Learning about smart contracts and decentralized applications
3. The ability to work with real-world examples</td></tr>
<tr><td>Instruction Method
(Face-to-face, Distance education etc.)</td><td>Face-to-face</td></tr>
<tr><td>Weekly Schedule of the Course</td><td>1.Blockchain Fundamentals
2.Blockchain Fundamentals
3.Bitcoin Mechanics
4.Wallets, Mining, Pools
5.Ethereum and Smart Contracts
6.Distributed Application Development
7.Distributed Application Development
8.Blockchain Security
9.Consensus Algorithms
10.Scaling Blockchain
11.Real-World Applications
12.Community, Regulations and Politics
13.Cryptocurrency Ecosystem
14. Future of Blockchain</td></tr>
<tr><td>Teaching Activities
(The time spent for the activities listed here will determine the amount of credit required)</td><td>Weekly theoretical course hours: 3
Reading activities
Internet search and library work
Making a report
Preparing and making presentations
Midterm and revision for midterm
Final exam and revision for final exam</td></tr>
<tr><td>Assessment Criteria</td><td>
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<tr><th></th><th>Number(s)</th><th>Weight (%)</th></tr>
<tr><td>Midterm exam</td><td>1</td><td>30</td></tr>
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Assignment	2	15
Application		
Project	1	15
Practice		
Quiz		
Final exam	1	40
Total	5	100

Workload of the Course

Activity	Number of Weeks	Duration (Weekly Hour)	End of Semester Total Workload
Weekly theoretical course hours	14	3	42
Weekly practical course hours			
Reading activities	14	3	42
Internet search and library work	14	2	28
Designing and implementing materials			
Making a report	2	4	8
Preparing and making presentations	1	6	6
Midterm and revision for midterm	1	12	12
Final exam and revision for final exam	1	16	16
Total workload			154
Total workload/ 25			6
Course Credit (ECTS)			6

Contribution Level between Course Outcomes and Program Outcomes

No	Program Outcomes	1	2	3	4	5
1	Knowledge of mathematics, science, basic engineering, computing, and computer engineering; ability to use this knowledge in solving complex engineering problems.					X
2	Ability to define, formulate and analyze complex engineering problems using basic science, mathematics and engineering knowledge and considering the UN Sustainable Development Goals relevant to the problems addressed.		X			
3	Ability to design creative solutions to complex engineering problems; ability to design complex systems, processes, devices, software, algorithms or products to meet current and future requirements, considering realistic constraints and conditions.					X
4	Ability to select, use and develop appropriate techniques, resources and modern engineering and informatics tools, including estimation and modeling, for the analysis and solution of complex engineering problems while being aware of their limitations.				X	
5	Ability to use research methods to examine complex engineering problems or research topics in computer engineering, including reviewing the literature, designing experiments, conducting experiments, collecting data, analyzing and interpreting results.			X		
6	Knowledge of the effects of engineering practices and the standards used in these practices on society, health and safety, economy, sustainability and environment within the scope of the UN Sustainable Development Goals; awareness of the		X			

	consequences of engineering solutions in the fields of information security and law.						
7	Acting in accordance with engineering professional principles and knowledge on ethical responsibility; awareness of acting impartially, without discrimination on any issue, and being inclusive of diversity.		X				
8	Ability to work effectively individually and as a team member or leader in intradisciplinary and multidisciplinary teams (face-to-face, remote, or hybrid).			X			
9	Ability to conduct effective verbal and written communication on technical issues in Turkish or English, prepare reports, make effective presentations and prepare software documentation, considering the various differences of the target audience (such as education, language, profession).			X			
10	Knowledge of business practices such as project, risk and change management and economic feasibility analysis; awareness of entrepreneurship and innovation.		X				
11	Lifelong learning skill that includes the ability to learn independently and continuously, to adapt to new and developing scientific practices and technologies, and to think inquisitively about technological changes.				X		

Lecturer(s) and Contact Information	Assist. Prof. Dr. Çağrı Şahin cagrisahin@gazi.edu.tr