

Syllabus(2025-2nd semester)

Course	Blockchain Application	Department	Cyber Security	Office Hours	매주 월요일 14:00 ~ 16:00
Course No. and Class	38487-01	Hours	3.0	Academic Credit	3.0
Professor	Jongkil Kim		Office	Jinseonmi-gwan 225	
Telephone	4253		E-MAIL	jongkil@ewha.ac.kr	
Value of competence	Pursuit of Knowledge(80), Creative Convergence(20)		Keyword	blockchain, Distributed ledger, Cryptocurrency	

1. Course Description

This subject is designed to introduce the fundamentals of blockchain systems and their applications. The subject content will include some important theories that are necessary to understand blockchain systems and their applications. This subject will include discussions on cybersecurity issues in blockchain systems.

2. Prerequisites

None

3. Course Format

Lecture	Discussion/Presentation	Experiment/Practicum	Field Study	Other
80%	10%	10%	0%	0%

- explanation of course format :

The students in this subject may need to present their project outcomes during the classes.
The subject includes some hands-on activities related to blockchain and smart contracts in the classroom.

4. Course Objectives

By completing this subject, students can gain a solid understanding of the essential theories and principles necessary to comprehend blockchain systems. Those will include cryptographic mechanisms and consensus algorithms that are critical to understanding blockchain systems. Moreover, the students may be enabled to discuss and understand the ongoing issues in blockchain systems and their applications, including cybersecurity issues.

5. Evaluation System

* Absolute evaluation

Midterm Exam	Final Exam	Quizzes	Presentation	Projects	Assignments	Participation	Other
30%	40%	5%	0%	7%	15%	3%	0%

* Evaluation of group projects may include peer evaluations.

- explanation of evaluation system

Your overall grade will be determined by how well you do on these graded components of the course.
Quizzes in the lectures are online assessments designed to verify that you have completed the online lectures before attending the offline classes.

6. Required Materials

No textbook is needed for this subject.

7. Supplementary Materials

Bitcoin: A Peer-to-Peer Electronic Cash System (2008) by Satoshi Nakamoto

8. Optional Additional Readings

<https://ethereum.org/>

9. Course contents

Week	Date	Topics, Materials, Assignments	Form of Class
Week 1	2025/09/02(TUE)	Introduction to Subject	Off-Line
	2025/09/04(THU)	Preliminaries	On-Line
Week 2	2025/09/09(TUE)	Preliminaries – Quiz, Tutorials and discussion	Off-Line
	2025/09/11(THU)	Introduction to Blockchain	On-Line
Week 3	2025/09/16(TUE)	Introduction to Blockchain – Quiz, Preparing Implementation (1)	Off-Line
	2025/09/18(THU)	Bitcoin and Cryptocurrency	On-Line
Week 4	2025/09/23(TUE)	Bitcoin and Cryptocurrency – Quiz, Preparing Implementation (2)	Off-Line
	2025/09/25(THU)	Hashcash and proof-of-work	On-Line
Week 5	2025/09/30(TUE)	Hashcash and proof-of-work – Quiz, Implementing Hashcash (1)	Off-Line
	2025/10/02(THU)	Hashcash and proof-of-work (2)	On-Line
Week 6	2025/10/07(TUE)	Chuseok (Korean Thanksgiving Day)	
	2025/10/09(THU)	Hangul Proclamation Day	
Week 7	2025/10/14(TUE)	Hashcash and proof-of-work – Quiz, Implementing Hashcash (2)	Off-Line
	2025/10/16(THU)	Lightning Network	On-Line
Week 8	2025/10/21(TUE)	Lightning Network – Quiz, Implementing privacy techniques on Lightning Network	Off-Line
	2025/10/23(THU)	Ethereum and Smart Contract	On-Line
Week 9	2025/10/28(TUE)	Mid-term Exam	Off-Line
	2025/10/30(THU)	NFT (Non-fungible Token)	On-Line
Week 10	2025/11/04(TUE)	NFT – Quiz, Minting and Trading NFT	Off-Line
	2025/11/06(THU)	Private Blockchain	On-Line
Week 11	2025/11/11(TUE)	Private Blockchain – Quiz, Implementation and discussion	Off-Line
	2025/11/13(THU)	Stable Coins	On-Line
Week 12	2025/11/18(TUE)	Stable Coins – Quiz, Implementation and discussion	Off-Line
	2025/11/20(THU)	Blockchain Applications (1)	On-Line
Week 13	2025/11/25(TUE)	Blockchain Applications – Quiz, Implementation and discussion	Off-Line
	2025/11/27(THU)	Project Presentation (I)	Off-Line
Week 14	2025/12/02(TUE)	Project Presentation (II)	Off-Line
	2025/12/04(THU)	Other topics in Blockchain Applications	Off-Line
Week 15	2025/12/09(TUE)	Subject Summary, Q&A	Off-Line
	2025/12/11(THU)	Final Exam	Off-Line
Makeup Classes 1	2025/10/14(TUE)	Proof-of-stake (I)	On-Line
Makeup Classes 2	2025/10/16(THU)	Proof-of-stake (II)	On-Line

10. Course Policies

* For laboratory courses, all students are required to complete lab safety training.

11. Special Accommodations

* According to the University regulation #57, students with disabilities can request special accommodation related to attendance, lectures, assignments, and/or tests by contacting the course professor at the beginning of semester. Based on the nature of the students' requests, students can receive support for such accommodations from the course professor and/or from the Support Center for Students with Disabilities (SCSD).

* The contents of this syllabus are not final—they may be updated.