# **課程：以太坊原理與應用開發 (課號:753835001, 703839001)**

**Class: Ethereum DApp Development**

## **Course Description**

Blockchain is a fast-growing field while Bitcoin is accepted as the payment method and decentralized applications are developed on Ethereum. Blockchain nowadays suffers the scaling problem, but more and more individuals and companies are still getting interested in it. This course will focus on the Ethereum blockchain. Topics include smart contract programming, contract security, development environment setup and privacy-preserving scheme. Students will work on hands-on projects to learn how to build DApps as well as getting familiar with development tools.

## **Instructors**

陳昶吾 [changwu@nccu.edu.tw](mailto:changwu@nccu.edu.tw)

## **Teaching assistants**

* TBA

## **Information**

* Time：星期三 D56 (13:10-16:00)
* Classroom：大仁 200102
* Syllabus: <http://bit.ly/nccu-eth-108>

## **Slack**

1. <https://nccu-eth-slack.herokuapp.com/>
2. 輸入你的 Email
3. 輸入 invite token: nccu

## **Goal**

* Blockchain fundamentals
* Dive into the Ethereum protocol
* Learn smart contract development and applications
* Understand the limitation of the Blockchain technology
* Hands-on project and group discussion

## **Teaching Approach**

* (60%) Lecture
* (15%) Discussion
* (15%) Group activity
* (10%) E-learning

## **Syllabus**

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| --- | --- | --- | --- |
| **Week** | **Topic\*** | **Lecture Hours** | **Outside of Class Hours** |
| 1 | 09/11: Introduction to Blockchain | 3 | 3 |
| 2 | 09/18: Ethereum I (Protocol) | 3 | 3 |
| 3 | 09/25: Ethereum II (Protocol) **(Forming teams for group project)** | 3 | 3 |
| 4 | 10/02: Wallet, Key & Node Management **(Homework 1)** | 3 | 3 |
| 5 | 10/09: Solidity Programming | 3 | 3 |
| 6 | 10/16: Truffle & Ganache **(Homework 2)** | 3 | 3 |
| 7 | 10/23: Contract Applications & Token model | 3 | 3 |
| 8 | 10/30: Smart Contract Security Best Practices | 3 | 3 |
| 9 | **11/06: Midterm** | 3 | 3 |
| 10 | **11/13: Project Proposal Presentation** | 3 | 3 |
| 11 | 11/20: Oracle, Proxy Contract, Random Number **(Homework 3)** | 3 | 3 |
| 12 | 11/27: Auction, Ethereum Name Service | 3 | 3 |
| 13 | 12/04: Decentralized Exchange | 3 | 3 |
| 14 | 12/11: Stablecoin & DeFi Applications **(Homework 4)** | 3 | 3 |
| 15 | 12/18: Privacy-Preserving Applications & DAO | 3 | 3 |
| 16 | 12/25: Ethereum 2.0 | 3 | 3 |
| 17 | **01/01: New Year's Day** | 0 | 0 |
| 18 | **01/08: Final Project Presentation** | 3 | 3 |

\* This schedule may change as needed.

## **Grading**

* (10%) Class participation
* (40%) Programming assignments
* (20%) Midterm
* (30%) Final project
  + (20%) Implementation
  + (10%) Presentation

## **Readings**

* Ethereum Yellow Paper ([Link](https://ethereum.github.io/yellowpaper/paper.pdf))
* Mastering Ethereum ([Link](http://github.com/ethereumbook/ethereumbook/blob/develop/book.asciidoc))