

Course Overview

Week Overview

Week 1 - Course Introduction

1. Course Introduction
 - What to expect / learning goals.
 - Introduction to the two-track system.
 - Where to find course materials.
 - Explanation final assignment / examination.
 - Setting up the development environment.

Week 2 - Decentralized Applications, Remix IDE and Smart Contracts

Introduction to Decentralized Applications.

1. What are decentralized applications?
 - How do they differ from a 'normal' application?

Week 3

Week 4

Week 5

Basic

1. Smart contract security
 1. DAO hack

Week 6 - Testing smart contracts

Basic

1. Testing smart contracts with Solidity in Remix IDE

Advanced

1. Testing smart contracts in JavaScript with Truffle Suite

Week 7 - Decentralized Storage

Decentralized File Storage with InterPlanetary File System (IPFS) and Swarm

Basic

1. What is IPFS? What is Swarm?
 1. What are the benefits of using decentralized storage?

1. deduplication, because everything is addressed by a hash
 2. integrity, files match the hash...
 3. ...
2. Download and explore IPFS Desktop
 3. Publishing files on IPFS

Advanced

1. Make your front-end interface available via IPFS

Prerequisites

For joining this course a basic knowledge about blockchain is assumed. Programming experience is not required. For the people who have programming experience there is an advanced track.

Learning Goals

- The student is able to work with the Remix IDE. This includes writing, testing and deploying smart contracts from within Remix.
- The student is able to write and deploy Solidity smart contracts on the Ethereum (test) network. For example smart contracts for coins, voting and bets
- The student is able to connect the Remix IDE to Metamask and manage transactions via Metamask.
- The student is able to describe what Ethereum, Solidity, Remix IDE, MetaMask, InterPlanetary File System (IPFS), Swarm and Self-Sovereign Identity (SSI) are.

Advanced Learning Goals

- The student is able to work with Truffle Suite. This includes writing, testing and deploying smart contracts with Truffle Suite.
- The student is able to create a simple front-end interface that interacts with ethereum smart contracts via Web3.js.
- The student is able to deploy files on IPFS or Swarm. This includes a simple front-end interface that interacts with Ethereum.

Final Assignment

Each student needs to hand in a final assignment. The final assignment will show that the student has achieved the learning goals described above. The final assignment for the advanced track will build upon the base final assignment.

Course Material

There will be a document available for each week with explanations and assignments. Slides will also be made available together with a cheatsheet. The cheatsheet will give an overview of difficult topics and will provide some dutch translations to make it easier to understand.

Resources

- Remix IDE - <https://remix.ethereum.org/>

- Remix IDE Documentation - <https://remix-ide.readthedocs.io/en/latest/>
- MetaMask - <https://metamask.io/>
- Truffle Suite - <https://www.trufflesuite.com/>
- Web3.js Documentation - <https://web3js.readthedocs.io/en/v1.2.4/>
- Swarm Documentation - <https://swarm-guide.readthedocs.io/en/latest/introduction.html>
- IPFS - <https://ipfs.io/>
- IPFS Desktop - <https://docs.ipfs.io/>
- EthPM Documentation - <https://ethpm.github.io/ethpm-spec/>