

Solidity and smart contract development

ECTS : 3

Description du contenu de l'enseignement :

Blockchain is an amalgamation of several existing technologies. This course begins with an introduction to the historical developments, technologies, and ideologies that led to the emergence of blockchain. Students will then explore the layered architecture of blockchain systems and analyze the key technical and economic factors influencing each layer. To illustrate these concepts, smart contracts will be used to programmatically simulate system behaviors and design mechanisms. By the end of the first half of the course, students will have completed the full smart contract development lifecycle using the Remix IDE.

The second half of the course adopts a case study approach to examine real-world blockchain applications. Participants will apply both analytical reasoning and the technical skills developed earlier in the course to formulate consultative assessments and solution strategies for contemporary blockchain use cases.

Compétence à acquérir :

By the end of this course, participants will demonstrate the ability to:

1. Interpret and articulate blockchain system architecture, including peer-to-peer networking, consensus mechanisms, and application-layer components.
2. Assess the technical robustness of blockchain projects.
3. Assess the security and economic aspects of smart contracts.
4. Implement core Ethereum standards and protocols in practical contexts involving cryptocurrencies, NFTs, and DAOs.
5. Collaborate effectively in open-source environments by utilizing Github and Remix tooling, and community-driven development practices.

Mode de contrôle des connaissances :

1. A weekly, 15min group presentation which expands on lecture topics.
2. Bi-weekly homework projects.
3. Final DAO project.

Bibliographie, lectures recommandées :

Solidity Documentation - <https://docs.soliditylang.org/en/latest/>

Code examples - <https://solidity-by-example.org/>

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Université Paris Dauphine - PSL - Place du Maréchal de Lattre de Tassigny - 75775 PARIS Cedex 16