

### Informatique

#### Blockchain and Electronic Cash

#### IDENTIFICATION

CODE : TC-5-S1-EC-BTC  
ECTS : 2.0

#### HOURS

Lectures : 4.0 h  
Seminars : 24.0 h  
Laboratory : 0.0 h  
Project : 4.0 h  
Teacher-student  
contact : 32.0 h  
Personal work : 4.0 h  
Total : 36.0 h

#### ASSESSMENT METHOD

Podcast in pairs.

#### TEACHING AIDS

#### TEACHING LANGUAGE

French

#### CONTACT

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#### AIMS

The objective of the Blockchain module is to give students a global vision of the technologies related to blockchain and crypto-currencies.  
Students will be able to understand the ecosystem of these technologies and will have the keys to approach this type of project.  
They will be able to make relevant technical choices and participate in the realization of these deployments.

#### Targeted skills

Identify the technical and socio-economic ecosystem of blockchain technologies  
Knowing the functions provided by blockchain technologies  
Be comfortable handling crypto-currencies, setting up portfolios, cashing and payments, tracing transactions.  
Know the new trades and trades passed by blockchain technologies  
Being able to automate actions on the blockchain and know how to create smart contracts

Discovery / Practice / Testimony will be our main approach to this course.

This EC is part of the teaching unit 5TC Options [TC-5-OPT] and contributes to the following skills:

C7 Design, implement, develop, deploy computer programs  
Capacity: Set up and compile a cryptocurrency, boot a blockchain, experiment  
Capacity: Mobilize and articulate the different blockchain and cryptocurrency software  
Knowledge: Bitcoin and Cryptocurrency Codes with Proof of Work

C8 Operate, analyze, improve digital systems  
Capacity: Create smart contracts  
Capacity: Find information on blockchain / cryptocurrency projects  
Capacity: Make technological choices related to the state of the art and the context of use  
Knowledge: Organization of blockchain / cryptocurrency projects  
Knowledge: History and evolution of blockchain / cryptocurrency / CAD technologies  
Knowledge: Software and services participating in the cryptocurrency network ecosystem  
Knowledge: Tokens ERC20 and smart contracts Ethereum  
Knowledge: Digital home blockchain / cryptocurrency projects

In addition, it requires the following skills:

B4 Show creativity, innovate, undertake  
B2 Work, learn, evolve autonomously  
A6 Communicate an analysis or a scientific approach with scenarios adapted to their specialty

#### CONTENT

- General presentation and reminders
- The different proofs
- Legal aspects [NFT, RGPD...]
- Security
- The blockchain ecosystem
- Governance of blockchain
- Smart contract [Solidity and ERC721]

The program may change depending on the availability of speakers and student requests.

#### BIBLIOGRAPHY

#### INSA LYON

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bitcoin.pdf <https://bitcoin.org/bitcoin.pdf>  
Mastering bitcoin, Andreas Antonopoulos  
Mastering ethereum, Andreas Antonopoulos

## PRE-REQUISITE

Distributed Systems, Peer-to-peer Systems, Basic Programming, APIs, Internet

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