

COURSE OUTLINE: CRYPTOECONOMY & BLOCKCHAIN

GENERAL

SCHOOL	ECONOMICS AND BUSINESS		
ACADEMIC UNIT	ECONOMICS		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	ΜΠ803	SEMESTER	8th (Major B)
COURSE TITLE	CRYPTOECONOMY AND BLOCKCHAIN		
INSTRUCTOR(S)	Assoc. Professor V. Vlachos		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
		3	6
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialized general knowledge, skills development</i>	Special background, skills development		
PREREQUISITE COURSES:	YES		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE (URL)	https://www.econ.uth.gr/		

LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon completion of the course, students will be able to:

- Fully understand the operation of cryptocurrencies, recognizing both their potential and limitations.
- Design and program smart contracts and decentralized applications (DApps).
- Utilize blockchain technology to create innovative decentralized financial services (DeFi).
- Evaluate and assess cryptoassets using fundamental and technical analysis.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and</i>
<i>Team work</i>	<i>sensitivity to gender issues</i>
<i>Working in an international environment</i>	<i>Criticism and self-criticism</i>
<i>Working in an interdisciplinary environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Production of new research ideas</i>	<i>.....</i>
	<i>Others...</i>
	<i>.....</i>

- Search for, analysis and synthesis of data and information, with the use of the necessary technology.
- Working in an interdisciplinary environment.
- Production of free, creative and inductive thinking.

SYLLABUS

The purpose of this course is to introduce students to Cryptoeconomics, Blockchain, and Decentralized Finance (DeFi), exploring both fundamental concepts and practical applications. During the course, students will become familiar with cryptocurrencies, cryptoassets, and the technologies that support them, with a particular focus on Bitcoin and Ethereum.

The mechanisms enabling secure decentralized transactions through Blockchain technology will be examined. Additionally, techniques for creating Smart Contracts and their fundamental applications will be presented, including Digital Tokens, Non-Fungible Tokens (NFTs), Decentralized Applications (Dapps), and Data Bridges (Oracles).

Furthermore, methods of fundamental and technical analysis for assessing the value of cryptoassets will be analyzed. Finally, practical examples of cryptoeconomics applications across various fields beyond cryptocurrencies will be showcased, providing a comprehensive overview of the technology and its dynamics in the modern economic landscape.

The main topics of the course are:

- Fundamental principles of Cryptoeconomics and Decentralized Finance (DeFi).
- Blockchain technology: its functionality and applications across various sectors of economic activity.
- Introduction to cryptography and the security of Bitcoin and Ethereum.
- Addresses, Keys, and Wallets in Bitcoin and Ethereum.
- Transactions, Consensus, and Security in Bitcoin and Ethereum.
- Analysis of the mining mechanism and the environmental impacts of cryptocurrency mining, with emphasis on Proof of Work (PoW) and Proof of Stake (PoS) algorithms.
- Programming Smart Contracts and Decentralized Applications (DApps) on Ethereum.
- Cryptoassets and alternative cryptocurrencies (Altcoins).
- Digital tokens and their various types, such as utility tokens and security tokens.
- Non-Fungible Tokens (NFTs): their use in art, the digital realm, and other fields.
- Prospects and challenges for the future of DeFi, as well as their potential impact on the financial system.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of the eclass online platform for posting (a) lecture materials, (b) announcements, and (c) exercises, case studies, and relevant articles. Use of electronic media for lecture presentations (PowerPoint). Presentation of practical examples of using and interacting with Blockchain applications.

TEACHING METHODS <i>The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	<table border="1"> <thead> <tr> <th>Activity</th><th>Semester workload</th></tr> </thead> <tbody> <tr> <td>Lectures</td><td>39</td></tr> <tr> <td>Study and analysis of bibliography</td><td>139</td></tr> <tr> <td>Exams</td><td>2</td></tr> <tr> <td></td><td></td></tr> <tr> <td>Course total</td><td>180</td></tr> </tbody> </table>	Activity	Semester workload	Lectures	39	Study and analysis of bibliography	139	Exams	2			Course total	180
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STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other. Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	The final course grade is determined as follows: A written exam at the end of the semester consisting of short-answer questions, accounting for 100% of the grade. The above assessment criteria are communicated to students in the first lecture of the course and remain continuously accessible through relevant announcements on the course's eclass platform.												

ATTACHED BIBLIOGRAPHY

- Charalambos Patrikakis, Eleni-Aikaterini Leligkou, Dimitrios Kogias. Blockchain. Available on Kallipos: <http://dx.doi.org/10.57713/kallipos-171>.
- Nikos Daskalakis, Panagiotis Georgitseas. FinTech and Crypto-Economy. Propobos Publications. (EUDOXUS code: 112693991).
- Additional bibliography/articles will be recommended during lectures.