Syllabus

1. Programme information

1.1. Institution	THE BUCHAREST UNIVERSITY OF ECONOMIC STUDIES
1.2. Faculty	Business Administration in Foreign Languages
1.3. Departments	Department of Economic Informatics and Cybernetics
1.4. Field of study	Business Administration
1.5. Cycle of studies	Master Studies
1.6. Education type	Full-time
1.7. Study programme	Digital business and innovation
1.8. Language of study	English
1.9. Academic year	2023-2024

2. Information on the discipline

2.1. Name	**Internet of Things and Blockchain**							
2.2. Code	**23.0295IF2.1-0004**							
2.3. Year of study	**2**	2.4. Semester	**1**	2.5. Type of assessment	**Exam**	2.6. Status of the discipline	**O**	2.7. Number of ECTS credits	**6**
2.8. Leaders	C(C)	**conf.univ.dr. SILVESTRU C Cătălin Ionuţ**			catalin@ase.ro			
	S(S)	**conf.univ.dr. SILVESTRU C Cătălin Ionuţ**			catalin@ase.ro			

3. Estimated Total Time

3.1. Number of weeks		14.00	
3.2. Number of hours per week		4.00	of which
		S(S)	2.00
		C(C)	2.00
3.3. Total hours from curriculum		56.00	of which
		S(S)	28.00
		C(C)	28.00
3.4. Total hours of study per semester (ECTS*25)		150.00	
3.5. Total hours of individual study		94.00	

Distribution of time for individual study

Study by the textbook, lecture notes, bibliography and student's own notes	20.00
Additional documentation in the library, on specialized online platforms and in the field	24.00
Preparation of seminars, labs, assignments, portfolios and essays	40.00
Tutorials	1.00
Examinations	2.00
Other activities	7.00

4. Prerequisites

4.1. of curriculum	
4.2. of competences	

5. Conditions

for the S(S)	The seminars / Lab classes will take place in computer labs with teaching multimedia equipment and internet connection.
for the C(C)	The lectures will take place in rooms with teaching multimedia equipment and internet connection.

6. Acquired specific competences

PREFESSIONAL	C4	
PREFESSIONAL	C6	

7. Objectives of the discipline

7.1. General objective	Acquiring knowledge about main aspects of Internet of Things (IoT) and blockchain technologies and their business applications.
7.2. Specific objectives	Competences for planning and designing IoT and blockchain-based solutions.

8. Contents

8.1. C(C)		Teaching/Work methods	Recommendations for students
1	Internet of Things: main concepts and approaches	Presentation, practical examples, case studies	
2	IoT applications: domains and scenarios	Presentation, practical examples, case studies	
3	IoT technology constraints	Presentation, practical examples, case studies	
4	The architecture of IoT solutions	Presentation, practical examples, case studies	
5	Methodological aspects of planning and IoT-based solution	Presentation, practical examples, case studies	
6	Smart Grid, Home Automation, Smart City applications	Presentation, practical examples, case studies	
7	The blockchain technology: main concepts and approaches	Presentation, practical examples, case studies	
8	Blockchain components and operations.	Presentation, practical examples, case studies	
9	Security features of blockchain solutions.	Presentation, practical examples, case studies	
10	Blockchain application domains	Presentation, practical examples, case studies	
11	Methodological aspects of planning a blockchain-based solution	Presentation, practical examples, case studies	
12	Blockchain case studies - Bitcoin, Ethereum	Presentation, practical examples, case studies	
13	The architecture of blockchain-based solutions (I)	Presentation, practical examples, case studies	
14	The architecture of blockchain-based solutions (II)	Presentation, practical examples, case studies	

15	Internet of Things: main concepts and approaches	Presentation, practical examples, case studies	
16	IoT applications: domains and scenarios	Presentation, practical examples, case studies	
17	IoT technology constraints	Presentation, practical examples, case studies	
18	The architecture of IoT solutions	Presentation, practical examples, case studies	
19	Methodological aspects of planning and IoT-based solution	Presentation, practical examples, case studies	
20	Smart Grid, Home Automation, Smart City applications	Presentation, practical examples, case studies	
21	The blockchain technology: main concepts and approaches	Presentation, practical examples, case studies	
22	Blockchain components and operations.	Presentation, practical examples, case studies	
23	Security features of blockchain solutions.	Presentation, practical examples, case studies	
24	Blockchain application domains	Presentation, practical examples, case studies	
25	Methodological aspects of planning a blockchain-based solution	Presentation, practical examples, case studies	
26	Blockchain case studies - Bitcoin, Ethereum	Presentation, practical examples, case studies	
27	The architecture of blockchain-based solutions (I)	Presentation, practical examples, case studies	
28	The architecture of blockchain-based solutions (II)	Presentation, practical examples, case studies	

Bibliography

- Sinclair B., IoT Inc. : How Your Company Can Use the Internet of Things to Win in the Outcome Economy, McGraw-Hill Education, 2017, Statele Unite ale Americii
- Lewis A, The Basics of Bitcoins and Blockchains: An Introduction to Cryptocurrencies and the Tehnology that powers Them, Mango Publishing, 2018, Statele Unite ale Americii
- Mehta, N. Agashe, A., Detroja, P., Blockchian Bubble or Revolution: The Present and Future of Blockchain and Cryptocurrencies, Paravane ventures, 2019, Statele Unite ale Americii
- Bassi, A., Bauer, M., Fiedler, M. et al., Enabling Things to Talk: Designing IoT solutions with the IoT Arhitectural Reference Model, Springer, 2013, Statele Unite ale Americii

8.2. S(S)		Teaching/Work methods	Recommendations for students
1	IoT solutions for enterprises: case study (I)	Case study analysis in student teams	
2	IoT solutions for enterprises: case study (II)	Case study analysis in student teams	
3	Workshop IoT solution: elaborate the concept	Student team workshop	
4	Workshop IoT solution: develop the business case	Student team workshop	
5	Workshop IoT solution: architecture planning	Student team workshop	
6	Workshop IoT solution: implementation planning	Student team workshop	
7	Blockchain solutions for enterprises: case study (I)	Case study analysis in student teams	
8	Blockchain solutions for enterprises: case study (II)	Case study analysis in student teams	
9	Workshop blockchain solution: elaborate the concept	Student team workshop	
10	Workshop blockchain solution: develop the business case	Student team workshop	
11	Workshop blockchain solution: architecture planning	Student team workshop	
12	Workshop blockchain solution: implementation planning	Student team workshop	
13	Team project revirew and feedback	Moderation, peer reviews,feedback	
14	Team project presentation and defence	Evaluation	
15	IoT solutions for enterprises: case study (I)	Case study analysis in student teams	
16	IoT solutions for enterprises: case study (II)	Case study analysis in student teams	
17	Workshop IoT solution: elaborate the concept	Student team workshop	
18	Workshop IoT solution: develop the business case	Student team workshop	
19	Workshop IoT solution: architecture planning	Student team workshop	
20	Workshop IoT solution: implementation planning	Student team workshop	
21	Blockchain solutions for enterprises: case study (I)	Case study analysis in student teams	
22	Blockchain solutions for enterprises: case study (II)	Case study analysis in student teams	
23	Workshop blockchain solution: elaborate the concept	Student team workshop	
24	Workshop blockchain solution: develop the business case	Student team workshop	
25	Workshop blockchain solution: architecture planning	Student team workshop	
26	Workshop blockchain solution: implementation planning	Student team workshop	
27	Team project revirew and feedback	Moderation, peer reviews,feedback	
28	Team project presentation and defence	Evaluation	

Bibliography

- Sinclair B., IoT Inc. : How Your Company Can Use the Internet of Things to Win in the Outcome Economy, McGraw-Hill Education, 2017, Statele Unite ale Americii
- Bassi, A., Bauer, M., Fiedler, M. et al., Enabling Things to Talk: Designing IoT solutions with the IoT Arhitectural Reference Model, Springer, 2013
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9. Corroboration of the contents of the discipline with the expectations of the representatives of the epistemic community, of the professional associations and representative employers in the field associated with the programme

The course content was correlated with local and international business requirements during various professional meetings and debates where the lecturer took part.

10. Assessment

Type of activity	Assessment criteria	Assessment methods	Percentage in the final grade
10.1. C(C)	Elaboration of team project. The presentation of the project is a mandatory condition for participating in the exam/	The projects and evaluated according to the established requirements	40.00
10.2. S(S)	Preparation and active participation in lab classes	The participation frequency and degree of interaction during lab classes is evaluated	10.00
10.3. Final assessment	Written exam	The answers are evaluated according to an established evaluation scheme	50.00
10.4. Modality of grading	Whole notes 1-10		
10.5. Minimum standard of performance	Knowledge and understanding of the presented concepts and terms; Practical abilities for using the methods covered in the seminar/lab.		

Date of listing,
04/26/2024

Signature of the discipline leaders,

Date of approval in the
department

Signature of the Department Director,