

SYLLABUS

Digital Economy Principles

University year 2025-2026

1. Information regarding the programme

1.1. Higher education institution	Babeş – Bolyai University of Cluj - Napoca
1.2. Faculty	Computer Science
1.3. Department	Department of Computer Science
1.4. Field of study	Computer Science
1.5. Study cycle	Master
1.6. Study programme/Qualification	Cybersecurity
1.7. Form of education	Full time

2. Information regarding the discipline

2.1. Name of the discipline		Principles of digital economy					Discipline code		MME9021		
2.2. Course coordinator					Lector univ. dr. Alexandru Roja						
2.3. Seminar coordinator					Lector univ. dr. Alexandru Roja						
2.4. Year of study		1	2.5. Semester		1	2.6. Type of evaluation		E	2.7. Discipline regime		Mandatory

3. Total estimated time (hours/semester of didactic activities)

3.1. Hours per week	4	of which: 3.2 course	2	3.3 seminar/laboratory/project	2
3.4. Total hours in the curriculum	56	of which: 3.5 course	28	3.6 seminar/laboratory/project	28
Time allotment for individual study (ID) and self-study activities (SA)					hours
Learning using manual, course support, bibliography, course notes (SA)					30
Additional documentation (in libraries, on electronic platforms, field documentation)					30
Preparation for seminars/labs, homework, papers, portfolios and essays					40
Tutorship					9
Evaluations					10
Other activities:					25
3.7. Total individual study hours	144				
3.8. Total hours per semester	200				
3.9. Number of ECTS credits	8				

4. Prerequisites (if necessary)

4.1. curriculum	Innovation management
4.2. competencies	Knowledge in the field of information technologies. Knowledge in the field of organizational management.

5. Conditions (if necessary)

5.1. for the course	Course room with video projector.
5.2. for the seminar /lab activities	Seminar room with video projector.

6.1. Specific competencies acquired ¹

¹ One can choose either competences or learning outcomes, or both. If only one option is chosen, the row related to the other option will be deleted, and the kept one will be numbered 6.

Professional/essential competencies	• Understanding the specific contexts of the digital economy. • Understanding the principles on which the digital economy is founded. • Understanding how value is created in the new digital paradigm. • Understanding the role of Artificial Intelligence in the digital economy. • The new principles on which the economy based on Artificial Intelligence is founded. • Understanding the specific contexts of organizations in the digital economy.in the digital economy.
Transversal competencies	• Applying principles, tools and frameworks specific to the digital economy. • Understanding the implications of information technology and new trends in the digital economy. • Identifying opportunities and capitalizing on them in the digital economy.

6.2. Learning outcomes

Knowledge	• Knowledge and understanding of the main paradigms related to data protection: data confidentiality, integrity and availability;
Skills	• Applying the rules of organized and efficient work, responsibility and seriousness towards the work done both individually and in a team; • Taking the initiative, promoting entrepreneurship; operating with economic knowledge, continuous learning;
Responsibility and autonomy:	• Professional communication skills: clear, concise, verbal and written description of professional results; • Honorable, ethical behavior, compliance with professional ethics;

7. Objectives of the discipline (outcome of the acquired competencies)

7.1 General objective of the discipline	• Understanding the concepts specific to the digital economy. • Familiarizing students with the main paradigmatic changes, dimensions and trends that govern the economy based on innovations and digital technologies. • Acquiring methods, techniques and tools for investigating the digital economy. • Understanding the opportunities and main issues specific to the AI-based economy. • Acquiring skills specific to the digital economy by students.
7.2 Specific objective of the discipline	• Mastering methods and tools for understanding the main trends of the digital economy. • Understanding the factors that underlie the digital economy and the generating forces. • Understanding the specific indicators of the digital economy. • Understanding the competitiveness factors specific to the digital economy. • Understanding the distinctive aspects of organizations specific to the digital economy.

8. Content

8.1 Course	Teaching methods	Remarks
1.Introduction to digital economy.	Lecture, heuristic conversation, problematization.	2 hours
2.Strategic trends of digital economy.	Lecture, heuristic conversation, problematization.	2 hours
3.Technics, methods and instruments to analyze digital economy particularities.	Lecture, heuristic conversation, problematization.	2 hours
4.Roles of data, information, knowledge in digital economy paradigm. Information economy. Network economy. Platform economics.	Lecture, heuristic conversation, problematization.	2 hours
5.Growth methods and models at micro (organizations), meso (business sectors) and macro level, specific to digital economy.	Lecture, heuristic conversation, problematization.	2 hours
6.The economics of Artificial Intelligence I.	Lecture, heuristic conversation, problematization.	2 hours
7.The economics of Artificial Intelligence II.	Lecture, heuristic conversation, problematization.	2 hours
8.The new digital value, intangible resources roles and digital strategies in digital economy.	Lecture, heuristic conversation, problematization.	2 hours
9.Competitive redefinition in new paradigm of digital economy, and new ecosystemic approaches	Lecture, heuristic conversation, problematization.	2 hours
10.Digital business models. Platform business models.	Lecture, heuristic conversation, problematization.	2 hours
11.Digital organizations (architectures, processes, governance principles).	Lecture, heuristic conversation, problematization.	2 hours
12.Management of digital organizations in the new paradigm of digital economy.	Lecture, heuristic conversation, problematization.	2 hours
13.Economics of digital innovation.	Lecture, heuristic conversation, problematization.	2 hours
14.Ethics of digital economy.	Lecture, heuristic conversation, problematization.	2 hours
Bibliography 1.Aalst, W., Mylopoulos, J., Rosemann, M., Shaw, M., Szyperski, C. (2018), <i>Digital Economy. Emerging Technologies and Business Innovation</i> , Springer 2.Agrawal, A., Gans, J., Goldfarb, A. (2022), <i>Power and Prediction: The Disruptive Economics of Artificial Intelligence</i> , Harvard Business Review 3.Agrawal, A. (2018), <i>Power Machines: The Simple Economics of Artificial Intelligence</i> , Harvard Business Review 4.Agrawal, A., Gans, J., Goldfarb, A. (2019), <i>The Economics of Artificial Intelligence: An Agenda</i> , National Bureau of Economic Research 5.Ashmarina, S., (2021), <i>Digital Transformation of the Economy: Challenges, trends and New Opportunities</i> , Springer 6.Brzozowska, A., Bubel, D., Nekrasenko, L. (2022), <i>Organisation Management in the Digital Economy</i> , CRC Press 7.Buchaev, Y., Abdulmanapov, S., Abdulmanapov, A., Khachatryan, A. (2021), <i>State and Corporate Management of Regions Development in the Conditions of the Digital Economy</i> , Springer 8.Chamoux, J. (2019), <i>The Digital Era 2. Political Economy Revisited</i> , Wiley 9.Chandler, J. (2020), <i>Innovation, Social, Networks, and Service Ecosystems. Managing Value in the Digital Economy</i> , Palgrave MacMillan 10.Chase, C. (2021), <i>Consumption-Based Forecasting and Planning. Predicting Changing Demand Patterns in the New Digital Economy</i> , Wiley 11.Codagnine, C., Karatzogiani, A., Matthews, J. (2019), <i>Platform Economics. Rhetoric and Reality in the „Sharing Economy“</i> , Emerald Publishing 12.Elliffe, C. (2021), <i>Taxing the Digital Economy. Theory, Policy and Practice</i> , Cambridge 13.Filippov, V., Chursin, A., Ragulina, J., Popkova, E. (2019), <i>The Cyber Economy</i> , Springer 14.Gottlieb, B. (2018), <i>Digital Materialism. Origins, Philosophies, Prospects</i> , Emerald Publishing 15.Ibrahim, Y. (2021), <i>Posthuman Capitalism. Dancing with Data in the Digital Economy</i> , Routledge 16.Jordan, T. (2020), <i>The Digital Economy</i> , Cambridge Press 17.Liu, Z. (2022), <i>Principles of Digital Economics. Innovation Theory in the Age of Intelligence</i> , Springer 18.Lundqvist, B., Gal, M. (2019), <i>Competition Law For The Digital Economy</i> , Edward Elgar 19.Mueller, H. (2020), <i>Future State 2025. How top technology executives disrupt and drive success in the digital economy</i> ,		

Wiley

20.OECD (2014), *Measuring Digital Economy*

21.Oncioiu, I., (2020), *Improving Business Performance Through Innovation in the Digital Economy*, IGI Global

22.Paliszkiewics, J., Chen, K. (2022), *Trust, Organizations and the Digital Economy*, Routledge

23.Peitz, M., Waldfogel, J. (2012), *The Oxford Handbook of The Digital Economy*, Oxford University Press

24.Petit, N. (2020), *Big Tech & the Digital Economy*, Oxford

25.Popkova, E., Sergi, B. (2020), *Digital Economy: Complexity and Variety vs. Rationality*, Springer

26.Popkova, E. (2022), *Imitation Market Modeling in Digital Economy: Game Theoretic Approaches*, Springer

27.Rodinov, D., Kudryavtseva, T., Skhvediani, A., Berawi, M. (2021), *Innovations in Digital Economy*, Springer

28.Pettinger, R., Gupta, B., Roja, A. Cozmiuc, D. (2022), *Handbook of Research on Digital Transformation Management and Tools*, IGI Global

29.Pettinger, R., Gupta, B., Roja, A. Cozmiuc, D. (2023), *Handbook of Research on Digitalization Solutions for Social and Economic Needs*, IGI Global

30.Sledziewska, K., Wloch, R. (2021), *The Economics of Digital Transformation. The Disruption of Markets, Production, Consumption, and Work*, Routledge

31.Suki, N., Suki, N. (2020), *Leveraging Consumer Behavior and Psychology in the Digital Economy*, IGI Global

32.Sussna, J., (2015), *Designing Delivery. Rethinking IT in the Digital Service Economy*, Oreilly

33.Tapscott, D. (2015), *The Digital Economy*, McGrawHill

8.2 Seminar / laboratory	Teaching methods	Remarks
Case study and debate: „Impact of main technological trends in new digital economy paradigm”.	Case study, debate	2 hours
Case study and debate: „Roles of data, information and knowledge in digital economy. Information economy. Network effects. Platform economics”.	Case study, debate	2 hours
Case study and debate: „Examples of growth models for digital economy”.	Case study, debate	2 hours
Case study and debate: „AI Economics”.	Case study, debate	2 hours
Case study and debate: „Digital Business Models”.	Case study, debate	2 hours
Case study and debate: „Digital Organizations”	Case study, debate	2 hours
Case study and debate: „Digital Innovation”	Case study, debate	2 hours

Bibliography

1.Aalst, W., Mylopoulos, J., Rosemann, M., Shaw, M., Szyperski, C. (2018), *Digital Economy. Emerging Technologies and Business Innovation*, Springer

2.Agrawal, A., Gans, J., Goldfarb, A. (2022), *Power and Prediction: The Disruptive Economics of Artificial Intelligence*, Harvard Business Review

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5.Ashmarina, S., (2021), *Digital Transformation of the Economy: Challenges, trends and New Opportunities*, Springer

6.Brzozowska, A., Bubel, D., Nekrasenko, L. (2022), *Organisation Management in the Digital Economy*, CRC Press

7.Buchaev, Y., Abdulmanapov, S., Abdulmanapov, A., Khachatryan, A. (2021), *State and Corporate Management of Regions Development in the Conditions of the Digital Economy*, Springer

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9.Chandler, J. (2020), *Innovation, Social, Networks, and Service Ecosystems. Managing Value in the Digital Economy*, Palgrave MacMillan

10.Chase, C. (2021), *Consumption-Based Forecasting and Planning. Predicting Changing Demand Patterns in the New Digital Economy*, Wiley

11.Codagnine, C., Karatzogiani, A., Matthews, J. (2019), *Platform Economics. Rhetoric and Reality in the „Sharing Economy”*, Emerald Publishing

12.Elliffe, C. (2021), *Taxing the Digital Economy. Theory, Policy and Practice*, Cambridge

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9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

- The content of the courses responds to market demands through the themes addressed, and the skills acquired can be used both in the innovation efforts of companies and technology start-ups.

10. Evaluation

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of final grade
10.4 Course	Acquiring the information received during the course. Own reasoning, critical and creative thinking on the topics of the course.	Exam.	60%
	Own reasoning, critical and creative thinking on the topics of the course.	Interventions and debates at the courses.	10%
10.5 Seminar/laboratory	Active engagement and participation in study cases debates.	Practical activities at seminars.	30%
10.6 Minimum standard of performance			
• Minimum grade of 5 for promotion.			

11. Labels ODD (Sustainable Development Goals)²

Not applicable.

Date:
9 April 2025

Signature of course coordinator

Lector univ. dr. Alexandru Roja



Signature of seminar coordinator

Lector univ. dr. Alexandru Roja



² Keep only the labels that, according to the [Procedure for applying ODD labels in the academic process](#), suit the discipline and delete the others, including the general one for *Sustainable Development* – if not applicable. If no label describes the discipline, delete them all and write „Not applicable.”.

Date of approval:

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Signature of the head of department

Assoc.prof.phd. Adrian STERCA