

# 2.1.10 Module development M09 Developing Digital Business Ecosystems

## Module Specification:

(A short description can be found in the attachments.)

## Developing Digital Business Ecosystems

Within the Erasmus+ KA2 Capacity Building Project (CBHE)

WORK4CE – Cross-domain competencies for healthy and safe work in the 21st century

619034-EPP-1-2020-1-UA-EPPKA2-CBHE-JP

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Version 0.2, 10.10.2021

Version 0.3, 09.01.2024

## 1. Summary

**Overall Learning Outcome:** At the end of the course the student will be able to understand the importance of considering the triple bottom line (TBL) of enhanced quality of life - Economic, Social, and Environmental in the DBE (also referred to as 3P: people, planet, profit). The student will become familiar with the Digital Business Ecosystem (DBE) based on the concepts of business and digital ecosystems. The core principles of DBE will be discussed from the point of a social-economical view and an information-communication technology (ICT) view at DBE, according to the triple bottom line (TBL) concept.

### Target Group Analysis (for the first iteration):

- Characteristics – Students in MSc programs in Computer Science, Project Management, Business Administration, and Business Informatics.
- Previous competence and prerequisites – basic knowledge of IT, business, communication and social science.
- Needs – 1 semester, 60 contact hours, online lectures, case-study, workshops, assignments and developing projects.
- Competence Goals – analyze, develop and organize a digital business environment.
- Prospective Job Field – IT industry, Project management, Research, Market Research, Business Administration, International Business, Entrepreneurial, Outsourcing, Finance.

**Competences & Learning Outcomes:** It is expected that the following Knowledge, Skills and Competences are delivered to students:

### Knowledge

- The student understands the concept elements of a business ecosystem.
- The student can list the advantages of integrating DBE criteria into the product development process.
- The student knows and understands the relationship between business ecosystems and business models (especially within a European framework).
- The student understands the drivers behind digital ecosystem-based businesses and their impacts on value creation, risk and reward distribution and management.
- The student gathers strong foundational knowledge of digital ecosystem-based business to become a thought leader in this area and influence of company's direction and strategy. The student understands the core concepts of platform economy
- The student understands the importance of a common view of the ecosystem-based business as a whole, and of establishing a common language among partners.
- The student describes the fundamentals and regulations of the DBE. The student understands the origin and need of DBE thinking

### Skills

- The student applies the business ecosystem methodology and manages the available tools for DBE.
- The student positions the methods of developing and applying a business model within the business organization as part of the product development process.
- The student reports the current environmental problems associated with products and services.
- The student defines the digital business concept and defines the phases of digital business modelling.
- The student learns to rapidly build ecosystem blueprints and model different scenarios visually, enabling enhanced analysis and decision-making.
- The student applies ICT tools for information supply chains to develop tailored processes for DBE  
The student applies evaluation methodologies and software tools for prod

### Competence

- Students train developing and discuss concepts in teams, they work in teams and set up DBE environments for their respective case study project

### Selection of Content:

The main topics of the module:

- What is Digital Business Ecosystems (DBE) in the framework of the 4th industrial revolution basis?
- What are the key components of a business ecosystem?
- What are the key concepts of digital ecosystems and platforms?
- Understand the social-economic impact aspects of a DBE
- Understand the Information-communication technology (ICT) view at DBE
- Case studies on DBE development

### Activities and Teaching/Learning Methods:

- Existing online courses => search on the internet, check, evaluate
- Existing tutorials => search on the internet, check, evaluate
- Smaller, modular sets of teaching materials and small explaining videos (e.g. an animated example)
- explanatory video => existing (many on YouTube) or produced => check methodology for explanatory videos (e.g. storytelling)
- eBooks, scientific papers => use "inverted classroom": students get the task to read some paragraph and during the lecture time their questions are discussed or questions are asked
- Development of individual and team assignments.
- Online Discussions, workshops
- Case studies (will be provided in a high-quality, comprehensive form with all relevant materials and instructions)
- DBE project developing
- Project presentations

This is an entirely Web-based course. It will be a project-based/challenge-based education.

The Activity Plan (see below in Section 3) during one semester includes theory classes and practical works (total of 60 contact hours) and self-study (120 hours).

### Teaching Materials/Literature/Media/Technical Requirements/Lab Equipment:

- Communication software for collaboration work (Microsoft Teams, Zoom)
- Communication technologies for online learning
- Software for presentation (Microsoft PowerPoint)
- High-Speed Internet Connection
- Microphone, web camera and stream projector
- Hardware and software for the learning process (presentation materials, cooperation work, communication, JIRA)
- Learning Management System (Moodle).

**Tailoring & Educational Tracks (Practical, Entrepreneurial, Scientific):** List the main tailoring options foreseen in the module design, e.g. range of ECTS (4-8), tailoring for target groups (students, professionals, ...) and possible educational tracks.

### Competence Assessment:

Knowledge: Oral or written exam, online test	30%
Groupwork: developing digital business ecosystem => project review	25%
Team presentation 1 for developing digital business ecosystem project (activity x)	10%
Groupwork or individual homework: write a case study (company case)	25%
(Team) presentation 2 for case study (activity y)	10%

### Curricula Integration:

Course characteristics: elective

- Course Frequency: every year - spring semester
- Targeted educational programmes: master's programmes on Informational Technology, Computer Science, Project management, Business Administration, Software Development, and Digital Transformation.

**Quality Evaluation:** The module will undergo a pilot teaching and will be evaluated by students, professors and IT/economics/business/media specialists to get feedback for improvement. This iteration continues for 3 years in different universities and a publishable release will be produced in each iteration.

### Quality Evaluation:

The module evaluation is based on:

- Pilot teaching in the frame of the project;
- OpenCops' evaluation;
- Feedback from Users;
- Feedback in the frame of the Train-the-trainer learning implementation;
- On the basis of the module implementation in the learning process;

### Change History & Ownership:

Revision	Product Owner	Date of Release	Remarks
1	Ilham Yusifly		First Revision of document about developers of Open Cop prepared for review of project quality board.
2	Kanan Hasanov Khanlar Ganiyev	10.10.2021	The second revision of document about developers of Open Cop prepared for review of project quality board.
3	Carsten Wolff Kanan Hasanov	16.01.2021	The third revision of document about developers of Open Cop was prepared for review by project quality board.

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## 2. Introduction to the module

Often, digital business ecosystems (DBE) refer to groups of firms or organizations connected by a shared interest in the exploitation of digital technology to materialize their own product or service innovation. In digital business ecosystems, the loosely coupled layers of digital objects enable firms to collaborate on a rather technical layer. DBE use digital platforms as a software infrastructure which enables large numbers of interacting business users, services or other entities to do business with each other using new forms of interaction.

There are technological and actor-related (individual-level) challenges in DBE. Technological challenges and barriers for digital business ecosystems lie in the degree of incompatibility of information technologies, for example, architectures, platforms or infrastructure. These barriers generally concern the standards to present, store, exchange, process and communicate data and information from loosely coupled entities within the ecosystem.

Even though business ecosystems evolve from system dynamics in their origin, it is behaviour, engagement, attitude and competence on the individual level and role definition on the collective level which constitutes the prerequisites for participation in new forms of value co-creation.

Developing and designing digital business ecosystems should take into account these challenges. Therefore, the module addresses the following major issues: system theory, social science, business networks, social-economic aspects and information-communication technology at DBE.

## 3. Module Description

### 3.1 Overall Learning Outcomes

- Familiarity with the types of digital platforms
- Familiarity with the main theories explaining the functioning of platforms
- Familiarity with business models using digital platforms
- Understanding digital platform management
- Familiarity with ecosystem topology around digital platforms

**Learning Outcomes/Competencies based on competence domains:**

**Technical Competence:** know and use DBE concepts for analyzing and building a digital business environment for specific cases (e.g. small and medium enterprises).

**Professional Competence:** manage the process of developing the digital business environment.

**Global Competence:** take into account cultural diversity, social differences, involvement of participants, and individual features during developing DBE.

The **Overarching Learning Outcomes (OLO)** as defined by EIT (<https://eit.europa.eu/our-activities/education/eit-learning-outcomes>) are mainly:

- Value judgments and sustainability competencies (EIT OLO 1):
- Entrepreneurship skills and competencies (EIT OLO 2)
- Creativity skills and competencies (EIT OLO 3)
- Innovation skills and competencies (EIT OLO 4)
- Research skills and competencies (EIT OLO 5)
- Intellectual transforming skills and competencies (EIT OLO 6)
- Leadership skills and competencies (EIT OLO 7)

### 3.2 Target Group

- Students and workers
- Students of MSc programs in Computer Science, IT, Project management, Business Administration, Software Development, Digital Transformation
- Education and training providers
- Industrial employers and social partners
- Small Medium Enterprises
- Policymakers at national, regional and international levels

### 3.3 Competences & Learning Outcomes

	Knowledge	Skills	Competence
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	<i>In the context of EQF, knowledge is described as theoretical and factual</i>	<i>In the context of EQF, skills are described as cognitive (involving the use of logical, intuitive, and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools, and instruments)</i>	<i>In the context of EQF, competence is described in terms of responsibility and autonomy</i>
<b>Level 7</b> The learning outcomes relevant to Level 7 are	<ul style="list-style-type: none"> <li>- highly specialized knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research</li> <li>- critical awareness of knowledge issues in a field and at the interface between different fields</li> </ul>	<ul style="list-style-type: none"> <li>— <del>specialized problem solving</del> skills are required in research and/or innovation to develop new knowledge and procedures and to integrate knowledge from different fields</li> </ul>	<ul style="list-style-type: none"> <li>- manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches</li> <li>- take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams</li> </ul>

### Knowledge

Students can

- explain the basics of cybernetics and systems theory
- explain and compare digital business models
- explain the concept of platform economics
- explain methods and tools for information supply chains
- explain the core concepts of DBEs

### Skills

Students can

- analyze and develop value chains and information supply chains
- apply ICT tools for information supply chains
- develop tailored processes for DBEs

### Competence

- Students train to develop and discuss concepts in teams
- Students work in teams and set up DBE environments for their respective case study project

## 3.4 Content

### Core course (4 ECTS - AzUAC)

Digital Business Ecosystems (DBE) basis.

- System theory and cybernetics
- Social Science and DBE
- Evolutionary and self-organizing systems
- Structural coupling between business and digital ecosystem
- Structural principles of DBE
- Case study analyzing

Social-economical view at DBE

- Business networks, industry clusters
- Platform economy
- Governance in DBEs
- Business processes, business models and value chains
- Cost-benefit analysis and DBE
- DBE collaborative communities
- Innovation, competition and dynamics in business ecosystems
- Trust among enterprises (SME) in DBE
- Case study analyzing

Information-communication technology (ICT) view at DBE

- Digital Ecosystem technology and the distributed nature of information
- Digital Ecosystem architecture, topology. ICT architectures and tools for DBEs
- Digital Ecosystem services
- Social network simulation and self-organization
- Information supply chain
- Efficiency and Effectivity for DBEs: Data Analytics and Business Intelligence
- Case study analyzing

### Elective courses (2 ECTS each)

#### Formation of regional innovative ecosystems (2 ECTS- NuZP)

- The essence of the basic categories of innovation development
- Architectonics of the National Innovation System
- Commercialization of innovations in the context of capitalization of human potential
- Innovative ecosystems: essence and methodological principles of formation. Best practice
- New Paradigm of Regional Innovation Policy

### Regional innovative clusters as a model of regional innovative ecosystems (2 ECTS- NuZP)

- Cluster value as an effective form of development of regions
- Structure of interaction of elements of the regional innovation cluster
- Models and Clustering Policy of the European Union

### Mechanisms of formation of regional innovative ecosystems (2 ECTS- NuZP)

- Conceptual principles of formation of innovative ecosystems in the region
- Institutional mechanisms for the formation of a regional innovation ecosystem
- Development of industrial parks as submodules of the regional innovation ecosystem of regions
- Formation of technological environments and innovation-technological hubs

### Digital Education Ecosystem - User-Centred Design of the Student Journey Configurator (2 ECTS - KNUCA)

- Student journey configuration concept
- Technical concept
- How to develop the digital ecosystem in the HEI

### Roles in the DBE (2 ECTS - KNUCA)

- DBE concepts
- Concept elimination of existing approaches for the analysis of business ecosystems
- Evaluation of existing approaches
- Classification of business ecosystem roles

### Project management for the digital transformation of enterprises (2 ECTS - KNUCA)

- What is a digital transformation project?
- Methodologies of DT project management
- Software for DT project management

### Additional topics for later iterations:

1. DBE in logistics and supply chain management
2. DBE in eCommerce
3. DBE in smart (renewable) energy systems
4. DBE in finance/fintech

## 3.5 Teaching & Learning Activity Plan

### A) Teaching/learning methods per competence

**Knowledge:** online courses, videos, literature: books and scientific papers, recent articles from blogs and media (mainly online)

**Knowledge and scientific methods:** case study analysis (case materials provided online)

**Practical skills, professional ability & attitude:** Plan and conduct a DBE project (groupwork: workshop or virtual project)

**Scientific competence, scientific ability:** Write a scientific case study on a real-world DBE case (individual or group work)

### B) Didactic concept:

Online courses, videos, ebooks, distance learning for the knowledge, possibly (virtual) lectures, provide material for further reading => use flipped/inverted classroom for discussion of topics, use exams (written, oral, online test) for competence assessment  
Project- and problem-based learning for the DBE project:

- based on a company case provided by an industry expert
- own entrepreneurial startup project => work-integrated learning (WIL), challenge-based (e.g. with real investor pitch)
- internship in a company => work-integrated learning (WIL)
- Case-writing method + surveys and interviews for the elaboration of scientific case study => use regular reviews by teachers and industry experts, possibly peer review by other student teams => motivate to publish the result as scientific paper (+ open data)

### C) Teaching & Learning Activity Plan

**Activity 1:** Theory courses on Digital Business Ecosystems (DBE) basis, Social-economical view at DBE and Information-communication technology (ICT) view at DBE (30 h in total, e.g. 15 x 2h)

The theory courses are online courses, videos or tutorials, and reading materials (ebooks, scientific papers, published media). They are conducted during the whole semester or in the first 3-4 weeks of the semester.

**Activity 2:** Case study project simulation in teams (e.g. 3-4 students) as a practical assignment (15 h contact time + 60 h team and individual work)  
Students conduct DBE projects based on the types of cases outlined below:

- conduct a DBE project in an existing company or organisation with a focus on organizational change
- conduct a DBE project in an existing company or organisation with a focus on the digital transformation of a business model
- develop a start-up project with a focus on a new, disruptive digital product or service

**Activity 3:** team presentations: a "project kick-off presentation" and a "project end presentation" are provided in activity 2 (see above).

**Alternative B for Activity 3:** Present a project case from your own job

**Activity 4:** Group or individual homework: writing a case study on a DBE project (15 h contact time + 60 h individual work)

Students write a scientific case study on an approved (industry/real) project case (can be provided by an industry partner, by the university or submitted by a student) and using the case writing methods.

Students have to gather the relevant information by themselves, e.g. doing interviews or surveys.

The result is a written case study (e.g. in a wiki) and the respective data (provided as open data) and tools.

Contact time is used in individual consulting and intermediate reviews.

**Activity 5:** presentation of case study

Students present the case study in a pitch-kutcha pitch format, e.g. 20 slides in 60 seconds in front of teachers, industry partners and students.

To do: Describe predefined "student journeys" through the module, and link it to learning trajectories and competence development paths.

### 3.6 Teaching & Learning Resources

- Communication software for collaboration work (Zoom, Microsoft Teams)
- Communication technologies for online learning (Moodle)
- Software for presentation (Microsoft PowerPoint)
- High-Speed Internet Connection
- Microphone, web camera, graphics tablet and stream projector
- Hardware and software for the learning process (presentation materials, cooperation work, communication, JIRA)
- Learning Management System (Moodle).

### 3.7 Tailoring & Educational Tracks

Educational Tracks:

- Practical:
- Entrepreneurial:
- Scientific
- Company:

### 3.8 Assessment Methods

Assessment, Self-Assessment, Peer-Assessment

FORM	%	REMARK
Knowledge: Oral or written exam, online test	30	Based on theory classes
Groupwork: developing digital business ecosystem => project review	25	Project review is conducted by teachers/industry experts
Team presentation 1 for developing digital business ecosystem project (activity x)	10	Pitch format with industry partners
Groupwork or individual homework: write a case study (company case)	25	Written report following case study method
(Team) presentation 2 for case study (activity y)	10	Pecha-Kutcha (with industry partners)

### 3.9 Curricula Integration

This module will be implemented in the Pilot version in the first or second semester of 2022-2023 in the University Master in Project Management.

It will be imparted by professors from AzUAC.

Students are expected from Azerbaijan Universities. Students from other partner universities are also welcome.

### 3.10 Quality Assurance - Evaluation

Quality Assurance - Evaluation:

- review and release by IEB/QMB
- pilot teaching with peer review and survey
- via student survey after each teaching of the module
- after curriculum integration: accreditation review

## 4. Syllabus/Module Handbook

Developing Digital Business Ecosystems									
Module Owner	Workload	Credits		Semester	Frequency			Duration	
AzUAC	180 h	6 ECTS		1	spring semester			1 Semester	

1	<b>Course Title</b> <b>Developing Digital Business Ecosystems</b>			<b>Contact hours</b> 4 hours per week / 60 h in total	<b>Self-Study</b> 120 h		<b>Planned Group Size</b> 25 students		
2	<b>Course Description</b> This module objective is to teach the students to develop DBE. Students will learn to understand, analyze, evaluate and develop DBE for different application scenarios. Module consists of 3 main parts: DBE basis, social-economical view at DBE and ICT view at DBE and cases studies, which gives required competencies for DBE development.								
3	<b>Course Structure</b> <b>Core course (4 ECTS - AzUAC)</b> Digital Business Ecosystems (DBE) basis. <ul style="list-style-type: none"> <li>• System theory and cybernetics</li> <li>• Social Science and DBE</li> <li>• Evolutionary and self-organizing systems</li> <li>• Structural coupling between business and digital ecosystem</li> <li>• Structural principles of DBE</li> <li>• Case study analyzing</li> </ul> <p>Social-economical view at DBE</p> <ul style="list-style-type: none"> <li>• Business networks, industry clusters</li> <li>• Platform economy</li> <li>• Governance in DBEs</li> <li>• Business processes, business models and value chains</li> <li>• Cost-benefit analysis and DBE</li> <li>• DBE collaborative communities</li> <li>• Innovation, competition and dynamics in business ecosystems</li> <li>• Trust among enterprises (SME) in DBE</li> <li>• Case study analyzing</li> </ul> <p>Information-communication technology (ICT) view at DBE</p> <ul style="list-style-type: none"> <li>• Digital Ecosystem technology and the distributed nature of information</li> <li>• Digital Ecosystem architecture, topology. ICT architectures and tools for DBEs</li> <li>• Digital Ecosystem services</li> <li>• Social network simulation and self-organization</li> <li>• Information supply chain</li> <li>• Efficiency and Effectivity for DBEs: Data Analytics and Business Intelligence</li> <li>• Case study analyzing</li> </ul> <p><b>Elective courses (2 ECTS each)</b></p> <p><b>Essentials of Regional Innovative Ecosystems and Clusters (2 ECTS - NuZP)</b></p> <p><b>Course Overview:</b> This course provides an integrated perspective on developing regional innovative ecosystems and clusters, highlighting key concepts, structures, and policies for fostering innovation-driven regional growth.</p> <p><b>Core Topics:</b></p> <ol style="list-style-type: none"> <li>1. <b>Fundamentals of Innovation Development</b> <ul style="list-style-type: none"> <li>◦ Basic categories and principles of innovation</li> <li>◦ Overview of the National Innovation System</li> </ul> </li> <li>2. <b>Innovative Ecosystems and Clusters</b> <ul style="list-style-type: none"> <li>◦ Essence and formation of innovative ecosystems</li> <li>◦ Regional innovation clusters: structure and interaction</li> <li>◦ Best practices and examples from the European Union</li> </ul> </li> <li>3. <b>Commercialization and Policy</b> <ul style="list-style-type: none"> <li>◦ Strategies for commercializing innovations</li> <li>◦ Regional innovation policies: new paradigms and models</li> </ul> </li> <li>4. <b>Mechanisms for Ecosystem Formation</b> <ul style="list-style-type: none"> <li>◦ Institutional frameworks for innovation ecosystems</li> <li>◦ Developing technological environments and hubs</li> </ul> </li> </ol> <p><b>Learning Outcomes:</b> Students will gain an understanding of the key elements and strategic approaches to building and managing regional innovative ecosystems and clusters, with insights into European practices and policies.</p> <p><b>Digital Education Ecosystem - User-Centred Design of the Student Journey Configurator (2 ECTS - KNUCA)</b></p> <ul style="list-style-type: none"> <li>• Student journey configuration concept</li> <li>• Technical concept</li> <li>• How to develop the digital ecosystem in the HEI</li> </ul> <p><b>Roles in the DBE (2 ECTS - KNUCA)</b></p> <ul style="list-style-type: none"> <li>• DBE concepts</li> <li>• Concept elimination of existing approaches for the analysis of business ecosystems</li> <li>• Evaluation of existing approaches</li> <li>• Classification of business ecosystem roles</li> </ul> <p><b>Project management for the digital transformation of enterprises (2 ECTS - KNUCA)</b></p> <ul style="list-style-type: none"> <li>• What is a digital transformation project</li> <li>• Methodologies of DT project management</li> <li>• Software of DT project management</li> </ul>								
4	<b>Application Focus</b> Students will be guided through a case study project where they plan a DBE developing project for an example case. This example case will be taken preferably from a real company project. Companies can bring their DBE projects as a case study. Students form teams to prepare the respective project and present it in a kick-off presentation to the companies.								
5	<b>Scientific Focus</b> For the scientific component, students <b>write a case study</b> based on a real company of their choice to highlight how it managed its digital business ecosystem. Students are encouraged to perform interviews or surveys with their case study company to gain detailed data for their case study. Students will write a scientific report in the form of an academic case study description. The case study will be presented at the end of the course as a Pecha Kucha presentation, meaning that they only have 20 slides which automatically change every 20 seconds. <b>Methods are</b> Literature review, Case study method, Semi-Structured Interviews and Survey. Deductive research based on the literature. Scientific reflection and discussion in the teams.								

6	<b>Parameters</b> <ul style="list-style-type: none"> <li>• ECTS: 6</li> <li>• Hours of study in total: 180</li> <li>• Weekly hours per semester: 4</li> <li>- Contact Hours: 60</li> <li>- Self-Study hours: 120</li> <li>• Course characteristics: elective</li> <li>• Course Frequency: every year - summer semester</li> <li>• Maximal capacity: 25 students</li> <li>• Course admittance Prerequisites: none</li> <li>• Skills trained in this course: theoretical, practical and scientific skills and competencies</li> <li>• Assessment of the course: assignment, workshop participation, case project preparation and evaluation, written/ oral exam.</li> <li>• Teaching staff: teachers from Open Community of Practice</li> </ul>	
7	<b>Learning outcomes</b> 7.1 Knowledge <ul style="list-style-type: none"> <li>• explain the basics of cybernetics and systems theory</li> <li>• explain and compare digital business models</li> <li>• know and use DBE concepts for analyzing and building digital business environments for small and medium enterprises.</li> <li>• manage the process of developing the digital business environment.</li> <li>• explain methods and tools for information supply chains</li> <li>• explain the core concepts of DBEs</li> <li>• take into account cultural diversity, social differences, involvement of participants, and individual features during development DBE.</li> </ul> 7.2 Skills <ul style="list-style-type: none"> <li>• analyze and develop value chains and information supply chains</li> <li>• apply ICT tools for information supply chains</li> <li>• develop tailored processes for DBEs</li> </ul> 7.3 Competence <ul style="list-style-type: none"> <li>• Students train to develop and discuss concepts in teams</li> <li>• Students work in teams and set up DBE environments for their respective case study project</li> </ul>	
8	<b>Teaching and training methods</b> Lectures introducing concepts, methods and tools, own literature reading, group work in the case-based projects to practice concepts and methods, to develop skills and to work on case study presentations to communicate results and do a scientific discussion and reflection	
9	<b>Curricula Integration</b> This module will be implemented in the Pilot version in the first or second semester of 2022-2023 in the University Master in Project Management. It will be imparted by professors from AzUAC. Students are expected from Azerbaijan Universities. Students from other partner universities are also welcome.	
10	<b>References</b> <ol style="list-style-type: none"> <li>1. Digital Business Ecosystems, edited by Francesco Nachira, European Commission Society and Media, 2007, Retrieved from <a href="http://www.digital-ecosystems.org/book/de-book2007.html">http://www.digital-ecosystems.org/book/de-book2007.html</a></li> <li>2. Building digital ecosystem architectures, by Mark Skilton, 2016.</li> <li>3. Key challenges of digital business ecosystem development and how to cope with them, by Key Lenkenhoff, 10 CIRP conference on industrial product-service systems, 2018, Sweden.</li> <li>4. From business ecosystems towards Digital Business Ecosystem, by Amir R. Razavi, IEEE DEST conference, 2010.</li> <li>5. The ABC of Digital Business Ecosystems, by Gerard Briscoe, article, May 2010</li> <li>6. Prince Kwame Senyo, Kecheng Liu, John Effah, Digital business ecosystem: Literature review and a framework for future research, International Journal of Information Management, Volume 47, August 2019, Elsevier</li> <li>7. Alghatam, Noora. "Public and Private Sector Collaboration to Establish Digital Business Ecosystems." Proceedings of the 20th Annual International Conference on Digital Government Research. 2019.</li> <li>8. Fuller, Jack, Michael G. Jacobides, and Martin Reeves. "The myths and realities of business ecosystems." MIT Sloan Management Review 60.3 (2019): 1-9.</li> <li>9. <a href="https://enqa.eu/index.php/home/esg/http://www.zoom-efg.eu/https://eit.europa.eu/sites/default/files/eit_label_handbook.pdf">https://enqa.eu/index.php/home/esg/http://www.zoom-efg.eu/https://eit.europa.eu/sites/default/files/eit_label_handbook.pdf</a>S. Sun, J. Yen: Information Supply Chain: A Unified Framework for Information-Sharing, P. Kantor et al. (Eds.): ISI 2005, LNCS 3495, pp. 422-428, 2005</li> <li>10. CERP-IoT: Vision and Challenges for Realizing the Internet of Things, European Union, 2010</li> <li>11. A. Humphreys, K. Grayson: The Intersecting Roles of Consumer and Producer: A Critical Perspective on Co-Production, Co-Creation and Presumption, Sociology Compass 2, 2008</li> <li>12. Cristiano Codagnone, Athina Karatzogianni, &amp; Jacob Matthews. (2019). Platform Economics: Rhetoric and Reality in the "Sharing Economy": Vol. First edition. Emerald Publishing Limited.</li> <li>13. Hukal, P., Henfridsson, O., Shaikh, M., &amp; Parker, G. (2020). Platform Signaling for Generating Platform Content. MIS Quarterly, 44(3), 1177–1205. <a href="https://doi.org/10.25300/MISQ/2020/15190">https://doi.org/10.25300/MISQ/2020/15190</a></li> <li>14. Meagher, Michelle. "WINNER TAKES ALL." <i>RSA Journal</i>, vol. 166, no. 3 (5583), RSA The royal society for arts, manufactures and commerce, 2020, pp. 32–34, <a href="https://www.jstor.org/stable/27008597">https://www.jstor.org/stable/27008597</a>.</li> <li>15. Barykin, S. Y., Kapustina, I. V., Kirillova, T. V., Yadykin, V. K., &amp; Konnikov, Y. A. (2020). Economics of Digital Ecosystems. <i>Journal of Open Innovation</i>, 68(4), 1–16. (+)<a href="https://doi.org/10.3390/joitmc6040124">https://doi.org/10.3390/joitmc6040124</a></li> </ol>	

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