



Innovative ICT Education for Social-Economic Development (IESED)  
574283-EPP-1-2016-1-LT-EPPKA2-CBHE-JP

# TECHNOLOGY OF PEDAGOGICAL INTERACTION NETWORK

Minsk 2018

## 1. COURSE PLAN

### Course code 17

Year of study	Semester	Academic hours					Hours of course work	ECTS	Number of hours
		Total	Lectures	Lab	Practice/ seminar	Independent work			
4	8	82	4	29	16	33	-	3	Full-time
4	8	82	4	21	16	41	-	3	Part-time

## 2. COMPETENCIES (IT Profile 1-9)

- Analyze perspectives and directions of development information systems and technologies for creating open e-learning environment
- Plan and organize network pedagogical support of e-learning
- To be able to work independently and in a team
- To be able to generate new ideas focusing on creativity, critical thinking, communication and collaboration.
- Build and optimize various types of content and e-learning models

## 3. COURSE GOAL

to master the ways of organizing the educational process using on-line services and tools for the development of key competencies of students on the basis of an open e-learning environment.

## COURSE OUTCOMES (4-5)

Upon completion of the course students will be able to:

- know the main technological and didactic capabilities of on-line services and tools for organizing the educational process on a person-oriented and meta-subject basis;
- motivate and manage the independent cognitive activity of students on the basis of on-line services and tools;
- conduct on-line training sessions, networking projects to form key competences of the 21st century;
- develop e-learning materials and diagnostic research on the basis of on-line services and tools.

## 4. COURSE CONTENT (FULL TIME)

№	Name of the topic	Number of academic hours					Form of knowledge control
		TOTAL	Lectures	Practical tasks	Labs	Independent work	
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
1	<b>Education in a digital world: e-learning models</b>	12	2	2	2	6	
1.1	Trends in the development of modern didactics on the basis of e-learning models	2	1			1	<i>Testing</i>
1.2	Our digital self: identity, communication in the network, key competences of the 21st century	5		1	2	2	<i>Lab</i>
1.3	Didactic principles of forming open e-learning content for self-directed learning and research	3		1		2	<i>Group work project "Literature review"</i>
1.4	Fundamentals of Assessment in e-learning environment	2	1			1	<i>Testing</i>
2.	<b>Online services for developing communication and cooperation skills</b>	25		5	10	10	

2.1	Performing collaboration in network classroom based on online services	12		2	6	4	<i>Lab</i>
2.2	Web-based communication tools for "synchronous learning"	4		2		2	<i>Lab</i>
2.3	Expansion of e-learning environment with the help of MOOC	5		1	2	2	<i>Lab</i>
2.4	Mobile applications for interactive survey	4			2	2	<i>Independent work "Posting to an online discussion board"</i>
3.	<b>On-line services for development of critical thinking and problem solving skills</b>	<b>14</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>5</b>	
3.1	Managing of educational and research projects on the basis of on-line services and tools	7		1	4	2	<i>Lab</i>
3.2	Structuring and visualization of e-learning materials based on cognitive-visual technologies	2	1		1		<i>Lab</i>
3.3	Online lecture as a way of student critical thinking development	5		1	2	2	<i>Lab</i>
4.	<b>Online services for development of creativity and innovation</b>	<b>12</b>		<b>3</b>	<b>4</b>	<b>5</b>	
4.1	Developing the creative and innovative potential of students through non-formal on-line learning resources and tools.	2		1		1	<i>Independent work "Preparation of thematic annotated bibliography list"</i>
4.2	Cloud services for gamification in knowledge management and increasing creativity.	4			2	2	<i>Lab</i>
4.3	Online grades tools for student motivation, engagement and achievement	6		2	2	2	<i>Lab</i>
5.	<b>Planning and managing pedagogical network interaction in open e-learning environment</b>	<b>19</b>	<b>1</b>	<b>4</b>	<b>6</b>	<b>8</b>	
5.1	Pedagogical tools for designing effective instructional strategies: best practices	4		2		2	<i>Independent work "Writing a case study"</i>
5.2	Designing relevant and real-world learning activities: ADDIE model for instructional design	5	1		2	2	<i>Lab</i>
5.3	Defining instructional, evaluation and delivery strategies	10		2	4	4	<i>Final webinar "My e-portfolio for pedagogical interaction network presentation"</i>
	<b>Total</b>	<b>82</b>	<b>4</b>	<b>16</b>	<b>29</b>	<b>33</b>	

## 5. COURSE CONTENT (PART TIME)

№	Name of the topic	Number of academic hours					Form of knowledge control
		TOTAL	Lectures	Practical tasks	Labs	Independent work	
1	2	3	4	5	6	7	8
1	<b>Education in a digital world: e-learning models</b>	<b>12</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>6</b>	
1.1	Trends in the development of modern didactics on the basis of e-learning models	2	1			1	<i>Testing</i>
1.2	Our digital self: identity, communication in the network, key competences of the 21st century	5		1	2	2	<i>Lab</i>

1.3	Didactic principles of forming open e-learning content for self-directed learning and research	3		1		2	<i>Group work project "Literature review"</i>
1.4	Fundamentals of Assessment in e-learning environment	2	1			1	<i>Testing</i>
2.	<b>Online services for developing communication and cooperation skills</b>	<b>25</b>		<b>5</b>	<b>8</b>	<b>12</b>	
2.1	Performing collaboration in network classroom based on online services	12		2	4	6	<i>Lab</i>
2.2	Web-based communication tools for "synchronous learning"	4		2		2	<i>Lab</i>
2.3	Expansion of e-learning environment with the help of MOOC	5		1	2	2	<i>Lab</i>
2.4	Mobile applications for interactive survey	4			2	2	<i>Independent work "Posting to an online discussion board"</i>
3.	<b>On-line services for development of critical thinking and problem solving skills</b>	<b>14</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>7</b>	
3.1	Managing of educational and research projects on the basis of on-line services and tools	7		1	2	4	<i>Lab</i>
3.2	Structuring and visualization of e-learning materials based on cognitive-visual technologies	2	1		1		<i>Lab</i>
3.3	Online lecture as a way of student critical thinking development	5		1	2	2	<i>Lab</i>
4.	<b>Online services for development of creativity and innovation</b>	<b>12</b>		<b>3</b>	<b>2</b>	<b>7</b>	
4.1	Developing the creative and innovative potential of students through non-formal on-line learning resources and tools.	2		1		1	<i>Independent work "Preparation of thematic annotated bibliography list"</i>
4.2	Cloud services for gamification in knowledge management and increasing creativity.	4			2	2	<i>Lab</i>
4.3	Online grades tools for student motivation, engagement and achievement	6		2		4	<i>Lab</i>
5.	<b>Planning and managing pedagogical network interaction in open e-learning environment</b>	<b>19</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>10</b>	
5.1	Pedagogical tools for designing effective instructional strategies: best practices	4		2		2	<i>Independent work "Writing a case study"</i>
5.2	Designing relevant and real-world learning activities: ADDIE model for instructional design	5	1		2	2	<i>Lab</i>
5.3	Defining instructional, evaluation and delivery strategies	10		2	2	6	<i>Final webinar "My e-portfolio for pedagogical interaction network presentation"</i>
	<b>Total</b>	<b>82</b>	<b>4</b>	<b>16</b>	<b>21</b>	<b>41</b>	

## 8. THEORETICAL CONTENT

№	Names of topics	Content
1.1	Trends in the development of modern didactics on the basis of e-learning models	Concepts of "e-didactics", "e-learning", "network lesson", cloud technologies". Realization of the person-oriented and meta-subject approaches on the basis of e-learning models. The main characteristics and directions of using cloud technologies in education.
1.4	Fundamentals of assessment in e-learning environment	Overview assessment practices in e-learning. Effective strategies for formative assessment in e-learning environment. Designing an online assessment in e-learning.
3.2	Structuring and visualization of e-learning materials based on cognitive-	Cognitive science concepts. Structuring and visualization of the material based on the use of on-line services for the compilation

	visual technologies	of intelligence cards. Basics of multimedia and video content producing.
5.2	Designing relevant and real-world learning activities: ADDIE model for instructional design	Forming of instructional design models as a respond to different teaching and learning demands in an evolving field of e-learning. The comparison between ADDIE and other models.

## 9. PRACTICAL CONTENT

№	Name of the practical assignment	Content
1.2	Our digital self: identity, communication in the network, key competences of the 21st century	The main ways of self-presentation of individuals in social networks. Structure of teacher digital portfolio on the basis of online services.
1.3	Didactic principles of forming open e-learning content for self-directed learning and research	Main characteristics of didactic principles and conditions of flexible use of space, which includes moving away from the classroom and into the community, and dividing larger learning spaces into smaller ones.
2.1	Performing collaboration in network classroom based on online office services	Overview of Google Docs applications: Google Docs, Google Spreadsheets, Google Forms. The ways of sharing and commenting files from Google Drive.
2.2	Web-based communication tools for "synchronous learning"	Main characteristics of asynchronous and synchronous communication (advantages and disadvantages). Synchronous online conferences as learning resources. Creation and using in educational process the personal Internet YouTube channel.
2.3	Expansion of e-learning environment with the help of MOOC	Using MOOC to engage learners and open up new possibilities for e-learning, co-creation of new content, personal e-learning portfolio.
3.1	Managing of educational and research projects on the basis of on-line services and tools	Overview of blogs, social media usage for creating and conducting web quests (network projects). The structure of the web-quests, review of educational web quests. Providing access for collaborative editing of the blog, social media.
3.3	Online lecture as a way of student critical thinking development	Overview of tools for producing online lectures. Online lectures: types, steps of preparation, main characteristics, methods of e-learning.
4.1	Developing the creative and innovative potential of students through on-line non-formal learning resources and tools.	Open educational resources as a catalyst for innovation. Overview of MOOC platforms, apps for developing the creative and innovative potential of students.
4.3	Online grades tools for student motivation, engagement and achievement	Overview of online tools for the organization of accounting of individual educational outcomes of students.
5.1	Pedagogical tools for designing effective instructional strategies: best practices	Instructional design as a system of pedagogical specifications for the development, implementation, evaluation of teaching materials and creation of an open learning environment.
5.3	Defining instructional, evaluation and delivery strategies	Classifications of instructional strategies. Principles of structuring of educational material for e-learning.

## 10. LABORATORY PRACTICE

№	Name of practical assignment	Content
1.2	Our digital self: identity, communication in the network, key competences of the 21st century	Creation Google account. Using Google Presentations for creating teacher digital portfolio. Sharing the presentation with other students.
2.1	Performing collaboration in network classroom based on online office services	Creation documents based on Google Docs applications: Google Docs, Google Spreadsheets, Google Forms. Using comments and sharing for organizing group work in network classroom.
2.3	Expansion of e-learning environment with the help of MOOC	Creation MOOC e-learning design (types of MOOCs, course structure, determination information needs to be delivered, communication strategy, e-learning content formats).
2.4	Mobile applications for interactive survey	Review of mobile applications for polls, tests, quizzes. Creation and editing tests, polls, interactive presentations. Creating an interactive survey on a given topic.

3.1	Managing of educational and research projects on the basis of on-line services and tools	Creation network project's blog (social media group). Carrying out network projects in teams, which require learners to research across subject boundaries, take responsibility for different parts of their project, commenting on each other's work and create a professional quality product for developing real-world problem-solving skills.
3.2	Structuring and visualization of learning materials based on cognitive-visual technologies	Infographics as one of the ways of knowledge construction with the help of visual models. Creation intelligence cards on the base of on-line tools for infographics.
3.3	Online lecture as a way of student critical thinking development	Organization of a web lecture. Demonstration the content on-line. Managing the group of students.
4.2	Cloud services for gamification in knowledge management and increasing creativity.	Web services for creating electronic didactic materials. Creation of quiz, crossword, puzzle.
4.3	Online grades tools for student motivation, engagement and achievement	The procedure for entering grades and passes of students. Adding comments, comments to training sessions, placement of homework assignments, training materials, links for students.
5.2	Designing relevant and real-world learning activities: ADDIE model for instructional design	Planning e-learning course or curriculum on the base of ADDIE model for instructional design.
5.3	Defining instructional, evaluation and delivery strategies	Developing e-learning course description and evaluation plan.

### 11. ASSIGNMENT FOR INDEPENDENT WORK (INDEPENDENT STUDY ASSIGNMENT)

№	Assignment
1.1	Watching video and evaluating the benefits associated with e-learning models
1.2	Writing self-introduction text for personal blog (site) Completing self-assessment survey
1.3	Literature review posting to an online discussion board (group)
1.4	Defining and illustrating main concepts by examples (charts, graphs, tables)
2.1	Studying written report and oral presentation guidelines Lab report preparation and presentation
2.2	Watching video and comparing synchronous and asynchronous learning
2.3	Group project "Interviewing in social media" Lab report preparation and presentation
2.4	Reading the article Lab report preparation and presentation
3.1	Reading the article Lab report preparation and presentation
3.2	Watching video and commenting on
3.3	Reading the article Lab report preparation and presentation
4.1	Preparation of thematic annotated bibliography list of online resources and tools
4.2	Preparation of thematic annotated bibliography list of online resources and tools
4.3	Reading the article Lab report preparation and presentation
5.1	Writing a case study
5.2	Watching video and commenting on Lab report preparation and presentation
5.3	Lab report preparation and presentation Completing self-assessment survey

### 12. SYSTEM OF ASSESSMENT OF KNOWLEDGE AND SKILLS (ACCORDING TO THE NATIONAL REQUIREMENTS)

Knowledge assessment comprises the routine assessment, intermediate assessment, and the final assessment. Students receive a cumulative grade based on the results of routine assessment. The cumulative grade is calculated prior to final assessment and comprises grades for all types of

routine assessment during the course. A cumulative grade and an final assessment grade form a final grade.

A ten-point scale, depending on the grade and the mark, includes the following criteria:

10 (ten) points, passed:

- systematized, deep and full knowledge on all sections of the curriculum of the institution of higher education in the academic discipline, as well as on major issues that go beyond its limits;
- accurate use of scientific terminology (including in a foreign language), competent, logically correct statement of the answer to questions;
- perfect mastering of the tools of the academic discipline, the ability to use it effectively in formulation and solution of scientific and professional problems;
- the expressed ability independently and creatively to solve complex problems in non-standard situations;
- complete and profound studying of basic, additional literature on the subject of the discipline;
- the ability to freely navigate in theories, concepts and directions on the discipline and give them an analytical assessment, use the scientific achievements of other disciplines;
- creative independent work on practical, laboratory classes, active creative participation in group discussions, high level of the culture of performance of tasks.

9 (nine) points, passed:

- systematized, deep and full knowledge on all sections of the curriculum of the institution of higher education on the academic discipline;
- accurate use of scientific terminology (including in a foreign language), competent, logically correct statement of the answer to questions;
- mastering of the tools of the academic discipline, the ability to use it effectively in formulation and solution of scientific and professional problems;
- ability independently and creatively to solve complex problems in non-standard situations within the curriculum of the institution of higher education on the academic discipline;
- complete studying of basic, additional literature on the subject of the discipline, recommended by the curriculum of the institution of higher education on the discipline;
- the ability to navigate in theories, concepts and directions on the discipline and give them an analytical assessment;
- Systematic, active independent work on practical, laboratory classes, active creative participation in group discussions, high level of the culture of performance of tasks.

8 (eight) points, passed:

- systematized, deep and full knowledge on all sections of the curriculum of the institution of higher education in the academic discipline in the volume of the curriculum of the institution of higher education on the discipline;
- use of scientific terminology (including in a foreign language), competent, logically correct statement of the answer to questions, the ability to make sound conclusions and generalizations;
- mastering of the tools of the academic discipline (methods of complex analysis, information technology), the ability to use it effectively in formulation and solution of scientific and professional problems;

- ability independently to solve complex problems within the curriculum of the institution of higher education on the academic discipline;
- studying of basic, additional literature, recommended by the curriculum of the institution of higher education on the discipline;
- the ability to navigate in theories, concepts and directions on the discipline and give them an analytical assessment;
- active independent work on practical, laboratory classes, systematic participation in group discussions, high level of the culture of performance of tasks.

7 (seven) points, passed:

- systematized, deep and full knowledge on all sections of the curriculum of the institution of higher education on the academic discipline;
- use of scientific terminology (including in a foreign language), competent, logically correct statement of the answer to questions, the ability to make sound conclusions and generalizations;
- mastering of the tools of the academic discipline, the ability to use it effectively in formulation and solution of scientific and professional problems;
- free possession of generic solutions within the curriculum of the institution of higher education on the academic discipline;
- studying of basic, additional literature, recommended by the curriculum of the institution of higher education on the discipline;
- the ability to navigate in basic theories, concepts and directions on the discipline and give them an analytical assessment;
- independent work on practical, laboratory classes, participation in group discussions, high level of the culture of performance of tasks.

6 (six) points, passed:

- sufficiently full and systematized knowledge in the volume of the curriculum of the institution of higher education on the discipline;
- use of the necessary scientific terminology, competent, logically correct statement of the answer to questions, the ability to make sound conclusions and generalizations;
- mastering of the tools of the academic discipline, the ability to use it effectively in solution of scientific and professional problems;
- ability independently to apply generic solutions within the curriculum of the institution of higher education on the academic discipline;
- studying of basic literature, recommended by the curriculum of the institution of higher education on the discipline;
- the ability to navigate in basic theories, concepts and directions on the discipline and give them a comparative assessment;
- active independent work on practical, laboratory classes, periodic participation in group discussions, high level of the culture of performance of tasks.

5 (five) points, passed:

- sufficient knowledge in the volume of the curriculum of the institution of higher education on the discipline;
- use of scientific terminology, competent, logically correct statement of the answer to questions, the ability to make sound conclusions;



- mastering of the tools of the academic discipline, the ability to use it in solution of scientific and professional problems;
- ability independently to apply generic solutions within the curriculum of the institution of higher education on the academic discipline;
- studying of basic literature, recommended by the curriculum of the institution of higher education on the discipline;
- the ability to navigate in basic theories, concepts and directions on the discipline and give them a comparative assessment;
- active independent work on practical, laboratory classes, periodic participation in group discussions, high level of the culture of performance of tasks;
- independent work on practical, laboratory classes, periodic participation in group discussions, sufficient level of the culture of performance of tasks.

4 (four) points, passed:

- sufficient knowledge within the educational standard of higher education;
- studying of basic literature, recommended by the curriculum of the institution of higher education on the discipline;
- use of scientific terminology, logical statement of the answer to questions, the ability to make sound conclusions;
- ability to draw conclusions without essential errors;
- mastering of the tools of the academic discipline, the ability to use it in solution of standard (typical) tasks;
- ability to solve standard (typical) tasks under the guidance of a teacher;
- ability to navigate in basic theories, concepts and directions on the discipline and give them an assessment;
- work under the guidance of a teacher on practical, laboratory classes, the permissible level of the culture of performance of tasks.

3 (three) points, failed:

- insufficient knowledge within the educational standard of higher education;
- studying of basic literature, recommended by the curriculum of the institution of higher education on the discipline;
- knowledge of a part of the basic literature, recommended by the curriculum of the institution of higher education on the discipline;
- use of scientific terminology, presentation of answers to questions with significant, logical errors;
- weak possession of the tools of the academic discipline, incompetence in solving standard (typical) tasks;
- inability to navigate in basic theories, concepts and directions on the discipline;
- work under the guidance of a teacher on practical, laboratory classes, the permissible level of the culture of performance of tasks.
- passivity on practical, laboratory classes, low level of the culture of performance of tasks.

2 (two) points, failed:

- fragmented knowledge within the educational standard of higher education;
- knowledge of individual literary sources, recommended by the curriculum of the institution of higher education on the discipline;

- inability to use scientific terminology of the academic discipline, the presence in the answer rude, logical errors;
- passivity on practical, laboratory classes, low level of the culture of performance of tasks.

1 (one) point, failed:

- lack of knowledge and (competences) within the educational standard of higher education, failure to answer, failure to appear for attestation without good cause.

### **13. METHODS AND MEANS OF IMPLEMENTATION OF THE CONTENT OF THE EDUCATIONAL PROGRAM AND TRAINING OF EDUCATIONAL, TRAINING AND METHODOLOGICAL MATERIALS**

The training will be conducted using interactive methods (round tables, project method) and e-learning technologies, implemented by means of the training portal (eLearning Server). The students will be provided with electronic presentations and videos of lectures, interactive exercises, tests, electronic and printed versions of handouts for laboratory works and practical classes.

Full-time classes students will learn the discipline directly in the computer lab. The following software (SW) are recommended for the training: Chrome Browser, On-line services (Google Office, Google Disc, Hangouts, Skype, Blogger, Xmind).

### **14. RESOURCES**

#### **Basic literature**

1. Tchoshanov, Mourat A. Engineering of Learning: Conceptualizing e-Didactics <http://iite.unesco.org/pics/publications/en/files/3214730.pdf> M.: - 2013
2. Kocyuba, I.YU., SHikov, A.N. Intellect-karty kak sredstvo e-didaktiki v komp'yuternyh tekhnologiyah obucheniya // Obrazovatel'nye tekhnologii i obshchestvo. 2015. №1. URL: <http://cyberleninka.ru/article/n/intellekt-karty-kak-sredstvo-e-didaktiki-v-kompyuternyh-tehnologiyah-obucheniya> (data obrashcheniya: 24.01.2017).
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4. Oblachnye tekhnologii v inklyuzivnom obrazovanii : uchebnoe posobie / sost. S.M. Kajsyn, O.A. Minich [i dr.] ; nauch. red.: S.M. Kajsyn, T.I. Moroz. – Minsk : MGIRO, 2015. – 170 s.
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6. Sirotyuk, A.L. Psihofiziologicheskie osnovy differencirovannogo obucheniya shkol'nikov : uchebnoe posobie / A.L. Sirotyuk. - Moskva ; Berlin : Direkt-Media, 2014. - 292 s. : il. - Bibliogr. v kn. - ISBN 978-5-4458-8859-8 ; [EHlektronnyj resurs]. - URL: <https://clck.ru/ESdYA> (26.07.2018).
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#### **Additional literature**

1. Hansun Zhang Waring Theorizing Pedagogical Interaction: Insights from Conversation Analysis (Routledge Research in Education) / Hansun Zhang Waring. – Routledge, 2015 – Mode of access: <https://www.amazon.com/Theorizing-Pedagogical-Interaction-Conversation-Routledge/dp/1138806951> – Date of access : 2.03.2018.

2. Attwell G., Hughes J. Pedagogic Approaches to Using Technology for Learning / Graham Attwell, Jenny Hughes. 2010 – Mode of access: <http://webarchive.nationalarchives.gov.uk/20110404220756/http://www.lluk.org/wp-content/uploads/2011/01/Pedagogical-approaches-for-using-technology-literature-review-january-11-FINAL.pdf> – Date of access : 2.03.2018.
3. Eric Klopfer, Scot Osterweil, Jennifer Groff, Jason Haas The Education Arcade MIT, 2009 – Mode of access: [http://education.mit.edu/wp-content/uploads/2015/01/GamesSimsSocNets\\_EdArcade.pdf](http://education.mit.edu/wp-content/uploads/2015/01/GamesSimsSocNets_EdArcade.pdf) – Date of access : 2.03.2018.
4. B. Haßler, L. Major, P. Warwick, S. Watson, S. Hennessy, B. Nicholl Perspectives on Technology, Resources and Learning: Productive Classroom Practices, Effective Teacher Professional Development. Faculty of Education, University of Cambridge, 2016 – Mode of access: [https://www.educ.cam.ac.uk/people/staff/watson/Hassler%20et%20al%202016%20-%20Perspectives%20on%20Technology,%20Resources%20and%20Learning%20\(Full\).pdf](https://www.educ.cam.ac.uk/people/staff/watson/Hassler%20et%20al%202016%20-%20Perspectives%20on%20Technology,%20Resources%20and%20Learning%20(Full).pdf) – Date of access : 2.03.2018.
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