

**EDUCATIONAL PROGRAMME: 8D01502 – Computer science**  
**Catalog of elective disciplines**

**1. OPTIONAL COMPONENTS OF THE CYCLE OF MAJOR COURSES**

*Optional component 1*

**Course: Theory and Practice of Distance Learning**

*Intensity of the Course:* 5 academic credits

*Module Code:* APCSFLT 703/1

*Module Name:* Actual problems of computer science and network technologies of teaching

*Prerequisites:* Commercialization of research and development

*Purpose:* formation of skills for the use of distance learning in a specific subject area, modern technologies for the development of distance courses, digital educational resources, the purpose and features of content, the main ways of working.

*Short Description:* The discipline considers information and educational environments and its effective use in distance learning, taking into account the features and principles of its implementation. The discipline builds the skills to use distance learning in a specific subject area, modern technologies for developing distance learning courses, digital educational resources, the purpose and features of content, the main ways of working.

*Learning Outcomes in EP (LOP):*

LOP4 – uses information and communication and digital technologies in research and teaching activities;

LOP5 – develops software products and training courses for the implementation of training in a virtual educational environment.

*Learning Outcomes in Course (LOC):*

LOC 1- uses cloud technologies in the field of science and education

LOC 2 - works with virtual educational environments in the implementation of digital educational policy objectives

*Post requisites:* Doctoral Student Research Work

*Optional component 1*

**Course: Managing the virtual learning environment**

*Intensity of the Course:* 5 academic credits

*Module Code:* APCSFLT 703/2

*Module Name:* Actual problems of computer science and network technologies of teaching

*Prerequisites:* Commercialization of research and development

*Purpose:* formation of skills for using the opportunities and advantages of virtual learning in the activities of a modern university.

*Short Description:* The discipline considers didactic methods and technological tools of educational and educational-methodical work in virtual educational environments, classification of virtual teaching aids, taxonomy of indicators of didactic design, illustrative and cognitive multimedia functions, controls in scripts of educational programs, didactic analysis of application software packages. Discipline builds the skills to have ideas about the possibilities and advantages of virtual learning in the activities of a modern university.

*Learning Outcomes in EP (LOP):*

LOP4 – uses information and communication and digital technologies in research and teaching activities;

LOP5 – develops software products and training courses for the implementation of training in a virtual educational environment.

*Learning Outcomes in Course (LOC):*

LOC 1- uses cloud technologies in the field of science and education

LOC 2 - works with virtual educational environments in the implementation of digital educational policy objectives

*Post requisites:* Doctoral Student Research Work

*Optional component 1*

**Course: Organization of pedagogical experiment and data processing**

*Intensity of the Course:* 5 academic credits

*Module Code:* APCSFLT 701/1

*Module Name:* Actual problems of computer science and network technologies of teaching

*Prerequisites:* no

*Purpose:* To form skills for conducting pedagogical experiments, analyzing the data obtained and their subsequent processing using appropriate methods and tools.

*Short Description:* The discipline considers methods and techniques for conducting content and methodological analysis, designing and organizing a pedagogical experiment, conducting psychological and experimental research for conducting pedagogical experiments on identification, analysis, formation, developed in order to achieve research results. Subject theoretical and methodological foundations of conducting and organizing a pedagogical experiment, the meaning and features of pedagogical research, organization and evaluation of pedagogical research teaches the use of the qualimetric approach. Measurement theory. Technology of planning and organization of pedagogical experiment. Modeling technology in pedagogical research. Evaluation of the results of the pedagogical experiment. Basic concepts of mathematical statistics. Pearson-Fisher statistics. Chi-square

*Learning Outcomes in EP (LOP):*

LOP3 – performs research work in the field of subject research and knows the methods and techniques of conducting pedagogical experiments.

*Learning Outcomes in Course (LOC):*

LOC 1 – The ability to interpret the results of a pedagogical experiment and draw conclusions based on the data obtained.

LOC 2 – apply the acquired knowledge and skills in conducting their own research, evaluating the effectiveness of pedagogical programs, developing new teaching methods and making informed decisions based on data.

*Post requisites:* Doctoral Student Research Work

#### *Optional component 1*

**Course: Methodology of application software development**

*Intensity of the Course:* 5 academic credits

*Module Code:* APCSNTL 701/2

*Module Name:* Actual problems of computer science and network technologies of teaching

*Prerequisites:* no

*Purpose:* Formation of skills in using application software packages, development environment, debugging, installation, documentation of programs using instrumental software.

*Short Description:* The discipline considers the basic concepts of algorithmic languages, principles of algorithmization of tasks, as well as the structure and principles of developing programs in a high-level language, the basics programming technologies, programming styles. The discipline forms the skills to use the software packages, the development environment, debugging, installation, documentation of programs using software tools .

*Learning Outcomes in EP (LOP):*

LOP4 – uses information and communication and digital technologies in research and teaching activities;

LOP5 – develops software products and training courses for the implementation of training in a virtual educational environment.

*Learning Outcomes in Course (LOC):*

LOC 1 - uses the theoretical and mathematical foundations of computer science in software development

LOC 2 - works with virtual educational environments

*Post requisites:* Doctoral Student Research Work