Interconnection of competencies and modules of the degree programme Ba Computer Science

| **The main learning outcomes** | **Qualifying aims in the meaning of learning outcomes** | **The main learning outcomes** |
| --- | --- | --- |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **a, b 21**  | **a, b** **22** | **a, b 23** | **a, b 24** |
| LO1. To demonstrate knowledge and abilities in the field of natural-scientific, social, humanitarian, economic disciplines, indicative of a broad outlook and mind culture |  | **Knowledge**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | the tendencies of social development of society  |  |  | + | + |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |
|  | ethical and spiritual values, social norms and navigate to them in own professional activity |  |  | + | + |  |  |  |  |  |  |  |  |  |  |  | + | + |  |  |  |  |  |  |  |
|  | principles of healthy life style of a man and the development of a personality  |  |  |  |  | + | + |  | + | + |  |  |  |  |  |  | + | + |  |  |  |  |  |  |  |
|  | the scientific basis for computer science, in particular knowledge of mathematics, logic, statistics and physics |  |  |  |  |  |  | + |  |  | + |  |  |  |  |  |  |  |  | + | + | + | + | + | + |
|  | **Skills and abilities**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | properly orientate in different social situations |  |  |  | + | + | + |  |  |  | + |  |  |  |  |  | + | + |  |  |  |  |  |  |  |
|  | retention and promotion of health |  |  |  |  |  | + |  | + | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | to use modern computing algorithm of mathematical tasks solution  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + | + | + | + |
|  | to apply major methods in learning disciplines individually and problem solution  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|  | formation of business written and oral speeches, understanding and communicating the heard (read) information, to start a dialogue, polylogue  | + | + |  | + | + | + | + |  |  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|  | **Competencies**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | readiness to reveal the natural scientific essence of problems that have arisen during professional activities |  |  |  |  |  | + |  |  |  | + |  |  |  |  | + |  |  | + | + | + |  |  |  |  |
|  | to make use of the foreign language as the means of business communication  | + | + |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |
|  | ability to live in a multilingual and multicultural modern world | + | + |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |
|  | possession of techniques of research and mathematical tasks solution  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + | + |  |  |
|  | possession of modern algorithms of various applied problems solution  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  |  |  | + |  | + | + |  |
|  | possession of modern computer mathematics systems  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + | + | + |  |
| LO2. To demonstrate possession of ethical and legal standards of behavior, tolerance to the traditions, cultures of other nations of the world, knowledge of the tendencies of social development of society, ability to live effectively and function in a social interaction successfully, organization skills of a communication process, also with the use of the foreign language  |  | **Knowledge**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  the role of political systems in society and various social groups, the role of culture in human life, rights and freedoms of man and citizen, the legal system and the foundations of the legislation of Kazakhstan, the role of science in the development of civilization, the relationship between science and technology |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  | + | + |  |  |  |  |  |  |  |
|  | **Skills and abilities**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | a positive mind, introduction into the system of national and ethical values  |  | + | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | possession of ethical and legal standards of behavior |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  | + | + |  |  |  |  |  |  |  |
|  | possession of a constructive dialog, know Kazakh, Russian, English, communicate in polycultural, polyethical and multyconfessional society  | + | + |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **Competencies**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | inclination for humanism and optimism  | + | + | + | + | + |  |  |  |  | + |  |  |  |  |  | + | + |  |  |  |  |  |  |  |
|  | be tolerant and able to a pedagogical cooperation  | + | + | + | + |  |  |  |  |  |  |  |  |  |  | + |  |  |  | + |  |  |  |  |  |
| LO3.To demonstrate ability to work in a team, correctly defend their point of view, and to offer new solutions; to reach compromises, to relate their opinion with the opinion of the collective, readiness to have a social responsibility for the results of own professional work  |  | **Knowledge**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | the basic mechanisms of the psyche, the role of consciousness and self-consciousness in behavior, communication and human activities, the formation and development of personality, practical knowledge systems, providing acquisition, development, improvement and intensification of mental and physical abilities and qualities |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  | + | + |  |  |  |  |  |  |  |
|  | **Skills and abilities**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | to work in a team, correctly defend their point of view, and to offer new solutions | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|  | **Competencies**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | a private responsibility and commitment to the professional ethics standards; to relate own opinion with the opinion of the collective, readiness to have a social responsibility for the results of own professional work  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  | + | + |  |  |  |  |  |  |  |
|  | possession of activity arrangement techniques  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| LO4. To demonstrate possession of subject, psycho-pedagogical and methodic knowledge systems; abilities and skills to integrate knowledge of various subject area in pedagogical problems solution, to find nonstandard and alternative decisions within the pedagogical situations; to carry out an integrated monitoring on the basis of psycho-pedagogical diagnostics  |  | **Knowledge**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | educational goal-setting and design |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  |  | + |
|  | conceptions and approaches in subject, psycho-pedagogical and methodic systems  |  |  |  |  | + |  |  |  |  | + |  |  |  |  |  |  |  | + |  |  |  |  |  |  |
|  | natural and artificial factors in the development of personality, practical knowledge and skills systems, providing acquisition, development, improvement and intensification of mental and physical abilities and qualities  |  |  |  |  | + | + |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |
|  | **Skills and abilities**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | design and realization of the integral educational process  |  |  |  |  |  |  |  |  |  | + |  |  | + |  |  |  |  | + |  | + |  |  |  |  |
|  | applying of theoretical knowledge in professional activity with regard to concrete socio-pedagogical conditions  |  |  |  |  |  | + |  |  |  | + |  |  | + |  |  |  |  | + | + | + |  |  |  |  |
|  | **Competencies**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | possession of skills to organize educational process, as well as monitoring of its results |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  | + |  |  |  |  |  |
| LO5. To demonstrate an understanding of the basic principles of complex information systems, experience with such systems; to gather and interpret relevant data to inform judgments that include reflection on relevant social and scientific issues; ability to think in abstract models  |  | **Knowledge**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | central concepts and systems of computer science |  |  |  |  |  |  | + |  |  |  |  |  |  |  | + |  |  | + |  | + | + | + | + | + |
|  | current scientific state of the studied field, architecture and functions of computer, structure of information systems (operation systems, systems of keeping data, communication systems) |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  | + | + |  |  | + | + | + |
|  | basic principles of complex information systems, that are compatible with up to-date modern technologies |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  | + | + |  |  | + | + | + |
|  | **Skills and abilities**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | integration of knowledge and expertise in a wider context  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  | + |  | + |  |  |  |  |
|  | to think in abstract models |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  | + |  |
|  | Innovations of educational activity and mind system  |  |  |  |  |  |  |  |  |  | + | + |  |  |  |  |  |  |  | + | + |  |  |  | + |
|  | **Competencies**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | possession of experience of adequate operating with complex information systems  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  | + | + |  |  | + | + | + |
|  | possession of modeling, construction, verification and testing methods typical for computer science and their use for problems solution  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  | + |  |
| LO6. To demonstrate knowledge of scientific research activity methods and methodology and abilities to use them during planning, organizing and carrying out of scientific research work, possession of modern methods of analysis, evaluation and interpretation of the results of scientific and pedagogical research, testing and evaluation of the relation between theory and empirical data, preparing of reporting documentation and compilation of data in the form of scientific articles and reports |  | **Knowledge**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | normative and legislative documents in the field of education, instructional documentation and human rights (international normative-legislative acts, legislation of the RK in the field of education and childhood protection)  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  | + | + |  |  |  |  |  |  |  |
|  | bases of gnosiology, methods and methodology of researching activity, pedagogy and psychology, methods of mathematical processing of experiments and observations results  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  | + | + |  |  |  |  |
|  | **Skills and abilities**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | applying of mathematical methods in psychology and pedagogy, methods of descriptive and inductive statistics in correlation analysis |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  |  |  |
|  | information management, carrying out an integrated monitoring on the basis of psycho-pedagogical diagnostics, analysis and synthesis  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  | + |  |  | + |  |  |  |  |
|  | statistic processing of experiments results by performing multi-choice laboratory tasks, to strive for perfection of research culture  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  | + |  |  | + |  |  |  |  |
|  | analysis and evaluation of theories and empirical data, which received in the processing result, applying of various mathematical methods in practice for psychological problems solution  |  |  |  |  | + |  |  |  |  | + |  |  |  |  |  | + |  |  |  |  |  |  |  |  |
|  | **Competencies**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | planning and organization of fundamental, research, applied scientific-research works and scientific and pedagogical activity  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |
|  | readiness to apply the skills of organization of research and project works in practice; to make summaries and references of the literature on a specialty; to prepare reports; to write theses (articles) on the research theme  |  |  |  |  |  |  |  |  |  |  |  |  | + | + |  |  |  |  | + |  |  |  |  |  |
|  | possession of technologies of professional introspection, mathematical processing of data (received in the result of psycho diagnostics) at the computer applying modern applied programs  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  |  |  |
| LO7. To demonstrate understanding of essence and significance of information in the development of modern information society, realize dangers and threats arising in this process, comply with basic requirements of data security. The ability to use various hardware and software in the educational process, to store and use information necessary for managerial decisions, how and where applies the necessary information when using the Internet networks,to own information protection requirements, to possess monitoring tools, analysis of existing information |  | **Knowledge**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  modeling, construction, verification and testing methods typical for computer science, significance of mathematics in general and professional education  |  |  |  | + |  |  |  |  |  |  | + |  |  |  | + |  |  |  |  |  | + | + | + | + |
|  | conceptions and technologies of designing and developing of database and systems that oriented to them  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  |
|  | basic conceptions of Internet, web-sites and development of Internet applications  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  | + |  |  |
|  | essence and significance of information in the development of modern information society |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  |
|  | information technologies and insurance their safety, as well as information resources management; modern methods of processing, transformation and protection of information in modern computer systems; the foundations of cryptology, the basic principles, methods and algorithms of operating software collection systems |  |  |  |  |  |  | + |  |  |  |  |  |  |  | + |  |  |  |  |  | + | + | + | + |
|  | **Skills and abilities**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | creation of logical, physical models of database, realization of database designing  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  |  |  | + |  | + |  |  |
|  | to design, realize and manage educational process and evaluate the consequences of made organizational-management decisions |  |  |  | + |  |  |  |  |  |  | + |  |  |  |  |  |  |  | + | + |  |  |  |  |
|  | to use basic computer skills as an information management tool, to use global networks for working with information |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  | + | + | + | + | + | + |
|  | **Competencies**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | theoretical knowledge on new information technologies and their impact on the development of society |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  | + | + | + | + | + |
|  | possession of the practical skills of organizational-management problems solution connected with the information security |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  | + |  |  |
|  | possession of bases of the information safety analysis and processing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + | + | + | + |
| LO8. To demonstrate knowledge of languages of programming, software and their application, ability to translate problems into mathematical language, posed in terms of other subject areas, and to use superiority of this reformulation for their solution. The ability to design, program, debug, test and accompany software using different technologies of software development tools and programming languages. The ability to design, develop and connect different types of databases to the project |  | **Knowledge**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | the most important algorithms, structures of data and problem solving patterns, including central paradigms of programming  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  | + |  |  | + | + | + | + |
|  | key notions and concepts of computer science, paradigms of programming, schemes of standard programming systems functioning, basic programming languages, instrumental programming environment  |  |  |  |  |  |  | + |  |  |  |  |  |  |  | + |  |  |  |  |  |  | + |  |  |
|  | **Skills and abilities**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | the use of various techniques of developing the efficient and reliable algorithms on creating software; modeling, analyzing and using the methods of the mathematical design and logical-mathematical methods of analysis and software testing |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  | + |  |  |
|  | work with common and professional software tools |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  | + | + | + | + |
|  | to design, develop and connect different types of databases to the project |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + | + | + | + |
|  | **Competencies**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | to identify, interpret and evaluate the prospects of the subject area independently  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + | + | + | + | + |
|  | to justify the design decisions made in the field of development and analysis of algorithms’ complexity, to organize and conduct experiments aimed at verification of their correctness using the methods of mathematical logic and theory of algorithms  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  |  |  | + | + | + | + | + |
| LO9. To demonstrate abilities and skills in developing the current educational and organizational documentation (didactic, control and measuring materials, etc.), ability to generalize and systemize own, as well as world pedagogical experience, to apply the experience of highly qualified teachers in practice |  | **Knowledge**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | the fundamentals of pedagogic management |  |  |  | + |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | innovations in Pedagogics, pedagogical technologies, psychology of creativity, and theoretical bases of creative activity |  |  |  | + | + |  |  |  |  | + |  |  |  |  |  |  |  |  | + | + |  |  |  |  |
|  | **Skills and abilities**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | carrying out the educational activity, designing and managing students’ educational process  |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | doing motivational, diagnostic, correctional, communicative and methodical work in the conditions of putting into practice modern pedagogic and information-communication technologies  |  |  |  | + |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  | + |  |  |  |  |
|  | **Competencies**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | readiness to generalize and systemize own, as well as world pedagogical experience, to apply the experience of highly qualified teachers in practice |  |  |  |  |  |  |  |  |  | + | + |  |  |  |  |  |  |  |  | + |  |  |  |  |
| LO10.To demonstrate possession of modern methods and techniques of teaching computer science, for the implementation of training programs of basic and elective courses and socialization processes, professional self-determination of students |  | **Knowledge**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | basic conceptions of teaching computer science  |  |  |  |  |  |  |  |  |  | + |  |  |  |  | + |  |  |  |  | + |  |  |  |  |
|  | the history of computer science, the legal aspects of computer science and their impact on society, ethical and security issues related to the use of data processing systems  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | psycho-pedagogical aspects of tesching of computer science  |  |  |  |  | + |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | organizational forms of lessons, principles and requirements of the organization of the educational process in computer learning environments  |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  | + | + |  |  |
|  | **Skills and abilities**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | possession of modern methods and techniques of teaching computer science, for the implementation of training programs of basic and elective courses and socialization processes, professional self-determination of students |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  | + |  |  |  |  |
|  | the use of traditional and innovation methods of teaching, management of mental activity of learners  |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  | + |  |  |  |  |
|  | **Competencies**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | searching, evaluation and use of pedagogical technologies, organization innovative activity  |  |  |  | + |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  | + |  |  |  |  |
|  | possession of skills of planning and conducting computer science’ lessons of different types  |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  | + |  |  |  |  |
| LO11.To demonstrate ability to build pedagogical interaction with students, teaching staff, workers in the classroom, with their parents; abilities to choose and use the optimal forms and methods of extra-curricular work on computer science and in general training work; to interact with parents, colleagues, social partners and professional communities to achieve a quality of educational process |  | **Knowledge:** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | the synergetic, social, educational systems the theory of pedagogical integration |  |  |  | + | + |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | systems of training techniques, forms and methods on the basis of the communication interaction  |  |  |  | + | + | + |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | theoretical and pedagogical bases of pedagogics, aged-specific personalities of students  |  |  |  |  | + | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | the most important laws and regularities of educational process |  |  |  |  | + |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **Skills and abilities**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | interactions with students, parents, colleagues, social partners and professional communities to achieve a quality of educational process  |  |  |  |  | + |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | to choose and use the optimal forms and methods of extra-curricular work on computer science and in general training work |  |  |  |  | + |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **Competencies**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | be able to the perceptual unity of educational reality  |  |  |  | + | + |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | possession of major methods of staff management  |  |  |  | + | + |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| LO12. To demonstrate ability to analyze problems of modern society life and environment integrally and systemically; acquisition skills of new knowledge useful for the everyday professional activity, ability to orientate to modern data flows and adapt to phenomena, process changing dynamically and abilities necessary for self-education. Ability to use the mathematical basis to analyze, to design and to develop information systems, including training information systems. |  | **Knowledge**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | modern pedagogical antropology |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |
|  | ways of cognitive activiies |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |
|  | methods of working with information from various sources | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|  | **Skills and abilities**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | acquisition of new knowledge useful for the everyday professional activity | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|  | to define gaps in knowledge |  |  |  | + | + |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |
|  | to study, summarize, communicate and apply the experience of highly qualified teachers  |  |  |  | + | + |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |
|  | to analyze problems of modern society life and environment integrally and systemically |  |  |  | + | + |  |  |  |  |  |  |  |  |  |  |  | + |  |  |  |  |  |  |  |
|  | ability to orientate to modern data flows and adapt to phenomena, process changing dynamically and abilities necessary for self-education |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + | + | + | + | + |
|  | to use the mathematical basis to analyze, to design and to develop information systems, including training information systems |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + | + | + | + |
|  | acquiring new knowledge through research and creative activity |  |  |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  | + | + |  |  |  |  |
|  | **Competencies**: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | readiness to solve cognitive problems and the generation of new knowledge | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |