**SYLLABUS**

**Fall semester 2022-2023 academic years**

**on the educational program “Information systems”**

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| **Discipline’s code** | **Discipline’s title** | **Independent work of students (IWS)** | **No. of hours per week** | | | | | **Number of credits** | **Independent work of student with teacher (IWST)** |
| **Lectures (L)** | **Practical training (PT)** | | **Laboratory (Lab)** | |
| SAiP3218 | System analysis and  information systems design | 3 | 1 | 0 | | 1 | | 2 | 7 |
| **Academic course information** | | | | | | | | | |
| **Form of education** | **Type of course** | **Types of lectures** | | | **Types of practical training** | | **Form of final control** | | |
| Full-time |  |  | | |  | | Oral | | |
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| Telephone number |  | | | | | |

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| **Academic presentation of the course** |

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| **Aim of course** | **Expected Learning Outcomes (LO)**  As a result of studying the discipline the undergraduate will be able to: | **Indicators of LO achievement (ID)**  (for each LO at least 2 indicators) |
| The aim of the course is the formation of the student's ability and skills to conduct data mining (IAD) in the IS environment. | 1. Understanding and Modeling Organizational Systems | 1.1 To analyze and design appropriate information systems |
| 1.2 Creating Virtual Organizations and Virtual Teams |
| 1.3 Developing Use Case Diagrams |
| 2. Project Management | 2.1 Initiating projects, determining project feasibility, scheduling projects. |
| 2.2 Defining the Problem in Project Initiation |
| 2.3 Ascertaining Hardware and Software Needs |
| 3. Information Gathering: Interactive Methods | 3.1 Interviewing in Information Gathering |
| 3.2 Using Questionnaires in Information Gathering |
| 4. Object-Oriented Systems Analysis and Design Using UML | 4.1 Exploring the Object-Oriented Concepts – Objects/Classes/Inheritance |
| 4.2 Exploring Class Diagrams – Method Overloading, Types of Classes |
| 4.3 Creating Activity Diagrams |
| 5. Human–Computer Interaction | 5.1 Exploring Human–Computer Interaction |
| 5.2 Exploring Types of User Interface |
| 6. Designing Accurate Data Entry Procedures | 6.1 Creating General Guidelines for Coding |
| 6.2 Choosing a Data Entry Method |
| **Prerequisites** | Fundamentals of IS | |
| **Post requisites** | Data Management , IS Basics , IT Infrastructure , System TK and IS Design . | |
| **Information resources** | 1. Khomyakov P.M. System analysis: a short course of lectures/Ed. V.P. Prokhorova - M.: Komkniga, 2006. - 216 p.  2. Belov, V.V. Design of information systems: Textbook / V.V. Belov. - M.: Academy, 2018 .-- 144 p.  3. Gvozdeva, T.V. Design of information systems: Automated design technology. Laboratory workshop. Textbook / T.V. Gvozdeva, B.A. Cylinder. - St. Petersburg: Lan, 2018 .-- 156 p.  4. Emelyanova, N.Z. Design of information systems: Textbook / N.Z. Emelyanova, T.L. Partyka, I.I. Popov. - M.: Forum, 2013 .-- 432 p.  5. Isaev, G.N. Design of information systems: Textbook / G.N. Isaev. - M.: Omega -L, 2013 .-- 424 p.  6. Martinin, S.A. Design and implementation of databases in the MySQL DBMS using MySQL Workbench: Methods and means of designing information systems and technology / S.A. Martinin, V.L. Simonov, M.V. Khrapchenko. - M.: Forum, 2018 .-- 61 p.  7. Perlova, O.N. Design and development of information systems: Textbook / O.N. Perlova. - M.: Academy, 2018 .-- 272 p.  <https://www.sites.google.com/site/anisimovkhv/about?authuser=0>  <https://www.w3computing.com/systemsanalysis/systems-roles-development-methodologies/> | |

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| **Academic policy of the course in the context of university moral and ethical values** | **Academic Behavior Rules:**  All students have to register at the MOOC. The deadlines for completing the modules of the online course must be strictly observed in accordance with the discipline study schedule.  ATTENTION! Non-compliance with deadlines leads to loss of points! The deadline of each task is indicated in the calendar (schedule) of implementation of the content of the curriculum, as well as in the MOOC.  **Academic values:**  - Practical trainings/laboratories, IWS should be independent, creative.  - Plagiarism, forgery, cheating at all stages of control are unacceLabable.  - Students with disabilities can receive counseling at e-mail – mukhitova.aigul@gmail.com. |
| **Evaluation and attestation policy** | **Criteria-based evaluation:**  assessment of learning outcomes in relation to descriptors (verification of the formation of competencies in midterm control and exams).  **Summative evaluation:** assessment of work activity in an audience (at a webinar); assessment of the completed task. |

**CALENDAR (SCHEDULE) THE IMPLEMENTATION OF THE COURSE CONTENT:**

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| Weeks | Topic name | Number of hours | Maximum score |
|  | **Module 1. Systems Analysis and Design (SAD)** |  |  |
| 1 | **L.1** Systems, Roles, and Development Methodologies | 1 | 0 |
| 1 | **Lab 1** Functional model development (IDEF0 methodology). Installation BPWin | 1 | 5 |
| 2 | **L.2** Understanding and Modeling Organizational Systems | 1 | 0 |
| 2 | **Lab 2** Functional model development (DFD methodology) | 1 | 5 |
| 2 | **IWST 1 Consultation on the implementation of IWS1-** **Functional model development** |  |  |
| 3 | **L.3** Project Management | 1 | 0 |
| 3 | **Lab 3** Functional model development (DFD methodology) | 1 | 5 |
| 3 | **IWS 1. Functional model development. Presentation.** |  | 30 |
| 4 | **L.4** Information Gathering: Interactive Methods | 1 | 0 |
| 4 | **Lab 4** Information model development (IDEF1X methodology). Installation EPWin. | 1 | 5 |
| 5 | **L.5** Information Gathering: Unobtrusive Methods | 1 |  |
| 5 | **Lab 5** Information model development (IDEF1X methodology) | 1 | 5 |
| 5 | **IWST 2. Project** |  | 35 |
|  | **Module 2. Modeling and Prototyping** |  |  |
| 6 | **L.6** Agile Modeling and Prototyping | 1 | 0 |
| 6 | **Lab 6** Visual development of information model and database (Microsoft SQL Server) | 1 | 5 |
| 7 | **L.7** Analyzing Systems Using Data Dictionaries | 1 | 0 |
| 7 | **Lab 7** Visual development of information model and database (Microsoft SQL Server) | 1 | 5 |
| 7 | **IWST 3. Consultation on the implementation of IWS 2 - Visual development of information model and database** |  |  |
|  | **LEVEL CONTROL 1** |  | 100 |
| 8 | **L.8** Process Specifications and Structured Decisions | 1 | 0 |
| 8 | **Lab 8** Visual development of information model and database (dbForge Studio for SQL Server) | 1 | 5 |
|  | **IWS 2. Visual development of information model and database. Report.** |  | 10 |
| 9 | **L.9** Object-Oriented Systems Analysis and Design Using UML | 1 | 0 |
| 9 | **Lab 9**  Visual development of information model and database (dbForge Studio for SQL Server) | 1 | 5 |
| 10 | **L.10 Designing Effective Output** | 1 | 0 |
| 10 | **Lab 10**  Visual development of information model and database (dbForge Studio for SQL Server) | 1 | 5 |
| 10 | **IWST 4. Object-Oriented Systems Analysis and Design Using UML.**  **Project.** |  | 10 |
| 11 | **L.11 Designing Effective Input** | 1 | 0 |
| 11 | **Lab11.** Developing a behavioral model (flowchart). MS Visio. | 1 | 5 |
| 12 | **L.12** Designing Databases | 1 |  |
| 12 | **Lab 12.** Behavioral Model Development (BPMN Methodology). ARIS | 1 | 5 |
| 12 | **IWST 5. Consultation on the implementation of IWS 2 - Human–Computer Interaction** |  |  |
| 13 | **L.13** Human–Computer Interaction | 1 | 0 |
| 13 | **Lab 13.** Behavioral Model Development (BPMN Methodology). ARIS | 1 | 5 |
| 13 | **IWS 3. Human–Computer Interaction. Report.** |  | 20 |
| 14 | **L.14** Designing Accurate Data Entry Procedures | 1 | 0 |
| 14 | **Lab 14.** Create a Project in Borland Together Architect for Eclipse | 1 | 5 |
| 14 | **IWST 6. Quality Assurance and Implementation. Report.** |  | 20 |
| 15 | **L.15** Quality Assurance and Implementation | 1 | 0 |
| 15 | **Lab 15.** Create a Project in Borland Together Architect for Eclipse | 1 | 5 |
| 15 | **IWST 7. Consultation on the examination issues** |  |  |
|  | **LEVEL CONTROL 2** |  | 100 |

**Dean of the faculty B.A. Urmashev**

**Head of the Department Sh.Zh.Musiralieva**

**Lecturer A. A.Mukhitova**