

Navoi State University – Information Systems

Program Duration: 2 years

Mode of Study: Full-time

Program Code: 70610103

Total Workload: 120 ECTS credits

ECTS credits per semester: 30

Overview

The Master's degree program in **Information Systems** (Program Code: 70610103) at Navoi State University is a two-year, full-time academic program comprising a total workload of 120 ECTS credits (30 ECTS per semester). The program is designed to prepare highly qualified information systems architects, IT managers, database administrators, systems analysts, and software research specialists equipped with advanced knowledge in enterprise system design, database management, information security, cloud infrastructure, and intelligent decision-support systems.

The curriculum integrates theoretical computer science, information architecture design, systems engineering, and strategic IT management. Students gain hands-on expertise in designing distributed information systems, managing large-scale database architectures, developing cloud-based solutions, implementing cybersecurity protocols, and analyzing big data. The program places strong emphasis on modernizing corporate and public governance, supporting digital economy infrastructure, and driving automated digital transformations in Uzbekistan.

Graduates of this program are fully equipped to pursue careers as chief information officers (CIOs), information systems architects, lead database engineers, IT project managers, cybersecurity analysts, research scientists, and academic staff in higher education institutions, as well as to continue their studies at the doctoral (PhD) level.

Assessment

A comprehensive and multi-component assessment system is applied in the Master's program in Information Systems to ensure continuous learning, technical engineering proficiency, structural analytical competence, and academic rigor.

1. Course-based assessment

- **Presentations and seminars** – assess students' ability to present, discuss, and defend information system architectures, enterprise software solutions, data security strategies, and research papers in academic and professional settings.
- **Mini-tests, quizzes, and oral exams** – monitor understanding of core theoretical concepts, database structures, system modeling methodologies (UML, BPMN), network protocols, and cybersecurity standards.

- **Midterm and final examinations** – evaluate theoretical depth, system design capabilities, and engineering problem-solving through written exams and practical lab tasks.
 - **Portfolio assignments** – compile system design blueprints, database schemas, API integration plans, security audit reports, and research paper drafts demonstrating technical progression.
 - **Independent assignments** – encourage self-directed software integration, database tuning, cloud platform deployment, and information flow modeling tasks.
2. **Research-based assessment**
- **Scientific Research Work (ITI)** – evaluated through research project proposals, system prototype performance reports, and defense of information system research outcomes before the department.
 - **Scientific and Pedagogical Work (IPI)** – evaluated via teaching practice, preparation of practical laboratory manuals, online course module design, and academic reporting.
 - **Master’s Thesis (MD/M)** – evaluated based on overall scientific rigor, architectural innovation, practical viability, thesis writing quality, and public defense before the State Attestation Commission.
3. **Practice-based assessment**
- **IT and Industrial Practice** – evaluated through performance in corporate IT departments, data centers, software engineering companies, and state digital administration agencies, accompanied by comprehensive practice reports.
 - **Pre-graduation practice** – assessed on the deployment and testing of complex information systems and final thesis preparation.
4. **Work-integrated learning**
- **Information Systems Design Projects** – assessed on system reliability, database scalability, security architecture, user interface design (UI/UX), and alignment with industrial and governmental standards.

Academic Requirements

Admission Requirements-Applicants applying for the Master’s degree program in Information Systems (Code: 70610103) must satisfy the following criteria:

- **Educational background** – A Bachelor’s degree (or equivalent qualification) in information systems, computer science, software engineering, information technology, applied informatics, or related engineering/quantitative fields from a recognized higher education institution.
- **Academic excellence** – Applicants holding an honors diploma (*imtiyozli diplom*) are eligible for preferential admission according to current regulations of the Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan.
- **Language proficiency** – A valid national or international certificate demonstrating at least B2-level foreign language proficiency (CEFR, IELTS, TOEFL, etc.) in English, Russian, or another recognized foreign language.

Graduation Requirements

To be granted the Master of Science degree in Information Systems, students are required to:

- Complete all compulsory and elective modules specified in the curriculum, accumulating a total of **120 ECTS credits** (30 ECTS per semester).

- Maintain standard academic standing according to Navoi State University regulations (passing marks in all subjects).
- Successfully complete all practical trainings (systems development practice, educational internship, and pre-graduation practice) with positive supervisor evaluations.
- Fulfill all research requirements (Scientific Research Work and Scientific-Pedagogical Work).
- Prepare, submit, and successfully defend a **Master's Thesis** demonstrating original research and practical information system architecture design before the State Attestation Commission.
- Pass all required state attestation processes.

Courses Offered

Year 1

Compulsory:

- Research Methodology and Scientific Writing in Information Systems
- Reforms in the Education System under the Development Strategy of New Uzbekistan
- Advanced Architecture of Information Systems and Enterprise Engineering
- Modern Database Management Systems and NoSQL Technologies
- High-Performance Information Processing and Distributed Systems

Elective:

- Information Security and Risk Management in Systems
- Cloud Technologies and Distributed Data Centers
- Object-Oriented Analysis and System Design (UML, BPMN)
- Regulatory Documents, ISO Standards, and Quality Management in IT
- Business Process Automation and ERP Systems

Year 2

Compulsory:

- Big Data Architecture and Analytical Information Systems
- Intelligent Decision-Support Systems and Knowledge Management
- IT Governance, ITIL Standards, and Project Management

Elective:

- Mobile and Web-Based Information Systems Architecture
- Microservice Architectures and System Integration (APIs)
- Cybersecurity Audit and Penetration Testing
- Professional Morality and Ethics in Information Technologies
- Blockchain Systems and Decentralized Data Registers
- Geographic Information Systems (GIS) and Spatial Data Architectures
- Human-Computer Interaction (HCI) and User Experience Design

Career Opportunities

Graduates of the Master's degree program in Information Systems acquire high-level system engineering, database management, and strategic IT leadership capabilities, enabling them to pursue careers across diverse technology, industrial, corporate, and governmental sectors:

- **Information Systems Architect / Enterprise Architect** designing comprehensive corporate IT architectures and system integrations in public and private sectors.
- **Lead Database Administrator / Data Engineer** managing relational, distributed, and big data storage infrastructures in commercial banks, telecom operators, and tech firms.
- **IT Project Manager / IT Director (CIO)** leading software development, system deployment, and digital transformation campaigns in major enterprises.
- **Systems Analyst / Business Systems Engineer** bridging operational requirements with digital hardware/software solutions in industrial combines (e.g., NGMK, AGMK) and ministries.
- **Information Systems Lecturer / Instructor** in higher education institutions, specialized academic lyceums, professional colleges, and corporate IT academies.
- **Cybersecurity Specialist / Information Security Manager** designing security protocols, access control mechanisms, and data protection strategies for critical IT infrastructures.
- **Research Scientist / Specialist** at scientific research centers under the Academy of Sciences of the Republic of Uzbekistan and specialized IT laboratories.
- **Cloud Infrastructure Specialist / System Administrator** designing, deploying, and maintaining cloud platforms, virtualization, and corporate networks.

Tuition Fees

- **For local students:** Approximate annual tuition – 9,700,000 UZS.
- **For international students:** Approximate annual tuition – 774.28 USD.

(Note: Tuition fees are subject to adjustment in accordance with university policy and foreign currency exchange rates.)

Learning Outcomes

Master's Degree in Information Systems

Upon successful completion of the program, graduates will be able to:

1. Knowledge

- **1.1.** Demonstrate advanced knowledge of information systems architecture, enterprise engineering, distributed database models, and cloud computing solutions.
- **1.2.** Understand state-of-the-art systems analysis frameworks (UML, BPMN), software engineering lifecycles, and IT service management standards (ITIL, COBIT).
- **1.3.** Explain principles of cybersecurity, data encryption protocols, vulnerability analysis, systems auditing, and disaster recovery strategies.
- **1.4.** Demonstrate comprehensive knowledge of big data analytics, data warehouse architecture, intelligent decision-support tools, and knowledge management systems.
- **1.5.** Recognize national legal standards, software copyright regulations, ISO quality certifications, and strategic e-governance policies in Uzbekistan.

2. Skills

- **2.1.** Architect, construct, optimize, and maintain scalable corporate information systems, microservices, and database infrastructures.
- **2.2.** Model complex organizational workflows, business processes, and data flows using standardized modeling techniques and enterprise software tools.
- **2.3.** Formulate, deploy, and monitor cybersecurity policies, access management frameworks, and system encryption protocols to protect institutional data.
- **2.4.** Integrate disparate software systems, cloud platforms, web services, and mobile applications into unified corporate data environments.
- **2.5.** Prepare technical architecture blueprints, system specifications, database schemas, security audit reports, and publishable scientific research papers.
- **2.6.** Effectively present information system projects, technical strategies, and structural data solutions to executive boards, software development teams, and academic audiences in national and foreign languages.

3. Competences

- **3.1. Systems & Research Competence** – Conduct independent, scientifically grounded research and development to create robust, secure, and innovative information systems.
- **3.2. Enterprise IT Leadership Competence** – Direct enterprise IT departments, guide digital transformation projects, and manage complex systems engineering workflows in government and corporate settings.
- **3.3. Methodological & Educational Competence** – Teach information systems and computer science disciplines in academic institutions using modern lab-based methodologies.
- **3.4. Architectural & Strategic Competence** – Conceptualize and implement large-scale data systems, cloud networks, and automated decision-making platforms to solve complex operational challenges.
- **3.5. Ethical & Digital Governance Competence** – Uphold rigorous ethical standards, user privacy guidelines, system transparency, and data protection regulations in all system implementations.
- **3.6. Lifelong Learning Competence** – Continuously adopt emerging system architectures, cloud technologies, and international IT industry standards through ongoing self-directed research and professional development.