



Ala-Too International University
Department of Computer Systems and complexes
Course Syllabus for
2025-2026 academic year
Fall semester

Title of the Course	Technical facilities of information
Course Code	None
Credit	2
Hours in a week	2
Prerequisites	Basic facilities of information skills
Type of the course	Practical
Recommended for	Software of computer engineering and automated systems
Language of instruction	English
Mode of education	Offline
LMS (Learning Management System)	None
LMS enrollment code	None
Online conference room	None
Physical classroom	C001
Lecturer	Nurbekov Mirlan Nurbekovich
Office	H 209
Office hours	Tu 15:00-17:00; We/Th 16:00-17:00; Fr 08:30-17:00
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Course Description

This course provides a comprehensive introduction to the technical facilities and systems used in information processing and management. It focuses on different technologies and methods for information storage, transmission, and protection, emphasizing their practical applications in modern information environments. Through lectures and hands-on laboratory work, students will learn to configure, secure, and maintain information systems using contemporary tools and approaches. The course aims to build a solid technical foundation essential for future professionals in computer engineering, software development, and information systems management.

Student Learning Outcomes (SLOs)

SLO.1. Understand the principles and components of technical systems used for information processing, storage, and management.

SLO.2. Evaluate and compare different technologies and methods for information storage, transmission, and protection.

SLO.3. Apply encryption, authentication, and access control techniques to secure information systems.

SLO.4. Demonstrate proficiency in configuring and utilizing networking and communication technologies, including wireless and cloud environments.

SLO.5. Analyze, troubleshoot, and resolve technical issues in information systems through practical exercises and case-based problem solving.

Course Content

Week	Topic	Focus/Lab/Activity
1	Introduction	Course overview, syllabus, grading and class policies
2	Data storage technologies	HDD, SSD, NAS, SAN & comparing storage performance
3	Data backup and disaster recovery	Backup strategies, RAID, cloud backups and configuring backup systems
4	Introduction to encryption and cryptography	Symmetric and asymmetric encryption/decryption of files
5	Team work activity 001	Teams design a full IT solution for a small business in Bishkek, planning hardware, software, network setup, and security within a set budget
6	Authentication methods, access control and network topologies with protocols	Passwords, multi-factor authentication, role-based access, LAN/WAN, TCP/IP, OSI model and designing a basic network topology
7	Wireless networking and security	Wi-Fi standards, encryption, vulnerabilities and secure wireless network setups
8	Firewalls and intrusion detection systems	Firewall types, IDS/IPS and configuring a firewall and simulate IDS
9	Midterm assessment	Offline test which covers materials from week 2 till week 8
10	Virtual machines, cloud services (AWS/Azure), SQL databases, and data protection.	SQL databases, injection prevention, VM deployment cloud instance and secure a sample database.
11	Team work activity 002	Teams need to breach or defend a simulated system, applying secure coding practices and defensive techniques, to steal or protect data

12	Secure software development practices, industrial control systems and SCADA security	Secure coding, static analysis, ICS architecture, threats, mitigation
13	Emerging technologies, privacy, and ethics	AI, blockchain, IoT; GDPR, ethical data handling; discussion and case study
14	IT incident response and forensics	Incident response plan, forensic tools; lab: analyze a simulated security incident
15	Network monitoring and management	SNMP, dashboards, performance analysis; lab: monitor network traffic and generate a report
16	Final exam	Offline exam which covers materials from week 2 till week 8

Grading rubric and assessments

Midterm assessment - Test	100 points
Final exam	100 points
Average = Midterm assessment * 0.4 + Final assessment * 0.6	

Course policies and academic integrity

This is a 16-week course instructed by Mirlan Nurbekov. The course instructor reserves the right to make changes to any portion of the syllabus at any time. Any modifications will be communicated in writing to students via the Learning Management System (LMS).

- Students are expected to communicate with the instructor professionally. Mobile phones, social media, and messaging apps (e.g., WhatsApp) should not be used for course-related inquiries. Instead, students should send emails, post comments in the LMS, or visit the instructor during office hours. All course-related announcements and materials will be shared through the LMS.
- Attendance is mandatory. Students are expected to attend at least 70% of the course sessions to be eligible for exams. Active participation in lectures, labs, and discussions is strongly encouraged.
- Students are required to uphold the highest ethical standards in all aspects of the course. Academic dishonesty includes, but is not limited to, cheating on exams, completing work for another student, and plagiarism.
- Plagiarism is a serious academic offense. To avoid plagiarism:
 - Do not copy words from any source without proper quotation and citation.
 - Do not use ideas, concepts, or opinions from any source without citing the source. This includes technical terms, original views, and key concepts.
 - Paraphrasing is allowed, but the source must be cited correctly, and the original meaning must not be misrepresented.

All cases of academic dishonesty will result in a failing grade for the course and will be reported to the Head of the Management Department for administrative review.

All projects, presentations, essays, and assignments must follow the Harvard referencing style. Submissions must be uploaded to the LMS before the specified deadline.

➤ Grading and Assessment:

- Midterm, final, and makeup exams should account for 40–50% of the total course grade, with the remainder coming from projects, presentations, essays, and assignments.
- To pass the course, students must achieve an average grade of at least 50 points, with a minimum of 40 points on the final exam.
- Students who do not pass the final exam are eligible for a makeup exam, which carries the same weight as the final assessment.

➤ Appeals

Students have the right to appeal grades within three working days from the date grades are announced. Appeals may include reviewing exam papers, requesting re-evaluation, requesting grading rubrics, or notifying the instructor of any errors in grade aggregation. Once the grade submission system is closed, grades cannot be changed.

Main Resources

Schneier, B. (2015) *Applied Cryptography: Protocols, Algorithms, and Source Code in C*. 20th anniversary edn. Wiley

Peterson, L.L. and Davie, B.S. (2019) *Computer Networks: A Systems Approach*. 6th edn. Burlington: Morgan Kaufmann

Stallings, W. (2020) *Network Security Essentials: Applications and Standards*. 6th edn. Pearson

Kurose, J. and Ross, K. (2021) *Computer Networking: A Top-Down Approach*. 8th edn. Pearson

Additional Resources

Cisco Networking Academy. Available at: <https://www.netacad.com/catalogs/learn> (Accessed: 12 August 2025).

AWS Training and Certification. Available at: <https://skillbuilder.aws/?cta=free> (Accessed: 12 August 2025).

Free IT and Cybersecurity Training Courses. Available at: <https://www.cybrary.it/> (Accessed: 20 August 2025).

OWASP Foundation. Available at: <https://owasp.org/> (Accessed: 20 August 2025).

Khan Academy (no date) *Computer Science*. Available at: <https://www.khanacademy.org/computing/computer-science> (Accessed: 20 August 2025).

Reddit (no date) */r/netsec*. Available at: <https://www.reddit.com/r/netsec/> (Accessed: 20 August 2025).

Cloud Academy (no date) *Cloud Computing and Security Labs*. Available at: <https://cloudacademy.com/> (Accessed: 23 August 2025).