MINISTRY OF SCIENCE, HIGHER EDUCATION AND INNOVATION OF THE KYRGYZ REPUBLIC
OSH STATE UNIVERSITY
INSTITUTE OF MATHEMATICS, PHYSICS, ENGINEERING AND INFORMATION TECHNOLOGIES
DEPARTMENT OF APPLIED INFORMATICS AND INFORMATION SECURITY

AGREED

Chairperson of the Institute's Educational and Methodological Council,
Ph.D. in Physical and Mathematical Sciences, Associate Professor Mamaziaeva E.A.

_____ _____ 2025

APPROVED
Head of the Department,
Ph.D. in Physical and Mathematical Sciences, Associate Professor Erkebaev U.Z.

_____ _____ 2025

Educational Program
(Syllabus)

Specialty	**PIE**	**Course Code**	**710300**
Language of Instruction	**Russian**	**Discipline**	**Applied Informatics in Economics**
Academic Year	**4**	**Number of Credits**	**4**
Lecturer	**Melisov. A.N.**	**Semester**	**3**
E-Mail		**Table according to the "MyEdu" app**	
Type of Study (full-time/part-time/evening/remote)	**Full-time**	**Course Type: (Mandatory/Elective)**	**Mandatory**

Osh, 2025

Course Description:

This course is designed to teach students the importance, principles, and practical application of sustainable development in the field of information technology. The lessons cover the ecological, social, and economic impacts of IT solutions. The course helps students incorporate sustainability into IT projects and company strategies. It develops students' abilities in critical thinking, analysis, and creating sustainable IT strategies.

Course Objective:

- To master the concept of sustainable development in the IT field and its key principles.
- To learn to analyze the ecological, social, and economic impacts of information technologies.
- To develop sustainable IT strategies and gain experience in their practical implementation.
- To become familiar with concepts such as Green IT, energy-efficient systems, and digital equity.

Prerequisites	To have basic knowledge of information technologies and management fundamentals.
Postrequisites	To apply analytical thinking and strategic planning skills in developing sustainable IT solutions.
Co-requisites	Courses on information systems management and ecological sustainability.

Learning Outcomes

By the end of the course, the student will acquire the following knowledge and skills:

Learning Outcome according to NBBP	Course Learning Outcome	Competencies

Calendar-thematic plan of lectures and seminar (practical, laboratory) classes

№	Week	Topic titles	Number of Hours		Баллы	Литература
			Lecture 24	Lab Hours 36		
1 Module. Fundamentals of Sustainable Development and the Ecological and Social Aspects of IT						

		Lecture №1. Key Concepts of Sustainable Development **Lab Work 1.** Study of Energy-Efficient Equipment	1	2	5/5	
		Lecture №2. Туруктуу өнүгүүдөгү маалымат технологияларынын орду **Lab Work №2.** Data Protection Practice	2	2	5/5	
	16.09-21.09	**Lecture №3.** The Role of Information Technologies in Sustainable Development **Lab Work №3.** Ecological Analysis of Software	2	2	5/5	
	23.09-28.09	**Lecture №4.** Social Responsibility and Digital Equity **Lab Work №4**. Methods of Digital Waste Management	2	2	5/5	
CA1		**Average Cumulative Score**				
		Total for CA1				
	30.09-05.10	**Lecture №5.** IT Resource Monitoring **Lab Work №5**. Energy-Efficient Network Architecture	2	2	5/5	
	07.10-12.10	**Lecture №6** The Importance of Information Security and Its Role in Sustainable Development **Lab Work №6.** Environmental Impact Assessment	1	4	5/5	
	14.10-19.10	**Lecture №7.** Resource Optimization in IT Systems **Lab Work №7**. Project Presentation on IT and Sustainability	2	4	5/5	
CA2		**Average Cumulative Score**			5/5	
		Total for CA2			10	
		Total	12	18		
2 Module. Implementing and Managing Sustainability in IT						

		Lecture №8. Digital Waste Management **Lab Work №8.** Analysis of an IT Company's Sustainability Report	3	4	5/5	
		Lecture №9. Global Challenges of Sustainable Development and IT Opportunities **Lab Work №9** Assessing Sustainability in IT Services	3	4	5/5	
		Lecture №10 Ensuring Sustainability in IT Projects **Lab Work №10** Planning Sustainability in IT Projects	2	4	5/5	
		Lecture №11. IT Management Strategies in Sustainable Development **Lab Work №11.** Implementing IT Strategies in Sustainable Development	2	3	5/5	
CA3		**Average Cumulative Score**			5/5	
		Total for CA3			10	
		Lecture №12. Monitoring and Evaluating IT Strategies in Sustainable Development **Lab Work №12.** Quality Control and Improvement in IT	2	3	5/5	
CA3		**Average Cumulative Score**			5/5	
		Total for CA3			10	
		Total	**12**	18		
		Result	24	36		

Plan for Organizing ISWS (12 hours)

№	Topic	Assignment for Independent Student Work (ISW)	Hours	Assessment Tools	point	Literature	Submission Deadline

1.	Key concepts of sustainable development and its role in the IT sector	Video lesson, project	**1**	Comprehensive test / Integrated assessment	5/5		
2.	Environmental aspects and the impact of IT on the environment	Video lesson, project	**1**	Comprehensive test / Integrated assessment	5/5		
3.	Social responsibility and digital equity	Video lesson, project	**1**	Comprehensive test / Integrated assessment	5/5		
4.	Green IT and energy-saving technologies	Video lesson, project	**1**	Comprehensive test / Integrated assessment	5/5		
	Deadline						
	1 Module ISWS 1 Average accumulated points				5/5		
5.	Information security and personal data protection	Video lesson, project	**1**	Comprehensive test / Integrated assessment	5/5		
6.	Digital waste management	Video lesson, project	**1**	Comprehensive test / Integrated assessment	5/5		
7.	IT infrastructure optimization	Video lesson, project	**2**	Comprehensive test / Integrated assessment	5/5		
8.	Ensuring sustainability in IT projects	Video lesson, project	**2**	Comprehensive test / Integrated assessment	5/5		
9.	Developing and monitoring IT strategies in sustainable development	Video lesson, project	**2**	Comprehensive test / Integrated assessment	5/5		
	Deadline						
	1 Module ISWS 1 Average accumulated points				5/5		

№	week	**Topic titles**	number of hours		point
			Lecture	**Lab Hours**	
1- module					
1	1- week		2	2	1
2	2- week		2	4	1

3	3- week		2	4	1
4	4- week		2	4	1
5	5- week		4	4	1
2- module					
6	6- week		2	2	1
7	7- week		2	4	1
8	8- week		2	4	1
9	9- week		2	4	1
10	10- week		4	4	1
		Total:	**24**	**36**	

Student's Independent Work (SIW) Organization Plan

№	topic	hours	assessment tools	points	literature	submission deadline
1.						
2.						
3.						
4						
5						
6						

course policy

1. Attendance in classes

- Requirements for attending lectures and practical classes
- Conduct during class
- Consequences of unexcused absences

2. Academic integrity and plagiarism

- Identifying plagiarism and academic dishonesty
- Consequences of plagiarism and cheating on exams
- Penalties for delays and missing deadlines in submitting assignments
- Deadlines for submitting homework, projects, and other assignments
- Penalties for missing deadlines

4. Retake and appeal policy

- Conditions and procedures for retaking exams and tests
- Rules for grade appeal submission

5. Use of gadgets in classes

• Permission or prohibition to use phones, laptops, and other devices during class

6. Rules for citing literature and references

- Requirements for formatting written works, citations, and used literature
- Rules for using artificial intelligence platforms

(Clearly presenting the course policy in the syllabus helps students understand the instructor's requirements, class attendance, assignment preparation rules, and prevents misunderstandings during the learning process.)

Grading system

Academic Integrity Declaration: Students enrolled in this course are required to submit a declaration adhering to the university's academic integrity policy. Regulation "On the Organization of the Educational Process at OshSU" A-2024-0001, 03.01.2024.

The course grade is composed of the following components: (100 points)

1- module - 30 point	2- module – 30 point
ISWS - 10 №1 Current assessment - 5 №2 Current assessment -5	*ISWS -10* №3 Current assessment - 5 №4 Current assessment - 5
Final exam– 40 балл	

Learning resources

(Use the full link; the access location for texts/materials has been provided)	
Electronic resources	• **Presentation and Article: IT and Sustainable Development (sample presentation) (example, needs practical search)** • **UNDP Kyrgyzstan — Sustainable Development:** https://www.kg.undp.org/content/kyrgyzstan/ru/home/sustainable-development.html • **Cisco — Sustainability in IT:** https://www.cisco.com/c/en/us/about/csr/sustainability.html • **Coursera курсу — Sustainable Development in IT (англисче):** https://www.coursera.org/learn/sustainable-development-it • Kyrgyz State Scientific Library: https://www.kg-library.kg **2018-2040- National Development Strategy of the Kyrgyz Republic for the years (2018) was approved by Decree No. 221 of the President of the Kyrgyz Republic on October 31, 2018, 150** https://www.gov.kg/ky/programs/8
Laboratory physical resources	*Computer, projector, interactive whiteboard*
Specialized software	*Office software, modeling software*