SYLLABUS
Fall semester 2020-2021 academic years
on the educational program "5B070300 Information Systems"

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)		
MCP4225	Process control and monitoring	3	15	15	30	3	3

Academic course information

Form of education	Type of course	Types of lectures	Types of practical training	Number of IWS	Form of final control
	Theory, practical	Informational	Laboratory works	3	Test on "Moodle" system
Lecturer	Karibayeva Aidana			**Office**	By schedule
e-mail	a.s.karibayeva@gmail.com				
Telephone number	+7 (777) 232 20 91				

Academic presentation of the course

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 course aims to develop the student's ability to, with the help of scientific theories and insights into practical application, analyze control systems and thus be able to take the relevant decisions regarding monitoring.	**LO** 1 to know process concept, process control, scheduling and scheduling of processes	**1.1** - monitor running processes in Operating Systems **1.2** - analyse type of processes **1.3** - give relative assessments based on the results of monitoring networks, memory, processes, servers, databases, and etc.
	LO 2 to apply the theoretical and methodological foundations of monitoring and control	**2.1** - provide analysis monitoring in OS, database, servers, cloud computing and etc. **2.2** - analyse the impact of running processes on the computing ability of a computer
	LO 3 apply the methodological framework for monitoring in various subject areas	**3.1** - establish processes that used to control and monitoring **3.2** – analyse the content and give a comparative assessment of the results of monitoring and control
		3.3 - define the technical aspects of monitoring
	LO 4 to build a monitoring methods and drawing up various tasks to control information and communication technologies	**4.1**- to create processes in Operating system and control them **4.2** – to run monitoring and control in servers, databases, applications
	LO 5 to synthesize monitoring results for various systems and applications	**5.1** – synthesize monitoring results using various software tools **5.2** – compose different types of alert monitoring and control **5.3** – develop monitoring projects and create, destroy, give priority to processes
Prerequisites and post requisites	**Prerequisites:** **Post-requisites: no**	
Literature and resources	**Online reachability:** additional study materials, homework assignments and projects can be found on their pages (UMKD) at univer.kaznu.kz.	

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 unacceptable. - Students with disabilities can receive counseling at e-mail *******@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.

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

Weeks	Topic name	LO	ID	amount of hours	Maximum score	Form of Knowledge Assessment
1	2	3	4	5	6	7
I	**Module –Processes in Operating Systems.**					
1	**Lecture.** Introduction to Process	LO 1	1.1	1	1	Video in Zoom synchronously
1	**Practice:** The difference between a project and a process	LO 1	1.1	1	3	Webinar in Zoom synchronously
1	**Lab class:** Installation Zabbix	LO 1	1.1	2	15	asynchronously, upload files to Univer system
2	**Lecture.** Processes in Operating Systems	LO 1	1.2 1.3	1	1	Video in Zoom synchronously
2	**Practice:** Working in Windows PowerShell, showing all running processes	LO 1	1.2 1.3	1	3	Webinar in Zoom synchronously
2	**Lab class:** I/O Monitoring (Windows)	LO 1	1.2 1.3	2	15	asynchronously, upload files to Univer system
3	**Lecture.** Process Scheduling Queues	LO 1	1.2 1.3	1	1	Video in Zoom synchronously
3	**Practice class:** Difference between Process and Kernel Thread	LO 1	1.2 1.3	1	3	Webinar in Zoom synchronously
3	**Lab class:** Memory, CPU and Network Monitoring (Windows)	LO 1	1.2 1.3	2	15	Webinar in Zoom synchronously, upload files to Univer system
3	**IWS 1 –** Processes in operating system	LO 1	1.1 1.2 1.3	2	5	Uploading files to Univer system

4	**Lecture.** Operating System Scheduling algorithms	LO 1	1.1 1.2 1.3	1	1	Video in Zoom synchronously
4	**Practice:** Scheduling algorithms	LO 1	1.1 1.2 1.3	1	3	Webinar in Zoom synchronously
4	**Lab class:** CPU Monitoring (Linux)	LO 1	1.1 1.2 1.3	2	15	asynchronously, upload files to Univer system
4	**IWST 1** - conducting mutual discussion and consultation on **IWS 1**	LO 1 LO 2	1.2; 1.3; 2.1; 2.2	2		Webinar in Zoom synchronously
5	**Lecture**. Process Synchronization	LO 1	1.2 1.3	1	1	Video in Zoom synchronously
5	**Practice:** Type of Synchronization	LO 1 LO 2	1.3 2.1 2.2	1	3	Webinar in Zoom synchronously
5	**Lab class:** I/O Monitoring (Linux)	LO 1 LO 2	1.3 2.1 2.2	2	15	asynchronously, upload files to Univer system
5	**IWST 2** - Acceptance and assessment of the assignment **IWS 1**	LO 1 LO 2	1.2 1.3 2.1 2.2	2		Webinar in Zoom synchronously
5	**MT 1**	LO 1 LO 2	1.2; 1.3; 2.1; 2.2		100	Final survey

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II	**Module – Process Management**					
6	**Lecture.** Multi-Threading	LO 2	2.1	1	1	Video in Zoom synchronously
6	**Practice:** Multi-Threading and Kernel Thread	LO 2	2.1	1	3	Webinar in Zoom synchronously
6	**Lab class:** Networking Monitoring (Linux)	LO 2	2.1	2	12	asynchronously, upload files to Univer system
6	**IWS 2 –** Networking Monitoring in Windows and Linux	LO 2 LO 4	2.1 2.2 4.1	2	10	upload files to Univer system
7	**Lecture.** Process Image	LO 2	2.2	1	1	Video in Zoom synchronously
7	**Practice:** Process Image			1	3	Webinar in Zoom synchronously
7	**Lab class:** Zabbix configuring temperature monitoring	LO 2 LO 3 LO 4	2.2 3.1 4.1	2	12	asynchronously, upload files to Univer system
8	**Lecture.** Introduction to Linux Process Management	LO 3	3.1 3.2 3.3	1	1	Video in Zoom synchronously
8	**Practice:** Processes in Linux	LO 3	3.1 3.2 3.3	1	3	Webinar in Zoom synchronously

8	**Lab class:** Monitoring linux service availability with Zabbix	LO 3	3.1 3.2 3.3	2	12	a synchronously
8	**IWST 3 –** Working in PowerShell	LO 2 LO 4	2.1 2.2 4.1	2		Webinar in Zoom synchronously
9	**Lecture**. Network monitoring	LO 3	3.1 3.2 3.3	1	1	Video in Zoom synchronously
9	**Practice:** Traffic monitoring	LO 3 LO 4 LO 5	3.2 4.1 4.2 5.1	1	3	Webinar in Zoom synchronously
9	**Lab class:** Traffic monitoring in Zabbix	LO 3 LO 4 LO 5	3.2 4.1 4.2 5.1	2	12	asynchronously, upload files to Univer system
9	Acceptance and assessment of the assignment **IWS 2**	LO 2 LO 4	2.1 2.2 4.1	1		Webinar in Zoom synchronously
10	**Lecture.** Simple Network Management Protocol (SNMP)	LO 3	3.1 3.3	1	1	Video in Zoom synchronously
10	**Practice:** Network Protocols	LO 3 LO 4	3.1 3.3 4.2	1	3	Webinar in Zoom
10	**Lab class:** Monitoring SNMP	LO 3 LO 4	3.1 3.3 4.2	2	12	asynchronously, upload files to Univer system
10	**IWS 3 -** SNMP and Traffic Monitoring	LO 3 LO 4	3.1 3.2 3.3 4.1 4.2	2	10	Report uploading
10	**Midterm**				100	
III	**Модуль – Monitoring.**					
11	**Lecture.** Database monitoring	LO 4	4.1 4.2	1	1	Video in Zoom synchronously
11	**Practice:** MySQL monitoring	LO 4	4.1 4.2	1	3	Webinar in Zoom synchronously
11	**Lab class:** Database monitoring in Zabbix	LO 4	4.1 4.2	2	15	asynchronously, upload files to Univer system
12	**Lecture.** Cloud monitoring	LO 4	4.1 4.2	1	1	Video in Zoom synchronously
12	**Practice:** Organization Cloud monitoring	LO 4	4.1 4.2	1	3	Webinar in Zoom synchronously
12	**Lab class:** Monitoring domain delegation time in zabbix	LO 4 LO 5	4.1 4.2 5.1 5.2	2	15	asynchronously, upload files to Univer system
13	**Lecture.** Server monitoring	LO 5	5.1 5.2	1	1	Video in Zoom synchronously

13	**Lab class:** Sending notifications and graphs from zabbix to telegram	LO 5	5.1 5.2	2	15	asynchronously, upload files to Univer system
13	**IWST 3 -** conducting mutual discussion and consultation on **IWS 3**	LO 3 LO 4	3.1 3.2 3.3 4.1 4.2	2	5	Webinar in Zoom synchronously
14	**Lecture.** Website monitoring	LO 5	5.1 5.2 5.3	1	1	Video in Zoom synchronously
14	**Practice:** Zabbix tool for web monitoring	LO 5	5.1 5.2 5.3	1	3	Webinar in Zoom synchronously
14	**Lab class:** Website monitoring in Zabbix	LO 5	5.1 5.2 5.3	2	15	asynchronously, upload files to Univer system
14	Acceptance and assessment of the assignment **IWS 3**	LO 5	5.1 5.2	2		Webinar in Zoom synchronously
15	**Lecture.** Security monitoring	LO 5	5.1 5.2 5.3	1	1	Video in Zoom synchronously
15	**Practice.** Organizing security monitoring	LO 5	5.1 5.2 5.3	1	3	Webinar in Zoom synchronously
15	**Lab class:** Accessing Google API Adsense via Zabbix	LO 5	5.1 5.2 5.3	2	15	Asynchronously, upload files to Univer system
15	**MT 2**				100	Final survey

Dean Urmashev B.A.
Chairman of the Faculty Methodical Bureau Gusmanova F.
Head of the Department Musiralyeva Sh.Zh.
Lecturer Karibayeva A.S.