

**CURRICULUM**  
of Educational Program on enrollment for 2022-2023 academic year

Educational program 6B07107 - Operational and service engineering  
Group of educational programs B064 - "Mechanics and metal working"

Form of study: full-time      Duration of study: 4 years      Academic degree: Bachelor of Engineering and Technology

Discipline code	Name of disciplines	Cycle	Total amount in credits	Total hours	classroom volume of lek/lab/p	SIS (including TSIS) in hours	Form of control	Allocation of face-to-face training based on courses and semesters							
								I course		II course		III course		IV course	
								1 semester	2 semester	3 semester	4 semester	5 semester	6 semester	7 semester	8 semester
<b>CYCLE OF GENERAL EDUCATION DISCIPLINES (GED)</b>															
<b>M-1. Module of language training</b>															
LNG108	English language	GED, RC	10	300	0/0/6	210	E	5	5						
LNG104	Kazakh (Russian) language	GED, RC	10	300	0/0/6	210	E	5	5						
<b>M-2. Module of physical training</b>															
KFK101-104	Physical Culture	GED, RC	8	240	0/0/8	120	Difercrit	2	2	2	2				
<b>M-3. Module of information technology</b>															
CSE677	Information and communication technologies (in English)	GED, RC	5	150	2/1/0	105	E				5				
<b>M-4. Module of socio-cultural development</b>															
HUM100	Modern History of Kazakhstan	GED, RC	5	150	1/0/2	105	SE		5						
HUM132	Philosophy	GED, RC	5	150	1/0/2	105	E			5					
HUM120	Socio-political knowledge module (sociology, politology)	GED, RC	3	90	1/0/1	60	E			3					
HUM134	Socio-political knowledge module (culturology, psychology)		5	150	2/0/1	105	E			5					
<b>M-5. Module of anti-corruption culture, ecology and life safety base</b>															
HUM133	Fundamentals of anti-corruption culture	GED, CCH	5	150	2/0/1	105	E			5					
MNG488	Fundamentals of Entrepreneurship and Leadership														
CHE656	Ecology and life safety														
<b>CYCLE OF BASIC DISCIPLINES (BD)</b>															
<b>M-6. Module of physical and mathematical training</b>															
MAT 101	Mathematics I	BD, UC	5	150	1/0/2	105	E	5							
PHY468	Physics	BD, UC	5	150	1/1/1	105	E	5							
MAT 102	Mathematics II	BD, UC	5	150	1/0/2	105	E		5						
<b>M-7. Module of basic training</b>															
<b>General technical training module</b>															
GEN 429	Engineering and computer graphics	BD, UC	5	150	1/1/1	105	E	5							
TEC564	The basics of plumbing	BD, UC	4	120	0/0/3	75	E		4						
TEC456	Introduction to the specialty	BD, UC	5	150	2/0/1	105	E	5							
GEN411	Theoretical and applied mechanics	BD, UC	5	150	2/1/0	105	E			5					
TEC554	Hydraulics and hydraulic drive of technological machines	BD, UC	6	180	2/0/2	120	E			6					
TEC463	Interchangeability, standardization and technical measurements	BD, UC	5	150	2/0/1	105	E			5					
PED104	The branch Materials and Structural Materials Technology	BD, UC	5	150	2/1/0	105	E			5					
GEN408	Strength of materials	BD, UC	5	150	1/1/1	105	E			5					
TEC164	Basics of thermodynamics and heat engineering installations	BD, UC	5	150	2/0/1	105	E				5				
NSE143	Industrial economics	BD, UC	5	150	2/0/1	105	E			5					
GEN125	Bases of designing and details of cars	BD, UC	5	150	1/1/1	105	E				5				
ELC103	Electrotechnics and Microelectronics	BD, UC	5	150	2/1/0	105	E				5				
SAF110	Labor protection	BD, UC	5	150	1/0/2	105	E				5				
TEC557	Structural strength of parts and assemblies of technological machines	BD, UC	4	120	2/0/1	75	E				4				
3218	Elective	BD, CCH	5	150	2/0/1	105	E				5				
PED446	Fundamentals of the theory of reliability of machines and mechanisms	BD, UC	5	150	2/0/1	105	E					5			
3220	Elective	BD, CCH	5	150	2/0/1	105	E					5			
3221	Elective	BD, CCH	5	150	2/0/1	105	E					5			
4222	Elective	BD, CCH	6	180	1/0/3	120	E						6		
AAP179	Educational practice	BD, UC	2						2						
<b>CYCLE OF PROFILE DISCIPLINES (PD)</b>															
<b>M-8. Module of professional activity</b>															
<b>Technology and Operations Module</b>															
TEC185	Technology of repair and operation of technological machines	PD, UC	5	150	2/0/1	105	E							5	
PED193	Instrumentation and automation of technological machines	PD, UC	5	150	2/0/1	105	E							5	
TEC560	Installation and assembly production of technological machines	PD, UC	6	180	2/0/2	120	E							6	
TEC570	Technical diagnostics of technological equipment	PD, UC	4	120	2/0/1	75	E					4			
3302	Elective	PD, CCH	5	150	2/0/1	105	E					5			
3303	Elective	PD, CCH	4	120	2/0/1	75	E					4			
4307	Elective	PD, CCH	6	180	2/0/1	120	E						6		
4308	Elective	PD, CCH	5	150	2/0/1	105	E						5		
4309	Elective	PD, CCH	5	150	2/0/1	105	E							5	
4310	Elective	PD, CCH	5	150	2/0/1	105	E							5	

4311	Elective	PD, CCH	5	150	2/0/1	105	E											5
AAP143	Production practice I	PD, UC	2									2						
AAP183	Production practice II	PD, UC	3												3			
<b>M-9. Module of final attestation</b>																		
ECA003	Preparation and writing of a thesis (project)	FA	6															6
ECA103	Defense of the thesis (project)	FA	6															6
<b>M-10. Module of additional types of training</b>																		
AAP500	Military affairs	ATT	0															
<b>Total based on UNIVERSITY:</b>											32	28	27	33	29	31	33	27
											60		60		60		60	

Number of credits for the entire period of study						
Cycle code	Cycles of disciplines	Credits				Total
		required component (RC)	university component (UC)	component of choice (CCH)		
GED	Cycle of general education disciplines	51	5			56
BD	Cycle of basic disciplines		91	21		112
PD	Cycle of profile disciplines		25	35		60
	<i>Total for theoretical training:</i>	<i>51</i>	<i>121</i>	<i>56</i>		<i>228</i>
FA	Final attestation	12				12
	<b>TOTAL:</b>	<b>63</b>	<b>121</b>	<b>56</b>		<b>240</b>

Decision of the Academic Council of Kazntu named after K.Satpayev. Protocol № 13 or "28" 04 20 22y.

Decision of the Educational and Methodological Council of Kazntu named after K.Satpayev. Protocol № 7 or "26" 04 20 22y.

Decision of the Academic Council of the Institute E&ME. Protocol № 5 or "10" 01 20 22y.

Vice-Rector for Academic Affairs

Director of Institute of E&ME

Head of department TM&T

Representative of the Council from employers

B.A.Zhautikov

K.K. Yelemessov

S.A. Bortebayev

M.A. Kanatbayev



MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF KAZAKHSTAN  
KAZAKH NATIONAL RESEARCH TECHNICAL UNIVERSITY after K. SATBAYEV



APPROVED

Director of the Institute of E&ME

R.K. Yelemessov

2022.

MAJOR ELECTIVE DISCIPLINES educational program for the 2022-2023 academic year admission  
Educational program 6B07107 - Operational and service engineering  
Group of Educational programs B064 - "Mechanics and metal working"

Full-time study

Study duration : 4 years

Academic degree: Bachelor of Engineering and Technology

Year of study	Code of elective	Code of discipline	Name of discipline	Semestr	Cycle	Credits	Total hours	lec/lab/pr	SIW (including SIWT) in hours
<b>M-7. Module of basic training</b>									
<b>General technical training module</b>									
3	3218	TEC411	Equipment maintenance system	5	BD	5	150	2/0/1	105
		TEC410	Fundamentals of the theory of wear of machinery and equipment					2/0/1	
	3220	TEC476	Internal combustion engines	6	BD	5	150	2/0/1	105
		TEC477	Gas-pumping units					2/0/1	
		TEC478	Gas turbine plants					2/0/1	
	3221	TEC469	Pumps, fans, compressors	6	BD	5	150	2/0/1	105
TEC480		Drives of mining machines and stationary options	2/0/1						
	TEC457	Drives of technological machines					2/0/1		
4	4222	TEC553	Fundamentals of designing technological machines and machine graphics	7	BD	6	180	1/0/3	120
		TEC556	Computer technologies in operational and service engineering					1/0/3	
<b>M-8. Module of professional activity</b>									
<b>Technology and Operations Module</b>									
3	3302	TEC429	Mining and transport machines	6	PD	5	150	2/0/1	105
		PED149	Equipment for metallurgical plants					2/0/1	
		TEC430	Machinery and equipment for drilling oil and gas wells					2/0/1	
4307	TEC569	Tribonika and Tribotechnics	7	PD	6	180	2/1/1	120	
	TEC568	Fuels, oils and special liquids					2/1/1		
4308	PED130	Technology maintenance and repair of compressor units and hydraulic machines		7	PD	5	150	2/0/1	105
		Welding technologies in repair and service production						2/0/1	
		Machines and equipment of pumping and compressor stations						2/0/1	
		Theory and practice of project management						2/0/1	
4309	TEC441	Operation and maintenance of drainage and pneumatic installations		8	PD	5	150	2/0/1	105
		Operation and maintenance of dust and gas cleaning equipment and recycled water supply						2/0/1	
		Equipment and technology of well repair and maintenance						2/0/1	
4310	PED457	Industrial safety in the oil and gas industry		8	PD	5	150	2/0/1	105
		Industrial safety in an industrial cluster						2/0/1	
4311	TEC500	Fundamentals of energy saving in repair and service production		8	PD	5	150	2/0/1	105
		Robotic complexes in metallurgical production						2/0/1	
		Energy-saving technologies in repair and service production in the oil and gas industry						2/0/1	
<b>Module "R&amp;D"</b>									
3	3303	TEC575	Experimental technique	6	PD	4	120	2/0/1	75
		TEC576	Design of experiments bench and field tests					2/0/1	

Credits numbers of elective disciplines over the entire period of study	
Cycle of disciplines	Credits
Cycle of basic disciplines (B)	21
Cycle of special disciplines (S)	35
<b>Overall:</b>	<b>56</b>

Decision of the Academic Council of the Institute E&ME. Protocol № 5 от "20" 06 20 22

Head of the department TM&T

S.A. Bortebayev

Representative of the Council from employers

M.A. Kanatbayev