APPROVED
Vice Rector for Academic Affairs of
Not available
_____ M.A.Solovyov
"_____"_____20____г.

THE MINISTRY OF EDUCATION AND SCIENCE OF THE RUSSIAN FEDERATION
Federal state autonomous educational institution of higher education
"National Research Tomsk Polytechnic University"

CURRICULUM
Admittance **2025** year

Major	**13.04.02 Electric Power Engineering and Electrical Engineering**
Educational Programme	Электромеханические комплексы и системы
Groups	**5AM56**
Qualification (degree)	Master
Mode of study	Intramural
Duration of study	2 year

Federal State Educational Standard	No. 147 on 28.02.2018
Educational Standard Established by Institution	Order No. 103-14/об on 13.04.2023
Department	School of Energy and Power Engineering Division for Power and Electrical Engineering
Type of professional activity / Type of professional tasks (main)	Project
Type (types) of professional activity / Type (types) of professional tasks (additional (-s))	Research

I. GRAPH OF EDUCATIONAL PROCESS

Years/Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
1									~									~	^	:	:	=	=									~									~	:	:	O	O	O	O	=	=	=	=	=
2									~									~	^	:	:	=	X	X	X	X	X	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	/	/	/	/	/	=	=	=	=	=	=	=	=

Symbols: "" - Theoretical Training and Practice "~" - Conference Week ":" - Examination Period "O" - Practical Training "X" - On-the Job Training "X*" - Pre-graduation Practical Training
"/" - Final State Certification "=" - Vacation "^" - Non-working holidays (not including Sundays)

TOTAL (in weeks):

		Year 1			Year 2			**Total**
		Sem. 1	Sem. 2	Total	Sem. 3	Sem. 4	Total	
""	Theoretical Training and Practice	16	16	32	16		16	**48**
"~"	Conference Week	2	2	4	2		2	**6**
":"	Examination Period	2	2	4	2		2	**6**
"**O**"	Practical Training		4	4				**4**
"**X**"	On-the Job Training					6	6	**6**
"**X***"	Pre-graduation Practical Training					10	10	**10**
"/"	Final State Certification					6	6	**6**
"="	Vacation	2	5	7	1	8	9	**16**
"^"	Non-working holidays (not including Sundays)	1		1	1		1	**2**
Total:		**23**	**29**	**52**	**22**	**30**	**52**	**104**
Duration of training (public holidays are not included)		20	24	44	20	22	42	**86**

II. CURRICULUM

No.	Name	Mode of control				Credits	Hours			Contact hours			Time distribution for courses and semesters (Contact hours/Self study + Contr. in sem. hours in a week)				Dep.	St.number LB*	St.number PR*
													1 year		2 year				
		Exam	Credit-Test	Term Paper	Term Project		Total	Contact hours	Self study + Contr. in sem.	Lecture	Labs	Sem. (Practical Training)	1 sem.	2 sem.	3 sem.	4 sem.			
M1	**Unit 1. Subjects (Modules)**					**59**	**2124**	**704**	**1420**	**248**	**152**	**304**							
M1.STPS1	**Standard Part: General Scientific Subjects Series (a compulsory component)**					**6**	**216**	**64**	**152**			**64**							
M1.STPS1.1	Professional English Training		1,2			6 3/3	216	64	152			64	2/4	2/4			OEE		12
M1.STPS2	**Standard Part: Professional Subjects Series (a compulsory component)**					**17**	**612**	**224**	**388**	**72**	**64**	**88**							
M1.STPS2.1	Electrical machines design		1			4	144	56	88	16	16	24	3.5/4.5				OEE		
M1.STPS2.2	Reliability of electromechanical energy converters		1			4	144	56	88	16	16	24	3.5/4.5				OEE		
M1.STPS2.3	Electrical Engineering Materials and Technologies for Power Engineering	1	1*	1		4	144	48	96	16	16	16	3/5				OEE		
M1.STPS2.4	Electric power compatibility of electrical equipment	1	1*	1		5	180	64	116	24	16	24	4/6				OEE		
M1.SPPS1	**Specific Part: Multidisciplinary Professional Subjects (a component formed by participants in educational process)**					**15**	**540**	**192**	**348**	**80**	**24**	**88**							
M1.SPPS1.1	Design of direct current electrical machines		2*			4	144	48	96	24		24		3/5			OEE		
M1.SPPS1.2	Design of alternating current electrical machines	2	2*		2	4	144	48	96	24		24		3/5			OEE		
M1.SPPS1.3	Technology and equipment for the production of electrical machines and apparatus	2	2*		2	4	144	48	96	16	8	24		3/5			OEE		
M1.SPPS1.4	Mathematical Modeling and Simulation of electrical machines	2				3	108	48	60	16	16	16		3/3			OEE		
M1.SPPS3	**Specific Part: Specific Multidisciplinary Professional Series (a component formed by participants in educational process)**					**21**	**756**	**224**	**532**	**96**	**64**	**64**							
M1.SPPS3.1	**«Проектирование и технология производства электромеханических преобразователей энергии»**					**21**	**756**	**224**	**532**	**96**	**64**	**64**							
M1.SPPS3.1.1.1	Electromechanical systems for electric energy generating of autonomous objects	3	3*		3	6	216	56	160	24	16	16			3.5/8.5		OEE		
M1.SPPS3.1.1.2	Measurements in electromechanical systems	3	3*		3	6	216	56	160	24	16	16			3.5/8.5		OEE		
M1.SPPS3.1.2	Thermal modes of electrical machines	3	3*	3		6	216	56	160	24	16	16			3.5/8.5		OEE		
M1.SPPS3.1.3.1	Special-purpose types of electrical machines	3				3	108	40	68	16	16	8			2.5/3.5		OEE		
M1.SPPS3.1.3.2	Electric micromachines of automatic devices	3				3	108	40	68	16	16	8			2.5/3.5		OEE		
M1.SPPS3.1.4	Industrial turbogenerators		3			3	108	32	76	16		16			2/4		OEE		
M1.SPPS3.1.5	Testing and diagnostics of electromechanical energy converters		3			3	108	40	68	16	16	8			2.5/3.5		OEE		
M2	**Unit 2. Practical Training dispersed, incl. Research Practice**					**22**	**792**		**792**										

No.	Name	Mode of control				Credits	Hours			Contact hours			Time distribution for courses and semesters (Contact hours/Self study + Contr. in sem. hours in a week)				Dep.	St.number LB*	St.number PR*
													1 year		2 year				
		Exam	Credit-Test	Term Paper	Term Project		Total	Contact hours	Self study + Contr. in sem.	Lecture	Labs	Sem. (Practical Training)	1 sem.	2 sem.	3 sem.	4 sem.			
M2.SPP	**Specific Part (a component formed by participants in educational process)**					**22**	**792**		**792**										
M2.SPP.1	Curricular Practical Training																		
M2.SPP.1.1	Students' Scientific Research Paper		1,2,3			22 7/9/6	792		792				0/14	0/18	0/12		OEE		
M2	**Unit 2. Practice**					**30**	**1080**	******	**1080**										
M2.SPP	**Specific Part (a component formed by participants in educational process)**					**30**	**1080**	******	**1080**										
M2.SPP.2	**Practical Training**					**6**	**216**	******	**216**										
M2.SPP.2.1	Practical Training for Primary Professional Skills		2*			6	216	**	216					+			OEE		
M2.SPP.3	**On-the Job Training**					**24**	**864**	******	**864**										
M2.SPP.3.1	Practical Training for Primary Professional Skills and Experience in Professional Activities		4*			9	324	**	324							+	OEE		
M2.SPP.3.2	Pre-Graduation Practical Training		4*			15	540	**	540							+	OEE		
M3	**Unit 3. Final State Certification**					**9**	**324**	******	**324**										
M3.STP	**Standard Part (a compulsory component)**					**9**	**324**	******	**324**										
M3.STP.1	Master's Graduation Thesis (completion, preparing for defence procedure and defence of graduation thesis)					9	324	**	324							+	OEE		
OD	**Optional Disciplines**					**10**	**360**	**160**	**200**	**160**									
OD.SPP	**Specific Part (a component formed by participants in educational process)**					**10**	**360**	**160**	**200**	**160**									
OD.SPP.1	Optional Courses		2,3			10 5/5	360	160	200	160				5/5	5/5		Other division		
									TOTAL:										
Unit 1	**Subjects (Modules)**, in total					**59**	**2124**	**704**	**1420**	**248**	**152**	**304**							
	Standard Part: General Scientific Subjects Series (a compulsory component), in total					6	216	64	152			64							
	Standard Part: Professional Subjects Series (a compulsory component), in total					17	612	224	388	72	64	88							
	Specific Part: Multidisciplinary Professional Subjects (a component formed by participants in educational process), in total					15	540	192	348	80	24	88							
	Specific Part: Specific Multidisciplinary Professional Series (a component formed by participants in educational process), in total					21	756	224	532	96	64	64							
Unit 2	**Practical Training dispersed, incl. Research Practice**, in total					**22**	**792**		**792**										
	Specific Part (a component formed by participants in educational process), in total					22	792		792										
Unit 2	**Practice**, in total					**30**	**1080**	******	**1080**										
	Specific Part (a component formed by participants in educational process), in total					30	1080	**	1080										
Unit 3	**Final State Certification**, in total					**9**	**324**	******	**324**										
	Standard Part (a compulsory component), in total					9	324	**	324										
Total programme hours						**120**	**4320**	**704**	**3616**	**248**	**152**	**304**	**16/38**	**14/40**	**14/40**				
Credits, including practice training and state final certification for semesters and courses						**120**							27	33	27	33			
													60		60				
Scope of Basic Part (Compulsory)						**19**													
Number of exams						**8**							2	3	3				
Number of credit-tests						**9**							4	2	3				
Number of differential credits						**10**							2	4	2	2			
Number of term papers						**3**							2		1				
Number of term Projects						**3**								2	1				

NOTES:

1. Form of control marked "*" denotes differential credit
2. 1 week of all types of practice training, research and state final examination amount to 1,5 ECTS - 54 hours
3. ** - without list of certain types of work, for which the number of contact hours with the teacher is set for 1 student in accordance with the time standards
4. Distribution by courses and semesters marked with "+ "denotes the activities of learners implemented during continuous periods of study
5. * - indicates the number of students in subgroups different from the statutory requirements (PR - 25 st., LB - 12 st.)

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