Speciality Program: Nuclear power plants: design, operation and engineering Field of Studies: Design and operation of nuclear power plants Years of Studies: 5
Language of Training: Russian

Nº	Subject	Semester	Hours	Credits
C.1.1	Mandatory part of Block 1			
C.1.1.1	History	1,2	144	4
C.1.1.2	Philosophy	5	108	3
C.1.1.3	Foreignlanguage*	1-4	360	10
C.1.1.4	The rule of law and modernity	1	72	2
C.1.1.5	Psychology**	4	72	2
C.1.1.6	Highermathematics	1-5	1188	32
C.1.1.7	Physics	1-6	1080	30
C.1.1.8	Computerscience	1,2	216	6
C.1.1.9	Engineeringandcomputergraphics	2,3	180	5
C.1.1.10	Materials science (materials of nuclear reactors)	7	72	2
C.1.1.10 C.1.1.11	Lifesafety	10	108	3
	•			4
C.1.1.12	Strengthofmaterials	3	144	
C.1.1.13	Machine parts and design basics	4	108	3
C.1.1.14	ElectricalandElectronics	4,5	252	7
C.1.1.15	Theory of Probability and Mathematical Statistics	3	108	3
C.1.1.16	Equationsofmathematicalphysics	5,6	252	7
C.1.1.17	Theoreticalmechanics	4	144	4
C.1.1.18	Quantummechanics	6	108	3
C.1.1.19	Physicsofnuclearreactors	6	72	2
C.1.1.20	Neutrontransfertheory	5	72	2
C.1.1.21	TechnicalThermodynamics	5	108	3
C.1.1.22	Statisticalphysics	6	108	3
C.1.1.23	Basics of heat and mass transfer	7	72	2
C.1.1.24	DiscreteMath	6	72	2
C.1.1.25	AutomationBasics	6	72	2
C.1.1.26	Fieldtheory	5	144	4
C.1.1.27	Hydrodynamics	7	144	4
C.1.1.28	PhysicsofDefense	7	108	3
C.1.1.29	NPP technologyandequipment	7	108	3
C.1.1.29	The dynamics of nuclear reactors	7	180	5
C.1.1.30		1	72	2
	PhysicalCultureandsport	1	12	
C.1.2	VariablepartofBlock 1	1.0	216	
C.1.2.1	Chemistry	1,2	216	6
C.1.2.2	Ecology	8	72	2
C.1.2.3	Economy***	3	108	3
C.1.2.4	Metrology, standardizationandcertification	7	72	2
C.1.2.5	Fundamentals of thermodynamics of nuclear power plant cycles	6	144	4
	and thermal power plants			T -
C.1.2.6	Nuclearpowerreactors	8,9	324	9
C.1.2.7	Heat and mass transfer in nuclear power plants	9	180	5
C.1.2.8	Fundamentals of radiation monitoring at nuclear power plants	9	108	3
C.1.2.9	Reliability of NPP equipment	10	180	5
C.1.2.10	Modes of operation and operation of NPP equipment	10	180	5
C.1.2.11	NuclearPowerPlants	9,10	324	9
C.1.2.12	Repair and installation of NPP equipment	8	144	4
C.1.2.13	Steam generators and heat exchangers	7,8	324	9
C.1.2.14	Turbomobile NPP	8,9	324	9
C.1.2.15	Algorithmization and modeling of NPP work processes	9	144	4
C.1.2.16	Automation of NPP control systems	10	216	6
		_		4
C.1.2.17	Water treatment at nuclear power plants	8	144	
C.1.2.18	Economicsofnuclearenergy	9,10	252	7
C.1.3	Disciplinesofchoice		1.4.4	
C.1.3.1.1	Fundamentals of Engineering Design and CAD of NPPs	4	144	4
C.1.3.1.2	Automated design of technological equipment for nuclear power	4	144	4

C.1.3.1.3 Militarytraining 4 144 4 C.1.3.2.1 Environmental impact of nuclear power plants 5 144 4 C.1.3.2.2 Environmental technology at nuclear power plants 5 144 4 C.1.3.2.3 Militarytraining 5 144 4 C.1.3.2.1 Thermomechanical and auxiliary equipment of nuclear power plants 6 180 5 C.1.3.3.1 Auxiliary technological systems of nuclear power plants 6 180 5 C.1.3.3.2 Auxiliary technological systems of nuclear power plants 7 180 5 C.1.3.3.3 Militarytraining 6 180 5 C.1.3.4.1 Water-chemical regimes at nuclear power plants 7 180 5 C.1.3.4.2 Organization and monitoring of water regimes of nuclear power plants 7 180 5 C.1.3.4.2 Militarytraining 7 180 5 C.1.3.4.3 Militarytraining 8 108 3 C.1.3.5.1 NPP electricalequipment 8		plants			
C.1.3.2.1 Environmental impact of nuclear power plants 5	C.1.3.1.3		4	144	4
C.1.3.2.2 Environmental technology at nuclear power plants 5 144 4 C.1.3.2.3 Militarytraining 5 144 4 C.1.3.3.1 Thermomechanical and auxiliary equipment of nuclear power plants 6 180 5 C.1.3.3.2 Auxiliary technological systems of nuclear power plants 6 180 5 C.1.3.4.1 Water-chemical regimes at nuclear power plants 7 180 5 C.1.3.4.2 Organization and monitoring of water regimes of nuclear power plants 7 180 5 C.1.3.4.2 Draganization and monitoring of water regimes of nuclear power plants 7 180 5 C.1.3.4.3 Militarytraining 7 180 5 C.1.3.4.3 Militarytraining 7 180 5 C.1.3.5.1 NPP electricalequipment 8 108 3 C.1.3.5.2 Electrical part of the nuclear power plant 8 108 3 C.1.3.5.3 Militarytraining 8 108 3 C.1.3.6.1 Gamesports 2-6				144	4
C.1.3.2.3 Militarytraining	C.1.3.2.2		5	144	4
C.1.3.3.1 Thermomechanical and auxiliary equipment of nuclear power plants C.1.3.3.2 Auxiliary technological systems of nuclear power plants 6 180 5	C.1.3.2.3		5	144	4
C.1.3.3.2 Auxiliary technological systems of nuclear power plants 6 180 5	C.1.3.3.1	Thermomechanical and auxiliary equipment of nuclear power	6	180	5
C.1.3.3.3 Militarytraining 6 180 5	C.1.3.3.2		6	180	5
C.1.3.4.2 Organization and monitoring of water regimes of nuclear power plants 7 180 5 C.1.3.4.3 Militarytraining 7 180 5 C.1.3.5.1 NPP electricalequipment 8 108 3 C.1.3.5.2 Electrical part of the nuclear power plant 8 108 3 C.1.3.5.3 Militarytraining 8 108 3 C.1.3.6.1 Gamesports 2-6 328 C.1.3.6.2 Improvingphysicaleducation 2-6 328 C.2.1 MandatorypartofBlock 2 2 108 3 C.2.1.1 Educational (fact-finding) practice 2 108 3 C.2.1.2 Educational (design and technological) practice 4 108 3 C.2.1.3 Educational (design and technological) practice 8 108 3 C.2.1.2 VariablepartofBlock 2 2 11 756 21 C.2.2.1 Production (design and technological) practice 8 108 3 C.2.2.1 Product	C.1.3.3.3		6	180	5
C.1.3.4.2 Organization and monitoring of water regimes of nuclear power plants 7 180 5 C.1.3.4.3 Militarytraining 7 180 5 C.1.3.5.1 NPP electricalequipment 8 108 3 C.1.3.5.2 Electrical part of the nuclear power plant 8 108 3 C.1.3.5.3 Militarytraining 8 108 3 C.1.3.6.1 Gamesports 2-6 328 C.1.3.6.2 Improvingphysicaleducation 2-6 328 C.1.3.6.1 Educational (fact-finding) practice 2 108 3 C.2.1 Educational (feeterchip practice 4 108 3 C.2.1.1 Educational (design and technological) practice 4 108 3 C.2.1.2 Educational (design and technological) practice 8 108 3 C.2.1.2 VariablepartofBlock 2 2 11 756 21 C.2.2.1 Production (design and technological) practice 8 108 3 C.2.2.1	C.1.3.4.1	Water-chemical regimes at nuclear power plants	7	180	5
C.1.3.5.1 NPP electricalequipment 8 108 3 C.1.3.5.2 Electrical part of the nuclear power plant 8 108 3 C.1.3.5.3 Militarytraining 8 108 3 C.1.3.6.1 Gamesports 2-6 328 C.1.3.6.2 Improvingphysicaleducation 2-6 328 C.2.1 MandatorypartofBlock 2 2 108 3 C.2.1.1 Educational (fact-finding) practice 2 108 3 C.2.1.2 Educational (research) practice 4 108 3 C.2.1.3 Educational (design and technological) practice 6 108 3 C.2.1.4 Undergraduatepractice 11 756 21 C.2.2 VariablepartofBlock 2 2 10 10 3 C.2.2.1 Production (design and technological) practice 8 108 3 C.2.2.1 Production (operational) practice 8 108 3 C.2.2.2 Production (basic part) 2 <td< td=""><td>C.1.3.4.2</td><td></td><td>7</td><td>180</td><td>5</td></td<>	C.1.3.4.2		7	180	5
C.1.3.5.2 Electrical part of the nuclear power plant 8 108 3 C.1.3.5.3 Militarytraining 8 108 3 C.1.3.6.1 Gamesports 2-6 328 C.1.3.6.2 Improvingphysicaleducation 2-6 328 C.1.3.6.2 Improvingphysicaleducation 2-6 328 C.2.1 Educational (fest-finding) practice 2 108 3 C.2.1.1 Educational (research) practice 4 108 3 C.2.1.2 Educational (design and technological) practice 6 108 3 C.2.1.3 Educational (design and technological) practice 8 108 3 C.2.1.4 Undergraduatepractice 11 756 21 C.2.2.1 Production (design and technological) practice 8 108 3 C.2.2.1 Production (operational) practice 10 108 3 C.2.2.2 Production (operational) practice 11 108 3 C.3.1 Preparation for protection of WRC 21	C.1.3.4.3	Militarytraining	7	180	5
C.1.3.5.3 Militarytraining 8 108 3 C.1.3.6.1 Gamesports 2-6 328 C.1.3.6.2 Improving physical education 2-6 328 C.2.1 MandatorypartofBlock 2	C.1.3.5.1	NPP electricalequipment	8	108	3
C.1.3.6.1 Gamesports 2-6 328 C.1.3.6.2 Improving physical education 2-6 328 C.2.1 Mandatorypartof Block 2 2 108 3 C.2.1.1 Educational (fact-finding) practice 2 108 3 C.2.1.2 Educational (research) practice 4 108 3 C.2.1.3 Educational (design and technological) practice 6 108 3 C.2.1.4 Undergraduate practice 11 756 21 C.2.2 Variable part of Block 2 2 108 3 C.2.1.4 Undergraduate practice 8 108 3 C.2.2.1 Production (design and technological) practice 8 108 3 C.2.2.1 Production (operational) practice 10 108 3 C.2.2.2 Production (operational) practice 11 108 3 C.2.2.3 Researchwork 11 108 3 C.3 State final certification (basic part) 126 6 <td>C.1.3.5.2</td> <td>Electrical part of the nuclear power plant</td> <td>8</td> <td>108</td> <td>3</td>	C.1.3.5.2	Electrical part of the nuclear power plant	8	108	3
C.1.3.6.2 Improving physical education 2-6 328 C.2.1 Mandatorypartof Block 2 2 108 3 C.2.1.1 Educational (fact-finding) practice 2 108 3 C.2.1.2 Educational (research) practice 4 108 3 C.2.1.3 Educational (design and technological) practice 6 108 3 C.2.1.4 Undergraduatepractice 8 108 3 C.2.1.2 VariablepartofBlock 2	C.1.3.5.3	Militarytraining	8	108	3
C.2.1 MandatorypartofBlock 2 C.2.1.1 Educational (fact-finding) practice 2 108 3 C.2.1.2 Educational (research) practice 4 108 3 C.2.1.3 Educational (design and technological) practice 6 108 3 C.2.1.4 Undergraduatepractice 11 756 21 C.2.1 VariablepartofBlock 2 2 2 C.2.2.1 Production (design and technological) practice 8 108 3 C.2.2.1 Production (operational) practice 10 108 3 C.2.2.2. Production (operational) practice 11 108 3 C.2.2.3 Researchwork 11 108 3 C.3.1 Preparation for protection and protection of WRC 216 6 Total 12208 330 F. Optionaldisciplines 8 252 F.1 Militarytraining 8 252 F.2 Construction and installation of equipment for nuclear power plants	C.1.3.6.1	Gamesports	2-6	328	
C.2.1 MandatorypartofBlock 2 108 3 C.2.1.1 Educational (fact-finding) practice 2 108 3 C.2.1.2 Educational (research) practice 4 108 3 C.2.1.3 Educational (design and technological) practice 6 108 3 C.2.1.4 Undergraduatepractice 11 756 21 C.2.1 VariablepartofBlock 2 2 2 C.2.2.1 Production (design and technological) practice 8 108 3 C.2.2.1 Production (design and technological) practice 10 108 3 C.2.2.2 Production (operational) practice 10 108 3 C.2.2.3 Researchwork 11 108 3 C.3.1 Preparation for protection and protection of WRC 216 6 Total 12208 330 F. Optionaldisciplines 8 252 F.1 Militarytraining 8 252 F.2 Construction and installation of equipment for nuclea	C.1.3.6.2	Improvingphysicaleducation	2-6	328	
C.2.1.1 Educational (fact-finding) practice 2 108 3 C.2.1.2 Educational (research) practice 4 108 3 C.2.1.3 Educational (design and technological) practice 6 108 3 C.2.1.4 Undergraduatepractice 11 756 21 C.2.2 VariablepartofBlock 2 2 2 C.2.2.1 Production (design and technological) practice 8 108 3 C.2.2.2.1 Production (operational) practice 10 108 3 C.2.2.2.3 Researchwork 11 108 3 C.3.1 Preparation for protection (basic part) 2 16 6 Total 12208 330 F. Optionaldisciplines 3 252 F.1 Militarytraining 8 252 F.3 Construction and installation of equipment for nuclear power plants 7 72 F.4 MilitaryTraining 01 4-8 843 F.5 Militarytraining 01 (finalcertification)	C.2.1				
C.2.1.2 Educational (research) practice 4 108 3 C.2.1.3 Educational (design and technological) practice 6 108 3 C.2.1.4 Undergraduatepractice 11 756 21 C.2.2 VariablepartofBlock 2 2 2 C.2.2.1 Production (design and technological) practice 8 108 3 C.2.2.2 Production (operational) practice 10 108 3 C.2.2.3 Researchwork 11 108 3 C.3 State final certification (basic part) 216 6 C.3.1 Preparation for protection and protection of WRC 216 6 Total 12208 330 F. Optionaldisciplines 8 252 F.1 Militarytraining 8 252 F.2 Construction and installation of equipment for nuclear power plants 7 72 F.3 Computer-aided design systems for the technological equipment of nuclear power plants 4 72 F.4 MilitaryTraining		Educational (fact-finding) practice	2	108	3
C.2.1.4 Undergraduatepractice 11 756 21 C.2.2 VariablepartofBlock 2 2 C.2.2.1 Production (design and technological) practice 8 108 3 C.2.2.2 Production (operational) practice 10 108 3 C.2.2.3 Researchwork 11 108 3 C.3 State final certification (basic part) 216 6 C.3.1 Preparation for protection and protection of WRC 216 6 Total 12208 330 F. Optionaldisciplines 252 F.1 Militarytraining 8 252 F.2 Construction and installation of equipment for nuclear power plants 7 72 F.3 Computer-aided design systems for the technological equipment of nuclear power plants 4 72 F.4 MilitaryTraining 01 4-8 843 F.5 Militarytraining 01 (finalcertification) 8 252 Generalindicators 3 Numberofcourseprojects 3	C.2.1.2		4	108	3
C.2.2 VariablepartofBlock 2 C.2.2.1 Production (design and technological) practice 8 108 3 C.2.2.1 Production (operational) practice 10 108 3 C.2.2.2 Production (operational) practice 11 108 3 C.2.2.3 Researchwork 11 108 3 C.3 State final certification (basic part) 216 6 C.3.1 Preparation for protection and protection of WRC 216 6 Total 12208 330 F. Optionaldisciplines 8 252 F.1 Militarytraining 8 252 F.2 Construction and installation of equipment for nuclear power plants 7 72 F.3 Computer-aided design systems for the technological equipment of nuclear power plants 4-8 843 F.4 MilitaryTraining 01 4-8 843 F.5 Militarytraining 01 (finalcertification) 8 252 Generalindicators Numberofcourseprojects 3 Numberoftermpapers	C.2.1.3	Educational (design and technological) practice	6	108	3
C.2.2.1 Production (design and technological) practice 8 108 3 C.2.2.2 Production (operational) practice 10 108 3 C.2.2.3 Researchwork 11 108 3 C.3 State final certification (basic part) 216 6 C.3.1 Preparation for protection and protection of WRC 216 6 Total 12208 330 F. Optional disciplines 8 252 F.1 Militarytraining 8 252 F.2 Construction and installation of equipment for nuclear power plants 7 72 F.3 Computer-aided design systems for the technological equipment of nuclear power plants 4 72 F.4 MilitaryTraining 01 4-8 843 F.5 Militarytraining 01 (finalcertification) 8 252 Generalindicators Numberofcourseprojects 3 Numberoftermpapers 8	C.2.1.4	Undergraduatepractice	11	756	21
C.2.2.2 Production (operational) practice 10 108 3 C.2.2.3 Researchwork 11 108 3 C.3 State final certification (basic part) 2 3 C.3.1 Preparation for protection and protection of WRC 216 6 Total 12208 330 F. Optional disciplines 8 252 F.1 Militarytraining 8 252 F.2 Construction and installation of equipment for nuclear power plants 7 72 F.3 Computer-aided design systems for the technological equipment of nuclear power plants 4 72 F.4 MilitaryTraining 01 4-8 843 F.5 Militarytraining 01 (finalcertification) 8 252 Generalindicators Numberofcourseprojects 3 Numberoftermpapers 8	C.2.2	VariablepartofBlock 2			
C.2.2.2 Production (operational) practice 10 108 3 C.2.2.3 Researchwork 11 108 3 C.3 State final certification (basic part) 2 3 C.3.1 Preparation for protection and protection of WRC 216 6 Total 12208 330 F. Optional disciplines 8 252 F.1 Militarytraining 8 252 F.2 Construction and installation of equipment for nuclear power plants 7 72 F.3 Computer-aided design systems for the technological equipment of nuclear power plants 4 72 F.4 MilitaryTraining 01 4-8 843 F.5 Militarytraining 01 (finalcertification) 8 252 Generalindicators Numberofcourseprojects 3 Numberoftermpapers 8	C.2.2.1	Production (design and technological) practice	8	108	3
C.3 State final certification (basic part) C.3.1 Preparation for protection and protection of WRC Total 12208 330 F. Optionaldisciplines F.1 Militarytraining 8 252 F.2 Construction and installation of equipment for nuclear power plants 7 72 F.3 Computer-aided design systems for the technological equipment of nuclear power plants F.4 MilitaryTraining 01 4-8 843 F.5 Militarytraining 01 (finalcertification) 8 252 Generalindicators Numberofcourseprojects 3 Numberoftermpapers	C.2.2.2		10	108	3
C.3.1 Preparation for protection and protection of WRC Total 12208 330 F. Optionaldisciplines F.1 Militarytraining F.2 Construction and installation of equipment for nuclear power plants F.3 Computer-aided design systems for the technological equipment of nuclear power plants F.4 MilitaryTraining 01 F.5 Militarytraining 01 (finalcertification) F.6 Generalindicators Numberofcourseprojects Numberoftermpapers 8 0 252 4-8 843 8-252 8 330 8 252 8 843 8 252 8 843 8 845 8 845 8 845 8 846 8 847 8 848 8 8	C.2.2.3	Researchwork	11	108	3
C.3.1 Preparation for protection and protection of WRC Total 12208 330 F. Optionaldisciplines F.1 Militarytraining F.2 Construction and installation of equipment for nuclear power plants F.3 Computer-aided design systems for the technological equipment of nuclear power plants F.4 MilitaryTraining 01 F.5 Militarytraining 01 (finalcertification) Generalindicators Numberofcourseprojects Numberoftermpapers 8 252 4-8 843 8-252 6-8 843 8 252 8 843 8 843 8 843 8 843 8 843 8 843 8 843 8 843 8 843 8 843 8 843 8 843 8 843 8 843 8 843 8 843 8 843	C.3	State final certification (basic part)			
F. Optional disciplines F.1 Military training F.2 Construction and installation of equipment for nuclear power plants F.3 Computer-aided design systems for the technological equipment of nuclear power plants F.4 Military Training 01 F.5 Military training 01 (final certification) F.5 Military training 01 (final certification) Seneral indicators Number of course projects Number of the technological equipment of a company of the power plants F.5 Military training 01 (final certification) Seneral indicators Number of course projects Number of term papers Seneral indicators Seneral indicator in				216	6
F.1 Militarytraining F.2 Construction and installation of equipment for nuclear power plants F.3 Computer-aided design systems for the technological equipment of nuclear power plants F.4 MilitaryTraining 01 F.5 Militarytraining 01 (finalcertification) Generalindicators Numberofcourseprojects Numberoftermpapers 8 252 72 4-8 843 5-5 Militarytraining 01 (finalcertification) 8 252 3 Numberoftermpapers		Total		12208	330
F.2 Construction and installation of equipment for nuclear power plants F.3 Computer-aided design systems for the technological equipment of nuclear power plants F.4 MilitaryTraining 01 4-8 843 F.5 Militarytraining 01 (finalcertification) 8 252 Generalindicators Numberofcourseprojects 3 Numberoftermpapers 8	F.	Optionaldisciplines			
F.3 Computer-aided design systems for the technological equipment of nuclear power plants F.4 MilitaryTraining 01 4-8 843 F.5 Militarytraining 01 (finalcertification) 8 252 Generalindicators Numberofcourseprojects 3 Numberoftermpapers 8	F.1	Militarytraining	8	252	
F.3 nuclear power plants F.4 MilitaryTraining 01 4-8 843 F.5 Militarytraining 01 (finalcertification) 8 252 Generalindicators Numberofcourseprojects 3 Numberoftermpapers 8	F.2	Construction and installation of equipment for nuclear power plants	7	72	
F.4 MilitaryTraining 01 4-8 843 F.5 Militarytraining 01 (finalcertification) 8 252 Generalindicators Numberofcourseprojects 3 Numberoftermpapers 8	F.3		4	72	
F.5 Militarytraining 01 (finalcertification) 8 252 Generalindicators Numberofcourseprojects 3 Numberoftermpapers 8	F.4	MilitaryTraining 01	4-8	843	
GeneralindicatorsNumberofcourseprojects3Numberoftermpapers8					
Numberofcourseprojects3Numberoftermpapers8				====	
Numberoftermpapers 8					3
1 1					
Numberofexams 35					
					54

^{*} C.1.1.3 "Russian as a foreign language" for foreign students

** The module "Social Entrepreneurship" is included in the work program for the discipline

*** The module "Technological Entrepreneurship" is included in the work program for the discipline