б-ЛАЗР ФГОС 3+ (4 курс)

Bachelor Program: 12.03.05 "Laser equipment and laser technologies"

Institute: Institute of mechanical engineering, materials science

Study Program: “Laser Equipment and Laser Technologies”

№	Subject	Semester	Hours	Credits
B.1.1	**Basic part**			
B.1.1.1	Foreign language	1	108	3
B.1.1.1	Foreign language	2	108	3
B.1.1.2	Philosophy	5	108	3
B.1.1.3	History	1	108	3
B.1.1.4	Economy	3	108	3
B.1.1.5	Mathematics	1	144	4
B.1.1.5	Mathematics	2	144	4
B.1.1.5	Mathematics	3	144	4
B.1.1.5	Mathematics	4	108	3
B.1.1.6	Informatics	1	180	5
B.1.1.7	Physics	1	108	3
B.1.1.7	Physics	2	108	3
B.1.1.7	Physics	3	108	3
B.1.1.8	Chemistry	1	108	3
B.1.1.9	Ecology	1	108	3
B.1.1.10	Engineering graphics (drawing)	1	72	2
B.1.1.11	Descriptive geometry and computer graphics	1	72	2
B.1.1.12	Electrical Engineering	4	216	6
B.1.1.13	Electronics and microprocessor technology	5	180	5
B.1.1.14	Materials Science and Materials Technology	4	216	6
B.1.1.15	Applied mechanics	3	144	4
B.1.1.16	Physical experiment technique and metrology	6	180	5
B.1.1.17	Fundamentals of quantum electronics	3	108	3
B.1.1.17	Fundamentals of quantum electronics	4	144	4
B.1.1.18	The interaction of laser radiation with matter	7	180	5
B.1.1.19	Coherent Optics	6	108	3

B.1.1.20	Nonlinear optics	7	72	2
B.1.1.21	Laser measurements	5	108	3
B.1.1.22	Laser receivers	8	108	3
B.1.1.23	Optical materials and technologies	5	216	6
B.1.1.24	Life safety	6	108	3
B.1.1.25	Physical Culture	1	72	2
B.1.2	**Variation part**			
B.1.2.1	The rule of law: history and modernity	2	72	2
B.1.2.2	Philosophy of Science and Technology	6	72	2
B.1.2.3	Foreign language for professional communication	3	72	2
B.1.2.3	Foreign language for professional communication	4	72	2
B.1.2.3	Foreign language for professional communication	5	72	2
B.1.2.4	Physical foundations of quantum electronics	4	108	3
B.1.2.5	Information Processing Methods	5	144	4
B.1.2.6	Mathematical modeling of physical processes	2	216	6
B.1.2.7	Fundamentals of Industrial Programming	3	108	3
B.1.2.8	Optics Basics	5	108	3
B.1.2.9	Accuracy of measuring instruments	6	252	7
B.1.2.10	Design of typical units of laser devices and devices	8	180	5
B.1.2.11	Methods of assembly, alignment and control of optical-electronic devices of quantum electronics	7	252	7
B.1.2.12	CAD systems	6	216	6
B.1.2.13	Laser Design	8	216	6
B.1.2.14	Laser materials analysis methods	7	216	6

B.1.3	**Disciplines of choice**			
B.1.3.1.1	Psychology	4	108	3
B.1.3.1.2	Engineering Psychology	/4	/108	/3
B.1.3.2.1	History of Russian Culture	1	72	2
B.1.3.2.2	History of Science and Technology	/1	/72	/2
B.1.3.3.1	Fundamentals of the theory of experiment	2	216	6
B.1.3.3.2	Theory of Inventive Problem Solving	/2	/216	/6
B.1.3.4.1	Methods of scientific creativity	3	108	3
B.1.3.4.2	Fundamentals of strategic planning of scientific tasks	/3	/108	/3
B.1.3.5.1	Modeling of laser welding and soldering processes	3	108	3
B.1.3.5.2	Designing high-tech laser systems	/3	/108	/3
B.1.3.6.1	Calculations of the economic efficiency of laser technology devices	7	108	3
B.1.3.6.2	Economic fundamentals of laser technology	/7	/108	/3
B.1.3.7.1	Innovation in Laser Technology	4	72	2
B.1.3.7.2	Innovative systems in the production of laser devices and devices	/4	/72	/2
B.1.3.7.3	Military training	/4	/72	/2
B.1.3.8.1	Digital and analog devices for spectrum processing	5	72	2
B.1.3.8.2	Physics of laser radiation	/5	/72	/2
B.1.3.8.3	Military training	/5	/72	/2
B.1.3.9.1	Optical systems and devices for focusing laser radiation	6	144	4
B.1.3.9.2	The basics of laser	/6	/144	/4

	optics			
B.1.3.9.3	Military training	/4	/72	/2
B.1.3.10.1	Laser technology in the manufacture of machinery and equipment	7	216	6
B.1.3.10.2	Laser materials processing methods	/7	/216	/6
B.1.3.10.3	Military training	/6	/180	/5
B.1.3.11.1	Optoelectronic devices for the study of laser parameters	8	72	2
B.1.3.11.2	Ultrasonic and laser devices	/8	/72	/2
B.1.3.11.3	Military training	/7	/180	/5
B.1.3.12.1	Game sports	2	0	82
B.1.3.12.1	Game sports	3	0	82
B.1.3.12.1	Game sports	4	0	82
B.1.3.12.1	Game sports	5	0	38
B.1.3.12.1	Game sports	6	0	44
B.1.3.12.2	Improving physical education	/2	0	/82
B.1.3.12.2	Improving physical education	/3	0	/82
B.1.3.12.2	Improving physical education	/4	0	/82
B.1.3.12.2	Improving physical education	/5	0	/38
B.1.3.12.2	Improving physical education	/6	0	/44
B.2	**Practice**			
B.2.1	1st Training Practice	2	108	3
B.2.2	2nd Training Practice	4	108	3
B.2.3	Production practice	6	108	3
B.2.4	Manufacturing Practice (SRW)	8	108	3
B.2.5	Undergraduate practice	8	216	6
B.3	**State final certification (basic part)**	8	216	6
F.	**Optional subjects**			
F.1	Introduction of innovative laser technological processes	5	72	

	in the production environment			
F.2	Physical principles of the operation of spectrum recording devices	5	72	
F.3	Principles of ultrasound and laser ranging	7	72	
F.4	Military training 01	4	144	
F.4	Military training 01	5	144	
F.4	Military training 01	6	144	
F.4	Military training 01	7	108	
F.4	Military training 01	8	51	
F.5	Military training 01 (final certification)	8	252	
	Total		8968	240