

Study programme "Engineering Technology, Mechanics and Mechanical Engineering"

Main attributes

Title	Engineering Technology, Mechanics and Mechanical Engineering
Identification code	MDM0
Education classification code	51521
Level and type	Doctoral (Third Cycle) Studies
Higher education study field	Mechanics and Metal Processing, Heat Power Engineering, Heat Technology, and Mechanical Engineering
Head of the study field	Marina Čerpinska
Department responsible	Faculty of Mechanical Engineering, Transport and Aeronautics
Head of the study programme	Marina Čerpinska
Professional classification code	
The type of study programme	Full time
Language	Latvian, English
Accreditation	29.05.2013 - 31.12.2022; Accreditation certificate No 2020/43
Variant 1	
Doctoral program branch	Applied Mechanics
Volume (credit points)	192.0
Duration of studies (years)	Full time studies - 4,0
Degree or/and qualification to be obtained	Doctor of engineering
Qualification level to be obtained	The 8th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	Master's degree of engineering (in the respective field)
Variant 2	
Doctoral program branch	Heat Engineering
Volume (credit points)	192.0
Duration of studies (years)	Full time studies - 4,0
Degree or/and qualification to be obtained	Doctor of engineering
Qualification level to be obtained	The 8th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	Master's degree of heat engineering
Variant 3	
Doctoral program branch	Mechanical Engineering
Volume (credit points)	192.0
Duration of studies (years)	Full time studies - 4,0
Degree or/and qualification to be obtained	Doctor of engineering
Qualification level to be obtained	The 8th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	Master's degree of engineering (in the respective field)
Variant 4	
Doctoral program branch	Production Automation and Processing Equipment
Volume (credit points)	192.0
Duration of studies (years)	Full time studies - 4,0
Degree or/and qualification to be obtained	Doctor of engineering
Qualification level to be obtained	The 8th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	Master's degree of engineering (in the respective field)
Variant 5	
Doctoral program branch	Medical Engineering and Medical Physics
Volume (credit points)	192.0
Duration of studies (years)	
Degree or/and qualification to be obtained	Doctor of engineering
Qualification level to be obtained	The 8th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	Master's degree of physics or chemistry science
Variant 6	
Doctoral program branch	Biomaterials and Biomechanics
Volume (credit points)	192.0

Duration of studies (years)	Full time studies - 4,0
Degree or/and qualification to be obtained	Doctor of engineering
Qualification level to be obtained	The 8th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	Master's degree of physics or chemistry science

Description

Abstract	Engineering doctoral program "Engineering Technology, Mechanics and Mechanical Engineering" in direction Applied Mechanics (reference number MDM1) duration is 4 years (192 credits) This is consistent with the current 4-year study trends in education in Europe. The program works RTU Faculty of Mechanical Engineering, Transport and Aeronautics, Institute of Mechanics and Mechanical Engineering. In the first year engineering doctoral basic education courses (Analytical Mechanics, Mechanics of Continuous media.) are studied, while the second and third year is to learn the Specialized courses (variation principles of mechanics, nonlinear oscillations in nature and technology, mechanics of composite materials, etc.). At the fourth year the finalization of the thesis is made (which started in the first three years). At the end of study the graduation thesis is defended.
Aim	Engineering doctoral program "Engineering Technology, Mechanics and Mechanical Engineering" in direction Applied Mechanics has ultimate goal to prepare highest quality knowledgeable specialists in technical innovation and development for engineering research laboratories as well for academic environment at the universities.
Tasks	1. To give the Latvian people's a possibility to get the highest quality education in the field of engineering to meet the requirements of Europe and the world, to enable foreign students to study in the RTU, equivalent to the world-known programs (eg Engineering Mechanics, Mechatronics, Material Science). 2. To apply of modernized teaching methods in studying process (case studies, work group in computing hall, research work in experimental halls, performing in scientific seminars, etc.). 3. Use of modern quality management methods of studying process, much attention on application of innovative ideas (analysis, thesis, antithesis, synthesis, Science, technology, inventions, patents, production). 4. To prepare a high qualified specialists for science and universities in community-needed directions, for example, Applied or continuous medium mechanics, mechanical engineering equipment, robot design, etc.
Learning outcomes	Student at the end of the program will be able: 1. Fundamentally evaluate the mechanical, electromechanical (mechatronics) and mechanical engineering object motion and collision, essence of technology processes on the base of the natural laws. 2. To offer visual examples of materials, machinery and construction in the Internet in various sectors of the economy and social life. 3. To optimize the control and parameters of mechanical and electromechanical systems under the given restrictions on the control action and phase coordinates. 4. To synthesize a fundamentally new mechanisms and machines using modern computer software.
Final/state examination procedure, assessment	The ultimate test is designed and bounded thesis that is assessed by Promotion Council experts and awarded as doctoral degree in engineering.
Description of the future employment	Doctors of Engineering have great employment opportunities for both local and international science projects that require experience in noise and vibration management processes, energy extraction technologies, robotics, aeronautics, fluid mechanics and new materials synthesis.
Special enrollment requirements	The main provisions for the initiation of the study is to obtain an academic or professional master's degree in engineering.
Opportunity to continue studies	Studies can continue in lifelong learning programs, or other doctoral programs in Latvia and abroad.

Courses

No	Code	Name	C.p. [1]	C.p. [2]	C.p. [3]	C.p. [4]	C.p. [5]	C.p. [6]
A		Compulsory Study Courses	15.0					
1	MTM639	Analytical Mechanics. Advanced Course	10.0					
2	MMP606	Basics of Continuous Media Mechanics	5.0					
B		Compulsory Elective Study Courses	21.0					
B1		Field-Specific Study Courses	21.0					
1	MMP649	Variational Principles in Mechanics	10.0					
2	MMP638	Nonlinear Oscillations in Nature and Engineering	10.0					
3	MTM638	Dynamics and Strength of Machines and Mechanisms	10.0					
4	MMP644	Mechanics of Composite Materials	10.0					
0	MMP634	Nonlinear Mechanics of Materials	5.0					
1	MMP647	Fracture Mechanics	5.0					
2	MTM640	Dynamic Analysis, Optimisation and Synthesis of Machines	5.0					
3	MTM641	Multidisciplinary Analysis and Optimization	6.0					
C		Free Elective Study Courses	6.0					
E		Final Examination	150.0					
1	MTM009	Research Work	150.0					
A		Compulsory Study Courses		15.0				
1	MSE613	Thermodynamics and Statistic Physics		10.0				
2	MSE615	Flow Mechanics		5.0				
B		Compulsory Elective Study Courses		21.0				
B1		Field-Specific Study Courses		21.0				
1	MSE611	Methods of Flue Gases Purification		10.0				
2	MSE612	Theoretical aspects of combustion in external fields		10.0				
3	MSE618	The Software in Heat Calculations		5.0				
4	EEP601	Patents		2.0				
5	EEI603	Supervising of Scientific Project		2.0				
6	MTM636	Design and Analysis of Engineering Experiments		2.0				
C		Free Elective Study Courses		6.0				
E		Final Examination		150.0				
1	MTM009	Research Work		150.0				
2	MSE009	Research Work		150.0				
A		Compulsory Study Courses			15.0			
1	MTH603	Methods of Experimental Research of Machines			10.0			
2	MTH604	Computer Aided Analysis of Mechanical Systems			5.0			
B		Compulsory Elective Study Courses			21.0			
B1		Field-Specific Study Courses			21.0			
0	MTM638	Dynamics and Strength of Machines and Mechanisms			10.0			
1	MTH602	Numerical Analysis for Research of Dynamics of Machines (for Master Students)			10.0			
2	MTM640	Dynamic Analysis, Optimisation and Synthesis of Machines			5.0			
3	MMP634	Nonlinear Mechanics of Materials			5.0			
0	MTH601	Computer-Aided Analysis of Mechanical Systems			10.0			
1	MMP635	Automation of Calculation of Construction Durability			10.0			
2	MMP606	Basics of Continuous Media Mechanics			5.0			

3	MTM64 1	Multidisciplinary Analysis and Optimization			6.0			
C		Free Elective Study Courses			6.0			
E		Final Examination			150.0			
1	MTM00 9	Research Work			150.0			
A		Compulsory Study Courses				15.0		
1	MRA60 1	Computer Integrated Manufacturing				10.0		
2	MTM64 0	Dynamic Analysis, Optimisation and Synthesis of Machines				5.0		
B		Compulsory Elective Study Courses				21.0		
B1		Field-Specific Study Courses				21.0		
1	MMP63 5	Automation of Calculation of Construction Durability				10.0		
2	MMP63 8	Nonlinear Oscillations in Nature and Engineering				10.0		
3	MTM63 8	Dynamics and Strength of Machines and Mechanisms				10.0		
4	MTM63 9	Analytical Mechanics. Advanced Course				10.0		
5	MRA32 7	Automated Production Control				5.0		
6	MMP60 6	Basics of Continuous Media Mechanics				5.0		
7	MRA40 7	Product Design and Development				3.0		
8	MRA35 5	Design Automation				3.0		
C		Free Elective Study Courses				6.0		
E		Final Examination				150.0		
1	MRA00 9	Research Work				150.0		
A		Compulsory Study Courses					15.0	
1	MEE602	Contemporary Medical Physics and Technology					10.0	
2	MMK60 4	Methods of Surface Analysis					5.0	
B		Compulsory Elective Study Courses					21.0	
B1		Field-Specific Study Courses					21.0	
1	MEE603	Physics of Biomaterials					10.0	
2	MEE601	Spectroscopy in Medicine					10.0	
3	MMK60 1	Nondestructive Inspection Methods					5.0	
4	MMK60 7	Up-to-date Materials					5.0	
5	MEE415	Science Intensive Technologies					4.0	
C		Free Elective Study Courses					6.0	
E		Final Examination					150.0	
1	MEE009	Research Work					150.0	
A		Compulsory Study Courses						15.0
1	BBB602	Mechanics of Biological Tissue						10.0
2	BBB603	Biomaterials						5.0
B		Compulsory Elective Study Courses						21.0
B1		Field-Specific Study Courses						21.0
1	BBB607	Testing of Biological Tissue						5.0
2	BBB601	Mechanics of Composite Materials						5.0
3	BBB604	Finite Element Method						5.0
4	BBB605	Technology of Biomaterials						10.0
5	BBB606	Technology of Biocoatings						5.0
6	BBB614	Specialized Research Seminars						6.0
C		Free Elective Study Courses						6.0
E		Final Examination						150.0
1	BBB009	Research Work						150.0

K.p.[*] kredītpunkti studiju programmas variantā