

## Study programme "Production Engineering"

### Main attributes

Title	Production Engineering
Identification code	MDR0
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	Anita Avišāne
Professional classification code	
The type of study programme	Full time, Extramural
Language	Latvian, English
Accreditation	29.05.2013 - 31.12.2022; Accreditation certificate No 2020/43
Variant 1	
Doctoral program branch	Instrument Engineering
Volume (credit points)	192.0
Duration of studies (years)	Full time studies - 4,0; Extramural - 5,0
Degree or/and qualification to be obtained	Doctor of Machine Science
Qualification level to be obtained	The 8th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	Engineering or equal to it academic or professional Master's degree in engineering.
Variant 2	
Doctoral program branch	Mechanized Production and Control
Volume (credit points)	192.0
Duration of studies (years)	Full time studies - 4,0; Extramural - 5,0
Degree or/and qualification to be obtained	Doctor of Machine Science
Qualification level to be obtained	The 8th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	Engineering or equal to it academic or professional Master's degree in engineering.

### Description

Abstract	<p>The Riga Technical University (RTU) engineering Doctorate study programme “Production Engineering” is the highest level study programme in the field of mechanics and sciences of machines. Implementation of the Doctorate study programme is carried out by the structural units of the Institute of Manufacturing Engineering of RTU Faculty of Transport and Science of Machines. The programme is being implemented in cooperation with other structural units of the university. Duration of studies is 4 years, the programme scope 192 credits (288ECT). The programme comprises mastering of parts A and B study courses, mastering of part C course and performance of other activities (assisting at lectures, leading of workshops, leading of bachelor's and course papers, participation in project development as well as engaging actively in the RTU and also international Doctorate school programmes).</p> <p>Mastering of theoretical competencies and knowledge is evaluated by means of several compulsory exams in the respective sub-sectors of the science. Each doctoral student has an individual doctorate study plan and corresponding work programmes. Doctoral students are being offered different duration studies abroad. The structural unit develops cooperation with universities abroad and thus doctoral students acquire different level additional qualification. The corresponding level and volume study courses that are mastered abroad may be equated to and included in the Doctorate study programme.</p>
Aim	The objective of the Doctorate study programme “Production Engineering” is to prepare highest qualification specialists in the fields of manufacturing engineering and production, who would be able to solve scientific innovation tasks, and prepare specialists for higher educational establishments and research institutions.
Tasks	The tasks of the Doctorate study programme are as follows: 1. To provide in-debt theoretical knowledge into the fundamental directions of studies, as well as acquire abilities to carry out scientific and research works and scientific discussion skills on the topics of his/her scientific sector (sub-sector) or that of other persons; 2. To develop Doctoral students' knowledge on technical innovation methods; 3. Provide Doctoral students with knowledge and skills of pedagogical work; 4. To promote performance of internationally significant researches, notification of their results and participation at international and local conferences.

Learning outcomes	<p>The programme graduate is able to assess and choose independently methods adequate for the researches in the science of machines, has provided a new insight into the existing knowledge and its practical application by carrying out a considerable size original research, a part of which is on the level of internationally cited publications. Is able to communicate both orally and in writing on the field of his/her scientific activity (his/her sector) with broader scientific circles and society in general. Is able to improve independently his/her scientific qualification, execute scientific projects, gaining achievements meeting the international criteria of the respective branch of science, to lead research or development tasks in companies, institutions and organizations requiring broad research knowledge and skills.</p> <p>Is able, carrying out independent, critical analyses, synthesis and evaluation, to solve significant research or innovation tasks, to move forward independently research ideas, to plan, structure and lead large scale scientific projects, including international ones. Is able to demonstrate good knowledge and understanding of the most urgent scientific theories and verities, masters research methodology and modern research methods in the respective sector of science or professional field and at the contiguity of different fields.</p>
Final/state examination procedure, assessment	<p>At the end of the study programme a doctorate paper (dissertation) is presented. The Doctor's scientific degree is awarded for independently developed doctorate paper containing scientifically original, tested results and giving new ideas in the definite sub-sector of the science. The conformity of the paper is being assessed by the State Scientific Qualification Commission, experts of the Latvian Science Board and the Doctorate Board, taking into consideration the following criteria: whether the scientific work a completed research with sufficient scientific novelty, corresponding content and size, whether modern analyses and data processing methods have been used in the work, are there publications in reviewed international scientific editions, have the research results been discussed at international scientific conferences (workshops). The Doctorate Board passes a decision by secret ballot.</p>
Description of the future employment	<p>The Doctoral studies result in knowledge for future scientific and pedagogic work in higher educational establishments, scientific research institutions and enterprises.</p>
Special enrollment requirements	<p>Engineering or equal to it academic or professional Master's degree in engineering.</p>
Opportunity to continue studies	<p>Not envisaged.</p>

## Courses

No	Code	Name	C.p. [1]	C.p. [2]
<b>A</b>		<b>Compulsory Study Courses</b>	<b>15.0</b>	
1	MAB666	Methods of Advanced Technology	10.0	
2	MAB611	Statistical Mechanics of Surfaces	5.0	
<b>B</b>		<b>Compulsory Elective Study Courses</b>	<b>21.0</b>	
<b>B1</b>		<b>Field-Specific Study Courses</b>	<b>21.0</b>	
1	MAB622	Principles of Automation of Technology	10.0	
2	MAB640	Wear Process Calculation	5.0	
3	MAB615	Theoretical Principles of Welding	5.0	
4	MAB655	Microwelding Technology and Equipment	10.0	
5	MAB667	Analysis of 3D Surface Deviations	10.0	
6	MAB670	Optimization of Machine Unit Maintenance	5.0	
7	MAB671	Research Workshop in Mechanical Engineering	6.0	
<b>C</b>		<b>Free Elective Study Courses</b>	<b>6.0</b>	
<b>E</b>		<b>Final Examination</b>	<b>150.0</b>	
1	MAB009	Research Work	150.0	
<b>A</b>		<b>Compulsory Study Courses</b>		<b>15.0</b>
1	MAI600	Cutting Theory and Machining Processes		10.0
2	MAI605	Mathematical Simulation of Machining Processes and Tool Design		5.0
<b>B</b>		<b>Compulsory Elective Study Courses</b>		<b>21.0</b>
<b>B1</b>		<b>Field-Specific Study Courses</b>		<b>21.0</b>
1	MAI602	Theory of Fluid Mechanics		10.0
2	MAI603	Surface Plastic Deformation		10.0
3	MAI604	Heat Processes in Machining		10.0
4	MAI608	Machine Repair Technology		5.0
5	MAI601	Physiochemical Treatment Processes and Tools		10.0
6	MAI607	Production Technology and Logistics		10.0
7	MMI412	Design of Production Machinery		5.0
8	MAB611	Statistical Mechanics of Surfaces		5.0
9	MAT601	Science of Patent		2.0
10	MAT600	Material Processing Technology		4.0
11	MAI606	Theory of Material Processing		10.0
<b>C</b>		<b>Free Elective Study Courses</b>		<b>6.0</b>
<b>E</b>		<b>Final Examination</b>		<b>150.0</b>
1	MAI009	Research Work		150.0

*K.p.[\*] kredītpunkti studiju programmas variantā*