RĪGAS TEHNISKĀ
UNIVERSITĀTE

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Study programme "Design Engineering"

Main attributes

Title	Design Engineering
Identification code	WGT0
Education classification code	47548
Level and type	Professional Master (Second Cycle) Studies
Higher education study field	Manufacture and Processing
Head of the study field	Edgars Kirilovs
Department responsible	Institute of Architecture and Design
Head of the study programme	Zane Zelča
Professional classification code	N/A
The type of study programme	Full time
Language	Latvian, English
Accreditation	29.06.2022 - 30.06.2028; Accreditation certificate No 2022/41
Variant 1	
Volume (credit points)	120.0
Duration of studies (years)	Full time studies - 2,0
Degree or/and qualification to be obtained	Professional master degree in design engineering / –
Qualification level to be obtained	The 7th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	• Professional bachelor degree in textile production technologies and product manufacturing, material production technologies and product manufacturing, or equivalent education; or • Professional bachelor degree in engineering and technology or natural sciences and entrance exam, and at least one year of work experience in engineering and technology or textile production technology and product manufacturing; or • Professional bachelor degree in engineering and technology or natural sciences, and at least six credits of study courses in clothing and textile technologies, and clothing and textile production.
Variant 2	
Volume (credit points)	120.0
Duration of studies (years)	Full time studies - 2,0
Degree or/and qualification to be obtained	Professional master degree in design engineering / –
Qualification level to be obtained	The 7th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	• Professional bachelor degree in material production technologies and product manufacturing or equivalent education, or professional bachelor's degree in design or equivalent education; or • Professional bachelor degree in engineering and technology or natural sciences or creative industries and entrance exam and at least one year of work experience in engineering and technology or design, or textile production technologies and product manufacturing; or • Professional bachelor degree in engineering and technology or natural sciences, or in the field of creative industries and at least six credit points of study courses in material technology and design.

Description

Abstract	The interdisciplinary study programme for obtaining a professional master's degree in design engineering is based on scientific discovery, the latest technologies and materials creative application in design project solutions to meet user needs, taking into account functional, aesthetic, environmental safety, sustainability and production requirements. Today's young practitioners work in an environment where design is crucial to competitive business and the demand for high-quality design in society is growing, along with the increasing role of latest technologies in every industry and aspect of life. Therefore, it is necessary to continuously identify and integrate new materials, forms, fittings, finishes and technologies in design projects, as well as to cooperate with specialists and production engineers in related fields on a daily basis.
Aim	To provide and develop students' professional, creative, and research competencies: - in the field of textile and clothing design and production, by training specialists who ensure the company's order fulfilment, their execution process, and employee management, effective development, implementation, and management of new technologies, methodologies, and systems, as well as improvement and expanding the understanding of professional ethics and socially responsible management or - to prepare specialists in the field of design for work in the field of indoor and outdoor product development in accordance with the ergonomic and technological solutions of their design usability, using appropriate raw materials (wood, metal, textiles, etc.), the respective processing technologies and their knowledge and skills of application of the implementation systems.

Tasks	The tasks of the study course: - to prepare LQF level 7 specialists in the field of clothing and textile production technology who either individually or leading a team or several teams in a parallel plan, organize and manage product production processes, accounting and logistics. Working in a team, develop the company's quality management system. By systematically analyzing information on the development trends and standards of the textile industry and integrating knowledge from different fields, design and implement a new design, modelling, technological process improvement, and/or design technologies, concepts, methods, and/or experimental models. Work on the introduction of new products into production. Define the principles of working time standardization in production, develop and implement company-level standards, analyse manufacturing productivity and manage the implementation of changes in work efficiency. Understand and drive the development of textile industries and related areas; - to prepare LQF level 7 design specialists who create new products and manage product development projects in accordance with environmental, communication, and/or service design projects; analyze the needs, problems, habits, etc. of the target audience (user); develop a methodological framework for testing, check the compliance of products and materials with regulatory enactments, prepare a technical project, perform author supervision, presentation and marketing of a product and/or service. Specializations according to the needs of industries.
Learning outcomes	Graduate of the study programme "Design Engineering": - Will be able to demonstrate basic and specialized knowledge relevant to the design specialization or the specialization of clothing and textile production technologies. Will be familiar with the methods of research planning, processing and interpretation of results, able to perform comparative analysis and assess compliance with the problem to be solved, understanding the need to ensure the reliability of the data obtained and being able to provide it for research in the field related to the specialization. - Will be able to develop conceptual solutions for the spatial environment, products and / or their collections according to consumer needs and project / market requirements, demonstrate the conceptual solution through preliminary design drawings, mock-ups and prototypes; create 2D & 3D visualizations in digital environments, as well as train others to use them. - Will be able to manage the development of products, collections, long-term and short-term brands, administer contracts, perform author's supervision in project execution, use industry terminology in the official language, use and comply with the regulatory enactments of the Republic of Latvia and international partners, industry-related regulations and regulatory documents; adhere to the professional and general ethical principles. - Will be able to coordinate the work outcomes with clients, cooperation partners and necessary institutions; plan the necessary research, analyze and design a product promotion campaign; organize order delivery to customers, arrange and perform quality management of order fulfilment; draw up documents in conformity with the requirements of record keeping regulatory enactments. - Will be able to perform professional, innovative and research activities, formulate and analytically describe information, plan and perform research necessary for problem identification and solution finding in the chosen specialization and related science sector. - Will be able to analyze and forecast scientific and technological development trends, assess their impact on competitors' products, as well as the aesthetic, material, functional, ergonomic and economic qualities of the products / collections to be developed. - Will be able to understand and analyze the possibilities of replacing non-renewable resources with regularly renewable ones, develop environmentally friendly solutions, integrating good design principles and finding economically viable solutions throughout the life cycle of the product from the extraction of raw materials, production of materials and use of the product to recycling or disposal. - Will be able to understand, analyze and synthesize material combinations, ensuring the compatibility of their properties and uninterrupted service time; analyze industry-leading technologies, follow the development and trends of new technologies, understanding the interlinked work processes - Will be able to think creatively, analytically, and comprehensively (holistically), independently make decisions corresponding to their level of competence and take responsibility for them.
Final/state examination procedure, assessment	The graduate of the study programme: - demonstrates specific knowledge relevant to the profession of designer or clothing and textile production engineer; - knows the methods of research planning, processing, and interpretation of results, is able to perform comparative analysis and assess the compliance with the problem to be solved, understands the need to ensure the reliability of the obtained data, and is able to provide it in research in the field; understands the most important concepts and regulations; does research findings integration, and critical analysis; - knows and follows the development trends and accomplishments of science and technology in the profession and specialisation in relevant scientific and research sectors; - is capable of developing conceptual solutions for the environment, products, and/or their collections in accordance with consumer demands and project/market criteria, visualising conceptual solutions in sketches, layouts/samples, and performing 3-dimensional visualisations in digital environments, and training others to apply them; - is capable of applying information technologies in the design process, including advanced design technologies such as automated design systems and production management systems, program-driven machines, and general-purpose and specialised databases; - is capable of managing the development of products, collections, long-term and short-term brands, subordinate and own professional development, contract administration, author supervision during project implementation, application of industry standards and technical regulations, compliance with industry and cross-border regulations, industry-related regulations, and regulatory documents, implementation of professional and general ethics in communication with clients, cooperation partners, and others; - is capable of applying acquired knowledge and skills, performing professional, innovative, or research activities, formulating and analytically describing information, planning and carrying out the research necessary for problem identification and solution in their field of science and profession; explaining the results, discussing them reasonably and argumentatively, and leading research projects/programmes; - is capable of analysing and forecasting scientific and technological development trends, as well as assessing their influence on the aesthetic, material, functional, ergonomic, and economic features of created products and collections; - is capable of understanding and analysing the possibilities of replacing non-renewable resources with regularly renewable ones, creating environmentally-friendly solutions, material combinations with suitable properties, integrating good design principles, and finding economic solutions throughout the product life cycle from raw material extraction, material production, and consumption to product disposal/recycling.

Description of the future employment	- Master's level specialists in clothing and textile production technologies ensure the company's order fulfilment process and employee management; the development, implementation and management of effective new technologies, methodologies and systems, as well as the advancement and awareness-raising of professional ethics and corporate social responsibility. - Master's level specialists in the field of design lead the development of a product, spatial environment, communication and/or service design projects; analyse user needs, problems, habits, etc.; develop a methodological framework for testing, check the conformity of products and materials with regulations, prepare technical projects, perform author's supervision, present and direct the product and/or service in the market.
Special enrollment requirements	The equivalency of a bachelor's degree for admission in the professional master's study programme is based on individual assessment: - for design specialization a negotiation process takes place, examining the applicant's work portfolio and the compliance of knowledge, skills and professional qualifications acquired in the previous study process; - for specialization in clothing and textile technologies admission is on the basis of the applicant's education documents and the compliance of professional qualifications, as well as the knowledge gained in professional activities.
Opportunity to continue studies	Doctoral studies.

Courses

No	Code	Name	C.p. [1]	C.p. [2]
A		**Compulsory Study Courses**	**65.0**	**65.0**
1	AD0042	Design & Technologies Challenges for the 21st Century	5.0	5.0
2	AD0138	Design & Technologies for Sustainability	6.0	6.0
3	AD0146	Research Design and Analysis	9.0	9.0
4	IV0557	Contemporary Issues of Strategic Management and Marketing	6.0	6.0
5	AD0141	Design and Technologies Project Management	6.0	6.0
6	AD0145	Design Marketing	5.0	5.0
			28.0	
1	DA0052	Physics and Electronics of Smart Materials	4.0	
2	AD0140	Development of Smart Products	6.0	
3	AD0154	Product Life Cycle and Quality System Management	6.0	
4	AD0147	Technological Systems and Supply Chains Management and Logistics	6.0	
5	AD0144	Clothing Design 2D and 3D Technologies	6.0	
				28.0
1	AD0001	User-Centered Design		5.0
2	AD0048	Design for Change		5.0
3	AD0051	Parametric 3D Modelling		5.0
4	AD0029	Integrated product design and development		7.0
5	AD0149	Networks, Planning and Design		6.0
B		**Compulsory Elective Study Courses**	**11.0**	**11.0**
B1		**Field-Specific Study Courses**	**11.0**	**11.0**
			11.0	
1	AD0056	Innovations in Textile Materials	5.0	
2	IV0144	Managerial Psychology	5.0	
3	BS0036	Business Ethics	5.0	
4	AD0051	Parametric 3D Modelling	5.0	
5	AD0001	User-Centered Design	5.0	
6	AD0048	Design for Change	5.0	
7	AD0139	Design Commentary and Criticism	6.0	
8	AD0150	Advanced Manufacturing of Garment	6.0	
9	AD0151	Development of Functional Garment	6.0	
10	AD0152	Development of Technical Textiles	6.0	
				11.0
1	AD0049	Event Design Management		5.0
2	AD0047	Design and Branding Strategy		5.0
3	AD0139	Design Commentary and Criticism		6.0
4	AD0140	Development of Smart Products		6.0
5	AD0154	Product Life Cycle and Quality System Management		6.0
C		**Free Elective Study Courses**	**5.0**	**5.0**
D		**Practical Placement**	**9.0**	**9.0**
1	AD0148	Internship	9.0	
2	AD0142	Internship (Design)		9.0
E		**Final Examination**	**30.0**	**30.0**
1	AD0153	Master Thesis	30.0	
2	AD0143	Master Thesis		30.0

K.p.[*] kredītpunkti studiju programmas variantā