

Design and Textile Materials,

2. cycle Master Study programme

1 General description of the programme

The Masters Study programme of the second cycle “Design and Textile Materials“ lasts two years. A student has to acquire 120 ECTS points. The study programme is aligned with the Bologna directives and is related to other study programmes in Europe. It represents the basis for the Doctoral study programme of the third cycle with the name “Textile Materials”.

During the postgraduate Masters Study programme of Design and Textile Materials students will gain theoretical knowledge and special practical skills to be able to solve the most demanding tasks in the field of advanced textile materials and design. The aim of the study programme is to educate new type of graduates who will be able to integrate the knowledge from the field of textile technologies, new materials and design to develop new advanced textile and clothing products for global market niches. The students will be trained to manage complex technological processes and to design textile products regarding their form, quality, functionality and price by combining theoretical knowledge and practical solutions, procedures and methods. Student’s ability to transfer theoretical knowledge to practice will be based on abstract and associative study and analysis of problems.

In addition to the postgraduate master's study program students will be educated to be able to join research and development institutes and national research institutions. The contemporary based study programme is adapted to reflect the rich scientific research activities of the academic staff at the Faculty of Mechanical Engineering.

The programme is divided into two study modules

- Textile Materials
- Engineering Design of Textile Materials.

These study modules are designed in such a manner that the students specialise in one of the specific fields, i.e. textile materials and design. Each module comprises 78 ECTS of compulsory courses and 12.ECTS of selective courses. In the 4th semester of the second study year students prepare their Masters Dissertations in the amount of 30 ECTS. The Masters Dissertation work comprises scientific and research study of a certain problem. The students have to prepare the Masters Dissertations, present and defend them in front of an examination board. The Masters Dissertation work significantly contributes to the final student M.Sc. classification. After finishing their studies they can continue their studies on PhD study programmes, which are also offered at our Faculty.

2 Short descriptions of the study modules

Textile Materials

The students of this module will gain the most advanced theoretical and practical knowledge needed for developing new textile materials and processes. Their skills will be based on a detailed knowledge of chemistry, physics, polymers, structure and properties of high-performance fibres, analytical methods, engineering design, surface properties of polymer materials, eco-textiles, etc. Particular attention is devoted to new technologies, e.g. nanotechnology, biotechnology, recycling, ecology, advanced smart, and intelligent textiles, etc.

Engineering Design of Textile Materials

The students of this module will gain the theoretical and practical knowledge needed for designing textile forms. Their training comprises the integration of knowledge on the properties of textile materials, colour science and colour studies, presentation techniques and virtual catalogues, developing collections, visual communications, eco-design, multi-functionality in design, etc. Students can specialise in different fields, e.g. fashion design, designing fashion accessories and footwear, designing textiles for interiors, creating collections and styles, etc.

3 General learning outcomes and competencies of the students

Graduate students are able to solve problems based on their acquired knowledge of natural sciences, information technology, design, and textile materials and technologies. They are able to plan, design, produce and monitor complex textile technological processes and products by also taking into account the qualities and prices of the products and processes. They have skills in the integration of environmental requirements regarding the problems of textile materials and textile design. They are creative and innovative due to their interdisciplinary study and are able to analyse, synthesise, and predict solutions and consequences. They have the abilities to apply knowledge in practice and they are autonomous in their professional work. They are capable of managing research methods, procedures and processes, and developing critical and self-critical assessments. During their study they will have developed communication skills, particularly communication within an international environment and trained for co-operation and teamwork.

4 The main subject-specific learning outcomes and competencies of the students

The main subject-specific competencies that are obtained from the Master of Science study programme of Design and Textile Materials are:

- an ability to use their knowledge within specific fields of textile materials and design: development of new textile materials, environmental engineering, fashion design, ,
- an ability to introduce new technological processes and production facilities,
- an ability to apply and upgrade computer-aided design for advanced design and optimization procedures,
- an ability to apply and upgrade processes and tools for modelling, optimisation and simulation of processes,
- an ability to analyse processes in textile engineering and designing textiles,
- an ability to develop and apply the modern production technologies, production automatisisation and new production concepts,
- an ability to evaluate information, material and energy flows by devising, designing, assembly, disassembly and maintaining products,
- an ability for synthesis of the current production methods and technologies, based on analysing, evaluating and judging of existing production methods and technologies,
- an ability to systematically organise and manage a production process,
- an ability to analyse the qualities of products by applying appropriate measurements and quality assurance,
- an ability to permanently develop skills by application of knowledge within specific professional areas,
- an ability to apply modern computer, information and communication technologies in the assessment procedures within specific professional areas,

5 General curriculum

The postgraduate Master Study programme of Design and Textile Materials lasts two years (4. semesters) in total amounting to 120 ECTS credit points. The students can select from one of the two offered study modules:

1. Textile Materials
2. Engineering Design of Textile Materials

Part	Part of study	Duration	ECTS credits
1	Module courses	1 year (2 semesters)	60
2	Module courses	1 year (2 semesters)	60
Total:		2 years	120

6 Detailed curriculum

Modul- Textile materials

1. year							
Subject	1 st semester			Cont. hours	Individ. work	Hours	ECTS
	L	S	T				
MECHANICAL PROPERTIES OF TEXTILE MATERIALS	45	0	30	75	105	180	6
ANALYTICAL METHODS IN TEXTILE	45	0	30	75	105	180	6
ORGANIC CHEMISTRY	30	0	30	60	120	180	6
POLYMERS	30	0	30	60	120	180	6
TEXTILE WASTEWATERS TREATMENT	30	15	15	60	120	180	6
Together semester:	180	15	135	330	570	900	30

Subject	2 nd semester			Cont. hours	Individ. work	Hours	ECTS
	L	S	T				
TEXTILE PERFORMANCE AND STRUCTURE PLANNING	30	30	15	75	105	180	6
BIOACTIVE TEXTILE MATERIALS	30	15	15	60	120	180	6
STRUCTURE AND PROPERTIES OF HIGH PERFORMANCE FIBRES	30	15	15	60	120	180	6
PHYSICS – SELECTED TOPICS	30	0	30	60	120	180	6
APPLICATION OF COLORIMETRY	15	15	0	30	60	90	3
ADVANCED DYEING PROCESSES AND COLOUR	15	0	15	30	60	90	3
Together semester:	150	75	90	315	585	900	30
Together year:	330	90	225	645	1155	1800	60

2. year							
Subject	3 rd semester			Cont. hours	Individ. work	Hours	ECTS
	L	S	T				
POLYMER MATERIALS SURFACE PROPERTIES	45	0	30	75	105	180	6
NANO – MATERIALS	30	15	15	60	120	180	6
ECO-TEXTILES	30	15	15	60	120	180	6
ELECTIVE SUBJECTS*	60	0	60	120	240	360	12
Together semester:	165	30	120	315	585	900	30

Subject	4 th semester				Cont. hours	Individ. work	Hours	ECTS
	L	S	T	K				
MASTER`S THESIS	0	0	0	30	30	870	900	30
Together semester:	0	0	0	30	30	870	900	30
Together year:	165	30	120	30	345	1455	1800	60
Together 2 years:	495	120	345	30	990	2610	3600	120

Elective subjects* - Modul Textile materials:

Subject	3 rd semester			Cont. hours	Individ. work	Hours	ECTS
	L	S	T				
DYES AND DECOLOURATION OF WASTE WATER	25	0	20	45	135	180	6
THERMAL PROPERTIES OF TEXTILE PRODUCTS	30	15	15	60	120	180	6
METHODS OF RECYCLING OF POLYMER MATERIALS	25	10	10	45	135	180	6
ENVIRONMENTAL ANALYTICS	45	0	15	60	120	180	6

Modul- Engineering Design of Textile Materials

1. year							
Subject	1 st semester			Cont. hours	Individ. work	Hours	ECTS
	L	S	T				
MECHANICAL PROPERTIES OF TEXTILE MATERIALS	45	0	30	75	105	180	6
INTERDISCIPLINARITY OF MATERIALS COLOUR	30	15	15	60	120	180	6
PRESENTATION TECHNIQUES AND VIRTUAL CATALOGUES	30	5	30	65	115	180	6
INTELLIGENT TEXTILES	30	15	30	75	105	180	6
FASHION DESIGN	30	0	30	60	120	180	6
Together semester:	165	35	135	335	565	900	30

Subject	2 nd semester			Cont. hours	Individ. work	Hours	ECTS
	L	S	T				
TEXTILE PERFORMANCE AND STRUCTURE PLANNING	30	30	15	75	105	180	6
DEVELOPMENT OF COLLECTIONS	30	0	30	60	120	180	6
VISUAL COMMUNICATION	30	0	30	60	120	180	6
ECO DESIGN	30	15	15	60	120	180	6
COMPUTER AIDED PATTERN DESIGN	30	0	30	60	120	180	6
Together semester:	150	45	120	315	585	900	30
Together year:	315	80	255	650	1150	1800	60

2. year							
Subject	3 rd semester			Cont. hours	Individ. work	Hours	ECTS
	L	S	T				
CLOTHING ENGINEERING	30	0	30	60	120	180	6
MULTIFUNCTIONALITY DESIGN	30	0	30	60	120	180	6
COLOUR AND SPACE STUDIES	30	0	30	60	120	180	6
ELECTIVE SUBJECTS**	60	0	60	120	240	360	12
Together semester:	150	0	150	300	600	900	30

Subject	4 th semester				Cont. hours	Individ. work	Hours	ECTS
	L	S	T	K				
MASTER'S THESIS	0	0	0	30	30	870	900	30
Together semester:	0	0	0	30	30	870	900	30
Together year:	150	0	150	30	330	1470	1800	60
Together 2 years:	465	80	405	30	980	2620	3600	120

Elective subjects - Modul Engineering Design of Textile Materials :**

Subject	3 rd semester			Cont. hours	Individ. work	Hours	ECTS
	L	S	T				
ACCESSORIES AND FOOTWARE DESIGN	30	0	30	60	120	180	6
STYLE IN ARCHITECTURE AND INTERIER	30	0	30	60	120	180	6
DESIGN OF COLLECTION AND STYLE	30	0	30	60	120	180	6
WOVEN FABRIC ENGINEERING DESIGN	30	0	30	60	120	180	6