Textile and Clothing Planning (Masters) NTOM

General information

The degree and type of study: Post-graduate study programme – masters degree study programme

Duration: 2 years (4 semesters), total of 120 credits ECTS

Field of study according to ISCED classification: (54) Manufacturing and processing

Classification of the study programme according to KLASIUS-P: (5420) Textiles, clothes, footwear, leather (broad programmes)

Classification of the study programme according to KLASIUS-SRV: (17003) Masters education (second Bologna cycle)

Scientific research discipline according to Frascati classification: Engineering and Technology

Basic goals and competences

The basic goal of the post-graduate programme Textile and Clothing Planning is to expand the knowledge of graduates in the university programme from the field of textiles and clothing, to train students in finding new sources of knowledge through scientific research methods and to manage the most complex working systems. The programme is intended to stimulate the development of critical reflection and communication capacity for teamwork management. A programme characteristic is that it aggregates students in project-oriented work and engages them in applied and basic research tasks, preparing them for further education at the third, doctoral level. In accordance with the principles of the Bologna process, the programme, in comparison with the current programmes, implies a deviation from the educational philosophy of proper integration of various technologies grounded on selected natural science contents. Educational philosophy has been adopted where in addition to the acquired knowledge other student competencies are equally important as well, including their skills and dexterity, in this case by promoting a research approach to rapidly developing technologies in the area of primary textile and clothing activities.

Competence profile of a graduate

General competences

- in-depth knowledge gained by the study of theoretical and methodological concepts connected with gaining capacity to seek new sources of knowledge through scientific research methods,
- developed critical reflection,
- ability to experiment and handle various concepts,
- developed capacity for independent learning in the professional and scientific area,
- ability to comprehend the interdependence between technology and design,
- ability to understand visual formats and their technological translation into graphic products,
- initiative and independence in decision making and in management of the most demanding work,
- ability to communicate with colleagues and experts in related disciplines, which facilitates active cooperation in teamwork and in the area of projects based on linking professional principles from various fields,
- developed professional, ethical and environmental responsibility,
- ability to use modern tools, skills and dexterity, primarily in the field of IKT technologies in daily professional and scientific research work.

Subject-specific competences

- in-depth knowledge of mathematics, engineering mechanics, organic and physical chemistry with developed science thinking ability
- in-depth review of high performance fibres, their structure in different structural levels (nano, microfibrilar, macrofibrilar), morphology and performance; use of high-performance fibres for high-technologies (high-tech) in medicine, pharmacy, biomedicine, biotechnology, optics, electronics, transport technology, IT, nuclear energy; fibres with specially modified properties of standard fibres, which allow specific sensual comfort (high-touch) during use,
- understanding scientific methods, critical analysis and synthesis and their use in solving concrete problems: analysis, development and production of progressive products with enhanced properties and high added value (yarn, non-woven, woven and knitted textiles); planning, analysis and execution of progressive mechanical textile processes,
- capacity of linking various knowledge from the fields of constructional, mechanical, physical and chemical properties of textiles with finishing processes aimed at the technological design of multi-functional textiles with high added value,
- understanding the difference between innovation management and management of routine operation,
- in-depth theoretical learning of the integral process of planning textiles with regard to design and functional guidelines,
- in-depth knowledge of the effect of climatic conditions, thermo-physical and sensory human responses in planning clothing for various intended uses,
- learning about innovations in modern textiles, especially intelligent textiles and textiles for special comfort based on a multi-functional and interdisciplinary approach,
- knowledge about state-of-the-art and special processes of the physical and chemical modification of fibre-forming polymers.

Employment possibilities

With their acquired knowledge, graduates of the masters degree in Textile and Clothing Planning can be employed in the leading positions in textile and clothing industries, consultant companies and agencies, in educational institutions engaged in textile and clothing activities, in trade and government administration.

Enrolment conditions

Enrolment conditions and criteria for selection in case of limited enrolment

Enrolment in the programme is possible for candidates who have:

a) completed university study programme of the first level degree in textiles, natural sciences, engineering, technology, computing, information technology, economics, organisation of work or design,

b) completed study programme of the first level degree in any other technical field if the candidate meets the requirements essential for advancing through the programme in the range 10–60 ECTS prior to enrolment; the requirements are set by the Studies Commission of the Faculty of Natural Sciences and Engineering and can be met during the study at the first level degree, in advanced study programmes or by passing exams prior to the enrolment in the masters programme,

c) completed professional study programme prior to the introduction of the Bologna Declaration in textiles, natural sciences, engineering, technology, computing, information technology, economics, organisation of work or design,

d) completed professional study programme prior to the introduction of the Bologna Declaration in any other technical field if the candidate meets the requirements essential for advancing through the programme in the range 10–60 ECTS prior to enrolment; the requirements are set by the Studies Commission of the Faculty of Natural Sciences and Engineering and can be met during the study at the first level degree, in advanced study programmes or by passing exams prior to the enrolment in the masters programme,

Enrolment in the programme is also possible for the candidates who have completed an equivalent study programme abroad as stated under points a) to d) in compliance with the conditions which apply to the students in the Republic of Slovenia.

If the number of candidates applying for the programme exceeds the number of enrolment spaces:

- candidates under points a) and c) shall be selected with regard to:
- number of points obtained in the first level study programme;
- candidates under points b) and d) shall be selected with regard to:
- number of points obtained in the first level study programme or the professional study programme before the introduction of the Bologna Declaration – 75%,
- number of points obtained in completing additional work required – 25%.

Points shall be calculated as follows: the average grade from the studies or additional work under point b) and d), rounded off to one decimal point, is multiplied by 10 (maximum 100 points).

Criteria for crediting knowledge and skills obtained before enrolment

The Faculty of Natural Sciences an Engineering (FNSE) may choose to credit student's knowledge (obtained in the framework of different kinds of education) if it corresponds to the course contents of the Textile and Clothing Planning masters study programme. The FNSE Studies Committee is charged with crediting knowledge and skills obtained before the enrolment, which is done on the basis of the student's written application and provided certificates or other documents proving the type of knowledge successfully acquired.

When crediting knowledge obtained before enrolment, the Studies Committee will take into account the following criteria:

- Whether conditions for enrolling into a specific educational course are adequate (required prior education for starting the study programme);
- Whether the scope of the completed educational course (number of hours of prior education as compared to the scope of the subject in question) adequately compares with the credited requirements;
- Whether the areas covered by the prior education programme, which the applicant would like to have credited, adequately compare with the subjects dealt with in the Faculty course.

The acquired knowledge and skills may be credited as a completed study activity if the conditions for taking part in the educational programme were the same as for enrolling into the masters programme Textile and Clothing Planning, if the prior educational programme encompassed at least 75% of the scope of the subject and if at least 75% of its contents cover the same areas as the subject the applicant would like to have credited. In the event the Committee finds that the acquired knowledge can be credited, the same number of ECTS points as awarded for the subject in question is granted.

Other information

Grading method

The student's level of learning shall be established and graded by individual courses and by concluding the learning process of each course with a final exam. The general rules of verifying knowledge shall be regulated according to the FNSE Examination Regulations approved by the senate of this institution. The verification of knowledge for all courses will take place in the form of written and/or oral exams. At the same time, previous knowledge that is a prerequisite for taking the exam shall be verified for each individual course. The method for verifying knowledge can be: papers and project reports, practical tasks or products, presentation and defence of papers and project works, reports on completed practical classes, oral knowledge verification during practical classes and/or examination of practical work. The grading scale prescribed by the Statute of the University of Ljubljana shall be used for grading. All forms of knowledge verification shall be graded with the following marks: 6–10 (positive), 1–5 (negative).

Progression of studies

Conditions for entry into a higher class

To enter into a higher class, a student must obtain a minimum of 54 ECTS credit points. The FNSE Studies Committee may exceptionally grant the promotion into a higher class to a student who has reached at least 42 ECTS credits in the previous class if they can prove justifiable cause. Justifiable causes are specified in the Statute of the University of Ljubljana.

Conditions to repeat a class

In order to repeat the first year, the student must have a minimum of 28 ECTS credit points.

During the course of studies, a student may repeat a class once or transfer to another study programme once for having failed to meet their obligations in the previous study programme.

Completion of studies

To complete the studies, students must meet all obligations in all enrolled courses, prepare a masters thesis and defend it.

Transfer between programmes

The transfer between study programmes is possible within the second level study programmes of the Department of Textiles, Graphic Arts and Design of the Faculty of Natural Sciences and Engineering and other faculties in accordance with the Higher Education Act, the Criteria for Changing Study Programmes and other regulations.

For transfer between programmes, the following criteria shall be taken into account:

- meeting the conditions for enrolment in the new study programme,
- number of places available,
- years or semesters in previous study programme where the student has completed all the work required and which can be credited in full,
- minimum number of semesters the student will have to complete in order to graduate in the new programme.

Transfer is possible:

a) from the second level study programmes in the following areas of expertise: graphic and interactive communications, computer science, informatics and media,

b) from the second level study programmes from other professional fields,

c) from the university programmes prior to the introduction of the Bologna Declaration in the following areas of expertise: graphic and interactive communications, computer science, informatics and media,

d) from the university programmes prior to the introduction of the Bologna Declaration from other professional fields.

Candidates must meet the conditions required for the entry into the programme they wish to transfer into. For each individual candidate, the FNSE Studies Committee determines the obligations that have to be met prior to the enrolment into the new programme and specifies which year the student can enrol into.

External electives and mobility

External electives

Students have the possibility of selecting 33% of their electives required by the programme (12 ECTS credit points) from other masters programmes at the Department of Textiles, Graphic Arts and Design, the Faculty of Natural Sciences and Engineering or from the masters programmes at other faculties.

Mobility

Students have the possibility to transfer 30 ECTS credit points (one study semester, regardless whether obligatory or elective units) from any programme in the field of textile or clothing activities offered by universities and other institutions of higher education in the AUTEX and Erasmus+ network.

Modes and forms of study

The postgraduate study programme Textile and Clothing Planning is organised as a full-time study. Based on the needs expressed by the companies in the industry, it may also be conducted as a part-time study. The part-time study is performed separately from the full-time study, so that a minimum of 60% of programme contact hours are conducted.

The courses are organised in the Slovenian language. The instructions for experimental work are provided in the English language to foreign mobility students. Parallel courses in the English language are organised if there are more than 5 students registered for an individual course and if the financing is ensured. Otherwise, the contents of lectures in English are provided in writing.

Curriculum

1st year

Course	Hours					ECTS
	L	S	P	O	Σ	
1st semester					**450**	**30**
Basic elective course 1					90	6
Basic elective course 2					90	6
High performance fibres	60	15	15	0	90	6
Advanced mechanical textile technologies	30	30	30	0	90	6
Advanced processes of finishing	30	30	30	0	90	6
2nd semester					**450**	**30**
Mechanical functionalisation of textiles	30	30	30	0	90	6
Chemical functionalisation of textiles	30	30	30	0	90	6
Functionalisation of ready-made products	30	30	30	0	90	6
Elective course 1					60	4
Elective course 2					60	4
Elective course 3					60	4
TOTAL					**900**	**60**

Basic elective courses

Course	Hours					ECTS
	L	S	P	O	Σ	
Mathematics 2	45	0	45	0	90	6
Organic chemistry	45	15	30	0	90	6
Data management	30	15	45	0	90	6

Elective courses

Course	Hours					ECTS
	L	S	P	O	Σ	
Textile composites	30	15	15	0	60	4
Technical textiles	30	0	30	0	60	4
Medical textiles	30	30	0	0	60	4
Quality Engineering	30	30	0	0	60	4
Biotechnology for textile processing	30	30	0	0	60	4
Textile care 2	30	15	15	0	60	4
Digital printing of textiles	30	0	30	0	60	4
Contemporary fashion and textile practices	30	15	0	15	60	4

Abbreviations used in the syllabus:

L – lectures
S – seminar work
P – practical course
O – other forms of educational activities (mainly project work)
ECTS – European Credits Transfer System (1 credit point equals a 30-hour student workload)
Grey – Courses designated in grey are not implemented in this study year.

2nd year

Course	Hours					ECTS
	L	S	P	O	Σ	
3rd semester					**450**	**30**
Research seminar	30	60	0	0	90	6
Ecology in textile processes 2	30	30	30	0	90	6
Advanced analytical methods	30	30	30	0	90	6
Elective course 4					60	4
Elective course 5					60	4
Elective course 6					60	4
4th semester					**450**	**30**
Masters thesis						30
TOTAL					**450**	**60**

Elective courses

Course	Hours					ECTS
	L	S	P	O	Σ	
Textile composites	30	15	15	0	60	4
Technical textiles	30	0	30	0	60	4
Medical textiles	30	30	0	0	60	4
Quality Engineering	30	30	0	0	60	4
Biotechnology for textile processing	30	30	0	0	60	4
Textile care 2	30	15	15	0	60	4
Digital printing of textiles	30	0	30	0	60	4
Contemporary fashion and textile practices	30	15	0	15	60	4

Abbreviations used in the syllabus:

L – lectures
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P – practical courses
O – other forms of educational activities (mainly project work)
ECTS – European Credit Transfer System (1 credit point equals a 30-hour student workload)

2nd year 2016/17

Course	Hours					ECTS
	L	S	P	O	Σ	
3rd semester					**450**	**30**
Research seminar	30	60	0	0	90	6
Elective course 3					90	6
Elective course 4					90	6
Elective course 5					90	6
Elective course 6					90	6
4th semester					**450**	**30**
Masters thesis						30
TOTAL					**450**	**60**

Elective courses 2016/17

Course	Hours					ECTS
	L	S	P	O	Σ	
Ecology in textile processes 2	45	15	60	0	90	6
Planning textiles	30	30	30	0	90	6
Planning clothing	60	15	15	0	90	6
Methods of textile characterisation	30	15	30	15	90	6
Fibre composites	30	60	0	0	90	6
Intelligent textiles	45	15	30	0	90	6
Biotechnology for textile processing	30	30	30	0	90	6
Digital printing of textiles	30	30	30	0	90	6

Abbreviations used in the syllabus:

L – lectures
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Grey colour – Courses designated in grey are not implemented in this study year

Description of courses

High performance fibres (6 KT): structure, design and development of high-performance fibres; methods and systems of designing high-performance fibres, carbon-, ceramic- and nanofibres; fibres for extremely demanding technologies; fibres with special sensory properties; properties of high-performance fibres and their uses.

Advanced mechanical textile technologies (6 KT): importance and use of advanced mechanical textile technologies (spinning, non-wovens production, weaving and knitting) in textile production and other areas of use; specialities of testing and quality assurance of textiles produced by advanced mechanical textile technologies; economics of advanced textile products; specialities in advanced textile products care.

Advanced processes of finishing (6 KT): special preparation processes of textile substrates for finishing; theoretical and technological novelties in dyeing; advanced physical, chemical and mechanical finishing processes; theory of fibre modification, theory of alternative media in finishing; finishing of textiles made of non-conventional fibres; presentation of the aim and effects of treatment of auxiliaries used for finishing process; environmental issues stemming from advanced finishing processes, synergism among finishing processes.

Mechanical functionalisation of textiles (6 KT): structure and properties of single, twisted and effective yarns, woven and knitted fabrics, knitwear and non-wovens; processes in the production of single, twisted and effective yarns, woven and knitted fabrics, knitwear and non-woven textiles; planning woven and knitted fabrics, planning knitwear.

Chemical functionalisation of textiles (6 KT): physical-chemical treatment of solid surface functionality; classification of surface modification processes of fibre-forming polymers, physical methods; chemical methods; importance of modification for individual types of fibres; review of analytical methods for determining the properties of modified fibre surfaces.

Functionalisation of ready-made products (6 KT): clothing comfort; psychology and neurophysiology of comfort, mechanisms of body thermoregulation, heat and moisture transfer in textiles, textile's hand, subjective comfort sensation of clothes,

objective testing of handle and thermo-physiological comfort parameters, planning of clothing comfort.

Research seminar (6 KT): preparing for research work (selection of a topic, formulating working hypotheses, planning research work); preparing masters thesis; rules in writing scientific research texts; content structure of the work; preparing pictorial material; steps in formulating the text; presentation of the work.

Ecology in textile processes 2 (6 KT): textile industry and pollution of the environment; environmental protection in connection with company management, marketing, innovation and development of products, services and technologies; environmental management systems; environmental conservation laws.

Advanced analytical methods (6 KT): chemical methods of testing; determining the molecular and supra-molecular structure and morphology of fibres; molecular mass and molecular mass distribution; spectrometric methods; scattering methods; thermal analysis; determining of fibre anisotropy, mass density, surface tension and diffusion processes.

Mathematics 2 (6 KT): repetition of the theory of functions with one variable (outline of elementary functions; derivative; indefinite and definite integral), ordinary differential equations (linear differential equations of order 1 and 2; applications), basics from the theory of functions of several variables (partial derivatives, double and triple integrals).

Organic chemistry (6 KT): importance and role of organic chemistry; chemical bond and molecular structure; nomenclature, structure, physical properties; stereochemistry; molecular structure and reactivity; mechanisms of organic reactions; chemistry of natural and synthetic molecules; stereochemistry of polymers.

Data management (6 KT): data, information and knowledge; acquisition, collection and evaluation of data; managing data: files, databases, information systems; tools, formats; data processing: categorisation, analysis, synthesis, transformation; presentation of data: structuring, visualisations, tools and techniques; data storage: documentation, metadata, archiving, security, access, rights, licenses; methodological approaches to data management; selected software tools and systems for data management.

Textile composites (4 KT): classification of composite materials; fibre for composites; matrices; contact surfaces, adhesion, surface modification; form of reinforcement system and basic properties of composites; non-composite systems; basic properties of polymer composites; non-destructive methods of polymer composite testing; standard testing methods for polymer composites; degradation of polymer composites; main processes in polymer composite production; most important areas of use and development trends.

Technical textiles (4 KT): systematic classification of technical textiles and their characteristic properties; fibres for technical textiles; choice of raw materials and constructions, production technologies, finishing agents and processes, special testing methods, specifications and standards.

Medical textiles (4 KT): special fibres and polymers; materials for application in medicine and production processes; classification of medical textiles by their intended use; anti-microbial fibre and finishing; textiles as carriers of pharmacological substances; care and maintenance; standards and regulations for testing and handling medical textiles.

Quality engineering (4 KT): in-depth study of approaches to quality management; importance of quality management from aspect of global competition; development of quality management systems; basic functions of quality management; methods and techniques in area of quality management; economics of quality; standardisation of quality systems; comprehensive quality management.

Biotechnology for textile processing (4 KT): biotechnological procedures in textile finishing; enzymes in textile care; enzymes in waste-water treatment; decomposition of colours in a substrate, in rinsing baths and in waste water; biotechnology in the development of new fibres; possibilities and effects of genetic modification in natural fibre production.

Textile care 2 (4 KT): classification of procedures for textile care with regard to structures of fibres and impurities; theoretical basis of wetting and washing; surface active agents; description of conventional, modern and special washing procedures and dry cleaning; environmental aspects of textile care.

Digital printing of textiles (4 KT): theoretical basis; devices and technology; basics of patterning; dyes and auxiliaries; substrates; preparing fabrics; methods of fixing dyes; analysis of textile-technological properties and appearance analysis of a

pattern; transfer from a digital to screen print; colour reception; impact on humans and the environment.

Contemporary fashion and textile practices (4 KT): introduction and basics in fashion management, introduction and basics in textile and clothing marketing; introduction and basics in fashion communication; introduction to processes and terminology to prosper in contemporary fashion and textile environment; contemporary fashion and textile practises and its key players; insight into various careers in fashion and textile design and management; individual project work.

Contact

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