OTGO

Doctoral study programme Textile Engineering, Graphic Communication and Textile Design

Information package

University *of Ljubljana*
Faculty of *Natural Sciences and Engineering*
Department of Textiles, Graphic Arts and Design

OTGO: Doctoral study programme Textile Engineering, Graphic Communication and Textile Design
Information Package

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GENERAL INFORMATION ABOUT DOCTORAL PROGRAMME

PROGRAMME GOAL AND GENERAL COMPETENCES

tgto
3rd level
information

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The doctoral programme Textile Engineering, Graphic Communication and Textile Design (TGTO) lasts 4 years and consists of 240 credits according to the European Credit Transfer System (ECTS).
The contents of the programme cover different fields of textile engineering, graphic and interactive communications and textile design, which are sensibly complementary.
Study field at ISCED classification: (21) arts; (54) production technology.
Classification of the study programme at KLASIUS-P:

- Textile Engineering: (5420) Textile, apparel, footwear and leather industry (for details Specified),
- Graphic and Interactive Communications: (2130) Audiovisual techniques and (multi) media production (for details Specified),
- Textile Design: (2143) Textile and fashion design (Fashion Design).

Classification of the study programme at KLASIUS SRV: (18202) Doctoral Education (third Bologna level).
Scientific research discipline at Frascati classification: engineering; humanities.

Scientific title: Doctor of Science

The doctoral programme Textile Engineering, Graphic Communication and Textile Design is organised and implemented by the Department of Textiles, Graphic Arts and Design at the Faculty of Natural Sciences and Engineering at the University of Ljubljana.

The goal of the doctoral study programme is to qualify post-graduate students to gain the following general competences:

- In-depth understanding of theoretical and methodological concepts in the area of textiles, graphic and interactive communications, and theory of textile design.
- The capability to independently develop new knowledge in the area of textiles, graphic and interactive communications, and theory of textile design.
- The capability to solve the most complex problems by testing and improving the already known solutions and by discovering new solutions in the area of textiles, graphic and interactive communications, and theory of textile design.
- The ability to manage the most complex work systems in the area of textiles, graphic and interactive communications, and theory of textile design.
- The ability to manage scientific and research projects in the area of textiles, graphic and interactive communications, and theory of textile design from a broad professional and/or scientific area.
- A developed critical reflection in the area of textiles, graphic and interactive communications, and theory of textile design.
- Social and communication capabilities to lead teamwork even in the case of projects based on the integration of scientific principles of various sectors.
- A developed professional, ethical and environmental responsibility.
- The ability to use modern tools, skills and competences especially in the area of IKT technologies in everyday professional as well as scientific and research work.

INTERNATIONAL COOPERATION OF HIGHER EDUCATION INSTITUTION

INFORMATION ON RESEARCH PROJECTS AND AGREEMENTS

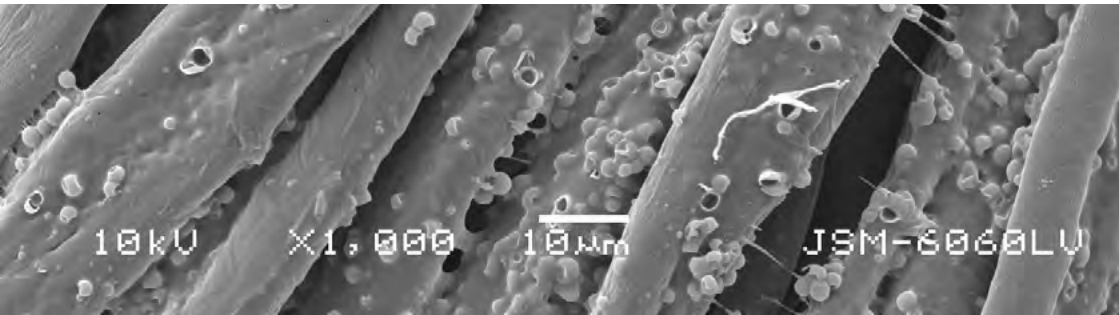
The Department of Textiles, Graphic Arts and Design cooperates with important European and other universities worldwide in the educational and research field.
The mobility of students, teachers and researchers is performed mainly within the CUMULUS and CEEPUS networks and within the Erasmus+ programme framework.
The list of Erasmus+ Bilateral Agreements signed by the Faculty of Natural Sciences and Engineering in 2018 is available on: https://www.ntf.uni-lj.si/ntf/wp-content/uploads/sites/2/2016/12/Seznam-medinstitucionalnih-Erasmus-pogodb-NTF-2018-1.pdf.

The list of universities in the CEEPUS network for students of graphic arts (CIII-RS-0704-05-1617 Research and Education in the Field of Graphic Engineering and Design) is available on: https://www.cmepius.si/visokosolsko-izobrazevanje/ceepus-2/.
The Department of Textiles, Graphic Arts and Design is a member of international associations in the field of textile, graphic and communication technologies, and education, i.e. AUTEX, CUMULUS, IFKT, IC, InPEQ and EFPRO.

The lecturers in the doctoral programme Textile Engineering, Graphic Communication and Textile Design are involved in different ongoing national and international scientific and artistic projects.
The scientific research work is conducted within 11 national research programmes financed by the Slovenian Research Agency (Department of Textiles, Graphic Arts and Design is the leading organisation of the P2-0213 Textiles and Ecology):

- PP1-0134 Chemistry for Sustainable Development
- P1-0195 Geoenvironment and Geomaterials
- P1-0230 Organic Chemistry: Synthesis, Structure, and Application
- P2-0082 Thin-Film Structures and Plasma Surface Engineering
- P2-0213 Textiles and Ecology
- P2-0246 ICT4QoL - Information and Communications Technologies for Quality of Life
- P2-0270 Production Systems, Laser Technologies and Materials Welding
- P5-0183 Social Psychology and Sociology of Everyday Life
- P5-0203 The Production of Meaning and Knowledge in a Time of Crisis: Cultural, Religious and Scientific-Developmental Aspects of Societies in Slovenia, the Balkans, Europe
- P6-0341 Humanities and the Sense of Humanity from Historical and Contemporary Viewpoints
- P6-0400 Social Contract in the 21st Century: Historical-Sociological, Philosophical-Ethical and Educational Aspects

Information about programmes and projects carried out at the Faculty of Natural Sciences and Engineering is available on: https://www.ntf.uni-lj.si/ntf/raziskovanje/raziskovalno-delo/programi-in-projekti/.



PROGRAMME STRUCTURE AND MOBILITY

COURSE LECTURERS AND MENTORS

The programme consists of two main course groups:
- basic courses (T),
- elective courses (I).

Basic courses allot 10 ECTS credits, whereas elective courses allot 5 or 10 ECTS credits.

Basic and elective courses are divided into two subgroups, i.e.:
- general courses (S) which are related by content to all three research fields of the doctoral study programme Textile Engineering, Graphic Communication and Textile Design, and
- field-specific courses (P), which include the content specific to a particular research field.

In cooperation with the mentor and research field coordinator, the student selects courses from the set of:
- basic courses (20 ECTS) and
- elective courses (25 ECTS).

In order to secure the research field, the student shall accumulate a minimum of 20 ECTS from the field-specific courses of which a minimum of:
- 10 ECTS from basic field-specific courses and
- 10 ECTS from elective field-specific courses.

The selection can be made among the set of courses of all scientific areas.

In cooperation with the mentor and research field coordinator, the student is able to accumulate 10 ECTS from the curriculum of other comparable programmes of Slovenian and foreign universities which have programmes evaluated by the European Credit Transfer System (ECTS) or other systems which enable a comparison of evaluation (generic skills).

The course Introduction to Scientific Research (UL, Faculty of Architecture) is obligatory for students in the field of textile design.

The lecturers of courses are university teachers (assistant professor, associate professor, full professor) with established scientific relevance for the course with suitable references.

The mentor and co-mentor for the preparation of doctoral dissertation can be a person with a university teacher title (assistant professor, associate professor, full professor) or researcher title (research associate, senior researcher or higher research associate) and has proof of research activity with a relevant scientific bibliography in the field of the doctoral dissertation topic. Co-mentoring must be substantively justified.

The minimal research activity of mentor and co-mentor is proved by 150 Z bibliographic points according to the SICRIS database and by more than 0 points in the indicator of significant achievements $A^{1/2}$.

The mentor and the co-mentor are confirmed in the process of registration and approval of the doctoral dissertation topic.

The list of potential mentors is available on: https://www.ntf.uni-lj.si/toi/wp-content/uploads/sites/7/2015/03/DR-TGTO-Potencialni-mentorji-programa-2018.pdf.

CURRICULUM WITH ECTS CREDIT EVALUATION OF STUDY OBLIGATIONS

tgto
3rd level
curriculum
basic courses
elective courses
lecturers

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1st year

Course unit	Lecturer	Contact hours L	S	T	Individ. work	Total hours	ECTS
Basic courses	According to selected course					600	20
Elective courses	According to selected course					300	10
Individual research work	Mentor					900	30
TOTAL					**1800**	**1800**	**60**
SHARE							**25%**

2nd year

Course unit	Lecturer	Contact hours L	S	T	Individ. work	Total hours	ECTS
Elective courses	According to selected course					450	15
Presentation of doctoral thesis research topic						150	5
Individual research work	Mentor					1200	40
TOTAL					**1800**	**1800**	**60**
SHARE							**25%**

3rd year

Course unit	Lecturer	Contact hours L	S	T	Individ. work	Total hours	ECTS
Individual research work	Mentor					1800	60
TOTAL					**1800**	**1800**	**60**
SHARE							**25%**

4th year

Course unit	Lecturer	Contact hours L	S	T	Individ. work	Total hours	ECTS
Individual research work	Mentor					1500	50
Presentation of findings of doctoral thesis prior to public defence						150	5
Elaboration of doctoral thesis and public defence						150	5
TOTAL					**1800**	**1800**	**60**
SHARE							**25%**

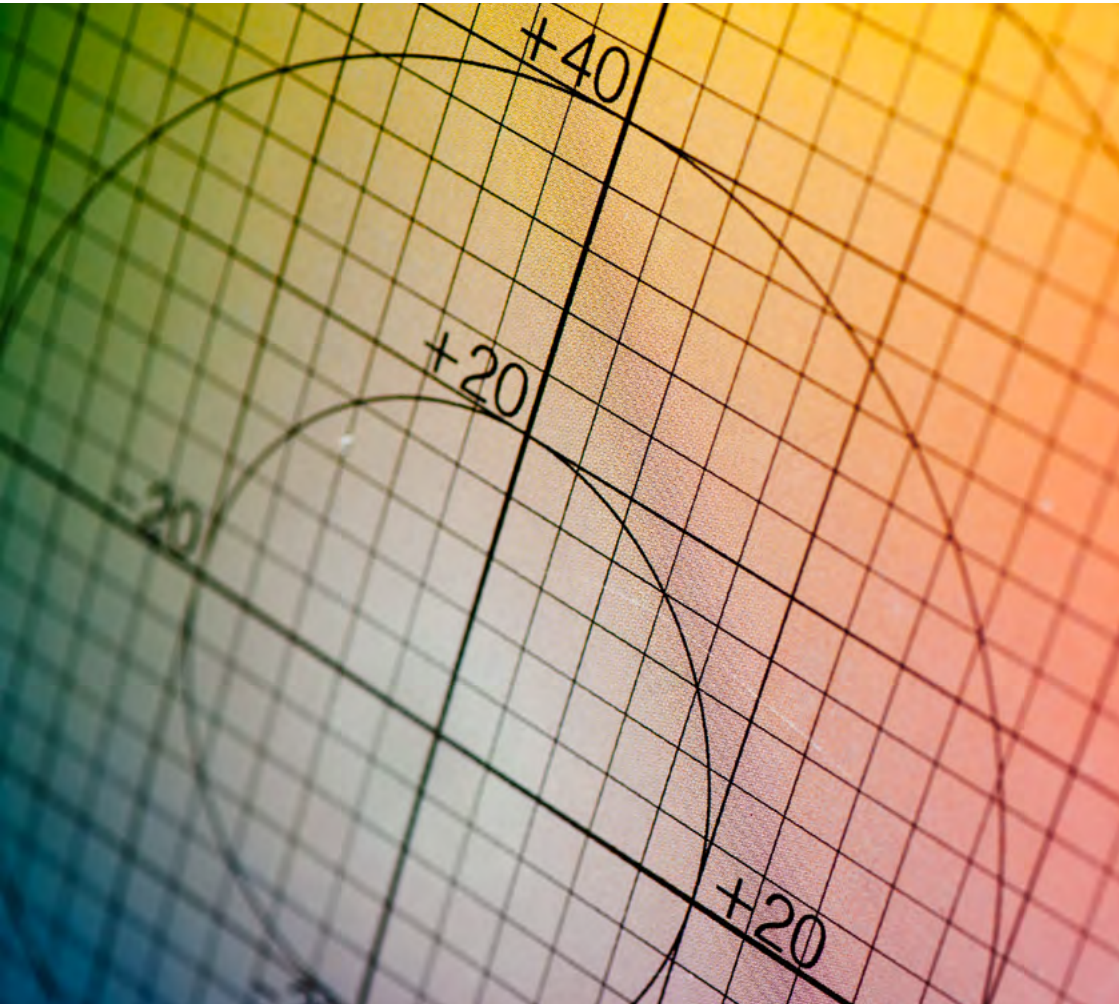
Basic course	Contact hours					
Course	L	S	T	Individ. work	Total hours	ECTS
T-S-1 (general) Mechanics – selected topics	60	90		150	300	10
T-S-2 (general) Physical organic chemistry with modern methods of separation and identification of organic compounds	60	90		150	300	10
T-S-3 (general) Optics, spectroscopy and microscopy for graphic and textile applications	60	90		150	300	10
T-S-4 (general) Principles of electronics for application in printed electronics	60	90		150	300	10
T-S-5 (general) Colour models and colour transforms	60	90		150	300	10
T-S-6 (general) Theory of colour	60	90		150	300	10
T-S-7 (general) Design of experiments and multivariate analysis methods in graphic arts and textiles	60	90		150	300	10
T-P-1 (textile engineering) Fibre forming polymer structure	60	90		150	300	10
T-P-2 (textile engineering) Structure and properties of textiles – selected topics	60	90		150	300	10
T-P-3 (textile engineering) Speciality fibres – selected topics	60	90		150	300	10
T-P-4 (textile engineering) Theory of finishing process	60	90		150	300	10
T-P-5 (graphic communication) Generating and processing information in graphic media – message of graphic media	60	90		150	300	10
T-P-6 (graphic communication) Visual image as communication media	60	90		150	300	10
T-P-7 (graphic communication) Interdisciplinary typography	60	90		150	300	10
T-P-8 (graphic communication) Advanced printing technologies, development and applications	60	90		150	300	10
T-P-9 (graphic communication) Interactivity	60	90		150	300	10
T-P-17 (graphic communication) Polymers for 3D printing in graphic arts	60	90		150	300	10
T-P-10 (textile design) Selected issues in sociology of the arts	60	90		150	300	10
T-P-11 (textile design) Theory of textile and fashion art	60	90		150	300	10

Basic course						
	Contact hours					
Course	L	S	T	Individ. work	Total hours	ECTS
T-P-12 (textile design) Theory of fashion	60	90		150	300	10
T-P-13 (textile design) Structure of art practice	60	90		150	300	10
T-P-14 (textile design) Cultural studies of fashion	60	90		150	300	10
T-P-15 (textile design) Theoretical foundations of textile design	60	90		150	300	10
T-P-16 (textile design) Theory of costume design	60	90		150	300	10
TOTAL	1440	2160		3600	7200	240

Elective course						
	Contact hours					
Course	L	S	T	Individ. work	Total hours	ECTS
I-S-1 (general) Environmental aspects in textiles and graphics	60	90		150	300	10
I-S-2 (general) Quality – selected topics	60	90		150	300	10
I-S-3 (general) Analysis of structure and properties of textile and graphic materials – selected topics	60	90		150	300	10
I-S-4 (general) Recycling of polymeric materials	30	45		75	150	5
I-S-5 (general) Plasma technologies for textiles and graphics	60	90		150	300	10
I-S-6 (general) Printed electronics	60	90		150	300	10
I-S-7 (general) Dyes and pigments in textile and graphic technology	30	30	15	75	150	5
I-S-8 (general) Microcapsulation	15	30	30	75	150	5
I-S-9 (general) Colour measurement – selected topics	30	30	15	75	150	5
I-S-10 (general) Modern analytical techniques in graphic and textile technology	30	45		75	150	5
I-S-11 (general) Computing and numerical methods in textile and graphic research	30	45		75	150	5
I-S-12 (general) Photography as communication media	30	45		75	150	5

Elective course						
	Contact hours					
Course	L	S	T	Individ. work	Total hours	ECTS
I-S-13 (general) Design and innovation	30	45		75	150	5
I-S-14 (general) Advanced technologies in clothing with selected topics of 2D/3D development of garment cuts	60	90		150	300	10
I-S-15 (general) Use of image processing and image analysis in graphic and textile research	60	90		150	300	10
I-S-16 (general) Methodologies of computer-aided design of products	60	90		150	300	10
I-P-1 (textile engineering) Functionalisation of textile materials	60	90		150	300	10
I-P-2 (textile engineering) Biotechnology for textile processing	60	90		150	300	10
I-P-3 (textile engineering) Advanced technologies for line textile production – selected topics	60	90		150	300	10
I-P-4 (textile engineering) Advanced technologies for textile production – selected topics	60	90		150	300	10
I-P-5 (textile engineering) Dyeing and printing of textiles – selected topics	60	90		150	300	10
I-P-6 (textile engineering) Pretreatment and finishing of fibrous substrates – selected topics	60	90		150	300	10
I-P-7 (textile engineering) Textile care – selected topics	25	50		75	150	5
I-P-8 (textile engineering) Speciality textiles– selected topics	30	45		75	150	5
I-P-9 (graphic communication) Ancient graphic materials and techniques – selected topics	30	45		75	150	5
I-P-10 (graphic communication) Sustainability at production and processing of paper and packaging	60	90		150	300	10
I-P-11 (graphic communication) Packaging and graphic materials – selected topics	60	90		150	300	10
I-P-12 (graphic communication) Methods for studying material-print interactions topics	60	90		150	300	10
I-P-13 (graphic communication) Quality analysis of graphic design products	30	45		75	150	5
I-P-19 (graphic communication) Functionalization of graphic materials	60	90		150	300	10

Elective course						
	Contact hours					
Course	L	S	T	Individ. work	Total hours	ECTS
I-P-14 (textile design) Interior and exterior textiles	60	90		150	300	10
I-P-15 (textile design) Advanced materials in textiles	60	90		150	300	10
I-P-16 (textile design) Studies in gender, body and clothing	60	90		150	300	10
I-P-17 (textile design) Fashion and media communication	60	90		150	300	10
I-P-18 (textile design) Sustainable design	60	90		150	300	10
TOTAL	1750	2615	60	4425	8550	295



ENROLMENT CONDITIONS AND CRITERIA FOR SELECTION IN CASE OF LIMITED ENROLMENT

MODE OF STUDY

GRADING

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3rd level
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The number of enrolment spaces is 10. The graduates of the following study programmes can enrol in the doctoral programme Textile Engineering, Graphic Communication and Textile Design:

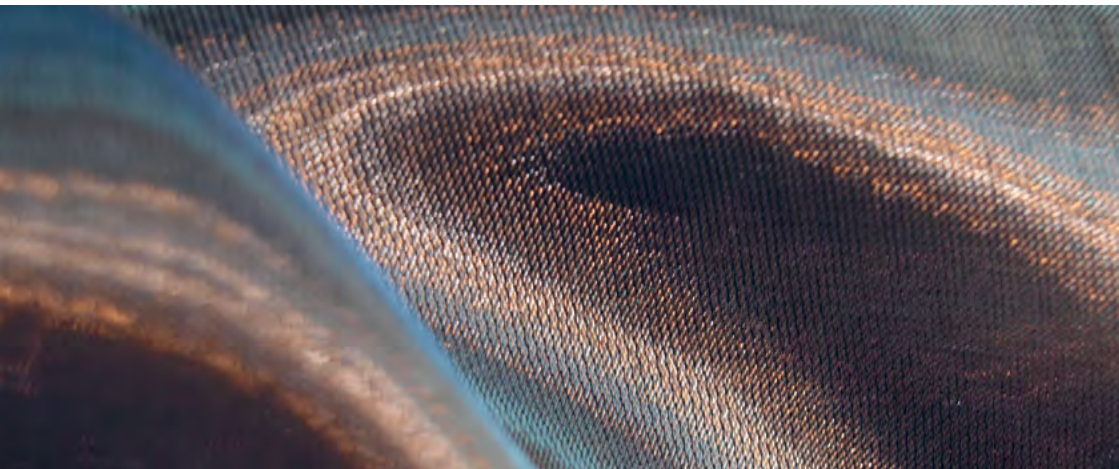
- second level study programmes;
- study programmes providing education for occupations regulated by the Directives of the European Union, evaluated with at least 300 ECTS credits;
- academic study programmes (before 11 June 2004);
- study programmes leading to a masters degree or a specialisation after completing an academic study programme; 60 ECTS credits of study obligations will be recognised to such candidates;
- study programmes leading to specialisation provided that candidates have previously completed a higher education professional study programme; for these candidates, additional entry requirements in individual areas amounting from 30 to 60 ECTS will be specified.

If the number of candidates applying for the programme exceeds the number of enrolment spaces, the candidates shall be short-listed according to their general success at their previous study as well as in the scientific and professional fields as follows:

- average grade of the exams of previous study (grade × 10 points),
- grade for the diploma thesis and its defence (grade × 3 points),
- a research paper evaluated by the criteria of the habilitation commission of the University of Ljubljana – proportional allocation of points is taken into account ([2 to 8] × 2 points),
- the Prešeren award at the University of Ljubljana – proportional allocation of points is taken into account (10 points),
- the Prešeren award at the faculty – proportional allocation of points is taken into account; if the same work is submitted as a diploma thesis, only half of the envisaged points shall be taken into account (6 points).

The doctoral programme is carried out as a full-time study.

In accordance with the Statute of the University of Ljubljana, the level of knowledge of a student at an exam is graded with the grades 5–10 (6–10 pass, 5 fail). The programme envisages written and oral exams; the preparation and oral presentation of seminars will be graded as well.



RECOGNITION OF KNOWLEDGE AND SKILLS ACQUIRED PRIOR TO ENROLMENT IN PROGRAMME

CONDITIONS FOR ADVANCING THROUGH PROGRAMME

The knowledge which has been acquired by the candidate through various types of study will be recognised if the content of such studies corresponds to the content of the courses included in the doctoral study programme Textile Engineering, Graphic Communication and Textile Design. The decisions on the recognition of the knowledge and skills acquired prior to the enrolment in the programme shall be made by the Studies Commission of the Faculty of Natural Sciences and Engineering on the basis of the candidate's written application, enclosed certificates and other documents which evidence the successfully acquired knowledge and the content of such knowledge.

In its decision-making, the Studies Commission will take into account the following criteria:

- fulfilment of the conditions required to enrol in various types of study (required previous education for enrolment in the programme),
- the extent of the previous study (the number of hours of the previous study in comparison with the number of hours of the study the candidate is enrolling in),
- suitability of the content of the previous study in comparison with the content of the study the student is enrolling in.

The acquired knowledge can be recognised as the fulfilled obligation if the condition for enrolment corresponds to the conditions required for enrolment in the doctoral study programme consisting of the courses of textiles, graphic and interactive communications, and theory of textile design, if the previous study encompassed at least 75% of the extent of the course, and if at least 75% of the content of the previous study corresponds to the content of the course the candidate is enrolling in. If the Commission establishes that the acquired knowledge may be recognised, the candidate's knowledge shall be evaluated with an equal number of ECTS credits as the course the candidate is enrolling in.

To advance to the 2nd year of the doctoral study, the students shall meet the obligations which allot them a minimum of 45 ECTS credits of which a minimum of 20 ECTS credits shall be accumulated from basic courses.

To advance to the 3rd year of the doctoral study, the students shall meet all obligations of the organised study forms of the 1st and 2nd year, and have approved a positive assessment of the appropriateness of the topic of the doctoral dissertation by the Committee for the follow-up of a doctoral student (KSDŠ) and by the Senate of the Faculty of Natural Sciences and Engineering.

To advance to the 4th year of the doctoral study, the students shall meet all obligations of the organised study forms of the 1st, 2nd and 3rd year, and have an approved topic of doctoral dissertation at the University of Ljubljana.

TRANSFER BETWEEN PROGRAMMES

TRANSFER BETWEEN 3rd LEVEL DOCTORAL STUDY PROGRAMMES

TRANSFER BETWEEN POST-GRADUATE STUDIES AND 3rd LEVEL DOCTORAL STUDY PROGRAMME PRIOR TO INTRODUCTION OF BOLOGNA DECLARATION

The transfer between study programmes is considered as discontinuation of the study in the third level study programme the candidate has enrolled in, and continuation of the study in the doctoral study programme Textile Engineering, Graphic Communication and Textile Design.
The following criteria are taken into account for the transfer between programmes:

- fulfilment of the conditions for enrolment in the new study programme,
- the number of places available,
- the years or semesters in the previous study programme in which the candidate met all study obligations and which can be recognised in full,
- the minimum number of semesters the candidate will have to complete in order to take the doctoral degree in the new programme.

The students enrolled in the 3rd level doctoral study programmes in the field of textile science, graphic and interactive communications, natural sciences and mathematics, design, technical, humanistic and social sciences who meet the conditions for enrolment in the doctoral programme will receive a list of additional obligations which shall be met in order to take their doctoral degree in the new programme.

The students in the post-graduate study programme at the NTF OTGO (Faculty of Natural Sciences and Engineering, Department of Textiles, Graphic Arts and Design) and the relative post-graduate study programmes (in the field of textile science, graphic and interactive communications, natural sciences and mathematics, design, technical, humanistic and social sciences) who were accredited prior to the enforcement of the Higher Education Act Amendment will receive a list of additional obligations which shall be completed in order to be able to take their doctoral degree in the new study programme.
The decisions about transfers between the programmes shall be made by the Studies Commission of the Faculty of Natural Sciences and Engineering in accordance with the Statute of the University of Ljubljana, the Criteria for Transfer between Study Programmes and other regulations.

CONDITIONS FOR COMPLETING STUDY

EMPLOYMENT POSSIBILITIES

Students can complete the study and obtain the scientific title doctor of science if they have successfully met all obligations set down in the programme and have successfully defended their doctoral thesis. The students must publish a minimum of one scientific paper dealing with the topic of their doctoral thesis which is SCI, SSCI or A&HCI indexed. The author must be the first author of the paper. The paper must be accepted for publication prior to submitting the doctoral dissertation for evaluation.

The possibilities of employment for the students who have completed the doctoral study programme Textile Engineering, Graphic Communication and Textile Design are diverse. Future doctors of science will be able to work in a pedagogic and research area at universities and research institutes, in textile, clothing, graphic, media and paper processing companies, publishing houses, advertising agencies and media companies, and even in the state administration, which employs experts and researches with the highest education.

SHORT PRESENTATION OF COURSES

tgto
3rd level
curriculum
basic courses
elective courses
lecturers

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Short presentation of basic courses

T-S-1 MECHANICS – SELECTED TOPICS: 10 ECTS
Lecturers: Pino Koc (coordinator), George Mejak
The course enables the acquisition of the basic principles of analytical mechanics in conjunction with the mechanics of the continuum. Emphasis is placed on understanding the mechanical laws and the principles of mechanics of materials and the operation of devices. The aim of the course is to successfully solve various problems that occur in the areas of textile and graphic technology. The acquired knowledge prepares students for the development of complex models and treatment of typical problems in narrow fields of research rheology, mechanics of composite materials and mechanisms.

T-S-2 PHYSICAL ORGANIC CHEMISTRY WITH MODERN METHODS OF SEPARATION AND IDENTIFICATION OF ORGANIC COMPOUNDS: 10 ECTS
Lecturer: Janez Cerkovnik
Candidates are acquainted with the basics of physical organic chemistry, together with some modern methods for separation and structural characterisation of organic materials. The course covers the following topics: chemical bonding, molecular structure and thermodynamics, stereochemical and conformational isomerism, molecular structure and reactivity, kinetics and reaction mechanisms in solution, mechanistic studies of selected organic reactions, acids and bases, and some modern methods for separation and identification of organic compounds.

T-S-3 OPTICS, SPECTROSCOPY AND MICROSCOPY FOR GRAPHIC AND TEXTILE APPLICATIONS: 10 ECTS
Lecturer: Raša Urbas
The course covers selected topics of physics and chemistry, which enable a successful application of materials science for the of state-of-the-art applications, especially "functional" or "smart" examples. Attention will be paid to measurement equipment available from field to laboratory scale. The knowledge is of crucial importance for continuous development of graphic and textile applications with successful introduction of so-called "smart" applications and printed electronics.

T-S-4 PRINCIPLES OF ELECTRONICS FOR APPLICATION IN PRINTED ELECTRONICS: 10 ECTS
Lecturer: Marta Klanjšek Gunde
The course considers basic knowledge required for printed organic electronics and its application within printed electronics. Special attention is devoted to understanding of electrical properties of materials suitable for application, topography of prints and requirements suitable for the final application. The measuring methods for analysis of materials (printing substrates and functional printing inks), process and performance of final product are given. The course includes discussing of applications according to the research of the student.

T-S-5 COLOUR MODELS AND COLOUR TRANSFORMS: 10 ECTS
Lecturers: Sabina Bračko (coordinator), Jože Guna
The course considers mathematical models (matrix, CLUT) and methods for colour transforms between different colour spaces used in the field of cross media publishing. Students will be able to apply their knowledge in the field of capturing, displaying and colour reproduction for different viewing and surround conditions. They will also be able to take into account changes due to the change in printing materials, inks and printing technique. Exact course will take into consideration student interests. Another goal is also obtaining the knowledge of the colour transform corrections from device space to CIELAB and CIEXYZ.

T-S-6 THEORY OF COLOUR: 10 ECTS
Lecturers: Sabina Bračko (coordinator), Raša Urbas, Dušan Kirbiš, Darko Slavec
The course considers colour theory, the

expression and use of different colour configurations in both analogies, contrast or colour combinations according to the principle of the golden ratio, colour induction, colour transformations, colour strength and coloured body. Students obtain knowledge about colour and light intervals, the relationship between colour and shape, spatial, psychological and symbolic effects of colour. Students obtain additional skills in the use of colour in art, textiles, clothing, graphic and interactive design. Students learn the importance of colour in graphic design, phenomena that influence the perception of colours, colour patterns digitisation and the importance of colour management.

T-S-7 DESIGN OF EXPERIMENTS AND MULTIVARIATE ANALYSIS METHODS IN GRAPHIC ARTS AND TEXTILES: 10 ECTS

Lecturer: Aleš Hladnik

The goal of the course is an extension of statistical way of thinking and approach to research that students encounter during their graduate and postgraduate studies. Students become familiar with modern statistical methods as well as with the appropriate software and web tools they will use at their R&D or professional work. The emphasis is on understanding the basic ideas of the design and analysis of experiments and of the multivariate statistical analysis as well as on solving real-world engineering problems in the areas of graphic arts or textiles.

T-P-1 FIBRE FORMING POLYMER STRUCTURE: 10 ECTS

Lecturer: Tatjana Rijavec

The course enables the acquisition of general and specific knowledge in the field of fibre polymers for the needs of product development. The structural morphological hierarchy of fibre polymers is presented. The relationship between structure and properties which is the foundation of understanding the polymeric materials behaviour is explained. The course covers studies of the fibre-forming polymers structure in non-oriented and amorphously crystalline state, and the changes resulting from the deformation. The study of the superstructure of oriented fibre-forming polymers and the interdependence between the structure and properties allows the understanding of the behaviour of fibres in end products.

T-P-2 STRUCTURE AND PROPERTIES OF TEXTILES – SELECTED TOPICS: 10 ECTS

Lecturers: Alenka Pavko Čuden (coordinator), Matejka Bizjak, Dunja Šajn

Within the course, the impact of properties of textile materials, technological parameters and production processes on structural, textural, mechanical-physical and rheological properties of yarns, woven fabrics, knitted fabrics and nonwovens is analysed in-depth. The course deals with complex existing applications and trains for the development of new applications. It transmits knowledge needed to design textiles with a pre-requisite structure and properties and for selecting the optimal and most cost-effective technologies for the production of textile structures.

T-P-3 SPECIALITY FIBRES – SELECTED TOPICS: 10 ECTS

Lecturer: Tatjana Rijavec

The course includes studies of different types of unconventional natural fibres such as vegetable fibres, wild silk, animal hair, and specialty chemical fibres, which include micro-fibres, nano-fibres, profiled, bi-component, antistatic, antibacterial, smart and high performance fibres. The emphasis is on understanding different ways of modification of fibre morphology and training for the proper professional selection of specialty fibres for the development of advanced and unique products with special properties for various interdisciplinary applications.

T-P-4 THEORY OF FINISHING PROCESS: 10 ECTS

Lecturers: Barbara Simončič (coordinator), Petra Forte Tavčer

The course includes theoretical bases of

textile finishing which supplements the courses in the field of chemical textile technology. It enables insight into the influence of fibre and dye structures on the dyeing process, thermodynamics of dye sorption, diffusion and rate of dyeing, relationship between dye and fibre, interactions between dyes and auxiliaries, chemical reactions in dye-bath, action of oxidising and reducing agents to fibres, enzymatic catalysed processes, rheology of media, wetting and wicking of textile surfaces, processes at solid-liquid interface, models and methods for determining the surface free energy components.

T-P-5 GENERATING AND PROCESSING INFORMATION IN GRAPHIC MEDIA – MESSAGE OF GRAPHIC MEDIA: 10 ECTS

Lecturer: Helena Gabrijelčič Tomc

The course enables the study of elementary and advanced methods for generating and processing information in different graphic media. The study of communication in graphic media involves a theoretical basis about the activity and effects of different media and the possibilities for their use, as well as analysis of the effects of messages in different media. The aim of the course is to give basic and advanced knowledge about generating data, which are significant and influential on all human senses only as information in graphic media. The second aim is the study of information processing in light of major sensory structures (visual, auditory), which enables knowledge of different graphic elements, their communication through different media and their responsibility in social contexts.

T-P-6 VISUAL IMAGE AS COMMUNICATION MEDIA: 10 ECTS

Lecturers: Klementina Možina (coordinator), Darko Slavec, Nace Pušnik

In this course, students thoroughly study how to notice, realise, understand, explain, describe and critically judge visible and hidden, compositional, aesthetic and communicative (positive and negative) characteristics of graphic work, starting from artistic analysis in connection with understanding and synthesis to the creation of new graphic work and visual communications in the civilised world. The work consists of informatisation in basic and specific high sensitivities in the observation and evaluation of civilisation use of graphic design and design-graphic visual systems, for the function of communication between creator and user.

T-P-7 INTERDISCIPLINARY TYPOGRAPHY: 10 ECTS

Lecturer: Klementina Možina

This course gives in-depth study of the influence of technological development on typography: various conventional and contemporary printing techniques, various media; role of various information carriers on typographic choice. Detailed knowledge about the influence of historical periods and artistic styles on typography is given. In-depth research of visibility, legibility and readability – their importance and role in presenting various types of texts in various media; investigation and use of appropriate research methods for their verification are thoroughly studied.

T-P-8 ADVANCED PRINTING TECHNOLOGIES, DEVELOPMENT AND APPLICATIONS: 10 ECTS

Lecturer: Deja Muck

The course presents selected topics in the field of printing technologies including 3D printing. The key parameters for each of these technologies which affect the optimal run ability, printability, productivity and economy are presented. The course introduces also hybrid printing and the possibilities that are enabled mainly in the field of printed electronics. At 3D printing, knowledge about printing technologies and the key parameters that determine the final quality of the printed object are gained.

T-P-9 INTERACTIVITY: 10 ECTS

Lecturers: Aleš Hladnik (coordinator), Matevž Pogačnik

The course covers the fundamental knowledge necessary for the understanding of the field of interactivity and gives a systematic

overview of the trends in interactive communication in new media. A student will get a deeper understanding of the terms such as multimedia, user interfaces, user experience, human-computer interaction, multimodal and multi-sensorial interfaces, user modelling and information systems. The course also comprises an overview of procedures in prepress and processing of multimedia content that enable execution of user-centred interactive services.

T-P-17 POLYMERS FOR 3D PRINTING IN GRAPHIC ARTS: 10 ECTS

Lecturers: Klemen Možina (coordinator), Urška Vrabič Brodnjak

The scope of the subject is studying the morphology of natural and synthetic polymers and their physical-mechanical response to stresses. It explores the possibilities of using these polymers in 3D printing and creating new composites with specified properties. The course emphasizes sustainable thinking and modification of 3D printing techniques to achieve morphological changes in polymers. It also focuses on developing composites that increase environmental resistance and reduce energy requirements during printing. The goal is to determine, create new products and technological upgrades that have a high degree of recyclability and are different from commercially developed products.

T-P-10 SELECTED ISSUES IN SOCIOLOGY OF THE ARTS: 10 ECTS

Lecturer: Dušan Kirbiš

The course focuses on the critical-historical presentation of the main features of modernity. Some of the relevant stages in the development of stylistic formations in modernity, including romanticism, realism and symbolism, will be critically unpacked. Based on this knowledge, students gain an analytical view of European modernism and historical avant-gardes and position of art which has retained its autonomous form, but has been substantially integrated into the circuits of global capitalism and its attendant "multicultural logic".

T-P-11 THEORY OF TEXTILE AND FASHION ART: 10 ECTS

Lecturers: Marija Jenko (coordinator), Elena Fajt, Katja Burger Kovič

Course deals with social criticism and formalism, the (un)culture of living and other phenomena in society that concern, mark and transform textile and fashion. It points out the importance of meaning of textile and fashion in the sphere of art, and of understanding sociological, psychological and ethical consequences of artistic interferences in different cultural environments. Students are stimulated to develop conceptual thinking through interdisciplinary views to connect different disciplines and media of their expression. They begin to research the phenomenon of the "hollow body", performance, art market and the influence of communication technologies and scientific development in textile and fashion art.

T-P-12 THEORY OF FASHION: 10 ECTS

Lecturers: Almira Sadar (coordinator), Elena Fajt

Course consists of profound study of different fashion theories and specific methods of clothing design, related to sociological, psychological and historical backgrounds of main functions and motifs of clothing. It especially points out the connections between fashion and other fields of design and focuses on study of the relations between body and clothes. It encompasses the understanding of fashion as a complex system of signs of social life. It includes the field of production and consumption of fashion, socio-psychological interpretations of public and personal, relations between the fashion and identity, ideology etc.

T-P-13 STRUCTURE OF ART PRACTICE: 10 ECTS

Lecturers: Jožef Muhovič (coordinator), Dušan Kirbiš, Darko Slavec

The course deals with important issues related to artistic productive thinking, conceptualisation, articulation, materialisation, and public presentation. It deals with theoretical and expression issues relating to several branches of art in historically im-

portant development turns of the modernist styles. It defines linguistic features and impacts of new artistic media – photography, film, video, digital techniques and practices etc – on design. It enters the field of aesthetics and makes comparisons with other artistic practices. It investigates the structure of the artistic language and explores the relations between subject, structure and substance, and ends with the presentation and verification of the effect in a public space.

T-P-14 CULTURAL STUDIES OF FASHION: 10 ECTS

Lecturer: Peter Stanković

The course addresses fashion from the perspective of cultural analysis. Fashion is in this context understood as a unique signifying system, several social relations are inscribed in: from economic, gender and sexual to ecological and political. In order to understand all these, students are firstly acquainted with the most important systems of theoretical explanations: Marxism, post-Marxism and post-structuralism, as well as the school of the so-called British cultural studies. Course explores various concrete aspects of fashion, including topics as: fashion and modernity, fashion and relations of social power, fashion and construction of gender and sexual identities, fashion as spectacle, and fashion as an expression of dichotomies of a contemporary individual.

T-P-15 THEORETICAL FOUNDATIONS OF TEXTILE DESIGN: 10 ECTS

Lecturers: Marija Jenko (coordinator), Alenka Pavko Čuden, Katja Burger Kovič

Course supports interdisciplinary research work, oriented towards innovative solving of different textile problems, and towards adequate valuating of textiles and their positioning into wider civilisational/cultural space. It defines and systematises crucial theoretical elements in textile design, educates in the field of semiotics of textiles and in the understanding of complex relations between artistic elements and the identity of textile materials. It stimulates individual expression together with technological innovations of industrial production, and develops ecological awareness and all-encompassing integration of textiles for the needs of different disciplines.

T-P-16 THEORY OF COSTUME DESIGN: 10 ECTS

Lecturers: Almira Sadar (coordinator), Elena Fajt, Karin Košak

Course includes profound knowledge from costume-design studies, of specific methods of designing costumes for different types of shows, and of history of the theatre, drama, scene design and costume design. It upgrades the knowledge of the role of costume design and its determinants in theatre, opera and dance performances and in film, television and video. It focuses on the integration of costume design in dramaturgic, directory and scenic concept of the performances from the 1980s on. It defines the relation between fashion and design through the history and in the present times, and it shows contemporary costume-design approaches of the world most renowned costume-designers.

Short presentation of elective courses

I-S-1 ENVIRONMENTAL ASPECTS IN TEXTILES AND GRAPHICS: 10 ECTS

Lecturers: Petra Forte Tavčer (coordinator), Maja Klančnik

The course includes the study of environmental legislation, impact of production processes, services, materials, wastes and products on environment, environmental protection solutions, environmental monitoring, industrial wastewater treatment, decolourisation of effluents, waste management, processing and recycling of wastes of textile and graphic industry and their final products, toxic chemicals in textile and graphic industry as well as legislation on chemicals. Environmental management systems are presented. Development of ecological products and environmental labels is discussed.

I-S-2 QUALITY – SELECTED TOPICS: 10 ECTS

Lecturer: Andrej Demšar

The main objective of the course is to develop the critical evaluation capability of quality management systems and procedures for constant quality improvement. Modern methods of quality management are discussed on the basis of critical analysis of practical examples. The importance of quality in order to achieve business excellence of the organisation is emphasised. Different procedures for quality management (ISO 9000 family of standards, QFD, Kaizen, lean manufacturing, TQM, Taguchi methods, six sigma, 20 keys etc) are presented and critically evaluated.

I-S-3 ANALYSIS OF STRUCTURE AND PROPERTIES OF TEXTILE AND GRAPHIC MATERIALS – SELECTED CHAPTERS: 10 ECTS

Lecturers: Andrej Demšar (coordinator), Diana Gregor Svetec

The main objective of the study is to develop the capability of critical application and evaluation of modern analytical methods for the analysis of structure and properties of textile and graphic materials which are almost all polymeric materials. Some structural properties and methods which student will study in the frame of the course: molecular mass, distribution of molecular weight, surface morphology, anisotropy, thermal properties, diffusion phenomena, viscoelasticity, mass density and others. Some of these methods are more thoroughly studied in connection with students' research work.

I-S-4 RECYCLING OF POLYMERIC MATERIALS: 5 ECTS

Lecturer: Diana Gregor Svetec

The topic of course is environmentally responsible development and treatment of textiles and graphic products. Students gain some knowledge about polymeric materials that are used in the textile, graphic and packaging industry, as well as about their structure and properties that are connected to degradation and recovery of polymeric materials. Students learn about different processes of sorting solid polymeric waste and recycling technologies for polymeric materials, and about the influence of recycling on the properties of polymers. Information about the life-cycle of polymeric textile and graphic products is given, with the goal to optimise ecological design of these products.

I-S-5 PLASMA TECHNOLOGIES FOR TEXTILES AND GRAPHICS: 10 ECTS

Lecturers: Marija Gorjanc (coordinator), Miran Mozetič

The course enables the insight into the theoretical basis and application of low temperature plasma for functionalisation of textile and graphic materials. It includes the overview of state of the art in the field of plasma modification of textile and graphic materials, the basis of non-equilibrium state of gas, characteristics of discharges, reactive gaseous particles in plasma, interaction between plasma radicals and materials and functionalisation and etching of materials. Characterisation of textile and graphic surfaces by X-ray photoelectron spectroscopy, atomic force microscopy and scanning electron microscopy was presented. Ageing of plasma-treated materials is also discussed.

I-S-6 PRINTED ELECTRONICS: 10 ECTS

Lecturer: Deja Muck

The course connects the knowledge of printing technology with the attainment of the course Principles of electronics for application in printed electronics. In the frame of the course, first experiences in the field of printed electronics, which are necessary for the application of such systems in practice are acquired. Special attention is devoted to the existing printed electronic applications and to the search for new innovative solutions for simple printed passive and active elements of electric circuits and their final applications.

I-S-7 DYES AND PIGMENTS IN TEXTILE AND GRAPHIC TECHNOLOGY: 5 ECTS
Lecturers: Sabina Bračko (coordinator), Mateja Kert
The course considers selected topics regarding dyes and pigments used in textile and graphic arts technology. In introduction, basic explanation for understanding the relationship between chemical composition and colour of substance is given. Relevant dye classes, their structure, properties and novel technological dyeing processes as well as properties of pigments as a component of printing ink are discussed in detail. Within the course, the knowledge about novel photochromic, thermochromic and electrochromic dyes and pigments is gained. Special attention is dedicated also to the ecological and toxicological problems of dyes and pigments.

I-S-8 MICROCAPSULATION: 5 ECTS
Lecturer: Bojana Boh Podgornik
The course deals with the development of microencapsulation technologies. Physical methods of microencapsulation and chemical methods of microencapsulation in the emulsion systems: emulsification, simple and complex coacervation, interfacial polymerisation, in situ polymerisation are presented. Isolation and drying of microcapsules, testing and analytics of microcapsules, formulations and applications of microcapsules in added value products, as well as uses of microcapsules in textiles and graphic communication are discussed.

I-S-9 COLOUR MEASUREMENT – SELECTED TOPICS: 5 ECTS
Lecturers: Sabina Bračko (coordinator), Marija Gorjanc
The course considers selected topics in the field of colour measurement. In introduction, the causes for colour formation are explained. A detailed knowledge and understanding regarding colour measurement regulations given by the International Commission on Illumination (CIE) is obtained within the course. Colour spaces, theories of colour vision and colour appearance models as well as regulations concerning dyed material preparation are discussed in detail. Standard methods for numerical assessment of colour and equations for colour difference evaluation are studied on the basis of practical research work.

I-S-10 MODERN ANALYTICAL TECHNIQUES IN GRAPHIC AND TEXTILE TECHNOLOGY: 5 ECTS
Lecturer: Jernej Iskra
Candidates are acquainted with the basic principles of modern analytical techniques and the practical choice and use of these techniques in research work in the field of graphic and textile technology. It includes a study of the transformations of substrates in real samples, separation methods and use of these techniques in research work, comparison of classical and modern instrumental methods and their possible use in real samples, identification and characterisation of real samples in real matrices with UV/VIS and IR spectroscopy, GC/MS, HPLC, NMR.

I-S-11 COMPUTING AND NUMERICAL METHODS IN TEXTILE AND GRAPHIC RESEARCH: 5 ECTS
Lecturer: Aleš Hladnik
The course goal is to give students knowledge on programming and numerical methods with the emphasis on textile and graphic arts problems. Students acquire skills of independent research work using mathematical programming packages for the analysis of measured data, digital image processing etc. Work with tools for digital data processing and digital image acquisition, as well as some samples in textile and graphic research are included.

I-S-12 PHOTOGRAPHY AS COMMUNICATION MEDIA: 5 ECTS
Lecturers: Marica Starešinič (coordinator), Jure Ahtik
The goal of the course is to describe and critically judge visible and hidden, compositional, aesthetic and communicative characteristics of photography, starting from artistic analysis and synthesis, to the

creation of new independent photographic work, based on visual photographic solutions with variations on a selected theme, problem or motif. Specific and high sensitivities in individual observation and valuation of the novel use of photographic visual systems in the role of a communication medium. Understanding analytical coordination between contemporary and classical approaches, development of original and recognised solutions and communication specialities required by contemporary moments in civilisation, as well as professional production.

I-S-13 DESIGN AND INNOVATION: 5 ECTS
Lecturers: Marija Jenko (coordinator), Karin Košak
Course aims to provide foundation knowledge of the complexity of the design, which represents the connection of creator's idea, industrial realisation, distribution network and consumer needs. It introduces procedures, methods and criteria for evaluating the quality of the design phase and later in the conversion of ideas into concepts and models. Students learn methods to identify the needs of potential users and learn to use tools to stimulate creativity. They get acquainted with the methods for testing prototypes with experimental and analytical methods as well as the ability to produce patent applications.

I-S-14 ADVANCED TECHNOLOGIES IN CLOTHING WITH SELECTED TOPICS OF 2D/3D DEVELOPMENT OF GARMENT CUTS: 10 ECTS
Lecturer: Matejka Bizjak
The subject critically reviews advanced technologies in clothing industry which also include seamless technology, and advanced systems for the management and control of clothing production. Advanced systems for the preparation and construction of garments, and systems for the simulation of the final product and prediction of the properties of the final product, which include draping, elastic properties, the forming ability etc are presented. The course includes traditional and computer-aided 2D/3D clothing anthropometrics. Students acquire in-depth theoretical and practical knowledge of 2D/3D development of garment patterns and the possibility of a new approach to the design of structural and functional relationship between clothing (textiles) and the body.

I-S-15 USE OF IMAGE PROCESSING AND IMAGE ANALYSIS IN GRAPHIC AND TEXTILE RESEARCH: 10 ECTS
Lecturers: Aleš Hladnik (coordinator), Deja Muck
Goal of the course is to provide students with fundamental knowledge about the modern theory and practice of image processing and analysis. The student will learn the most common digital image processing procedures, such as point-wise and local operations, image transformations, morphological filtering and colour image processing routines. They will also become familiar with various software tools used in the field. With the acquired knowledge, they will be able to solve a variety of problems encountered in research and/or industrial settings in papermaking, graphic technology, textile science and elsewhere.

I-S-16 METHODOLOGIES OF COMPUTER-AIDED DESIGN OF PRODUCTS: 10 ECTS
Lecturer: Helena Gabrijelčič Tomc
The course is focused on the study of methodologies of computer-aided design and prototyping products. The study includes both design and technological aspects of producing and processing bitmap and vector images and graphics as well as methods of creating patterns by repeating. With the involvement of processing and analysis of two-dimensional and three-dimensional content, the elimination of semantic elements from digital media and the transformation of the contents in a new significance with the aim of further use in computer aided design of different products is considered. Besides prototyping, the course is oriented in the study of setting of various content and products in the space/

time and the creation of static and dynamic presentation of computer-designed products.

I-P-1 FUNCTIONALISATION OF TEXTILE MATERIALS: 10 ECTS

Lecturers: Barbara Simončič (coordinator), Marija Gorjanc, Petra Forte Tavčer, Brigita Tomšič, Tatjana Rijavec, Živa Zupin

The course includes a review of contemporary chemical and mechanical technologies of textile functionalisation. The processes are studied in relation to the chemical structure of fibres, constructional parameters of fabric. The functionalisation of synthetic fibres with organic and inorganic additives in the process of fibre spinning and the use of applied techniques of functionalisation in different processes of textile finishing are presented. A review of chemical agents for textile functionalisation, standard methods for determining functional properties of textile fibres, and contemporary analytical methods for determining morphological, physical and chemical changes in fibres after functionalisation is performed.

I-P-2 BIOTECHNOLOGY FOR TEXTILE PROCESSING: 10 ECTS

Lecturers: Petra Forte Tavčer (coordinator), Bojana Boh Podgornik

The course includes a study of different biotechnological processes in the production of textile and other fibrous substrates. Students get knowledge of the basic enzymology, classification of enzymes, structure and properties of proteins, enzymatic catalysis, enzyme activity and stability, basic thermodynamics and enzyme kinetics, industrial enzymes, sources and production of enzymes, handling enzymes, biotechnological processes in finishing textiles and industrial applications. Enzymes for textile care, micro-organisms and enzymes for decolourisation and enzymes in bleaching are presented. Biotechnology in the development of new fibres and the genetic modification in the production of new natural fibres are discussed.

I-P-3 ADVANCED TECHNOLOGIES FOR LINE TEXTILE PRODUCTION – SELECTED TOPICS: 10 ECTS

Lecturers: Dunja Šajn Gorjanc (coordinator), Stane Praček

Selected material provides an in-depth theoretical and technological expertise in the manufacture of twisted, core and advanced yarns, where their structure and properties are emphasised. Within the course frame, factors influencing the design, structure and properties of yarns are presented and analysed in detail. Classical technological processes of yarn manufacture are discussed, with the emphasis on advanced technologies of yarn forming. The impact of advanced spinning process on the properties, productivity and cost price of yarns is presented.

I-P-4 ADVANCED TECHNOLOGIES FOR TEXTILE PRODUCTION – SELECTED TOPICS: 10 ECTS

Lecturers: Alenka Pavko Čuden (coordinator), Matejka Bizjak, Dunja Šajn Gorjanc

The aim of the course is to explore new approaches in textile machine building and their limitations. Automation, robotics and computerisation of production lines which allow the dismissal of bottlenecks in the manufacture of textiles are presented. Advanced technologies of flat textiles manufacture, specific technologies of mechanical after-treatment of textiles, modern systems for sample preparation and advanced control systems of manufacturing processes are presented. The course is aimed to qualify students for the scientific approach to the selection of cost-effective technologies for production of various textiles and to design innovative textiles for specific purposes.

I-P-5 DYEING AND PRINTING OF TEXTILES – SELECTED TOPICS: 10 ECTS

Lecturers: Petra Forte Tavčer (coordinator), Mateja Kert, Marija Gorjanc

The course covers the most contemporary topics in the field of textile printing and/or

dyeing. Students get knowledge of the theory of dyeing, physical-chemical properties of dye solutions, rheological properties of thickeners and inks, colour reception, textile materials and auxiliaries, fixation of dyes and functional agents on textile substrates, finding the most appropriate process from the aspect of dyed material fastness, ecology of technological phases as well as of water outlets. Special printing techniques, printing of demanding materials, printing for functionalisation and transfer from digital to screen printing are discussed. Analytical methods for the material characterisation and the determination of high-level quality demands are upgraded.

I-P-6 PRETREATMENT AND FINISHING OF FIBROUS SUBSTRATES – SELECTED TOPICS: 10 ECTS

Lecturers: Brigita Tomšič (coordinator), Barbara Simončič, Petra Forte Tavčer

The course includes intensive study of the most contemporary pretreatment and finishing processes of fibrous substrates. Pretreatment of unconventional natural and synthetic fibres and their mixtures is investigated. The influence of chemical treatment conditions on the properties of substrates is analysed. The most novel analytical techniques for the characterisation of modified substrates are presented. Alternative bleaching agents, biocatalysts in oxidation processes and the influence of catalysts and activators on oxidation processes are studied. The relation between the chemical structure and functionality of the finishing agents, interactions between the agents and substrates as well as the sol-gel technology are discussed.

I-P-7 TEXTILE CARE – SELECTED TOPICS: 5 ECTS

Lecturers: Mateja Kert (coordinator), Barbara Simončič

The course covers theoretical approaches of different processes of textile care and their sustainability. Students intensively study the theory of wetting and washing, mechanisms of surfactants in aqueous and non-aqueous media, surfactant-soil-fibre interactions and the appropriate analytical method for the evaluation of textile care processes. An overview of modern agents for textile care and of contemporary textiles and possibility of their care is presented. Textile care processes are studied from the economic and ecological point of view. European and global guidelines of textile care processes are discussed.

I-P-8 SPECIALITY TEXTILES – SELECTED TOPICS: 5 ECTS

Lecturers: Matejka Bizjak (coordinator), Alenka Pavko Čuden, Tatjana Rijavec

The course provides specialist knowledge of the structure and geometry of 2D and 3D textiles for agronomy, filtration, construction, aviation, medicine, sport and leisure. Advanced structural, geometric, mechanical, comfort and other specific characteristics of these textiles are presented and analysed. The impact of raw materials, structural and manufacturing parameters on the final properties of specialty textiles is critically discussed. In addition to mastering the existing fields of application, students are qualified to plan and find new applications.

I-P-9 ANCIENT GRAPHIC MATERIALS AND TECHNIQUES – SELECTED TOPICS: 10 ECTS

Lecturer: Jedert Vodopivec Tomažič

In this course, the ancient graphic printing materials and techniques of manufacturing written and printed graphic products in different periods of time are presented. The aim of the course is to present the necessary knowledge for a professional to understand the selection and quality of materials and techniques used in the past in the field of graphic arts, craft, manufacture and industry. These topics are necessary to solve complex advanced research tasks and to plan and implement projects which are in direct or indirect relation to the graphic cultural heritage.

I-P-10 SUSTAINABILITY AT PRODUCTION AND PROCESSING OF PAPER AND PACKAGING: 10 ECTS

Lecturers: Diana Gregor Svetec (coordinator), Branka Lozo

In this course paper, board and packaging are presented from the sustainability viewpoint. An overview of current situation in this field is given. Knowledge is gained about biopolymers and other ecological materials; environmental friendly processes of manufacturing, finishing and re-processing of paper and packaging; testing methods for functionality evaluation and tools for evaluation of printed products and packaging sustainability; planning and eco-design of packaging according to sustainability. Selected topics are chosen according to individual student research work.

I-P-11 PACKAGING AND GRAPHIC MATERIALS – SELECTED TOPICS: 10 ECTS

Lecturers: Diana Gregor Svetec (coordinator), Sabina Bračko

In this course, special topics from the field of graphic materials used for manufacturing printed products and packaging, interactions between different graphic materials, manufacturing processes of printed and packaging products, characterisation of materials and products are thoroughly studied. Based on the knowledge of structure and properties of graphic and packaging materials, manufacturing processes, finishing of printed products and packaging the knowledge needed for the development of new products or improvement of existing printed products and packaging is gained.

I-P-12 METHODS FOR STUDYING OF MATERIAL-PRINT INTERACTIONS: 10 ECTS

Lecturers: Deja Muck (coordinator), Aleš Hladnik

In the frame of the course, the knowledge about instrumental methods that allows objective evaluation of material-print interaction is obtained. The course is oriented towards knowledge and understanding of interactions between the surface of printing materials, coatings, printing inks, glues, varnishes and other liquid materials. Presentation and purpose of using different methods from other research areas (SEM, CLSM, AFM and others) are included for better understanding of complex problems in graphic applications.

I-P-13 QUALITY ANALYSIS OF GRAPHIC DESIGN PRODUCTS: 5 ECTS

Lecturers: Klementina Možina (coordinator), Darko Slavec, Helena Gabrijelčič Tomc

The goal of this course is employment with in-depth aesthetic analysis of problems of graphic design and user experience and their connection among artistic theory, design process and final production of graphic products in different media. Aesthetic, psychological and usability function of typography, photography, moving image and correct coordination among them are discussed. The course also includes defining protocols for quality testing regarding user goals and specifications of graphic and interactive media.

I-P-19 FUNCTIONALIZATION OF GRAPHIC MATERIALS: 10 ECTS

Lecturer: Urška Vrabič Brodnjak

This course includes knowledge of various functionalisations, technological processes and properties of graphic materials, as well as the limits of nanotechnology applications. These processes include the design of functionalised, sustainable graphic materials that are important for integration into the circular economy. Standard and modern processes of functionalisation and analysis are learned and applied. An important part of the course also includes the analysis of the influence of external factors that determine the properties of the functionalised products (migration of substances, insect infestation, etc.).

I-P-14 TEXTILES IN SPACE: 10 ECTS

Lecturers: Marija Jenko (coordinator), Matejka Bizjak, Karin Košak, Katja Burger Kovič

The course is closely related to industrial design, interior design, landscape architecture, construction, fine art and textile technology. The emphasis is on the development and design of fabrics for interior and exterior use through understanding and appreciation of architectural rules and significance in the historical and broader cultural context. When creating a new demand for modern and unique serial production, the separation of public and private in organic approach takes into account the important role of textile technology, not ignoring the role of other interdisciplinary skills.

I-P-15 ADVANCED MATERIALS IN TEXTILES: 10 ECTS

Lecturers: Tatjana Rijavec (coordinator), Sabina Bračko, Milan Bizjak, Marjan Jenko

The course deals with active smart textiles and wide possibilities of their use, and integration of biotechnology, information technology, microelectronics, microelectromechanical devices as well as with the development of portable computers and nanotechnology. Students are introduced to fundamental physical-chemical principles of operation of smart textiles and the ability to plan and design new products, including smart textiles. Acquired knowledge of advanced materials enables collaboration and communication with experts in various disciplines.

I-P-16 STUDIES IN GENDER, BODY AND CLOTHING: 10 ECTS

Lecturer: Alenka Švab

The course presents the main theoretical perspectives and study topics of gender, body and dress with the basics of epistemology and methodology of research specific to this area. It encourages critical view of sexual relationships, sexual construction of the body, clothing and fashion and related social phenomena and their placement in a variety of institutional, political, social, economic and aesthetic explanatory frameworks. It defines sexual construction of clothing and fashion, cultural and gender stereotypes, gender socialisation through dressing, relationship between clothing and nudity.

I-P-17 FASHION AND MEDIA COMMUNICATIONS: 10 ECTS

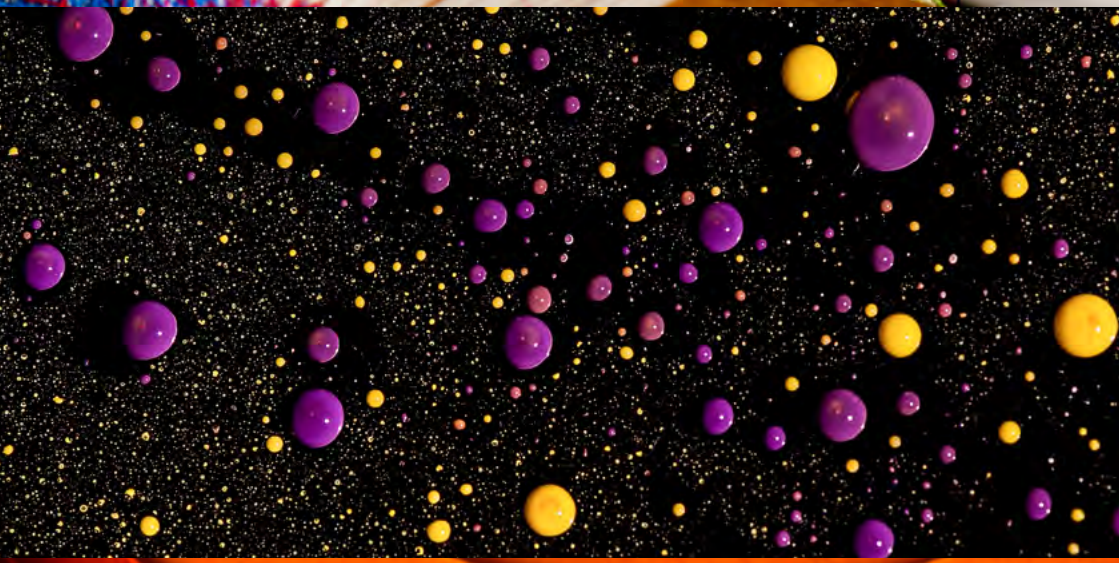
Lecturer: Maruša Pušnik

The course treats communication skills to operate media culture in connection with fashion industry, presents role of the media in promoting and structuring fashion in the contemporary world, and outlines the importance of marketing communication and advertising for changing fashion tastes. Students gain an insight into the history and development of media, consumer and popular culture. They learn about creating fashion campaigns in the media, the method of selection of the necessary information for the promotion and communication of fashion, with the presentation of fashion brands in the visual and textual meaning, with the media industry and fashion as a communication network in contemporary society.

I-P-18 SUSTAINABLE DESIGN: 10 ECTS

Lecturers: Almira Sadar (coordinator), Marija Jenko, Elena Fajt

The course aims to provide in-depth theoretical knowledge in the field of sustainable design and understanding of sustainable design models with the emphasis on innovative design methods and concepts based on the social aspects of sustainability. It presents various fields of sustainable design with the emphasis on the material and social aspects of sustainable design. It enables students comprehensive understanding of sustainable design models and methods, which are based on the combination of ecological and ethical principles.



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