

# GMT

graphic and media  
technology

higher education professional  
study programme

chair of information  
and graphic arts technology

2022/2023



University of Ljubljana  
Faculty of Natural Sciences and Engineering

# **PRESENTATION, MISSION AND VISION OF THE FACULTY OF NATURAL SCIENCES AND ENGINEERING**



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omm  
otgo

[www.ntf.uni-lj.si](http://www.ntf.uni-lj.si)

The Faculty of Natural Sciences and Engineering was created when the Faculty for Natural Sciences and Technology at the University of Ljubljana was reorganised in 1994. It hosts four departments:

- Department of Textiles, Graphic Arts and Design
- Department of Materials and Metallurgy,
- Department of Geology and
- Department of Geotechnology, Mining and Environment.

The study of mining and geology first began in 1919 with the foundation of the University of Ljubljana; an independent study programme of Metallurgy was launched in 1939 within this section, while the study of textiles began as part of the Department of Chemical Technology in 1956. Chemical education and computer sciences were launched in 1982. Since 1961, the Department of Textiles, Graphic Arts and Design has been offering Textile Technology studies; in 1979, this was expanded with Textile and Clothing Design and then Graphic Technology in 1996.

The Faculty is very diverse and offers a wide array of disciplines. It nurtures basic, applied and developmental research in geology, mining, geotechnology, material sciences, metallurgy, textile engineering, graphic technology, textile, fashion and graphic design and IT.

The intellectual and creative environment, provided and nurtured by the Faculty, enables the teaching and creation of new knowledge, which is then spread by graduates to different institutions and partners working in various research and industrial fields within the natural sciences, engineering, textile, clothing and other material design as

well as graphic and media technologies. Graduates take part in the industrial, scientific research and artistic environment both in Slovenia and abroad. In many areas, they are a truly competitive force on the international labour market. The mission of the Faculty of Natural Sciences and Engineering is to offer quality higher education and provide scientific research in all compatible disciplines, regardless of their differences. All developmental and research work is carried out for the common good of the Republic of Slovenia and for the wider environment; first and foremost, this includes growth of the Slovenian economy, preservation of the Slovenian natural environment, care for the well-being of the inhabitants of Slovenia and, consequently, care for the common good of both humanity and nature.

Our Faculty will do its part to place the University of Ljubljana among other world-class universities. By ensuring transparent business practices and cooperation in the areas of teaching and research, it will help enable the quality development of all disciplines and the preservation of study programmes. It will strengthen the academic community of professors, researchers, students and other associates and do its best to achieve recognition both at home and abroad. It will do everything in its power to raise the quality of the study programme, teaching, research and its public activities to the highest international level. It will widen its international cooperation and its collaboration with top-notch institutions and the economy in Slovenia and abroad; it will continue to ensure the employability of its graduates by constantly updating the content of its study programmes.

# CHAIR OF INFORMATION AND GRAPHIC ARTS TECHNOLOGY



igt  
chair  
information  
graphic arts  
technology  
history  
activities

[www.ntf.uni-lj.si/igt](http://www.ntf.uni-lj.si/igt)

The study of Graphic Arts and Chair of Information and Graphic Arts Technology is part of the Department of Textiles, Graphic Arts and Design, Faculty of Natural Sciences and Technology, University of Ljubljana. Our premises are located at Snežniška 5 in Ljubljana. Our professors, teaching assistants and technical staff are involved in a number of research and teaching activities. These include – but are not limited to – pre-press, press and postpress operations, graphic materials, printed electronics, packaging, image processing, information-communication technologies, photography, 3D modelling, colorimetry, typography, graphic design and ecology. Chair members are lecturers and assistants in the basic and optional courses that are part of the Bologna study

programmes of undergraduate level, postgraduate level (master's study programme) and doctoral study programme. As part of our study courses, we – together with our students – organise various exhibitions, presentations and other events. We also perform research work and host national and international conferences and symposia.

Our goal is to perform high-quality research work and education in the fields of graphic and interactive communications that will provide our students with fundamental theoretical and practical knowledge they will need when working in graphic arts, packaging and paper-making industry, design and advertising agencies, media, educational and research organisations.



## HISTORY

Here are some important historical milestones of our chair:

- 1996: Start of Graphic Technics, the first higher educational professional study programme for the field of graphic technology in Slovenia
- 2000/001: First study year with a post-graduate study of graphic technology
- 2002/2003: Enrolment of the first generation of students to the university programme Graphic Technology
- 2006/2007: Start of the Bologna declaration study programmes

## ACTIVITIES

R&D activities of our Chair are performed in a variety of fields of modern graphic and information technology as well as related fields, such as:

- Conventional, digital and 3D printing
- Substrate characterisation and print quality assessment: spectroscopic and microscopic methods, image processing/analysis
- Functional printing and printed electronics
- Automatic identification technologies: barcodes and 2D codes, radiofrequency identification (RFID)

- Colour science: colorimetry, colour management, colour appearance models, spectral colour acquisition and reproduction
- Modern graphic materials: recycled paper and board, synthetic graphic materials, UV printing inks, (smart) packaging, effect pigments
- Sustainability and eco-design of printed products and packaging
- Usability and legibility of typography in different media
- Typographic cultural heritage
- Eye tracking: evaluating user experience in conventional and digital media
- Web design and development for PC, Mac and mobile platforms – smart phones, tablet computers
- Digital photography and video
- 3D modelling and animation
- Microencapsulation
- E-learning
- Scientific and technical informatics

Current changes in study programmes are available on: [www.ntf.uni-lj.si/igt](http://www.ntf.uni-lj.si/igt).



# STUDY PROGRAMME

## STUDY PROGRAMME OF THE 1st LEVEL



study  
1st level  
gmt  
graphic  
media  
technology  
curriculum

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# GRAPHIC AND MEDIA TECHNOLOGY

**The degree and type of study:** Undergraduate study programme – higher education professional study programme

**Duration:** 3 years (6 semesters); 180 total ECTS credit points

**Title:** Bachelor of Science (B.Sc.)

**Field of study according to ISCED classification:** (21) Arts

**Classification of the study programme according to KLASIUS-P:** (2130) Auto-visual techniques and (multi)media production (broad programmes)

**Classification of the study programme according to KLASIUS-SRV:** (16203) Academic higher education (first Bologna cycle)

**Scientific research discipline according to Frascati classification:** Engineering and Technology

## BASIC GOALS

The basic goal of the higher education professional programme of Graphic and Media Technology is to train an expert of sufficient professional breadth who will be capable of managing, in terms of the technology and execution, diverse and demanding graphic activities and graphics related to media activities.

A graduate has broad expertise and professional knowledge in the study area of graphic and media technology, augmented by selected knowledge in the areas of natural sciences, information and communication technology, aesthetics, graphic design and management of digital media in visual and interactive applications and services.

A graduate also has professional ethical and environmental responsibility, can use modern tools of different graphic and media technologies and is able to observe, analyse and evaluate natural, cultural, artistic design and visual systems. Graduates of the programme Graphic and Media Technology acquire

an overview and understanding of technological parameters of digital media, visual and interactive applications and services and basic graphic materials and digital techniques of representing information, including the capacity to understand the interdependency between technology and design.

## ENROLMENT CONDITIONS AND THE CRITERIA FOR SELECTION IN CASE OF LIMITED ENROLMENT

Enrolment in the programme shall be possible for any person who has completed the final examination, vocational matura or general matura in any four-year secondary school programme.

If the number of candidates applying for the programme exceeds the number of enrolment spaces, candidates shall be selected according to the following criteria:

- overall performance on the final examination, vocational matura or general matura (60%);

- overall performance in the 3rd and 4th years of secondary school (40%).

### **STUDENT OBLIGATIONS**

For entry into a higher class, a student must have confirmed attendance in all courses, complete all practical classes and obtain the following number of ECTS credit points for entry into each individual class:

- a minimum of 54 ECTS credit points for entry into the 2nd year;
- 60 credit points from the first year and a minimum of 54 ECTS credit points from the second year for entry into the 3rd year.

To repeat a class, students must have:

- all practical classes and a minimum of 28 ECTS credit points for the 1st year;
- all practical classes and a minimum of 28 ECTS credit points for the 2nd year.

During the course of studies, a student can repeat a class once or change the study programme once for having failed

to meet his or her obligations in the former study programme.

### **SELECTING EXTERNAL ELECTIVES**

Students have the possibility of achieving 10 ECTS credit points through electives offered by other programmes at the Department of Textiles, Graphic Arts and Design or by choosing courses at other faculties falling under the University of Ljubljana (for this, the student requires permission from his or her faculty).

### **MOBILITY**

Students have the possibility of transferring 30 ECTS credit points (one study semester, regardless of the obligatory or optional units) from any programme in the field of graphic or media-related activities offered by universities and other institutions of higher learning in the IARIGAI, CEEPUS, CUMULUS or Erasmus+ network.



## CURRICULUM

1st year	Contact hours	ECTS
<b>1st semester</b>	<b>450</b>	<b>30</b>
1 Introduction to graphic media	90	6
2 Information technologies	90	6
3 Basics of artistic expression	60	4
4 Theoretical basics of printing processes	90	6
5 Photography and video	60	4
6 English for specific purposes	60	4
<b>2nd semester</b>	<b>450</b>	<b>30</b>
7 Printing 1	90	6
8 Colour metrics	90	6
9 Typographic elements	90	6
10 Graphic materials	90	6
11 Graphic prepress	90	6
<b>Total</b>	<b>900</b>	<b>60</b>

2nd year	Contact hours	ECTS
<b>3rd semester</b>	<b>450</b>	<b>30</b>
12 Statistics	60	4
13 Typographic design	90	6
14 Artistic analysis of graphic products 1	60	4
15 Standardisation of graphic processes	90	6
16 Studio photography	60	4
17 Interactive media tools	90	6
<b>4th semester</b>	<b>450</b>	<b>30</b>
18 Environmental protection in graphic arts	90	6
19 Finishing graphic products	60	4
Optional courses	300	20
<b>Total</b>	<b>900</b>	<b>60</b>

2nd year optional courses	Contact hours	ECTS
20 Testing of graphic materials	90	6
21 Printing 2	90	6
22 Video	90	6
23 Interactive media 1	90	6
24 Media visualisation	60	4
25 Packaging 1	60	4
26 Printing plates	60	4
27 Data structure and transfer	60	4

3rd year		Contact hours	ECTS
5th semester			30
28	Practical training		30
6th semester		360	30
	Optional courses	360	24
	Diploma thesis		6
Total		360	60

3rd year optional courses		Contact hours	ECTS
29	Interactive systems 1	90	6
30	Video	90	6
31	Planning graphic production	90	6
32	Business information systems	90	6
33	Quality management	90	6
34	Testing of graphic materials	90	6
35	Printing 2	90	6
36	Basics of 3D modelling	90	6
37	Packaging 2	60	4
38	Media design	60	4
39	User interface technologies	60	4
40	3D technologies	60	4
41	Basics of 3D animation and simulation	60	4
42	Entrepreneurship	60	4
43	Information sources	60	4

## INDUSTRIAL PLACEMENT

The industrial placement of Graphic and Media Technology students takes place in smaller and larger graphic, media and paper processing companies, in publishing, design and advertising agencies, in media companies, in educational institutions, in research institutes working in the field of graphic technologies, in sales and in public administration.

## OPTIONAL COURSES

Every year the Faculty gives a list of optional courses available in current academic year.



gmt, 1st level, enrollment,  
curriculum, optional courses,  
practical training, mobility,  
diploma degree  
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# TUTORING



tutoring  
advise  
foreign students

[www.ntf.uni-lj.si/igt](http://www.ntf.uni-lj.si/igt)

# ERASMUS+ STUDENT EXCHANGE



erasmus+  
exchange  
coordinator

[www.ntf.uni-lj.si/igt](http://www.ntf.uni-lj.si/igt)

Tutoring is systematic guidance to students in their studies and in their academic development.

The purpose of tutoring at the Faculty of Natural Sciences and Engineering is to:

- support students during their studies,
- increase the transfer of students to the next year,
- advise students in the selection of optional courses,
- assist in the study of individual courses or the mandatory practice
- encourage students to participate in extracurricular activities.

Student tutoring for foreign students helps foreign students to overcome possible cultural differences and adapt to the new environment. The priorities of foreign students are primarily: residence, student ID, transport. Possible cultural differences (language, habits, personal attitudes) might well influence the study performance of a foreign student. Tutors help them with everyday life challenges, to integrate into our environment, to overcome homesickness and with various administrative procedures.

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Erasmus+ is a seven-year programme supported by the European Union. The principle aim of the programme is to improve the level of education, know-how, skills and creativity, which are the cornerstones of the European knowledge society.

Erasmus+ enables young people, students and adults to acquire experience and new skills during studies, training or volunteer work abroad. At the same time, the programme will lend support to institutions and organisations when it comes to cooperating with similar institutions in other countries in order to encourage innovation and update teaching practices and youth work. The Erasmus+ programme rests on five key pillars:

- Key Action 1 (KA1): Learning Mobility of Individuals;
- Key Action 2 (KA2): Cooperation for Innovation and the Exchange of Good Practices;
- Key Action 3 (KA3): Support for Policy Reform;
- the Jean Monnet programme and
- the Sports programme.

At the University of Ljubljana, the Office of International Cooperation and Exchanges is responsible for the implementation of KA1. The Office is responsible for foreign students who opt to do their exchange in Slovenia, while Slovenian students going abroad are offered similar support from offices belonging to host institutions.

Detailed information on student learning mobility is available in the guidelines **Erasmus+ Instructions for Students**. All official documents are available on the following website: [www.uni-lj.si/eng \(#erasmus+\)](http://www.uni-lj.si/eng/#erasmus+).

The Sectoral Coordinator for the Erasmus+ programme for Information and Graphic Arts Technology and the Coordinator of the Erasmus+ programme for student exchange and industrial placement at the Faculty of Natural Sciences and Engineering are available on the Faculty website ([#erasmus+](http://www.uni-lj.si/eng/#erasmus+)).

# LIBRARY AND STUDY MATERIALS



library otgo  
books  
journals  
e-books  
dikul  
reading  
study room

[www.ntf.uni-lj.si/igt](http://www.ntf.uni-lj.si/igt)



It has been said that the way to the laboratory leads through the library. That statement is true. Without books, journals and information, there cannot be any work of professional value or any good learning, teaching or research results. Thus, the library in a way reflects the image of the institution in which it operates. This is especially true for faculty libraries, which must cooperate in teaching and scientific work. The library of the Department of Textiles, Graphic Arts and Design was founded in 1962 along with the department. As the department grew, the library grew with it. During the initial period, it collected material from the field of textile technology. When the Chair of Textile and Fashion Design was es-

tablished, the procuring of professional literature was extended to the areas of design, fashion and art, and with the introduction of the clothing and graphic programmes, it was extended further to include clothing, graphics, information technologies and media.

Towards the end of 2014, the library collection totalled 20,639 books, 3,777 graduation and thesis papers, 5,088 issues of journals, 363 units of unbound material and 644 standards. In 2014, the library subscribed to 88 foreign and Slovenian journal titles. Throughout the year, the library lent out 25,800 volumes of material to its students, professors and other users. Electronic sources are available on DIKUL, i.e. 31,900 e-books and eight databases.



# **PUBLISHING ACTIVITIES AND THE JOURNAL TEKSTILEC**



publishing  
monograph  
textbooks  
journal  
tekstilec  
rmz  
geološki zbornik

[www.ntf.uni-lj.si/igt](http://www.ntf.uni-lj.si/igt)

Department of Textiles, Graphic Arts and Design has since 1991 also organised publishing activities. Up to now, the department has published over 100 volumes in the areas of textiles, fashion design and graphic arts, in printed and electronic forms.

Department of Textiles, Graphic Arts and Design' publishing activity includes monographs, textbooks and other study materials, miscellanies of various contributions from scientific and professional symposiums and study material written for seminars.

The above-mentioned literature can be purchased on the ground floor at the reception desk.

When discussing publishing activities, it is worth mentioning that some departments also publish their own professional journals. The oldest such journal published by the Faculty is the **Mining and Metallurgy Quarterly** (*Rudarско-metalurški zborniki*), which first started being published regularly in 1953; today, four issues are published annually. In 1998, it changed its name to **RMZ – Materials and Geoenvironment** (*RMZ – Materiali in geookolje*). The journal *Geološki zbornik*, which is issued once in two years, is published by the Department of Geology. The **Tekstilec** journal, which has been regularly published since 1958, has been issued by the Department of Textiles, Graphic Arts and Design since 2007. Four volumes are released each year.

**Tekstilec** (ISSN: 0351-3386 print, e-ISSN 2350-3696 online) is the journal of Slovenian textile professionals. It provides fundamental and applied scientific information on physical, chemical and engineering sciences related to the textile industry. Its professional and research articles refer to fibres and testing, chemical and mechanical textile technology, technical textiles and their application as well as other fields associated with textile technology and design and the textile and clothing industry, e.g. development, application and manufacture of natural and man-made fibres, yarns and fabrics, design, marketing, ecology, ergonomics, education in textile sector, cleaning of textiles, etc. The journal is divided into two parts. In the first part, scientific contributions are published (they may also be published in the English language); i.e. fundamental research articles (original scientific and review, preliminary communication), short communications and technical articles. The second part, written only in the Slovenian language, includes short articles about textile-technology novelties from Slovenia and around the world, information on dry cleaning and washing technology from the viewpoint of textile materials and ecology, brief information about the Slovenian and worldwide textile and clothing industry as well as articles on textile design.

# **RESEARCH INFRASTRUCTURE CENTRE OF THE FACULTY OF NATURAL SCIENCES AND ENGINEERING**



ric  
research  
analysis  
infrastructure  
arrs  
irspin  
cooperation

[www.ntf.uni-lj.si/igt](http://www.ntf.uni-lj.si/igt)

The Research Infrastructure Centre of the Faculty of Natural Sciences and Engineering (NTF) is a part of the Network of research and infrastructural centres at the University of Ljubljana (MRIC UL). Its performance is financed by the Slovenian research agency. RIC UL NTF offers research equipment of NTF that is located at the:

- Department of Geology (OG)
- Department of Mining, Geotechnology and Environment (OGRO)
- Department of Materials and Metallurgy (OMM)
- Department of Textiles, Graphic Arts and Design (OTGO)

RIC UL NTF:

- offers experts and instrumental support to research in the areas of production, functionalisation and characterisation of various organic and inorganic materials with emphasis on fibre making and other polymers (textile and graphic) as well as metallic, non-metallic and composite materials. With the support of the infrastructure centre, the processes of material synthesis as well as mechanical and chemical procedures can be performed. It provides remodelling and chemical modification of materials in the whole process chain. The equipment enables numerical modelling and planning of eco-friendly materials, products, procedures and technologies. It makes physical simulation of processes possible. Analytical equipment comprises apparatuses for the investigation of morphology and chemical composition of materials as well as examination

of their mechanical, physical, optical, thermo-gravimetric and functional properties in accordance with asserted standards.

- provides support to scientific research and pedagogical activities at the Faculty of Natural Sciences and Engineering and to other members of the University of Ljubljana as well as other Slovenian and foreign universities and institutes. Such collaborations are performed in the framework of various programs and projects and also as researcher, student and teaching staff exchanges.
- also cooperates in research results transference into the economy through development-research projects in the IRSPIN centre complex, The Slovenian Textile Technology Platform and The Steel Technology Platform. Through expert opinions, it supports development projects of the Slovenian textile, metallurgy, metal processing, mechanical and electrical industry and also various large and small companies.
- also provides support to government agencies and departments. It collaborates with various associations, organisations, institutions, museums and other users.

The equipment is known by its high quality in regard to performance accuracy as well as regular maintenance at the highest technological level. Because of regular use of some of the equipment, it is recommended that the research is planned and reservation of the equipment is made in time. The equipment responsible persons are always prepared to advise.

# **INSTITUTE OF TEXTILE AND GRAPHIC TECHNOLOGY AND TEXTILE DESIGN**



itgto  
institute  
research  
analysis  
textile technology  
graphic technology  
cooperation

[www.ntf.uni-lj.si/igt](http://www.ntf.uni-lj.si/igt)

The Institute of Textile and Graphic Technology and Textile Design at the Ljubljana Department of Textiles, Graphic Arts and Design has a rich past and an important role in the area of scientific research and technical work.

Today, the Institute actively cooperates on various development projects and cooperates with government and non-governmental organisations on EU projects and the harmonisation of directives in the field of labelling textile and leather products; it also issues various publications for companies and consumers and much more. Collaboration between laboratories is naturally also very important: it has helped our current programme become much more extensive, now including personal protective equipment, toys, textile floor coverings, etc. Since the Institute can draw upon all the employees at the Department as well as enlist external collaborators, the professional nature of the work is never an issue.

#### **General description**

- Research and development activities:  
The basic activities of the Institute include analyses, solving complaints

and providing professional opinions and assessments. The research and development work takes place in equipped laboratories belonging to the Department of Textiles, Graphic Arts and Design and includes the areas of textiles (mainly analysis of fibres, yarns, threads, flat textiles and toys), graphic technologies and design. Collaborating with other laboratories is also important, since it greatly expands our current programme of analyses, which now also includes personal protective equipment and toys.

- Cooperating with businesses:  
The Institute cooperates with Slovenian businesses in the context of research-and- development projects, preparing studies and analysis with professional opinions.
- Education:  
Educational courses are carried out at seminars that are organised at our Department or in facilities belonging to the client. The programme is carried out according to the client's needs.



# STUDENT COUNCIL OF THE FACULTY OF NATURAL SCIENCES AND ENGINEERING



council  
students  
projects

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## ALUMNI CLUB



alumni club  
otgo  
network

[www.ntf.uni-lj.si/igt](http://www.ntf.uni-lj.si/igt)



The Student Council of the Faculty of Natural Sciences and Engineering is an official working body that represents the interests of students and is committed to achieving them. We try to ensure the quality of the academic process and diverse student life. The Student Council has become well-known for its good work among students and professors, who are increasingly turning to us with the desire for cooperation.

By prior arrangement, regular meetings are held every month where we discuss academic and current student issues and the appraisals of habilitation procedures

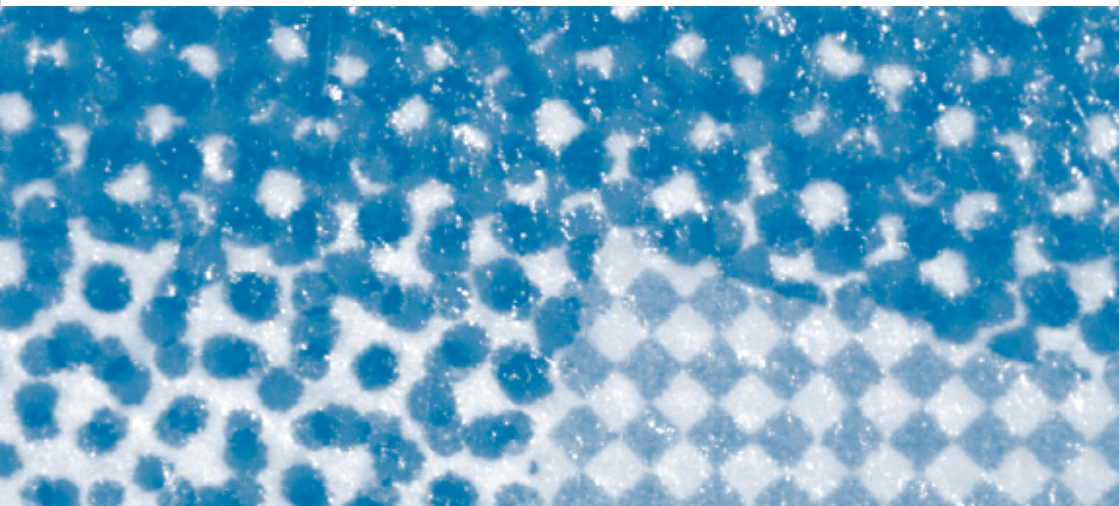
correlated with student surveys. The Student Council elects committed representatives in other working bodies of the faculty (Committees, Senate, Governing Board, Academic Assembly) who then report about the actions and work of other faculty members. We try to ensure all four departments of the Faculty of Natural Sciences and Engineering are represented equally.

The Student Council of the Faculty of Natural Sciences and Engineering operates autonomously and obtains the majority of its finances from the contributions of students upon enrolment.

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The Alumni Club of the Department of Textiles, Graphic Arts and Design at the Faculty of Natural Sciences and Engineering of the University of Ljubljana brings together graduates of all generations who have graduated at this Faculty. As a member, you will be able to attend free professional, social and sporting

events and gatherings where you can meet successful individuals and gain new knowledge and contacts, enabling you to widen your social network as well as create new career opportunities. We kindly invite you to stay in touch with the Faculty even after your studies and join us at the NTF-OTGO Alumni Club.



# CONTACTS



contact  
location  
address  
telephone  
e-mail  
social  
student office

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