Decision of the Accreditation Commission of AQAS

on the study programme

- Licenciate in “Textiles and Leathers Products Engineering” **(Bachelor-B.Eng.)**

offered by the Technical University of Moldova (TUM)

Based on the report of the expert panel and the discussions of the Accreditation Commission in its 63rd meeting on 23rd/24th of May 2016, the Accreditation Commission decides:

1. The study programme **“Textiles and Leathers Products Engineering” (Bachelor of Engineering)** offered by **Technical University of Moldova (TUM)** is accredited according to the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG).

   The accreditation is **conditional**.

2. The study programme essentially complies with the requirements defined by the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) and the European Qualifications Framework (EQF) in their current version. The required adjustments can be processed within a time period of nine months.

3. The conditions have to be fulfilled. The fulfilment of the conditions has to be documented and reported to AQAS no later than **28th of February 2017.**

4. The accreditation is given for the period of **five years** and is valid until **30th of September 2021**.

Conditions:

1. The core competences of the graduates of the programme must be defined by the Faculty of Light Industry. The present disciplines have to be re-analysed in order to emphasise the contribution to a certain core competence.
2. The quality of the module descriptions must be harmonized and some modules must be described more detailed, transparent and competence oriented.
3. The calculation of credits must be done in a transparent way and the workload for each discipline must be correlated with the effort which is necessary to finish the course.

The conditions were fulfilled within the given timescale.

The Accreditation Commission confirms the fulfilment of the conditions in it's decision of 28./29.08.2017.

The following **recommendations** are given for further improvement of the programme:

1. Practical elements of the curriculum (e.g. extended internships) should be strengthened to improve the employability of students.
2. The university should provide a concept as to how it is guaranteed that students are made more familiar with general academic requirements like independent literature re-

search, development of a structured working plan, process documentation etc. The teaching methods should strengthen the activating element to enable the students to become more independent.

3. The internationalization of teaching staff and students should be improved. Learning agreements should be formulated so that competences gained during a semester abroad can receive recognition more easily. Some elective courses should be offered entirely in a foreign language and the faculty should take part in the Erasmus programme more actively.
4. Literature should be present in Romanian but also in English – to support the internationalization of the programme. Furthermore, the number of textile related journals should be increased.
5. Cooperation in research - especially with an interdisciplinary focus - should be strengthened to provide more up-to-date research projects for students and for the industry.
6. To allow the students to develop a special valuable profile (international, practical skills and/or social skills), more elective courses should be integrated into the curriculum.
7. The availability of equipment should be improved, e.g. a sewing machine for leather ware. Moreover, an analytical lab related to quality control of clothes should be set up.
8. To train the practical skills in quality management an analytical lab could be set up. At first, simple low cost methods could be established, like test of washing fastness, water- or rain-repellent testing or testing of rub fastness.
9. Evaluations of lessons and the teaching staff should be carried out in a more systematic manner and the results should be documented.

With regard to the reasons for this decision the Accreditation Commission refers to the attached assessment report.

Experts' Report

on the study programme

- Licenciate in "Textiles and Leathers Products Engineering" **(Bachelor-B.Eng.)**

offered by the Technical University of Moldova (TUM)

Visit to the university: 13th and 14th of January 2016

Panel of Experts:

Prof. Dr. Maria Carmen Loghin	Faculty of Textile, Leather and Industrial Management, Technical University of Iaşi, Romania
Prof. Dr. Boris Mahltig	Professor for Functionalisation of Textiles, Faculty of Textile and Clothing Technology, University of Applied Sciences Niederrhein, Mönchengladbach, Germany
PhD Eng. Carmen Marian	Expert Textile Restorer, Iaşi, Romania (Representative from the Labour Market)
Jessica Hinczica	Montan-University Leoben, Austria (student expert)

Coordinator:

Doris Herrmann, Ronny Heintze	AQAS e.V., Cologne, Germany

1. Accreditation Procedure

This report results from the external review of the Bachelor programme "Textiles and Leathers Products Engineering" (Licenciate in Technical Studies) offered by the Technical University of Moldova (TUM) in Chișinău, Moldova. The review is based on criteria that were developed jointly as part of a TEMPUS project in cooperation with the Ministry of Education of the Republic of Moldova. The criteria are based on the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) that were developed by the European Association for Quality Assurance in Higher Education (ENQA) and presented to the Bologna Follow-Up group in 2005.[1]

The university provided a Self Evaluation Report (SER) as an application for accreditation. The accreditation procedure was officially initiated by a decision of the AQAS Accreditation Commission on 17th and 18th of August 2015. The Accreditation Commission nominated the above-mentioned expert panel and the university agreed to the composition of the panel.

The visit to the university in Chisinau took place on 13th and 14th of January 2016. On site, the experts interviewed different representatives of stakeholder groups (management of TUM, head of department, teaching staff, employers and graduates as well as students) and consulted additional documents (e.g. Bachelor thesis) and student work. The visit concluded with the presentation of the preliminary findings by the group of experts to the university representatives on the second day**.**

2. General Information

The Technical University of Moldova (TUM) was founded in 1964 based on the Decree of the Council of Ministers of the USSR with 5 basic faculties: Electrical Engineering, Mechanics, Technology, Construction and Economy.

Today TUM is the only technical university in Moldova, a non-commercial legal entity with a status of a public institution, registered in the State Register and accredited as a whole. Within the TUM education is organized based on the European credit transfer and accumulation system (ECTS). The university is financed mostly by the state and by other sources like donations, sponsorships, tuition fees etc. Presently, the university covers 9 faculties: Power and Electrical Engineering (PEE), Mechanical and Industrial Engineering and Transports (MIET), Computers, Informatics and Microelectronics (CIM), Engineering and Management in Electronics and Telecommunications (EMETC), Technology and Management in Food Industry (TMFI), Light Industry (FLI), Cadaster, Geodesy and Construction (CGC), Urbanism and Architecture (UA), Economic Engineering and Business (EEB), as well as the Technical College of Chisinau.

The university has a QM-system on different levels, including commissions, coordinators, surveys, analyses of the labour market and questionnaires.

3. Profile and Learning Outcomes of the Programme

The programme "Textiles and Leathers Products Engineering" is located at the Faculty of Light Industry. The Faculty of Light Industry of the Technical University of Moldova was founded by the Government of the Republic of Moldova in 1995 as a reaction to the need to train engineering staff for the textile industry.

Each year, around 100–120 students are enrolled full-time while circa 45–50 students study part-time in 5 programmes: Textiles and Leathers Products Engineering, Industrial Clothing Design,

[1] *As the newly developed ESG 2015 were published after the accreditation procedure for 11 programmes had already started, the ESG 2005 guidelines and criteria apply.*

Decorative Arts, Engineering and Management in Light Industry as well as Design and Printing technologies. Currently, there are 323 enrolled full-time students and 189 part-time students.

The programme „Textiles and Leathers Products Engineering“ used to train specialists in 3 distinct specialties today there are specialities of the programme under review: a) Clothing Design and Technology, b) Knitwear Design and Technology, c) Leather Products Design and Technology.

The Faculty of Light Industry also offers programmes which have different foci or which specialize in creative aspects of clothing like Industrial Clothing Design, Engineering and Management in Light Industry, Design and Printing Technologies, Decorative Arts, Option Design of Textiles.

The programme's mission of "Textiles and Leather Products Engineering" is formulated in the SER. The TUM wants to offer a training for high quality staff for the garments/tricot/footwear and haberdashery industry providing for the compatibility of activities and results both at national and international levels. The objectives of the study process are:

- Profound studies of fundamental and specialty disciplines for the formation of proper engineering thinking;
- Development of skills for the elaboration of manufacturing strategies;
- Flexibility in the implementation of changes to manufacturing process;
- Mastering of design methods for products and processes;
- Mastering of advanced technologies;
- Development of communication skills;
- Development of future specialists' creativity in the light industry.

The study disciplines are supported by didactic materials elaborated in accordance with the curricular concept of the education process, guidance and didactic materials corresponding to the curriculum of disciplines, theories and actual trends.

Recognition and Internationalization

In the SER, the TUM describes that the teaching staff of the faculty took part in numerous international projects. Another opportunity to internationalize the studies is the participation of students in mobility programmes. For example, the students benefited from an internship in the CEEPUS Project at the Technological University of Vienna, Austria. Another student won a mobility scholarship of the Erasmus Mundus Programme at the University of Lisbon, Portugal. The mobility of students to higher education institutions abroad is monitored at the university level by the Department of International Relationships.

The Faculty of Light Industry collaborates in didactical-methodological and research areas with higher education institutions in Romania, Ukraine and Russia.

Experts' Evaluation

The aims and the content of the programme „Textiles and Leathers Products Engineering“ comply very well with the profile of the TUM. The programme fits to the profile of a technical university preparing people for the local labour market. Due to the fact, that the local textile industry is of importance to the country, it is absolutely necessary that the only technical university of the country prepares qualified staff for this field.

The title of the programme „Textiles and Leathers Products Engineering“ is reflected in the contents of the curriculum. The technical equipment and the staff existing at the faculty are sufficient to train people in the fields of clothing design, knitwear design and leather technology. However, there is a lack in using new technology. As the links with the local industry are traditionally strong in Moldova, it could be an option to ask companies if their equipment can be used so that there is

an additional option to train staff and students. Therefore, certain deficits in the technical equipment of TUM could be compensated. Nevertheless, it would be an advantage to provide more technical equipment directly to the faculty (see chapter “Resources”).

The intended learning outcomes of the programme are strongly related to the requirements of the local labour market and mainly reflect the demands of future employers. Nevertheless, the panel of experts recommends that the practical aspect of the programme should be strengthened because the two internships which last one month each are considered too short. Therefore, the Faculty of Light Industry should include more practical elements, e.g. by extending one of the internships or by including more internships. **(Finding 1)**

The teaching of the theoretical background is good and meets the requirements. However, in the opinion of the experts the students should be made more familiar with academic requirements. Academic methods in that way mean e.g. the ability to do independent literature research, the formulation of a structured working plan as well as documentation skills. Students have to learn to work independently, it should thus be guaranteed that they are able to make themselves familiar with new topics on an academic level and that they can provide a clear documentation of processes. While strengthening such academic methods in the curriculum, it is necessary that competences of the students are described in a way which adheres to the academic level of the European Qualifications Framework. **(Finding 2)**

The entrance requirements and the selection processes are clearly defined and adequate. During the site visit it became obvious to the panel of experts that the labour market wishes to increase the internationalization of the teaching staff and students. **(Finding 3)** The need for internationalization has two reasons; first, the whole business of textile and clothing is an international one: the clothing industry in Moldova has already many international customers and business partners. Second, this international competence of students and graduates is needed to work in national companies abroad.

The structure of the "Textiles and Leathers Products Engineering" programme allows student mobility from other universities abroad. The Faculty of Light Industry provides students with information about mobility options. Nevertheless, the panel of experts recommends defining the instruments to promote international mobility (e.g. diploma supplements, transcripts of records, etc.). Learning agreements should be formulated before students depart to other countries and it should be defined in a clear manner how competences gained during an Erasmus semester can contribute to the content of the current programme. **(Finding 3)**

The work actually done in research is considerable due to personal efforts but there are disadvantages due to a lack of equipment which limits the experimental possibilities. The actual research which was demonstrated to the experts in form of publications and conference contributions seems to be successful. It has to be kept in mind, however, that the aim of research is not only to publish the results but to use them for the education of students. The students should be trained in interesting new topics which means that universities could introduce these topics to the future employing industry. Because there is a lack of devices to be used by the faculty, the possibilities of research are limited. Nevertheless, the faculty can try to overcome this disadvantage on one hand by implementing further analytical competences in the programme and on the other hand by strengthening the aspect of cooperation in research, especially interdisciplinary cooperation. (Finding 5) This could be a way to introduce new topics to the programme. One approach could be, for example, to start a cooperation in the field of functional textiles and clothes.

4. Curriculum

The programme „Textiles and Leathers Products Engineering“ has a duration of 4 academic years. The academic year begins in September and lasts for 30 weeks distributed over two semesters of 15 weeks each, two exam sessions of 3 weeks by the end of each semester and 3 holidays, including Easter holidays. Midterm exam sessions follow the seventh week of study of each semester.

Curricula are elaborated for all disciplines and are part of the educational plan. In Moldova the university has to guarantee that curricula for the respective programmes comply by structure and content with the requirements of the national framework plan. The description of the curriculum includes: preliminary data, skills and competences to be achieved, the administration of disciplines, topics and approximate distribution of hours, results of the education process and content, suggestions for the individual activity of students, questionnaires for the periodical and final evaluation and bibliographic references.

The programme „Textiles and Leathers Products Engineering“ has undergone numerous structural changes in the recent years. Simultaneously with the adherence of the Republic of Moldova to the Bologna Process in the year 2005 the Education Plan for cycle I, for the bachelor degree for a study period of 4 years, was devised and approved. Based on the decision of the meeting of the Senate of TUM for the improvement of economic/managerial training of TUM students, the study plan was elaborated, approved and implemented in the year 2011.

The TUM describes in the SER that the contents of each discipline are updated in accordance with the latest achievements in science and technology of the Light Industry. The updated programmes are discussed at and approved by the meetings of the chairs.

The students have several options to specialize in: “clothing design and technology”, “knitwear design and technology” or “leather products design and technology”. The curriculum includes laboratory work and case studies which contribute to the active teaching of students. Doing annual work and annual projects in key specialty disciplines contributes to the development of specific competencies and capacities necessary to design and evaluate products and processes. Intense collaboration with the labour market should allow students to carry out annual projects and bachelor’s degree work on actual problems of the national industry.

At the end of the bachelor’s degree the student must demonstrate the capacity to generate new ideas or innovative solutions for familiar problems or situations. The 27 professional and transversal competences for the bachelor’s degree for „Textiles and Leathers Products Engineering“ are defined in the SER. The professional competences of the programme of represent the knowledge, abilities and attitudes establishing the competences specific to the professional activity in the successful solution to situations and problems relating to the conception, design and manufacturing of garments, footwear and haberdashery, as well as the organization of their efficient manufacturing in various production systems.

The university describes that the transversal competences relate to the entire domain and have a trans-disciplinary character (e.g. teamwork abilities, verbal and written communication skills in the mother tongue and one European language, autonomy of learning, openness to learning during the lifetime, ability to resolve problems and make decisions, entrepreneurial initiative and spirit, acknowledgement and respect for the diversity and cultural variety, respect for and observation of professional values and ethics).

According to the SER, scientific research related to the programme takes place and is a component of education. Annually, the teaching staff as well as PhD, Master’s and Bachelor’s degree students attend a scientific-technical conference organized by the Technical University of Moldova in November.

Between 1995-2013 the Faculty of Light Industry obtained 4 invention patents and was registered at the State Agency for Intellectual Property of the Republic of Moldova (AGEPI) with over 16

industrial models of garments; staff issued 20 manuals and monographs and published circa 100 articles in national and foreign specialty journals. Around 850 scientific articles were published in the collections of conferences and symposia. The TUM outlines that the teaching staff of the faculty took part in numerous international projects.

Experts' Evaluation

The content of the educational plan is a result of a continuous harmonisation process of the National Qualifications Framework with the labour market requirements and with the qualification of the academic staff. The focus of the programme is put on the national economy for the sectors of ready-made-clothes, leather and knitwear. This is positive if the curriculum is analysed strictly in a national context. However, from the perspective of the international labour market, experts could hardly identify comparisons with other similar programmes at universities abroad. Currently, the TUM is undergoing a review process of the curricula so that the knowledge based plans are changing towards competence oriented plans. In this context, the Faculty of Light Industry has to define the core competences of its graduates for this programme. **(Finding 6)** The present disciplines must be re-analysed in order to emphasise the contribution to a certain core competence. If needed, some courses should be replaced with others or should be added as electives (e.g. time study, line balancing, ergonomic workplaces, CAD etc.).

To support the internationalization of the programme different measures should be taken. Besides language courses special elective courses could be taught completely in a foreign language. **(Finding 3)** For example, technical courses or courses related to international textile business could be provided in English or courses related to the Italian textile industry could be given in Italian.

The structure of the educational plan consists of fundamental courses (26%), general competences and humanistic disciplines (16%), specialty compulsory disciplines (13%) and specialty electives (45%). In fact, electives become compulsory for a certain professional pathway (clothing, knitwear or leather goods).Therefore, the Faculty of Light Industry should integrate more elective courses into the curriculum to allow students to develop a special valuable profile (international, practical skills and/or social skills) **(Finding 7)**.

The SER provides the description of most elements of the curriculum (54 specialty courses). The panel of experts recognized that a form for course descriptions is used, but that the completion for each course was done unevenly. For example, in some cases the learning outcomes are defined too briefly, in other cases too general. Sometimes the same learning outcome was found for different formative disciplines. In terms of content, the experts have appreciated that there is no overlap between disciplines.The course contents (topics) ensure the objectives of the programme "Textiles and Leathers Products Engineering". The experts recommend to review the formal content of records and to complete them evenly **(Finding 8)**. It is also recommended that the module descriptions are available to students. They should receive the handbook as part of the Student's Guide given at the admission to the study cycle.

After the discussions with the students and the academic staff during the on-site visit, the panel of experts concluded that there is an adequate balance between theory and practical applications. Yet experts recommend a more in-depth explanation of teaching and assessment methods in the documents of the programme. Teaching methods should facilitate the ability of students to work independently to solve problems and generate ideas **(Finding 2)**. The assessment methods should be presented in more detail (possibly by year algorithmic form - e.g. Final mark = 50% A + 30% B + 20% C, where A, B, C are different evaluation forms). The algorithm of the assessments should be communicated in a transparent manner to students from the beginning.

The experts have found that there is a preoccupation of academic staff with scientific research in the programme, having the obligation to cover 30% of the workload with research. If there are ongoing research projects, students are selected based on their performance and consequently involved in solving specific issues.

The programme uses a credit point system to describe the student workload (1 credit point = 30 hours). For each discipline in the educational plan the number of credits is described in a transparent way, but according to the discussion with students they consider the workload in all disciplines as relatively high. The experts recommend that the calculation of credits should be done in a transparent way and it should be ensured that the workload of each discipline is correlated with the effort which is necessary to finish the course. **(Finding 9)**

5. Feasibility and Student Support

Consultation offers at university level

In the application for accreditation the TUM describes that career counselling and guidance aims at assisting graduates of lyceums to make a right choice of the course of study as well as to consult students and master's degree candidates concerning a successful employment after graduation and in designing a successful professional career. It also aims at providing support to the university's teaching staff in pursuing an academic career. Within the organizational structure of the university the Information and Career Guidance Center (UICGC) is in charge of this kind of consultations.

The UICGC elaborates and distributes information (newspapers, leaflets, flyers etc.) on the faculties, chairs, specialties, forms of education and enrolment opportunities for full-time and part-time education.

The social services for students in the Technical University of Moldova are organized and managed at a central level. The students have access to medical services.

Workload

The study plan provides for the allocation of ECTS credits for each course unit. One credit is issued for 15 hours of direct contact plus 15 hours of individual activity. One academic year allows for the accumulating of 60 credits respective 240 credits at the end of the programme.

Teaching and Learning Act

The didactic strategies of TUM aim at strengthening active learning. This process should be facilitated by annual work and projects for key disciplines contributing to the development of specific skills: materials for the clothes / footwear and leather goods, constructive modelling of clothes, Knit's Structure Design, Clothes' Technology, Processes of Shoe Manufacturing / Knit's Technology, Elaboration of design documentation / Design of footwear, Projecting of Manufacturing Enterprises / Projecting of Knitted Enterprises / Projecting of Footwear and Leather Goods Enterprises. The themes of annual work and projects are individual, while the elaborated solutions have a practical value and are evaluated in the possibility of implementation in light industry.

Experts' Evaluation

In the discussion with the panel of experts the students explained that they feel well informed by the TUM. Before the students start to study at the university they receive enough information about the programmes offered. The TUM is very active in marketing and sends experienced students to schools to inform the pupils about the university which seems to be an effective initiative to attract new students.

The motivation of the students to enter the programme „Textiles and Leathers Products Engineering“ is to become a designer, to open one’s own studio; others simply like to produce clothes. The students who took part in the discussion with the experts said that their expectations have been satisfied by the university.

At the beginning of their study the students are supported by (assigned) tutors, they help the students in their first semester. Even in their later studies the students can talk to the tutors if they have problems with their studies or conflicts with professors. It seems that there are very trustful relations between students and professors and that there is a good exchange about discipline oriented questions or about the aspect of learning. In cases where students get ill or cannot visit their lessons for other reasons, the professors try to find an individual solution for each student.

In the discussion with the panel of experts the students stated that they wanted to study one semester abroad and criticised that they did not receive sufficient information about the Erasmus Program. The reason for this may be that the TUM just recently started to join the Erasmus Programme. The students also emphasised that the recognition of their courses is relatively easy if a student returns to the home university TUM. Exchange of teaching staff takes place as well and some general courses are taught by professors from other universities.

At the end of each semester, the students have the possibility to evaluate their courses with questionnaires. The management of the university told the panel of experts that all the results of the evaluations are accessible to them. In cases where professors do not receive positive feedback from the students, the management reacts and takes measures to secure the good reputation of the university.

The students have so called pre-exams before they can go to the final exam. These pre-exams should help the students to pass the exam and to reduce the failure rate. In cases where students fail, they can repeat the exam 3 times. The students have written, practical and oral exams.

The TUM offers a wide range of courses in this programme but the students do not have the possibility to specialize in certain aspects of their discipline by choosing elective courses. Furthermore, students need additional courses in which they learn to work with digital programmes to draw and design. This competence is needed to enter the labour market because the companies ask for these skills.

If there are any changes in the schedule, the students receive the information from a board in the entrance hall. During the site visit the panel of experts gained the impression that the size of the classes in courses is sufficient to learn or do practical work.

The students can choose the advisor and the topic for their bachelor thesis. The experts appreciate that the students can follow their own interests. The differentiation of the bachelor thesis in research related and not-research related should be avoided because the same standard has to be fulfilled for all bachelor theses .

In sum, the feasibility of the programme is given; nevertheless, there is the need to improve some aspects for the benefit of the students.

6. Employability

All in all 2860 engineers graduated from the Faculty of Light Industry, 1933 originate from the programme „Textiles and Leathers Products Engineering“ (1572 from the specialization “clothing design and technology”). The programme pursues as a scope the training of highly qualified specialists for the following professional activities:

1. Option Clothing Design and Technology
   - elaboration and implementation of collections of models in enterprises, firms and participation at contests and fashion events;
   - technical organization of production processes for the launching of new products;
   - use of automated systems in the manufacturing of garments;
   - elaboration of new technological production processes;
   - optimization of technological processes of manufacturing of garments at production enterprises.
2. Option Knitwear Design and Technology
   - artistic and engineering design of tricot products;
   - design of tricots with various structures and properties;
   - elaboration of technological processes to obtain tricots and manufacture tricot;
   - organization of manufacturing process at industrial enterprises.

   The graduates of this option are employed in order to organize the production activity at industrial enterprises.
3. Option Leather Products Design and Technology
   - elaboration and artistic design, constructive and technological design of new collections of models,
   - articles made of leather and substitutions (artificial and synthetic leather, textiles, furs etc.);
   - organization and launching of production of elaborated collections of models;
   - experimental scientific research and activity in the education institutions.

Experts' Evaluation

Success of the graduates on the labour market is one of the declared objectives of the Faculty of Light Industry. The programme „Textiles and Leathers Products Engineering" maintains very close connections with the labour market and is therefore aware of its requirements. The programme reflects the demands of future employers and the panel of experts obtained the impression that the employability of the graduates is good.

The programme focusses on the national economy for the sector of textile confections, leather and knitwear. The textile industry is one of the sectors with positive developments in Moldova making it a priority focus area also for higher education. Due to the high turnover rates in this industry, the Moldavian companies almost constantly need new staff. However, there is a certain need for internationalisation. A challenge for the faculty will be to deliver specialists for the newest technologies to improve the employment in national companies, but also to prepare the graduates for the international labour market.

The faculty provides assistance for the students in these regards:

- Within the organizational structure of the university, the Information and Career Guidance centre is in charge also for a successful employment after graduation.
- For each professional activity there is a clear and comprehensible description of potential fields of employment of graduates.
- In the faculty there is a procedure to organize a job-fair twice a year where enterprises and employers come together and present their needs for specialists. Following this event there is a list of open positions.

- The students are also encouraged to attend national job fairs and to participate in contests and fashion events.

There is a strong and a good cooperation/exchange with the labour market:

- The TUM started an Excellence Centre to help to connect the faculty to the labour market. This centre is steered by a board that also features representatives from the national labour market who are particularly interested. The experts have no concrete information about a collaboration of the faculty with companies outside Moldova.
- Internships are a good instrument to connect students to employers. Each year the companies accept students from the faculty for internships. To improve the employability there is a need to extend one of the internships or to include more internships (see Finding 1).
- The requirements of the labour market are collected and analysed by the faculty with the help of a questionnaire. The faculty tries to detect what is required by the industry, what are needs and potentially job positions. Furthermore, by meetings with the enterprises the faculty is informed about the change in the field of this industry, about their perceptions of expected future changes and, consequently, their demanded skills of graduates.

A diploma supplement is handed to the students upon completion of the programme „Textiles and Leathers Products Engineering“ bachelor's degree. The qualifications obtained are relevant for the labour market and allow the graduates to fill positions in Light Industry for the following options: Clothing Design and Technology, Knitwear Design and Technology, Leather Products Design and Technology. The intention of the faculty is to qualify the students as comprehensively as possible and to open a wide field of employment to them. Since Moldova is a small country, one specialist has to work on the whole production line of the relatively small enterprises.

The research activity has to be connected to the labour market requirements more intensely by addressing new topics in which the future employing industry is interested. The faculty should try to involve more students in these research projects with the intention that the annual projects and bachelor's degree theses' offer new solutions, have a practical value and may be implemented in Light Industry.

7. Resources

The Faculty of Light Industry has 5 chairs, 40 full-time teaching staff, 15 part-time employees and 14 persons of auxiliary staff practicing didactic, scientific research and continuous formation activity. The 5 chairs are: Chair of Clothes and Knitwear Technology (CKT), Chair of Clothes and Knitwear Design (CKD), Chair of Bases of Design and Technical Creation / Design of Garments (DG), Chair of Modelling and Technology of Leather Products (MTLP), Chair of Design and Printing Technologies (DPT).

Presently the Faculty of Light Industry has 12 auditoriums located in both academic buildings which allow covering the course hours of disciplines provided by the programme “Textiles and Leathers Products Engineering“. Laboratory work is done in the laboratories, in specialized workshops and in the computer centre. This centre offers 40 computers for the students. The chairs have 14 specialized laboratories and 3 training workshops in visual arts, design of garments, tricot, footwear and haberdashery intended specifically for practical training at their disposal.

A new ZIP house with a modern infrastructure and equipment was built in 2015 which can be used by the students in the field of design and also by students from “Textiles and Leather Products Engineering.

The library is equipped with computers and is capable of providing internet services and access to the catalogues of various libraries. The library of the Faculty of Light Industry has bibliographic

sources for all the disciplines included in the study plans. The FLI branch of the library has an electronic catalogue of books. The students of the Faculty of Light Industry may also use the resources of TUM library

Experts' Evaluation

Human Resources

The panel of experts has analyzed CVs and lists of papers of teaching staff included in the SER. According to this and the discussions during the site visit, experts have noticed that the skill level of the teaching staff as well as their motivation for continuous education are highly relevant for assuring the quality of the programme. 28.49 (81.5%) of the total teaching positions of the programme are covered by full-time employees of the Faculty of Light Industry, but only 15 (37.5%) of them are doctors (PhD). Associated staff, when necessary, is recruited from the labour market depending on specialization and experience relevant to the demands of the programme. During the discussion with the university the panel of experts was informed that several staff members are finalizing their doctoral thesis at the moment or within the next year.

In the opinion of the panel of experts the relation of ages in the teaching staff is optimal: the top share is occupied by teaching staff between ages 41 and 45 (37.5%); young didactic staff aged under 35 constitutes 32.5%, while the share of third age didactic staff (56 to 65 years) is represented by 10. All teachers involved in the "Textiles and Leathers Products Engineering" programme will be active during the accreditation period (next five years).

The university organizes English and ICT courses for its staff. Specialized training is done individually in different ways (PhD, post-doc). The panel of experts appreciated getting to know that each member of the teaching staff is requested to conduct a kind of documentation internship in companies in Moldova to get the latest news on equipment development, materials and technologies.

The university has a mechanism to evaluate the performance of each teacher once every 5 years. Each employed person writes an activity report, focusing on achievements in teaching and research, which he/she presents in front of the academic community. The results are validated by the University Senate.

The expert panel found out that there is a cordial relationship between management and teaching staff. The experts also noted that the relationship between students and teachers is based on trust and mutual appreciation.

Rooms, labs, equipment and library

Related to the actual demands of the programme and the strong relation to local industry the resources are sufficient. However, in the long term an improvement of resources is necessary in different fields. This statement is especially valid if besides teaching research has to be done on an adequate level. Suggestions for a better technical equipment could be a sewing machine for leather materials, a simple printing device or a coating device for preparation of artificial leather. The decisions on investment should be done according to demands of employability and the direction of proposed future research. **(Finding 10)**

Concerning the resources of the library of the faculty there is a certain deficit related to up-to-date scientific literature, especially in the field of textile engineering. Literature should be present in Romanian but also in English – to support the internationalization of the programme. **(Finding 4**) This recommendation of the experts can have an impact to improve the abilities in many different sectors, like internationalization, quality of bachelor theses, competences of students in relation to employability;of course this will also help to strengthen the research of the faculty.

The mentioned data base/link to Springer-Journals is positive but for the clothing area less helpful due to the fact that Springer supports only few textile related journals, as e.g. “Fibers and Polymers”. A possible improvement could be implemented by support of more textile related journals, as e.g. “Melliand International”. It should also be kept in mind that patent literature is supplied free of charge by espacenet-data base**. (Finding 4)** This information could also be given to the students, e.g. in an elective course related to literature research and intellectual property.

A second point is the need for quality control of textile and clothes in the department. The knowledge on quality control and analytical methods is a significant tool which can increase the employability of students. To train the practical skills in this field an analytical lab is helpful. A second advantage of such a lab lies in its usage to improve the quality of research results because it can deliver data and facts which can be published. To start with such a lab simple low cost methods could be established at first, like testing of washing fastness, water- or rain-repellent properties or testing of rub fastness. **(Finding 10)**

For future developments it could also be of relevance to set up up a printing lab. However, this should only be done if there is a corresponding interest from industry or if the research profile is developed in this area.

8. Quality Assurance

The Quality Management System (QMS) designed and implemented by the TUM was certified in accordance with the standard ISO 9001:2008 (in 2011) by the Romanian Certification Authority SIMTEX-OC. In March 2012, TUM was subject to the first supervision audit for the compliance of its Quality Management System.

The bodies responsible for the maintenance and management of the QMS are:

1) Management Representative in the area of Quality, authority assigned to First Vice-Rector.

2) The Senate Commission „Education and Quality Assurance” is responsible for the promotion of quality assurance policies and control over the respective processes in the university.

3) The QMS coordinator, the head of the Quality Management Department.

4) The Quality Management Commissions (QMC) established for the coordination, control and analysis of quality assurance activities and quality of education at the faculty.

5) The person responsible for the quality assurance (at the chair level).

The following instruments are implemented: systematic sociological surveys of students and teachers, permanent analysis of the labour market, annual organization of job fairs.

Experts’ Evaluation

The quality culture of the Faculty of Light Industry and the TUM as whole is clearly seen. There are continuous methods of quality control implemented, and continuous improvement of teaching and curriculum is clearly the aim of the faculty. Regular feedback mechanisms are used and include especially students and the industry as potential employers.

The module descriptions are valuable for the students. They contain the intended learning outcomes, methods of learning and teaching, assessment methods, and the expected workload (self-study and presence). However, the quality of the descriptions of the modules differs strongly. Therefore, the quality of the module descriptions should be harmonized and some modules should be described more detailed and transparent. (see Finding 8)

The organization of the programme and courses as well as of internships is well coordinated and allows the students to complete the programme in regular duration.

QA instruments exist but how they work in practice has not become transparent to the experts. It was nevertheless obvious that the teaching staff asks for and receives feedback from the students. The panel of experts recommends that evaluations of lessons should be carried out in a more systematic manner and that the results should be documented. **(Finding 12)**

9. Recommendations of the panel of experts

The panel of experts recommends to accredit the Licenciate in “Textiles and Leathers Products Engineering” (Bachelor-level) offered by the Technical University of Moldova, Republic of Moldova with conditions.

Findings:

1. Practical elements of the curriculum (e.g. extended internships) should be strengthened to improve the employability of students.
2. The university should provide a concept as to how it is guaranteed that students are made more familiar with general academic requirements like independent literature research, development of a structured working plan, process documentation etc. The teaching methods should strengthen the activating element to enable the students to become more independent.
3. The internationalization of teaching staff and students should be improved. Learning agreements should be formulated so that competences gained during a semester abroad can receive recognition more easily. Some elective courses should be offered entirely in a foreign language and the faculty should take part in the Erasmus programme more actively.
4. Literature should be present in Romanian but also in English – to support the internationalization of the programme. Furthermore, the number of textile related journals should be increased.
5. Cooperation in research - especially with an interdisciplinary focus - should be strengthened to provide more up-to-date research projects for students and for the industry.
6. The core competences of the graduates of the programme must be defined by the Faculty of Light Industry. The present disciplines have to be re-analysed in order to emphasise the contribution to a certain core competence.
7. To allow the students to develop a special valuable profile (international, practical skills and/or social skills), more elective courses should be integrated into the curriculum.
8. The quality of the module descriptions should be harmonized and some modules should be described more detailed, transparent and competence oriented.
9. The calculation of credits should be done in a transparent way and it should be paid attention that the workload of each discipline is correlated with the effort which is necessary to finish the course.
10. The availability of equipment should be improved, e.g. a sewing machine for leather ware. Moreover, an analytical lab related to quality control of clothes should be built.
11. To train the practical skills in quality management an analytical lab could be built. At first, simple low cost methods could be established, like test of washing fastness, water- or rain-repellent testing or testing of rub fastness.
12. Evaluations of lessons should be carried out in a more systematic manner and the results have to be documented.