ASIIN Seal & European Labels

Accreditation Report

Bachelor's Degree Programmes
Ba Technology of Food Products
Ba Technology of Crop Processing Technology
Ba Technology and Design of Light Industry Products
Ba Technology and Design of Textile Materials

Provided by
Almaty Technological University

Version: 29 September 2017

Table of Content

A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for [1]	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC)[2]
Технология продовольственных продуктов	Ba Technology of Food Products	ASIIN, EUR-ACE® Label	ASIIN, 2012-2017	01, 08, 09
Технология перерабатывающих производств	Ba Technology of Crop Processing Technology	ASIIN, EUR-ACE® Label	ASIIN, 2012-2017	01, 08, 09
Технология и конструирование изделий легкой промышленности	Ba Technology and Design of Light Industry Products	ASIIN, EUR-ACE® Label	ASIIN, 2012-2017	01, 08, 09
Технология и проектирование текстильных материалов	Ba Technology and Design of Textile Materials	ASIIN, EUR-ACE® Label	ASIIN, 2012-2017	01, 08, 09

Date of the contract: 18.06.2016

Submission of the final version of the self-assessment report: 10.03.2017

Date of the onsite visit: 17.-18.05.2017

at: Almaty technological University Main Campus

Peer panel:

Yekaterina Astafyeva, M. Sc., M.Auezov South Kazakhstan State University, Shymkent

Prof. Dr. Burkhard Egerer, Technical University of Applied Sciences Nürnberg,

Prof. Dr. Thomas John, University of Appled Sciences Neubrandenburg,

Prof. Dr. Jens Schuster, University of Applied Sciences Kaiserslautern,

Prof. Dr. Eike Stumpf, Rheinisch-Westfälische Technische Hochschule Aachen (RWTH)

Merey Zhumadilova (Student peer) Auezov South Kazakhstan State University

[1] ASIIN Seal for degree programmes; EUR-ACE® Label: European Label for Engineering Programmes

[2] TC: Technical Committee for the following subject areas: TC 01 - Mechanical Engineering/Process Engineering; TC 08 - Agriculture, Nutritional Sciences and Landscape Architecture; TC 09 - Chemistry.

Representative of the ASIIN headquarter: Dr. Thomas Lichtenberg
Responsible decision-making committee: Accreditation Commission for Degree Programmes
Criteria used: European Standards and Guidelines as of 10.05.2015 ASIIN General Criteria, as of 10.12.2015 Subject-Specific Criteria of Technical Committee 01 – Mechanical Engineering/Process Engineering as of 09.12.2011 Subject-Specific Criteria of Technical Committee 08 – Agriculture, nutritional sciences and landscape architecture as of 27 March 2015 Subject-Specific Criteria of Technical Committee 09 – Chemistry as of 12.12.2011

B Characteristics of the Degree Programmes

Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF[3]	d) Mode of Study	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Ba Technology of Food Products	Bachelor of technical and technology	1. Technology of meat and fish products 2. Technology of milk and dairy products 3. Technology of public catering and special purpose products	Level 6	Full time	8 Semester	240 ECTS	Intake is autumn Programme started in 2001
Ba Technology of Crop Processing Technology	Bachelor of technical and technology .	1. Grain preservation, processing and reprocessing technology 2. Bread, pasta and confectionary technology 3. Brewery and winemaking technology.	Level 6	Full time	8 Semester	240 ECTS	Intake is autumn Programme started in 2001
Ba Technology and Design of Light Industry Products	Bachelor of technical and technology	1. Technology and designing of garments 2.Technology and designing of products from leather and fur 3. Decorating and modeling of products of light industry	Level 6	Full time	8 Semester	240 ECTS	Intake is autumn Programme started in 2004

[3] EQF = The European Qualifications Framework for lifelong learning

Name	**Final degree (original/English translation)**	**b) Areas of Specialization**	**c) Corresponding level of the EQF[3]**	**d) Mode of Study**	**f) Duration**	**g) Credit points/unit**	**h) Intake rhythm & First time of offer**
Ba Technology and Design of Textile Materials	Bachelor of technical and technology	1.Technology of knitted production 2.Technology and equipment of finishing production 3.Designing of textile products	Level 6	Full time	8 Semester	240 ECTS	Intake is autumn Programme started in 2004

For the Bachelor's degree programme Technology of food products the institution has presented the following profile in the self-assessment report:

„The aim of the Educational Programme Ba Technology of food products is forming knowledge, skills and habits, as well as vocationally important qualities, necessary for food products production technological processes management"

For the Bachelor's degree programme Crop processing technology the institution has presented the following profile in the self-assessment report:

„The aim of the Educational Programme Ba Crop processing technology is the preparation of highly qualified professionals with a competitive level of knowledge, skills and professional skills in the field of processing and manufacturing of food products "

For the Bachelor's degree programme Technology and design of light industry products the institution has presented the following profile in the self-assessment report:

„The aim of the Educational Programme Ba Technology and design of light industry products is training highly skilled and competitive in the market of professional services in the field of technology and design of garments."

For the Bachelor's degree programme Technology and design of textile Materials the institution has presented the following profile in the self-assessment report:

„The aim of the Educational Programme Ba Technology and design of textile materials is training of highly qualified, creative thinking, competitive and well adapted to the constantly changing conditions of professionals in the field of technology and design textile materials.“

C Peer Report for the ASIIN Seal[4]

1. The Degree Programme: Concept, content & implementation

Criterion 1.1 Objectives and learning outcomes of a degree programme (intended qualifications profile)

Evidence:

- Almaty Technological University (ATU), The Self-Assessment Report (SAR) for re-accreditation and for the Seal, chapter 1
- Diploma Supplement, Annex T to the SAR
- www.atu.kz, accessed 04.06.2017
- Discussion with ATU management, programme responsible persons, staff members, business representatives, and students

Preliminary assessment and analysis of the peers:
When looking for subject specific websites of the degree programmes under scrutiny the peers could only find a general website about the two faculties where the bachelor programmes are offered; however, subject-specific websites for each degree programme under review are neither available in English nor in Russian. The peers underline that ATU wants to become an internationally acknowledged university and therefore a transparent presentation of the degree programmes is required. The peers welcome that ATU has introduced Diploma Supplements for the different programmes, which outline their learning objectives in a comprehensive form. The peers think that this is acceptable (compare criterion 5.3) and they also confirm that the self-assessment report provides detailed learning objectives for each degree programme.

The peers refer to the **Subject-Specific Criteria (SSC)** of the Technical Committee Mechanical Engineering / Process Engineering as well as to the SSC of the Agriculture, Nutritional Sciences and Landscape Architecture as a basis for judging whether the intended

[4] This part of the report applies also for the assessment for the European subject-specific labels. After the conclusion of the procedure, the stated requirements and/or recommendations and the deadlines are equally valid for the ASIIN seal as well as for the sought subject-specific label.

learning outcomes of the four Bachelor's programmes, as defined by ATU, correspond to the exemplary constituted learning outcomes of these Technical Committees. The auditors examine the areas of competence as set forth by the SSC for degree programmes and come to the following conclusions:

The learning outcomes of the Bachelor's degree Technology of food products include that students shall possess "basic knowledge in natural-scientific, social, humanitarian, economic disciplines" and more specifically, "be aware of basic physical-chemical properties of raw materials, semi-finished products and finished goods, their modifications in technological process course" which implies a broad and sound knowledge in M*athematics,* and *Engineering* to understand the complex technology of food products. In addition, the students should be "aware of the factors, influencing the quality of semi-finished products and finished goods; resources and power-saving in technological processes of food products manufacturing". The peers welcome that the students shall gain a profound understanding of "safety rules, production sanitary, fire safety and labour protection" which is of high importance in this profession. The students shall also be aware of "theoretical and practical basics of food products technologies elaboration". The peers are convinced that students gain competences in the field of *Engineering Analysis*. With regard to E*ngineering Practice* the peers understand that students shall "be able to apply theoretical knowledge to practice in production, storage and realization of food raw materials and products" and "have skills in applying modern methods of food products quality and safety research using advanced software, innovation and information technologies". The peers also take positive note of the goal that students shall be "able to fulfil first-aid safety measures upon emergency situations at thermal and power equipment and other objects of enterprise sustainment". Furthermore, the students shall be able "to master operation of new techniques, new methods and new technologies of food productions", "to design and update food production and technological lines", and "demonstrate knowledge in applying advanced technologies to food products manufacturing". The peers conclude that competences in the field of *Engineering Design* shall be obtained. Besides, graduates shall be able "to solve standard tasks of vocational activity based on information and bibliography culture applying information-communication technologies", "to orient in contemporary information flows and adapt to dynamically changing phenomena and processes in the economics of the world" and "to use regulatory documentation and Quality assurance system, as well as food products safety on the principles of ISO and HACCP" which is in line with the competence of *Investigations and Assessment* as the peers agree. When it comes to so-called *Transferable Skills* the peers understand that the students shall be "able to work in the team, reasonably hold own point of view, propose new solutions, be flexible and mobile in different surroundings, connected with vo-

cational activity" and be "aware of social-ethic values, based on public opinion, traditions, customs, social conventions and be oriented to them in vocational activity". The peers summarise that the subject-specific criteria are covered in the learning objectives of the Bachelor's programme Technology of Food Products.

The learning outcomes of the Bachelor's degree programme Crop processing technology explain that students will "know modern tools, techniques of engineering and computer graphics, mathematical and statistic data processing and analysis" as well as "know the basics of management, organization of planning of companies and marketing of products of processing industries", and "know engineering and mathematical methods of processing information to select the raw materials to manufacture products of processing industries". It is plausible for the peers that the students shall gain extensive technical knowledge in the field of E*ngineering*, *Mathematics and Natural Science* that is needed for Crop Processing. The peers understand that the students shall "know methods of measuring parameters, calculation and selection of equipment of processing facilities", "be able to realize the optimum and rational technological modes of operation of the equipment", and "be able to creatively take decisions on all matters of complex assessment of quality of raw materials and finished product; to certify the quality of raw materials and finished products". The peers agree that this requires competences in *Engineering Analysis*. With regard to competences in the field of *Engineering Design* the peers welcome that students should be able to "carry out technological design with using of CAD, which will ensure the effective design development, meeting the requirements of long-term development of the industry to demonstrate the ability to design engineering devices in the field of environmental technology" and "carry out scientific and research work on innovation processes". The peers judge it positively that students shall be "able to read and understand literature and debate on industrial issues and use this knowledge in practice" and "be competent to demonstrate the skills of logical thinking based on scientific texts studied by specialty". This clearly covers the required competences in *Investigations and Assessment* as the peers confirm. The peers comprehend that the students shall be able to "to improve and optimize existing technological processes on the basis of a systematic approach to the analysis of quality of raw materials and end product requirements" and "to own the modern methods of determining the quality and characteristics of raw materials; to evaluate the quality of raw materials supplied to the processing"; the peers can see the reference to *Engineering Practice* as demanded in the ASIIN criteria. The peers appreciate that the students shall be able "to demonstrate a commitment to continuous personal development and improvement of professional skills" and "to know the professional vocabulary and terminology in the specialty, that is necessary to the future specialists of lexical minimum for communication in the workplace"; the peers are convinced

that this leads to *Transferable Skills* in terms of team working and communication. The peers conclude that the subject-specific criteria of ASIIN and the intended learning outcomes of this programme are in line.

For the Bachelor's degree programme Technology and design of light industry products the peers confirm that the students shall "have basic knowledge in the field of natural-science, social and economic disciplines" and "know the main conceptions, terms and definition so metrology, standardization and certification in the field of light industry products designing" which is in line with competences in *Engineering, Mathematics and Natural Science*. In addition, the students shall "know the peculiarities of production of raw materials and materials for production products and goods, as well as variety of the main materials of different applications", "be familiar with methods of conducting of basic technological processes of sewing and foot wear production and production of leather and fur", and "carry out standard testing on determination of physical and mechanical characteristics of different types of materials, used in light industry". The peers can see that these learning outcomes reflect competences in the field of E*ngineering Analysis*. Aspects of *Engineering Design* are also covered from the peer's point of view as it is stated in the programme objectives that students shall "be familiar with methods of calculation and design of garments details and technical equipment units", "know the requirements necessary for designing of goods of different assortment, taking into consideration modern fashion tendency", and be "able to take part in programs on developing proposals assortment formation concerning clothing industry products and their promotion in the market". Additionally, the students shall "demonstrate independence during working out of standard and scientific projects taking into consideration mechanical and technological, aesthetic and economic parameters", "carry out standard testing on determination of physical and mechanical characteristics of different types of materials, used in light industry", and "be able to evaluate technical solution from the point of view of technical and economic indicators, unification and standardization level". The peers confirm that the students shall develop competences in the field of *Engineering Practice*. Furthermore, students shall "be familiar with methods of collection, storage and processing computer information, used in professional activity", "be able to develop technical documentation for clothing industry products", and "be able to use scientific and technical information, national and international experience during developing new innovative technologies". The peers agree that competences in the field of *Investigation and Assessment* are covered. Students shall also obtain *Transferable Skills* like being "able to speak and write logically, reasonably and clearly, have a good command of literary and business writing, to have a good command of public and scientific speech, to work out and edit professional text, to analyze logic of reasoning and expressions". The peers con-

clude that the competences as outlined in the subject-specific criteria of ASIIN are being observed appropriately.

The peers acknowledge that the programme objectives and learning outcomes of the Bachelor's degree programme Technology and design of textile materials have been elaborated in detail. The peers see key competences of the field of *Knowledge and Understanding* of the ASIIN subject specific criteria covered as students shall "have a basic knowledge in the field of natural sciences, social, humanitarian and economic disciplines" and "know the theoretical and practical foundation of developing of technological process parameters of production textile materials and products". The peers understand that competences in the field of *Engineering Analysis* are aimed for in the objective that students "use technical means to measure the main parameters of technological process, the properties of raw materials and textile products" and "demonstrate knowledge of equipment and rules of exploitation of technical and laboratory equipment". The peers particularly welcome that students shall "know the safety regulations, industrial hygiene, fire safety and standards of occupational safety". *Engineering Design* is also covered from the peer's point of view as students shall be "able to justify the adoption of specific technical solutions in developing technological processes and designing textile materials" and "demonstrate the independence to develop projects of textile products that are based on mechanical and technological, aesthetic, economic parameters". The peers agree that competences in the field of *Investigation and Assessment* are covered in the objectives as students "know the main methods, ways and means of getting, storing, processing information" and shall be "able to work with the computer as an information management tool". *Transferable Skills* are covered in a broad set of competences implicating that the students shall be able "to cooperate with colleagues and work in collective" and "to apply logically true, justified and clearly build oral and written speech". The peers notice that this degree programme is the only one, out of the four, that mentions that students shall "know one foreign language on the communication level". Given that ATU aims at enhancing international mobility for staff members and students, the peers think that this objective should be included in all four programmes; considering the curricula, the peers note that language competences are being developed in all programmes.

Even though the programme objectives and learning outcomes are still lengthy and partly a bit bulky, the peers acknowledge that ATU has put a lot of effort into improving the learning outcomes by systematically taking into account the taxonomy of Bloom. This was recommended in the first accreditation and has been fulfilled from the peer's point of view. In addition, the peers see that the intended learning outcomes are, by and large, in line with the requirements of the subject-specific criteria of ASIIN. Furthermore, the University applies for the EUR-ACE® (European Accredited Engineer) Label. The EUR-ACE®

Label is a quality certificate for engineering degree programmes and is recognized Europe-wide. During the accreditation process, the reviewers verified whether the engineering degree programs comply with the criteria fixed in the EUR-ACE Framework Standards. The Subject-Specific Criteria (SSC) of the Technical Committee for Mechanical Engineering and Process Engineering are closely linked to the EUR-ACE Framework Standards; consequently, the analysis of the Subject-Specific Criteria encompasses the EUR-ACE Framework Standards. The peers confirm that the EUR-ACE Framework Standards regarding the intended learning outcomes are fulfilled for the First (Bachelor) Cycle Degree Programmes in line with the Bologna Declaration.

ATU points out that the programmes in the field of *food technology* as well as in the *field of light industry* are more or less unique in the Republic of Kazakhstan and highly supported by the present government. Other universities also offer programmes in these fields but ATU is the most prominent and best-reputed institution. Graduates from this University can be found in all food processing and light industry companies of the country and internationally. ATU provides statistical evidence showing that most of the graduates find employment in the first few months after graduation. The peers understand that these degree programmes present a Unique Selling Proposition and graduates are sought for on the labour market. Given the political intention to further develop particularly these economic fields, the peers are very positive about the employment opportunities of graduates.

ATU explains that advisory boards exist for the different degree programmes and provide feedback as well as support to ATU. The business representatives report that round tables between companies and the University take place regularly, and business representatives and ATU staff members jointly discuss the curricula and programmes; employers occasionally recommend adding some elements to the programmes which is being considered by ATU. The University further explains that the learning objectives of the programmes as well as the curricula are being revised and updated annually depending on the feedback from the advisory board and the labour market. The peers acknowledge that relevant stakeholders are included in the process of formulating and further developing the objectives and learning outcomes. The discussion with business representatives affirms the close cooperation with the business partners and a generally high level of satisfaction with the degree programmes under accreditation.

Criterion 1.2 Name of the degree programme

Evidence:

- Almaty Technological University (ATU), The Self-Assessment Report (SAR) for re-accreditation and for the Seal, chapter 1

Preliminary assessment and analysis of the peers:
In the first accreditation it had been recommended to promote the introduction of an internationally used and recognised English name of the degree programmes. ATU has changed the original names in the following manner:

Old: Technology of food production – new: Technology of food products

Old: Technology of processing productions – new: Crop processing technology (for different branches of industry)

Old: Technology and construction of light industry – new: Technology and design of light industry products

Technology and design of textile materials, - the name of this programme remained the same.

In principal, the peers think that the changes of the names of the programmes are suitable and align the name and the curricula of the programmes better than before. However, in the Self-Assessment Report ATU indicates that it wants to harmonize National Classifier notions with the International standard classifier of education; four programmes shall be reduced to two. The peers strongly support this effort and confirm that ATU has taken steps to fulfil the recommendations; the envisaged changes will be even more rewarding as the peers point out. In addition, the peers conclude that the recommendation made in the first accreditation, namely to promote the introduction of an internationally used and recognised English name, has been fulfilled.

Criterion 1.3 Curriculum

Evidence:

- Almaty Technological University (ATU), The Self-Assessment Report (SAR) for re-accreditation and for the Seal, chapter 1
- Module descriptions provided by the university

- Model curricula, Volume 1, Annexes D.1, D.2, D.3, D.4
- Analysis of curriculum content, Volume 1, Annexes K.1, K.2, K.3, K.4
- Discussion with ATU management, programme responsible persons, staff members, business representatives, students

Preliminary assessment and analysis of the peers:
The auditors assessed the curricula of the programmes under review against the programme objectives provided in the self-assessment report as well as against the stipulations of the subject-specific criteria of ASIIN. The peers received an overview of the sequence of modules for the different degree programmes; the overall objectives and intended learning outcomes for the degree programmes are systematically substantiated and updated in its individual modules. The module descriptions are examined in more detail under criterion 5.1. ATU provided a module-objective matrix for each degree programme depicting the curricular implementation of the intended learning outcomes. However, the table shows only abbreviations of clusters of learning outcomes which makes it difficult to properly align the individual module to the specific learning objective. In a nutshell, the peers conclude that this table can only be used partially. But since ATU provided fairly detailed module descriptions the peers were able to comprehend the content of the individual modules and its contribution to the fulfilment of the learning objectives.

The auditors are aware of the fact that the curriculum of all programmes contains modules like “History of the Republic of Kazakhstan”, “Basics of right”, “Political Science”, “Philosophy” or “Kazakh/Russian language” which are mandatory by state regulation and have to be understood in the specific context of the country. The peers consider the amount of “general studies” quite high but conclude that it is still acceptable.

The peers understand that the degree programmes can be studied in a “*normal*” and in a “*dual*” mode. The dual mode means that students study and work at a professional enterprise at the same time. Students, for example, studying Ba Technology of Food Products work at a large brewery applying the theoretical knowledge in a real work environment. The practical work is partly aligned with the theoretical modules but not throughout. As far as the content of the curriculum is concerned, the two modes are fully identical. The peers think that this is acceptable.

The peers appreciate the model curricula (Appendix D1-4) provided by ATU as they outline clearly the “general disciplines” and the “basic disciplines”; the peers also understand that each programme offers several specialisations. However, these specialisations (elective components) are not presented in the curricula overview. In Appendix E 1-4 ATU provides exemplary study plans which illustrate possible study paths of students; however,

the subjects and the elective modules for the different trajectories do not become fully transparent either. In Appendix K 1-4 ATU presents an additional table called “Analysis of content of the curriculum” which gives a clear overview of all modules that need to be taken including the electives and the trajectories. However, the peers do not comprehend why ATU provides three different tables with more or less the same content. In the module handbooks the different trajectories and the corresponding modules are clearly outlined.

As outlined under criterion 1.1, the auditors could see that the intended learning outcomes are in line with the subject-specific criteria (SSC) of the Technical Committee for Mechanical Engineering and Process Engineering. The peers base their assessment, if the curricula of the different degree programmes are designed in a way to achieve the intended learning outcomes, on the information available, namely the module descriptions and the module-objective matrix.

The peers understand that the curricula of all study programmes contain a lot of similarities which allows them to assess some aspects of the subject-specific criteria of ASIIN for all four bachelor programmes alike. Therefore, the peers are convinced that competences in E*ngineering Practice* are covered in all programmes as all programmes require an “educational” and an “industrial practice” as well as in the “pre-diploma practice” of 9 ECTS credits and a comparatively extensive Bachelor Thesis comprising 21 ECTS credit points. Based on the module description of the Bachelor Thesis the peers also comprehend that the students acquire skills in *Investigation* of scientific sources and *Assessment*. Given the large number of “general studies” including modules like “Sociology and politics science”, “Foreign language”, “Philosophy and introduction to religious studies” or “Bases of the economic theory” it is plausible to the peers that all students of all programmes under scrutiny acquire *Transferable Skills*. With regard to the more technical skills the peers analyse the programmes individually. The peers are also being explained that basic topics in mathematics or natural sciences are introduced on a more general level and after the coverage of the basic topics the teachers make a special reference to the specific study programme to connect the basic knowledge with the requirements of the specific degree programmes.

In the Bachelor programme Technology of food products, the students are supposed to obtain competences in the field of *Knowledge and Understanding* in modules like “Mathematics”, “Engineering and computer graphics” or “Descriptive Geometry and Drawing”, “Chemistry”, “Fundamentals of food technology”, or “Analytical and physical colloid chemistry”. The peers confirm that these modules are suitable to provide basic competences in mathematics and natural sciences. It is also plausible for the peers that competences in the field of *Engineering Analysis* and problem solving are taught in mod-

ules like “Theoretical and Applied Mechanics” or “Fundamentals of the theory of machines and mechanisms”, “Processes and devices of food manufactures “ or “Fundamentals of hydraulics and heattransfer or “Refrigeration technique or engineering ”, “Theoretical Foundations of food storage” or “Theoretical Foundations of food preservation”, “Automation of technological processes” or “Electrical engineering”. However, the peers do not comprehend why essential modules like “Safety precautions”, “Labour protection”, “Quality and food safety” or “Food safety” are only elective modules. The explanation that most students select the safety related modules anyway is not convincing to the peers. The peers emphasize that safety related topics have to be compulsory and if certain safety topics are covered in other modules already, this needs to be made transparent in the module descriptions. The Bachelor programme Technology of food products offers three different specializations like “Technology of meat and fish products”, “Technology of milk and dairy products”, and “Technology of products of public catering and special purpose”. The peers understand that each trajectory offers modules that contain aspects of industrial or technical *Design* like “Design of meat and fish industry” or “Designing of the enterprises of primary processing of livestock” for the first trajectory, “Designing of the enterprises of the dairy industry” or “Design technological processes of milk production” for the second trajectory and “Designing of public catering” or “Material and technical supplies of catering” for the third specialization. The peers conclude that design competences are appropriately included in the curriculum.

For the Bachelor programme Crop processing technology, the peers understand that the students are supposed to gain a broad and sound knowledge in *Mathematics, Science* and engineering in modules like “Mathematics”, “Physics”, “Chemistry”, or “Analytical and physical colloid chemistry”. Competences in the field of *Engineering Analysis* and problem solving competences are supposed to be obtained in modules like “Seed growing with Basics of plant growing” or “The study of the properties of raw materials in the processing industry”, “Expertise of products of grain processing”, “Processes and devices of processing manufactures”, “Basics of hydraulics and heat transfer, Hydraulic and pneumatic machines and drives”, “General technology of processing manufactures Commodity Food”, “General technology of food production”. Furthermore, the peers think that essential modules like “Safety precautions” and “Labour protection” must not only be elective courses but to be compulsory for all students. This programme offers three different specializations like “Grain preservation, processing and reprocessing technology”, “Bread, pasta and confectionary technology”, and “Brewery and winemaking technology”. The peers understand that engineering design competences are included in the specific modules of the trajectories and underpin the competences that are specifically needed for the specialization. For example, modules like “Design of elevators and the grain processing

enterprises with SAD", "Designing of flour - cereals and compound feed businesses", or "Designing of the enterprises for storage and processing of grain" are included in the first trajectory and modules like "Design of bakery, macaroni and confectionary productions enterprises with SAD", "Designing small enterprises of baking, macaroni and confectionery industry", and "Improvement of technological processes of bakery, macaroni and confectionery industries" are part of the second specialization. The third specialization includes modules like "Design of fermentative productions and winemaking enterprises with SAD", "Designing small enterprises of brewery industry", and "Improving the technological processes of brewery production". The peers confirm that it is sensible to have the choice of different elective courses in the field on engineering design because that gives the students the opportunity to develop their field of specialization based on their specific interests.

The Bachelor programme Technology and design of the light industry products contains a number of modules like "Mathematics", "Physics", "Chemistry", "Physics and chemistry of high-molecular compounds" or "Electrical Engineering"; the peers confirm that these modules provide advanced knowledge of M*athematic-Scientific and Engineering* principles. The peers understood that competences in the field of *Engineering Analysis* should be obtained in modules like "Theoretical and applied mechanics", "Materials science of products of light industry", "Chromatics", "Electrical engineering and electric equipment", "Suit composition", or "Automation of technological processes of industry". However, modules like "Life safety", "Labour protection in light industry" or "Safety measures" are only elective courses. The peers point out those essential modules must be compulsory and should not only be elective. This programme offers the following three trajectories "Technology and designing of garments", "Technology and designing of products from leather and fur", and "Decorating and modelling of products of light industry". The peers verify that competences in the field of *Engineering Design* are included in the different trajectories. The first trajectory, for example, contains modules like "CAD Graphics" or "Bases of design preparation of garments". The peers think that modules like "Constructive modelling of products from leather and fur" or "Bases of design preparation of products from leather and fur" cover the design competences in the second trajectory. The third trajectory includes modules like "Construction and technology of products of light industry" or "Design of products of light industry" which are appropriate modules to obtain design competences. The peers wonder why "shoe production" is not part of this programme and learn that "shoe production" exists on a small scale so far, and it is planned to expand the ambitions in this field in the near future. In summary, the peers conclude that competences of *Engineering Design* are properly covered in the different trajectories.

The Bachelor Programme Technology and design of textile materials also offers a number of modules that provide advanced knowledge of *Mathematic-Scientific and Engineering* principles like “Bases of physics and chemistry of polymers, dyes and textile excipients”, “Mathematics”, “Chemistry”, or “Physics”. The peers understand that competences in the field of *Engineering Analysis* shall be obtained in modules like “Composition of textile drawing”, “Technological equipment of textile production”, “Technology of textile industries” or “Automation of technological processes in industry”, “Automation of typical technological processes” or “Automated control systems”. However, like in the other degree programmes, the peers criticize that modules like “Labour safety” or “Safety precautions” are only elective courses and demand that safety related courses are a mandatory part of the curriculum. The programme offers three trajectories namely “Designing textiles”, “Technology and equipment of finishing production” and “Technology of knitted production” and the specific engineering design skills are integrated in these trajectories. Modules like “Designing of cotton technology”, “Designing of the structure of textile materials” or “Structure and design of fabrics” are appropriate to develop competences in the field of *Engineering Design* as the peers confirm. The second trajectory offers modules like “Introduction in nanotechnology”, “Technology of preparation of textile materials”, “Painting of textile materials”, “Technology of printing of textile materials” or “Digital technologies in printing of textile materials” which are in line with the subject-specific criteria of ASIIN for *Engineering Design*. Also for the third trajectory the peers can see that there are some modules like “Designing of picture structure and combined knitted interlacing”, “Design of structure of the main knitted interlacing” or “Design of structure of derivative knitted interlacing” which develop the necessary competences in the field of *Engineering Design*. However, the peers noticed that only very simple weaving machines were in use and highlight that modern forms of weaving are very important in today’s modern textile industry and recommend that students should also be introduced to professional weaving machines.

By and large the peers gain a positive impression of the curricula of the degree programmes; safety measures need to be made mandatory in all programmes as the peers underline. Apart from this only some minor recommendations are being made and the peers confirm that the curricula are in line with the subject-specific criteria of ASIIN.

Criterion 1.4 Admission requirements

Evidence:

- Almaty Technological University (ATU), The Self-Assessment Report (SAR) for re-accreditation and for the Seal, chapter 1.3
- Annex H Rules of admission to ATU (Bachelor degree)
- Decree of Republic of Kazakhstan Government, dated July 14, 2016, № 405
- https://atu.kz/?id=531&list=2, accessed 04.06.2017
- Discussion with ATU management, programme responsible persons, staff members, business representatives, students

Preliminary assessment and analysis of the peers:

The peers can see on the website of ATU that the rules and regulations are accessible to all students; however, the links lead to one Russian general website on ATU only. Given the ambition of Almaty Technological University to be more international the peers highlight that all study relevant information including the admission rules and requirements should be made available in English, too. The auditors discuss the admission rules and procedures, which are also provided as an annex to the peers, with the university representatives. The programme coordinators explain that the selection of the applicants for the Bachelor programmes is made by the Ministry of Education and Science; more specifically, admission for the bachelor degrees is carried out by the admission rule developed by the Ministry of Education and Science of Kazakhstan based on the Decree of the Government of the Republic of Kazakhstan No.405 dated July 14, 2016. Applicants who want to be admitted to ATU need to prove the availability of the secondary education certificate, the certificate of common national testing or complex testing, and the availability of medical certificate on the health condition. It was further explained to the peers that educational grants are awarded to students on a competitive basis in accordance with gained scores on the Common National Testing (CNT) or complex testing. This Common National Testing is being taken by all high school graduates and the score received qualifies a high school graduate to apply for university admission. The Ministry of Education and Science defines the quantity of Educational Grants for each academic degree programme. Altogether, the auditors judge that the admission requirements are reasonable for maintaining the quality of the Bachelor degree programmes.

International students can apply for the Higher Education Institutes by taking the complex test (Bachelor degree) and university entrance exams. The official language of study is Russian but some basic courses are offered in English. Foreign students are supposed to take a one year course of Russian but there are some special agreements between countries. The peers conclude that the specific requirements and needs of foreign students are taken into consideration when applying at ATU.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 1:

The peers thank ATU for providing the links to the subject specific websites. The following websites

Ba Technology of food products: (accessed 2017-08-16)

Ba Technology of Crop Processing Technology: https://atu.kz/?id=558&list=3 (accessed 2017-08-16)

Ba Technology and Design of Light Industry Products: https://atu.kz/?id=562&list=3 (accessed 2017-08-16)

Ba Technology and Design of Textile Materials: https://atu.kz/?id=563&list=3 (accessed 2017-08-16)

provide an overview of the intended learning outcomes of the different programmes. However, the learning outcomes for the "Ba Technology and Design of Textile Materials" are very difficult to read and the peers suggest changing the formatting of this website. Given this additional information, the peers refrain from the intended recommendation.

The peers welcome that ATU decided to include the objective to foster the competence of foreign languages in all degree programmes. The peers appreciate the announcement of ATU to make modules like "Quality and safety of food products", "Food products safety", «Labor protection», "Life safety", "Labor protection in light industry" mandatory for all students. However, the module descriptions still refer to these modules as electives. Therefore, the peers stick to their intended requirement.

The peers comprehend the reasoning of ATU that the demand of professionals competent in the field of weaving must be proven to justify a major investment in that kind of equipment. The peers also praise the solution found thus far, that the partner company «Universal Reklama» gives students the opportunity to gain practical experiences on modern weaving machines. Given the small number of students for that specialisation, the peers conclude that this is a sensible solution and refrain from the intended recommendation. As the peers would like to cross-check how ATU is going to resolve this matter, the peers confirm their intended recommendation.

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- Almaty Technological University (ATU), The Self-Assessment Report (SAR) for re-accreditation and for the Seal, chapter 2.1
- Rules of recognition and nostrification, approved by the Order of MES RK № 8 dated January 10, 2008
- Annex N On arranging academic process
- Module descriptions provided by the university
- Model curricula, Volume 1, Annexes D.1, D.2, D.3, D.4
- Analysis of curriculum content, Volume 1, Annexes K.1, K.2, K.3, K.4
- Discussion with ATU management, programme responsible persons, staff members, business representatives, students

Preliminary assessment and analysis of the peers:

Modularization:

All Bachelor study programmes under review are modularized and run over 8 semesters. The peers determine that each module is a sum of teaching and learning whose contents are concerted. Most of the modules of the Bachelor's degree programmes encompass between 3 and 5 ECTS credits. The small modules with 3 ECTS credits in the Bachelor's degree programmes are typically introduction courses, internship courses (educational or industrial practice) or compulsory language courses, which are often based on attendance-based learning. In principal, the peers agree that from a formal standpoint this kind of modularisation is possible. In each degree programme the students can select a field of specialisation which allows them to develop a specialised field of competence (compare criterion 1.3). From the auditors' point of view, the structure of the degree programmes ensures that the qualification level and the intended learning outcomes can be achieved and that the students can complete the degree programmes successfully without any delay.

Practical Approach/Internships

Internships and the practical approach of the degree programmes are being dealt with under criterion 1.1 and 1.3.

Student Mobility

If students want to go abroad and study in a foreign country the applicants need to have good grades, an interview for languages, and they need to have a grant. For those who do not have a grant, they need to identify other programmes they can also apply for. The students explain that normally a large number of applicants is competing for few places. The selection process is based on the grades and the language skills. The students confirm that the selection procedure is transparent and fair; those who have not been selected can understand the decision. According to the teachers, the language skills of students obtained through the mandatory language courses are enough to study abroad. All students of ATU need to take some mandatory courses which can be taken via distance learning. The peers recommend to consider the Erasmus programme of the European Union as an additional possibility to offer scholarships and foster international mobility. Sometimes companies also provide scholarships to students to study abroad. The peers conclude that opportunities to study abroad are available and the selection process seems to be fair and transparent; but they regret that only few scholarships are offered and that consequently only a small number of students has a chance to really benefit from these opportunities. In order to realize the vision of ATU to become an internationally recognized institution of Higher Education, the peers recommend to increase the number of international exchange programmes and to offer more opportunities to students to participate in these exchange programmes.

Recognition of achievements and competences

The management of ATU explains that the Ministry of Education and Science of the Republic of Kazakhstan is an executive body for recognition procedures in the Republic of Kazakhstan. Recognition represents the procedure of the official confirmation of the foreign educational qualification validity confirmation with the aim of an owner to get access to the educational activity. The academic mobility center issues a certificate on the recognition of educational documents or provides a substantiated response on the refusal in written form. ATU adds that under normal circumstances, learning agreements are signed and the students are being told beforehand which courses can be recognized and which distant learning courses should be taken to make sure not to miss out on certain mandatory subjects. As for the recognition of qualifications gained from other institutions of higher education, in particular abroad, grades, credits and content of modules are taken into consideration. There is a specific reference made by the regulations to the qualifications or competencies to be recognized. According to the Lisbon Convention each university is asked to recognize activities completed externally unless the HEI can prove that the competencies gained at the other HEI are completely different. In summary, the peers agree that rules and regulations on recognition are in place and are executed in a way that is in line with the requirements of the Lisbon Treaty.

Criterion 2.2 Work load and credits

Evidence:

- Almaty Technological University (ATU), The Self-Assessment Report (SAR) for re-accreditation and for the Seal, chapter 2.2
- Module descriptions provided by the university
- Model curricula, Volume 1, Annexes D.1, D.2, D.3, D.4
- Analysis of curriculum content, Volume 1, Annexes K.1, K.2, K.3, K.4
- Discussion with ATU management, programme responsible persons, staff members, business representatives, students

Preliminary assessment and analysis of the peers:

The peers understood that ATU has developed a credit system; according to this students' contact hours with a teacher during lectures and practical (seminar) lessons are accompanied with 2 hours of students' independent work for each contact hour. ATU turned the Kazakh credit points into the European Credit Transfer and Accumulation System (ECTS) to be able to compare the study attainment and performance of students of higher education with other European countries. When looking at the module descriptions the peers notice a number of calculation inconsistencies in the workload calculation. During the discussions it was explained that one credit hour corresponds to 30 hours of student workload. This conversion is correct for many modules but not for all; all modules with 5 ECTS points have a student workload of 135 hours (instead of 150) and 8 ECTS points show 225 (instead of 240) hours of workload. The peers point out that the ECTS-credits and the actual Workload must be described in the module descriptions consistently and understandably. In the first accreditation it was recommended that the collection of data should also include the actual workload; the peers cannot see that this recommendation has been considered in the questionnaire (compare criterion 5).

The analysis of the curriculum shows clearly that a workload of exactly 30 ECTS points is envisaged for each semester. The students confirm that the workload is fairly balanced and gives them also time for non-academic activities as most of the lectures are in the morning and many afternoons are available for other activities. The study programmes are organised in a way that the majority of students tend to complete the studies in the envisaged timeframe (compare criterion 1.1). The peers confirm that the estimated time budgets seem to be realistic and enable students to complete the degree without exceeding the regular course duration; however, an exact work-load verification should still take place.

Criterion 2.3 Teaching methodology

Evidence:

- Almaty Technological University (ATU), The Self-Assessment Report (SAR) for re-accreditation and for the Seal, chapter 2.3
- Module descriptions provided by the university
- Discussion with ATU management, programme responsible persons, staff members, business representatives, students

Preliminary assessment and analysis of the peers:

The peers studied the module descriptions to understand the teaching methodology which is being applied. ATU points out that the applied teaching methods comprise "information-theoretical teaching methods", "Practical and operational teaching methods", "Search and creative teaching methods", "Trainees independent work methods", and "Control and assessment methods". The peers welcome that most modules consist of lectures and have a practical and laboratory component. The peers would like to know how laboratories and independent work are carried out and learn that students get a task and have to develop their own solutions; if questions arise they can address the teacher for assistance. The teachers see themselves in an advisory role who can also be contacted electronically. The teachers give one example of designing a coat, where students have to do some research in the internet and examine fashion journals; based on these inspirations they draw a collection that needs to be presented and discussed in class. Finally, the students have to create the clothes they designed themselves. Sometimes projects are executed in close cooperation with companies; then the actual project work is supervised by staff members of the company. The peers were also shown the University shop where coats and other clothes made by students are for sale; the peers praise this initiative and encourage the University to further pursue such motivational endeavours. As outlined under criterion 1.3 the peers also appreciate the team and group work examples which show that a number of non-technical social skills are being trained in the programmes. The students are familiarised with independent academic research in the final Bachelor's Thesis. Summing up, the peers judge the teaching methods and instruments to be suitable to support the students in achieving the learning outcomes. The peers also think that the recommendation made in the first accreditation to apply more activating forms of learning (e.g. projects, problem based learning) has been fulfilled.

Criterion 2.4 Support and assistance

Evidence:

- Almaty Technological University (ATU), The Self-Assessment Report (SAR) for re-accreditation and for the Seal, chapter 2.4
- Discussion with ATU management, programme responsible persons, staff members, business representatives, students

Preliminary assessment and analysis of the peers:

The peers examine the general information about ATU on the website as well as the course related websites and can only find a general introduction page of the University. The students confirm that programme relevant information is available in Russian and Kazakh which gave them an opportunity to get a full understanding of the degree programmes and employment opportunities. However, given that ATU seeks international accreditation and intends to become an international university attracting foreign students, the peers emphasise that ATU should also offer an English website to underpin its ambition.

Apart from this, ATU provides support and assistance throughout the life-cycle of a student. Teachers from ATU present the different degree programmes at schools and offer an "Open Day" at the University which provides an opportunity to interested stakeholders to investigate the facilities. The students confirmed that if more subject relevant information is requested, they can address staff members and are normally being helped. Some students indicate that they had been particularly attracted by some famous fashion designers who are teaching at ATU presently. Students are being welcomed with an orientation week when starting their studies at ATU. When commencing the study programme, first-year students receive a Students' Guideline which contains all relevant information about the educational process of the credit system, structural units of the university, general requirements to the students, their rights and obligations, main provisions of monitoring and evaluation of students' knowledge. The academic advisor provides academic advice in terms of courses to be selected; the students select their elective courses and discuss the academic path with their advisor. If too few students apply for one elective, the students are offered alternatives and vice versa, if the group is too big an additional group is opened. The students explain to be content with the advisory system and the selection of electives. Additionally, the academic advisor also supports students regarding personal matters. The students confirm that the academic advisors are very supportive and try to assist the students in all matters. Tutors or even some teachers offer extra-curricular support in difficult classes like Mathematics or Physics to assist the students to

pass the examinations. If students fail an examination they have to take summer classes at their own expense. The peers conclude that adequate resources are available to provide individual assistance, advice and support for all students. The peers understand that this concept of student support leads to low failure rates and the support services help the students to achieve the learning outcomes and complete the degree programme within the scheduled time.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2:

The peers welcome that ATU intends to increase the number of exchange programs and to give more possibilities for the students to participate in international mobility. The peers take note of the activities considered by ATU and stick to their recommendation to assess the outcome at the time of reaccreditation. The peers comprehend that the calculation from Kazakh credit to ECTS credit points is a challenging matter. The calculation provided by ATU is plausible; however, the ECTS credit points and the corresponding workload are still inconsistent. The peers conclude that this inconsistent presentation in the module descriptions is not acceptable. If 1 ECTS credit point corresponds to 30 hours of student workload, then this conversion factor must be applied consistently to all module descriptions. In its present state the calculation is not comprehensible for external stakeholders. The peers understand that the relation to the students' actual workload and ECTS credit points have been included into the polling form «Students' satisfaction with the content and quality of the academic process per discipline».

The peers appreciate the price monitoring of canteen food in the country and understand that ATU cannot go below this threshold; the compensational measures for students under special circumstances are sensible. Regarding the access to Wi-Fi at ATU, the peers welcome that the specialists of ATU's information technological department are upgrading the WI-FI signal in the weak signal zones, including additional equipment installation. Moreover, the university's top management has taken a decision to equip all dormitories with Wi-Fi prior to the new academic year commencement.

The peers understand that it is not the normal case that students have to purchase their own consumables for projects. The fact that the students reported about this are more exceptional cases. The peers acknowledge that the Management of ATU has taken note of this situation is about to develop measures to prevent this in future. The same applies to the complaint that students claim to have too little time to change from one lecture room to the other. The peers are positive that ATU will find suitable solutions and stick to their recommendation to ascertain that these issues are being taken up at reaccreditation.

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- Almaty Technological University (ATU), The Self-Assessment Report (SAR) for re-accreditation and for the Seal, chapter 3
- Annex L Regulation on control and assessment of trainees learning progress
- Annex R – Exam schedule template
- Module descriptions provided by the ATU
- Discussions with students and teaching staff

Preliminary assessment and analysis of the peers:

Examination organisation

The peers understand that the students are supposed to take 2 attestations per subject, an intermediate attestation after week 8 and a final attestation at the end of each semester; each examination period should be at least 2 weeks. The examination schedule is developed by the "Planning and control department" together with the Dean of the relevant department, approved by the Vice-Principal on study and methodology. The examination schedule is published as early as possible but 2 weeks before the examination session at the latest. The approved exam schedule is published on the ATU website. ATU has assessment criteria for the educational, control and assessment process in place in order to ensure transparency for students and teaching staff. In case of disagreement with the examination assessment the student may appeal. The appeal should be submitted by the student to the appeal commission. Repeated state exams and defence of the graduate work in order to improve a positive score are not allowed; repeated final attestation of the student should be held during the next final attestation period only for those forms on which a previous final attestation was unsatisfactory. The students confirm that the examination schedule is usually well balanced and allows enough time for preparation. In summary, the peers come to the conclusion that the examinations are well organised at ATU.

Examination methods

Based on the module descriptions the peers can see that the form of examination is communicated clearly; the final score on a discipline includes the current performance,

intermediate and final assessment. The total assessment of knowledge on a 100-score system is weighed at 60% for the intermediate attestation and 40% for the final control.

The peers welcome that a wide set of different forms of examination is applied. Depending on the content and intended learning outcomes of the modules, very different examination forms are chosen to properly assess the actual competence of the students. The examination forms include verbal survey (colloquium), written survey, thesis defense, presentation of lab analysis, tests, semester task, solving situational tasks, creative tasks (presentation and defense of home work, essay, projects presentation), discussion of the issues in groups, or practice report defense. Furthermore, a term paper/project report has to be provided in accordance with the work curriculum on the specialty. The students add that they have to carry out projects like knitting a sweater and the items are being exhibited; oral examinations require the student to explain how they have implemented the project, or e.g. which textiles they have used. The peers analysed the examinations as far as this was possible due to language barriers and conclude that the examinations are devised to individually measure to which extent students have reached the learning outcomes defined. The peers confirm that the examinations are structured in a way to cover all of the intended learning outcomes (knowledge, skills and competences) and provide students feedback on their progress in developing competences.

The rules for re-sits, disability compensation, illness and other circumstances are defined in the University regulations on education and the completion of studies and therefore transparent to all stakeholders.

Final Thesis

Students have to carry out an independent research project for the Bachelor's Thesis which comprises 21 ECTS credit points and a pre-diploma practice of 9 ECTS credit points; this is compared with standards at other universities a large amount of credit points. The last semester is dedicated to the pre-diploma practice and the final theses. The students have to identify a research topic themselves which must be approved by the university supervisor and the company where the practice is conducted. Students and lecturers report about cooperation with bakery plants, breweries, companies producing dairy products or textile companies etc. During the pre-degree practice the students collect relevant data at the companies for the final thesis; the final thesis is written at the university afterwards. Sometimes companies even offer scholarships for certain topics and many graduates find immediate employment in the company they have worked in after graduation. The peers examined the final theses as far as they could and confirmed that the thesis ensures that students work on a set task independently and at the level aimed for.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 3:

The peers conclude that this criterion is fulfilled.

4. Resources

Criterion 4.1 Staff

Evidence:

- Almaty Technological University (ATU), The Self-Assessment Report (SAR) for re-accreditation and for the Seal, chapter 4
- ATU_Module and Staff Handbook Vol 3 EP Crop processing technology
- ATU_Module and Staff Handbook Vol 2 EP Technology of food products)
- ATU_Module and Staff Handbook Vol 4 EP Technology and design of the light industry products
- ATU_Module and Staff Handbook Vol 5 EP Technology and design of textile materials
- Discussion with management and staff members

Preliminary assessment and analysis of the peers:
Staff members

The peers welcome the staff handbook for each degree programme and verify that the composition of the teaching body is able to ensure that the intended learning outcomes are achieved by the time the degree is completed. Sometimes also guest lecturers from industrial partners offer lectures to give the students first hand information of labour market developments. Additionally, foreign guest lecturers are invited regularly and hold lectures; in the latest academic year 11 people from countries like the Russian Federation, Germany, Austria, Italy, Great Britain, Bulgaria, Belarus provided academic lectures in relevant professional fields to students of ATU. Regarding the recruitment of staff members the auditors gained the impression that a competitive selection procedure was carried out to recruit university lecturers from other institutions of Higher Education or from private companies. Based on Kazakh law, the total number of teaching staff is calculated based on the average ratio of students and teachers (the average number of students per teacher) 8/1. The peers confirm that there are sufficient staff resources available for providing assistance and advice to students and to fulfil administrative tasks.

Research activities

The auditors notice that the self-assessment report provides a detailed overview of the research activities carried out in the last years; the funds are coming from governmental institutions, private companies and international institutions. The peers are pleased to see that staff members of ATU also published a number of articles in international journals. Given that ATU is one of the leading universities in the Republic of Kazakhstan in the field of light industry and food production technology, the university receives acknowledgement and support from governmental programmes. Therefore it is plausible to the peers that research projects in close connection to companies from these fields are taking place; ATU highlights that research funding is playing an important role with regard to the overall budget of the university and the upgrading of research equipment. Bachelor students are actively involved in the research projects. The peers confirm that the research and development activities carried out by the teaching staff of ATU are in line with and support the level of academic qualification aimed at.

Criterion 4.2 Staff development

Evidence:

- Almaty Technological University (ATU), The Self-Assessment Report (SAR) for re-accreditation and for the Seal, chapter 3
- Discussion with management and staff members

Preliminary assessment and analysis of the peers:

The peers are pleased to hear that ATU pays a lot of attention to the development of its staff members; a number of opportunities are provided like further education courses on Advanced Training Institutions, ATU's staff retraining programme at other higher education organizations, probation courses at the specialized training centres, participation in scientific-methodological seminars and conferences, exhibitions and other events. Didactical training is obligatory for young staff members. ATU presents a table illustrating the active pursuance of staff development in the last years. In addition, teachers who teach in English are sent abroad to improve their English. ATU is about to intensify the language efforts as it intends to increase the number of English taught lessons significantly in the next few years. During their discussion the peers gained the conviction that the English competences of staff members can still be further developed but in the light of the ongoing training activities and knowing that the improvement of language competences is a

long-term endeavour, the peers confirm that the activities of ATU are appropriate and supporting the intended goal.

Criterion 4.3 Funds and equipment

Evidence:

- Almaty Technological University (ATU), The Self-Assessment Report (SAR) for re-accreditation and for the Seal, chapter 4.3
- Detailed lists of equipment in the self-assessment report
- Visit of laboratories
- Discussion with management and representatives from business

Preliminary assessment and analysis of the peers:

During the discussion with representatives of the management of ATU the peers learn that ATU is a private University and most of the overall funds for teaching and equipment stem from student fees; about 90% of the students receive state grants. Additional budget comes from private companies and services rendered by ATU. The peers believe that the budgetary resources are closely linked to the number of students permitted to the university. ATU emphasises that graduates are working in all relevant companies in Kazakhstan and partly also in international enterprises and maintain very close relationship to the University providing opportunities for internships and final theses; hence, the ATU can count on strong business support. Given the tremendous investment in infrastructure since the first accreditation, the successful business model of ATU over the last years and the budgetary information provided in the self-assessment report, the peers come to the conviction that ATU has appropriate funds to execute the programmes under scrutiny for the time of accreditation.

The peers visited the laboratories for all four degree programmes and were deeply impressed about the infrastructural changes that have taken place since the last accreditation five years ago. The peers are pleased that a lot of new and up-to-date equipment for the practical education and laboratories have been purchased and are actively used for the different study programmes. As indicated under criterion 1.3 the peers still recommend the introduction of a professional weaving machine, but all things considered the peers are very satisfied with the steep development of ATU. The students confirm that there is old and new equipment and they are primarily working on the new machinery. Furthermore, the students explain that the library is in an appropriate condition offering sufficient literature. ATU possesses a number of computer rooms where students can also use digitally available literature. The number of computer places is normally sufficient;

only at peak times students have to wait for computers to be available again. The students also praise the dormitories for having relaxing rooms. However, they complain about expensive meals in the cantina and indicate that the wireless internet access is fairly slow at many places at ATU; but there are also few small places with rapid internet access. Moreover, the students also mention that learning facilities are small and insufficient at peak times. In a nutshell, the peers come to the conclusion that ATU has made major infrastructural achievements in the last years and the recommendation made in the first accreditation has been taken up very seriously. Nevertheless, the peers still recommend to also see if the wireless internet access and the student learning facilities could be further improved. The peers understand that students need to purchase the material for projects in food production, textile design etc.; they consider this to be unusual compared to universities in other countries. The students did not complain about it but the peers point out that the necessary material for projects may be quite costly and put a burden on the student's budget. The peers wonder if ATU may consider providing some of the basic resources to the students when projects need to be implemented.

The students indicate that the breaks between the different courses are only 10 minutes which makes it difficult to reach the classroom for the next course on time; therefore the peers recommend to change the schedule to give students an opportunity to reach classes on time.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 4:

The peers conclude that this criterion is fulfilled.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Module descriptions provided by the ATU

Preliminary assessment and analysis of the peers:

The peers positively note that the full set of module descriptions is available for the peers but English websites for the different degree programmes under accreditation are missing and international stakeholders are unable to find appropriate information about the different degree programmes on the internet. The peers underline that all programme relevant information needs also to be made available in English on the website.

The peers examine the module descriptions of all four programmes and note that the modules have comprehensible names and identification codes. The peers also acknowledge that the responsible module coordinators as well as the lecturers are mentioned throughout all module descriptions. The peers further appreciate the indication of the language of teaching and see that only the English courses are taught in English. Requirements for the successful participation in a module are not mentioned which would be worthwhile to add as the peers advise. They see that the relation to the curriculum is pointed out making it evident to the students if a module is compulsory or elective. The work load is specified in the teaching methods and explained in detail which activity requires which kind of workload. In most cases the total workload corresponds with the number of credit points awarded to the module; however, in some cases the calculation is wrong like in all modules comprising 5 or 8 ECTS credit points (compare criterion 1.3). The peers advise to check all work load-credit point calculations. The intended learning outcomes are mostly referring to different levels of competence (knowledge, skills, competence) which is positively judged by the peers. In addition, the content of the modules is explained in detail. The peers welcome the very detailed and informative section on the type of teaching and the respective contact hours and think that this description explains understandably how the intended learning outcomes are supposed to be achieved. The different types of examination are outlined. The reading list provides an overview of national and international relevant literature for the different courses; the programme responsible persons explain that the lecturers normally refer to Russian literature and some English standard references are included too. In summary, the peers conclude that the module descriptions have further improved since the first accreditation. Some modules like Volume 3, p. 61, p. 96, p.181, p. 188, p. 193, p.321, p. 324, p. 326, p. 328, p. 329, p.331, p. 334, p. 344, p. 345, p. 346, p.354, p. 357, p. 368, p. 371, p.372 contain partly inappropriate terminology like, for example, “Nobility” instead of “Knowledge”. Therefore, some minor corrections, as outlined in the previous section, are still advised.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- Annex T Diploma Supplement

Preliminary assessment and analysis of the peers:

The peers welcome that after graduation a degree certificate is issued and a Diploma Supplement is being provided to the students in English. At § 4.2 of the Diploma Supplement the learning objectives of the programmes are described in a short and concise way which is acceptable to the peers. However, the peers criticise that the Diploma Supple-

ment does not contain the classification of the degree programme with regard to its applicable education system. Statistical data as set forth in the ECTS User's Guide is not included to allow readers to categorise the individual result/degree.

Criterion 5.3 Relevant rules

Evidence:

- Annex H Rules of admission to ATU (Bachelor degree)
- Annex I On approval of the Rules of the organization of educational process on credit technology basis
- Annex J Staff of the working groups
- Annex L Regulation on control and assessment of trainees learning progress
- Annex M QUESTIONARY
- Annex N On arranging academic process: On credit technology education and securing trainees' academic mobility
- Annex O Rules of arranging and conducting vocational practices
- and rules of determining the organizations as a base for practices
- Annex U Quality Management System Certificate
- Annex V Certificate of the International IQNet Certification Network)
- Annex P List of bases of professional practice
- Annex Q COOPERATION AGREEMENT ON IMPLEMENTING A DUAL EDUCATION SYSTEM
- Annex S Order on Language Training Center establishment
- Annex T Diploma Supplement
- Annex W Academics quality assessment

Preliminary assessment and analysis of the peers:

The peers can see that the rights and duties of both the higher education institution and students are clearly defined and binding in rules and regulations. All of them have been provided as appendices to the self-assessment report. The peers could also identify an overview in English on the website; however, the links to the respective documents are incorrect. The peers recommend that all programme relevant information should be made available in English on the website.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 5:

The peers appreciate the correction of the mistakes mentioned in the report and welcome the planning of ATU to compile a terminological dictionary on ATU specialties in 2017-2018. The peers thank ATU for the presented Diploma Supplement and agree that this version contains more specific information about the educational system of Kazakhstan and provides statistical data according to the ECTS-User's guide in addition to the final grade. Henceforth, the peers conclude that the envisaged requirement is obsolete.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Annex M QUESTIONARY
- Annex U Quality Management System Certificate
- Annex V Certificate of the International IQNet Certification Network)
- Annex W Academics quality assessment

Preliminary assessment and analysis of the peers:

The peers understand that ATU has a Quality Assurance System in place which represents a package of internal actions and external assessment procedures designated to improve the quality of education programmes' design and implementation. The Quality Assurance System covers elements of internal quality measures including student, graduate, employer, and instructor feedback mechanisms. Additionally, external expertise is provided by the professional community and employers. The student's survey is conducted via the computer questionnaire in the "Platonus" system; an exemplary questionnaire had been made available to the peers (Annex M "Teaching quality in trainee opinion"). The peers are irritated about the question in the questionnaire "Have you ever got your marks from this teacher for money?" (p. 87/88 SAR). The peers ask if this has ever been an issue in the past and learn that cases of corruption have not occurred at ATU so far; still it remained unclear to the peers why this question is included. The peers could not find a question regarding the actual student work load and the ECTS credit points; the peers think that this recommendation has not been taken up appropriately. The results of the analysis are presented in the self-assessment report and the peers comprehend that most

questions show very high satisfaction rates of the students. In addition, ATU carries out graduates and employer surveys; during the survey over 200 graduates of accredited degree programmes and over 100 enterprises of the relative fields in Almaty and in the Republic of Kazakhstan were interviewed. According to the survey result, the graduates highly appreciate the specialty skills development, provided by the university. The graduates also point out interpersonal communication and teamwork. ATU graduates mentioned a good level of theoretical knowledge, complaining about too little practical professional competences. ATU graduates also criticized the condition of the laboratory equipment. In summary, about 90% of respondents gave "good" and "excellent" marks. In summary, the peers see their original recommendations, namely to use more activating forms of teaching and to improve the laboratory equipment, supported by the assessment of the graduates; given the significant development of equipment and facilities it would be worthwhile to see if this was acknowledged by the graduates. The majority of enterprises' representatives point out that the level of graduates' training meets the professional requirements. In addition, about 80% of the employers pointed out the adequacy of the professional theoretical training and only 35% of the employers insisted that the young specialists who come to the enterprises, needed additional practical training. The peers praise the different quality assurance measures implemented at ATU and would like to know which practical consequences ATU derives from these findings.

The peers understand that the results of the student surveys are not published but the results are being communicated to the "Union of Students" who discuss it and send their feedback to the management of ATU. The students confirm that there had been incidences where bad feedback of students led to the exchange of teachers but all things considered the students indicate that they normally do not get any feedback on the consequences drawn from the evaluation results. Students normally do not know if and how lecturers make changes based on the feedback from students. The peers conclude that ATU has made some progress with regard to the recommendation made in the first accreditation; however, the peers are still of the opinion that the quality assurance unit of ATU should communicate the measures of improvement resulting from evaluations more transparently to students.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 6:

The peers thank ATU for the explanation on combating corruption and understand why that question has been included in the questionnaire; however, they are doubtful if this kind of question is an adequate tool to identify corruption. The peers confirm that Annex C "Questionnaire «Students' satisfaction with the content and quality of the academic

process on the discipline»" contains the question "Evaluate the compliance of the discipline labor intensity to the credits/hours, allocated to the certain discipline" which assesses the credit points and the corresponding student workload. The peers stick to their recommendation that ATU should communicate more transparently to students the measures of improvement resulting from evaluations.

D Additional Documents

Before preparing their final assessment, the panel ask that the following missing or unclear information be provided together with the comment of the Higher Education Institution on the previous chapters of this report:

„No additional documents needed“

E Summary of the peers

The peers summarize their analysis and final assessment for the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
Ba Technology of Food Products	With requirements for 1 year	EUR-ACE	30.09.2024
Ba Technology of Crop Processing Technology	With requirements for 1 year	EUR-ACE	30.09.2024
Ba Technology and Design of Light Industry Products	With requirements for 1 year	EUR-ACE	30.09.2024
Ba Technology and Design of Textile Materials	With requirements for 1 year	EUR-ACE	30.09.2024

Requirements

For all degree programmes

A 1. (ASIIN 1.3) Modules dealing with safety measures need to be mandatory part of the curriculum. If safety aspects are included in other modules it has to be outlined clearly in the module description.

A 2. (ASIIN 2.2) The ECTS-credits and the actual workload must be described in the module descriptions consistently.

Recommendations

For all degree programmes

E 1. (ASIIN 2.1) It is recommended to provide more opportunities and financial support for international mobility of students and teachers.

E 2. (ASIIN 4.3) It is recommended to improve the student learning facilities and the wireless internet access

E 3. (ASIIN 4.3) It is recommended to change the schedule to give students an opportunity to reach classes on time.

E 4. (ASIIN 5) It is recommended to communicate the measures of improvement resulting from evaluations more transparently to students

F Assessment of the Technical Committees

Technical Committee 01 (11.09.2017)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee fully agrees to the requirements and recommendations proposed by the peers.

Assessment and analysis for the award of the EUR-ACE® Label:

However, given the latest decision of the label Committee of ENAEE, the EUR-ACE Label must not be awarded to specializations but it must be awarded to full-fledged degree programmes only. One of the specialization areas of the degree programme Ba Technology of Food Products is called "Technology of public catering and special purpose products". The Technical Committee is aware that the degree programme had received the EUR-ACE Label during the first accreditation. The Technical Committee analyses the modules dealing with engineering as well as with catering competences and concludes per majority that the relevant engineering modules compulsory for all students do not suffice to develop the necessary engineering competences. Therefore, the Technical Committee concludes that the EUR-ACE Label cannot be awarded to the Bachelor degree programme Ba Technology of Food Products.

The Technical Committee Mechanical Engineering / Process Engineering – recommends the award of the seals as follows:

Degree Programme	**ASIIN-seal**	**Subject-specific label**	**Maximum duration of accreditaiton**
Ba Technology of Food Products	With requirements for 1 year	Not awarded EUR-ACE	30.09.2024
Ba Technology of Crop Processing Technology	With requirements for 1 year	EUR-ACE	30.09.2024
Ba Technology and Design of Light Industry Products	With requirements for 1 year	EUR-ACE	30.09.2024
Ba Technology and Design of Textile Materials	With requirements for 1 year	EUR-ACE	30.09.2024

Technical Committee 08 (18.09.2017)

Assessment and analysis for the award of the ASIIN seal:

It fully agrees with the assessment and recommended resolution of the peers.

Assessment and analysis for the award of the EUR-ACE® Label:

The Technical Committee judges that the intended learning outcomes of the degree programmes do comply with the engineering specific part of Subject-Specific Criteria of the Technical Committees 08. Taking into account ENAEE's decision that the EUR-ACE® Label should no longer be awarded for single study tracks but only for full-fledged engineering programmes, the Technical Committee considers particularly the Bachelor's programme Technology of Food Products still eligible for the award of the label. Doubts whether the specialisation "Technology of public catering and special purpose products" meet the EUR-ACE® standards are considered unsubstantiated not only because of the overall small portion of modules making up this specialisation, but also with a view to the presumptive technology-related content of at least certain modules of this specialisation.

The Agriculture, Nutritional Sciences and Landscape Architecture – recommends the award of the seals as follows:

Degree Programme	**ASIIN-seal**	**Subject-specific label**	**Maximum duration of accreditaiton**
Ba Technology of Food Products	With requirements for 1 year	EUR-ACE	30.09.2024
Ba Technology of Crop Processing Technology	With requirements for 1 year	EUR-ACE	30.09.2024
Ba Technology and Design of Light Industry Products	With requirements for 1 year	EUR-ACE	30.09.2024
Ba Technology and Design of Textile Materials	With requirements for 1 year	EUR-ACE	30.09.2024

Technical Committee 09 (20.09.2017)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee follows the assessment of the peers regarding the proposed requirements and recommendations. However, the Committee thinks that recommendation number 4 needs to be reformulated to better describe the issue; but the Committee does not make a suggestion. The Technical Committee cannot decide about the EUR-ACE label.

The Chemistry – recommends the award of the seals as follows:

Degree Programme	**ASIIN-seal**	**Subject-specific label**	**Maximum duration of accreditaiton**
Ba Technology of Food Products	With requirements for 1 year	No decision	30.09.2024
Ba Technology of Crop Processing Technology	With requirements for 1 year	No decision	30.09.2024
Ba Technology and Design of Light Industry Products	With requirements for 1 year	No decision	30.09.2024
Ba Technology and Design of Textile Materials	With requirements for 1 year	No decision	30.09.2024

G Decision of the Accreditation Commission (19.09.2017)

Assessment and analysis for the award of the ASIIN seal:

The Committee discusses the procedure with special attention to the award of the EUR-ACE label for the Ba Technology of Food Products. In the case of recommendation 3 the members decide to slightly modify the wording for a clear understanding of the meaning. Apart from this aspect the Committee follows the recommendation of the peers and the Technical Committees.

Assessment and analysis for the award of the EUR-ACE® Label:

In the assessment of the award of the EUR-ACE label the Accreditation Committee agrees with the assessment of the TC 01 insofar as the EUR-ACE Label must not be awarded to specializations but it must be awarded to full-fledged degree programmes only as long as the ENAEE does not decide otherwise. Hence, the Ba Technology of Food Products cannot be awarded the EUR-ACE label due to the fact that the specialization area "Technology of public catering and special purpose products" does not fully comply with the necessary engineering competences outlined in the Subject-Specific Criteria. The other programmes do comply with the respective criteria and can be awarded the EUR-ACE label without restrictions.

The Accreditation Commission for Degree Programmes decides to award the following seals:

Degree Programme	**ASIIN-seal**	**Subject-specific label**	**Maximum duration of accreditaiton**
Ba Technology of Food Products	With requirements for 1 year	EUR-ACE not awarded	30.09.2024
Ba Technology of Crop Processing Technology	With requirements for 1 year	EUR-ACE	30.09.2024
Ba Technology and Design of Light Industry Products	With requirements for 1 year	EUR-ACE	30.09.2024
Ba Technology and Design of Textile Materials	With requirements for 1 year	EUR-ACE	30.09.2024

Requirements

For all degree programmes

A 1. (ASIIN 1.3) Modules dealing with safety measures need to be mandatory part of the curriculum. If safety aspects are included in other modules it has to be outlined clearly in the module description.

A 2. (ASIIN 2.2) The ECTS-credits and the actual Workload must be described in the module descriptions consistently.

Recommendations

For all degree programmes

E 1. (ASIIN 2.1) It is recommended to provide more opportunities and financial support for international mobility of students and teachers.

E 2. (ASIIN 4.3) It is recommended to improve the student learning facilities and the wireless internet access

E 3. (ASIIN 4.3) It is recommended to re-design the schedule in order to give all students an opportunity to attend classes on time.

E 4. It is recommended to communicate the measures of improvement resulting from evaluations more transparently to students.

Appendix: Programme Learning Outcomes and Curricula

According to self-assessment report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Technology of Food Products:

Aim of EP «Technology of food products» - forming knowledge, skills and habits, as well as vocationally important qualities, necessary for food products production technological processes management	
Competence code	**Competence formulation**
General cultural competences (GCC)	
GCC 1	Possessing basic knowledge in natural-scientific, social, humanitarian, economic disciplines spheres, securing formation of highly educated personality with spacious mind and principles of thinking
GCC 2	Be aware of social-ethic values, based on public opinion, traditions, customs, social conventions and be oriented to them in vocational activity; traditions and cultures of Kazakhstan peoples
GCC 3	Be aware of Kazakhstan's legal system and legislation basics; have a concept of science and scientific thinking, tendencies of the society's social development
GCC 4	Have skills to operate modern techniques, use information technologies in vocational activity
GCC 5	Be able to acquire new knowledge, indispensable for everyday vocational activity and education continuation at master degree courses.
GCC6	Be able to observe business ethics standards, strike a happy medium, match own opinion with the collective one; be properly oriented in different social situations and be tolerant to traditions, culture of other nations of the world
GCC 7	Be able to work in the team, reasonably hold own point of view, propose new solutions, be flexible and mobile in different surroundings, connected with vocational activity
GCC 8	Be able to apply basic laws knowledge of natural-scientific, social, humanitarian, economic disciplines in vocational activity
GCC 9	Be able to independently and methodologically proper use of physical education and health strengthening methods
GCC 10	Be able to orient in contemporary information flows and adapt to dynamically changing phenomena and processes in the economics of the world
GCC 11	Demonstrate striving to sustainable personal development and updating vocational proficiency
GCC 12	Demonstrate ability to written and oral vocational communication in one of foreign languages
General professional competences (GPC)	
GPC 1	Be aware of basic physical-chemical properties of raw materials, semi-finished products and finished goods, their modifications in technological process

GPC 2	Be aware of basic requirements to raw materials, semi-finished products and finished goods, methods of their control
GPC 3	Be aware of the factors, influencing the quality of semi-finished products and finished goods; resources and power-saving in technological processes of food products manufacturing
GPC 4	To know safety rules, production sanitary, fire safety and labor protection
GPC 5	To know basics of marketing, management and planning the enterprises of small and medium business
GPC 6	Be able to use core laws of natural-scientific disciplines in vocational activity, apply methods of mathematical analysis and experimental research
GPC 7	Be able to apply techniques of production staff and population protection from potential consequences of accidents, calamities, natural disasters
GPC 8	Be able to use regulatory documentation and Quality assurance system, as well as food products safety on the principles of ISO and HACCP.
GPC 9	Be able to fulfill first-aid safety measures upon emergency situations at thermal and power equipment and other objects of enterprise sustainment
GPC 10	Be able to solve standard tasks of vocational activity based on information and bibliography culture applying information-communication technologies
Professional competences (PC)	
PC1	To be aware of meat, dairy industries and catering current state
PC2	To be aware of theoretical and practical basics of food products technologies elaboration
PC3	To be aware of enterprises economics basics, management methods and marketing research management at food industry enterprises
PC4	Be able to develop measures on updating the food production technological processes.
PC 5	To have skills in applying modern methods of food products quality and safety research using advanced software, innovation and information technolo-
PC 6	Be able to use normative documentation, regulations in the production process
PC 7	Be able to operate different types of technological equipment in compliance with safety techniques requirements to food production enterprises
PC8	Be able to show knowledge of vocational functions, communicate information, ideas, problems and solutions both to specialists and non-specialists
PC9	Be able to apply theoretical knowledge to practice in production, storage and realization of food raw materials and products
PC 10	Be able to fulfill technological control over finished products quality
PC 11	Demonstrate knowledge of labor protection rules at food branch enterprises, conditions of environment protection
PC 12	Be able to master operation of new techniques, new methods and new technologies of food productions
PC 13	Be able to design and update food production and technological lines.
PC 14	Demonstrate knowledge in applying advanced technologies to food products manufacturing
PC 15	Demonstrate knowledge of devices and rules of technological and laboratory equipment exploitation

The following **curriculum** is presented:

MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF KAZAKHSTAN
ALMATY TECHNOLOGICAL UNIVERSITY

«ANGREED» by
Chairman of the Council of Trustees
_____ **R.G. Mnatsakanyan**
27 march **2015**

«APPROVED»
Rector of ATU
_____ **T.K. Kulazhanov**
2015

WORK STUDY PLAN (CURRICULUM)
for the full-time students on speciality 5B072700 - Technology of Food Production

Module	Name of module	Hours	ECTS	Weekly course hours				
				Lectures	Practical lessons	Laborotory lessons	SSWWL	SSSW
		1st semester						
HK 1101	History of Kazakhstan	135	5	30	15		23	67
K®L 1106	Kazakh (Russian) language	135	5		45		23	67
FL 1107	Foreign language	135	5		45		23	67
Mat 1203	Mathematics	135	5	15	30		23	67
Ph 1204	Physics	135	5	15	15	15	23	67
CS 1102	Computer Science	135	5	15	15	15	23	67
	Total	**810**	**30**	**75**	**165**	**30**	**138**	**402**
		2nd semester						
K®L 1106	Kazakh (Russian) language	135	5		45		23	67
SPS 1110	Sociology and political science	180	6	30	30		30	90
FL 1107	Foreign language	135	5		45		23	67
Mat 1203	Mathematics	90	3	15	15		15	45
EM-1	1. Engineering and Computer Graphics 2. Descriptive Geometry and Drawing	135	5	15	30		23	67
LSESD 1105	Life safety, ecology and steady development	180	6	30	30		30	90
	Total	**855**	**30**	**90**	**195**	**0**	**144**	**426**
		3rd semester						
BR 2109	Basics of the right	90	3	15	15		15	45
EM-2	1. Microbiology 2. Microbiological control of food production	90	3	15	15		15	45
PK®L 2201	Professional kazakh (russian) language	90	3		30		15	45
Chem 1205	Chemistry	180	6	30		30	30	90
FFT 2301	Fundamentals of Food Technology	210	7	45	30		30	105

PIRS 2111	Philosophy and introduction to religious studies	225	8	45	30		45	105
	Total	**885**	**30**	**150**	**120**	**30**	**150**	**435**
	4th semester							
BETIF 2108	Bases of the economic theory	90	3	15	15		15	45
APCChem 2206	Analytical and Physical Colloid Chemistry	180	6	30		30	30	90
EM-3	1. Biochemistry 2. Chemistry of nutrients	135	5	30		15	23	67
EM-4	1. Theoretical and Applied Mechanics 2. Fundamentals of the theory of machines and mechanisms	135	5	30	15		23	67
EM-5	1. Merchandise and Expert Examination of food products 2. Merchandise of food products	225	8	45	30		45	105
EP	Educational practice	90	3				15	75
	Total	**855**	**30**	**150**	**60**	**45**	**151**	**449**
	5th semester							
POFL3202	Professional oriented foreign language	90	3		30		15	45
EM-6	1. Physiology of nutrition 2. Human nutrition	135	5	30	15		23	67
EM-7	1. Processes and devices of food manufactures 2. Fundamentals of hydraulics and heating engineering	135	5	30	15		23	67
EM-8	1. Physico-chemical and biochemical basis of the production of meat and fish products 2. Physico-chemical and biochemical basis of the production of milk and dairy products 3. Organization of production and service for catering business	135	5	15		30	23	67
EM-9	1. Equipment of the meat and fish industry 2. Equipment of the dairy industry 3. Catering equipment	180	6	30		30	30	90
EM-10	1. Technology of meat and meat products 2. Technology of milk and	180	6	30		30	30	90

	milk products 3. Technology products catering							
	Total	**855**	**30**	**135**	**60**	**90**	**144**	**426**
		6th semester						
EM-11	1. Theoretical Foundations of food storage 2. Theoretical Foundations of food preservation	180	6	30	30		30	90
EM-12	1. Automation of technological processes 2. Electrical engineering	135	5	15		30	23	67
EM-13	1. Technology of meat and meat products 2. Technology of milk and milk products 3. Technology products catering	180	6	15	15	30	30	90
EM-14	1. Accounting at meat and fish industry 2. Accounting for the dairy industry 3. Accounting for catering	135	5	15	30		23	67
EM-14	1. Technology of national meat products and canned 2. Technology of national dairy 3. Technology of national dishes and food products 4. Technology of soft drinks	135	5	15	30		23	67
IP	Industrial practice	90	3				15	75
	Total	**855**	**30**	**90**	**105**	**60**	**144**	**456**
		7th semester						
EM-15	1. Economics, organization and planning of the industry enterprises 2. Business planning in enterprises sector	135	5	30	15		23	67
EM-16	1. Basics of industrial construction 2. Safety precautions 3. Labor protection	90	3	15	15		15	45
EM-17	1. Monitoring and evaluation of the quality of raw materials and foodstuffs 2. Technochemical control industry	180	6	30		30	30	90
EM-18	1. Quality management system 2. Food Safety	135	5	30	15		23	67

EM-19	1. Technology of fish products 2. Technology children's dairy products and canned 3. Technology products for special purposes	180	6	30		30	30	90
EM-20	1. Designing of meat and fish industry 2. Designing of the enterprises of the dairy industry 3. Designing catering	135	5	15	30		23	67
	Total	**855**	**30**	**150**	**75**	**60**	**144**	**426**
	8th semester							
PdP	Pre-diploma practice	270	9				15	255
FQWB	Final qualifying work of bachelor	630	21				60	570
	Total	**900**	**30**				**75**	**825**
	Total on EP:	**6870**	**240**	**840**	**780**	**315**	**1090**	**3845**

Vice-rector for educational-methodical work **Rskeldiev B.A.**

Head of the educational-methodical department **Ahmetova N.K.**

Head of the subdepartment **Taeva A.M.**

According to self-assessment report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Crop Processing Technology:

Aim of EP "Crop processing technology" - the preparation of highly qualified professionals with a competitive level of knowledge, skills and professional skills in the field of processing and manufacturing of food products	
Competence code	**Competence formulation**
	General cultural competences (GCC)
GCC 1	have knowledge on basic and general subjects and apply the acquired complex of knowledge and intellectual level of development in a variety of professional and social activities;
GCC 2	to know the professional vocabulary and terminology in the specialty, that necessary to the future specialists of lexical minimum for communication in the work-
GCC 3	know the basics of ethical and legal rules, governing the relationship of human to human, society and the environment, to be able to take them into account in the development of environmental and social projects;
GCC 4	know the basics of labor legislation of Kazakhstan;
GCC 5	to know the traditions and culture of the peoples of Kazakhstan; to be tolerant to the traditions and culture of other peoples of the world;
GCC 6	be able to express a common understanding of the inner world, to show solidarity and tolerance towards other opinions of the collective;
GCC 7	to be able to maintain the necessary level of labor discipline;
GCC 8	be able to read and understand literature and debate on industrial issues and use this knowledge in practice;
GCC 9	be able to recognize the social importance of their future profession, have a high motivation to perform professional activities;
GCC 10	be able to adequately guided in different social situations and to be tolerant to the traditions and culture of other peoples of the world;
GCC 11	be competent to demonstrate the skills of logical thinking based on scientific texts studied by specialty;
GCC 12	be able to demonstrate a commitment to continuous personal development and improvement of professional skills;
GCC 13	be able to competently analyze the various ideological and engineering problems;
GCC 14	be competent to independently use lexical and grammatical structures to express communicative abilities;
GCC 15	to be competent as a producer, manager, consumer of products of processing industries.
	General professional competences (GPC)

GPC1	to know modern tools, techniques of engineering and computer graphics, mathematical and static data processing and analysis;
GPC 2	know method of measuring parameters, calculation and selection of equipment of processing facilities;
GPC 3	know the basics of management, organization of planning of companies and marketing of products of processing industries;
GPC 4	know the system of legislative acts, the ways and means to ensure healthy working conditions at the enterprises of processing industries;
GPC 5	be able to solve the problem of effective technology in processing industries with usage of computers and automation;
GPC 6	be able to use various methods of organization and control the activity of enterprises of processing industries;
GPC 7	to be able to own engineering and mathematical methods of processing information to select the raw materials to manufacture products of processing industries;
GPC 8	to be able to realize the optimum and rational technological modes of operation of the equipment;
GPC 9	be able to creatively take decisions on all matters of complex assessment of quality of raw materials and finished product; to certify the quality of raw materials and finished products;
GPC 10	be able to demonstrate competence in the procedure of drawing up of business plans and business bases of labor legislation;
GPC 11	be able to provide rhythmic and economic operation of the equipment of individual sites and the production as a whole;
GPC 12	be able to demonstrate the ability to predict market conditions of the finished product of processing industries.
	Professional competences (PC)
PC1	know the optimal and rational technological modes of operation of the equipment;
PC 2	to know the problems of increasing product quality and efficient of using of raw materials, energy and other resources in the enterprises of processing in-
PC 3	know the role of the main types of crops and their features for effective using of processing industry;
PC 4	know the methods of theoretical and experimental research in the field of procurement, storage, and processing of various types of raw materials into finished products, using of modern methods of design of experiments and computer equipment;
PC 5	be able to carry out scientific and research work on innovation processes;
PC 6	to be able to improve and optimize existing technological processes on the basis of a systematic approach to the analysis of quality of raw materials and end product requirements;
PC 7	to be able to own the modern methods of determining the quality and characteristics of raw materials; to evaluate the quality of raw materials supplied to the pro-
PC 8	be able to use statistical methods of experimental data processing for the analysis of technological processes in the production of various types of finished products;
PC 9	be able to critically rethink the experience, modify if necessary the profile of their professional activities, recognize the social importance of their future profession, have a high motivation to perform professional activities;
PC 10	be able to carry out technological design with using of CAD, will ensure the effective design development, meeting the requirements of long-term development of the industry;

PC 11	be able to quickly make up technological schemes of movement of crop production; control and regulate the technological modes of processing and storage of crop production.
PC 12	be able to analyze technological processes based on using of the data bank in the trend of development of these processes.

The following **curriculum** is presented:

MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF KAZAKHSTAN
ALMATY TECHNOLOGICAL UNIVERSITY

«ANGREED» by
Chairman of the Council of Trustees
R.G. Mnatsakanyan
27 march 2015

«APPROVED»
Rector of ATU
T.K. Kulazhanov
2015

WORK STUDY PLAN (CURRICULUM)
for the full-time students on speciality 5B072800 - Crop Processing Technology

Module	Name of module	Hours	ECTS	Weekly course hours				
				Lectures	Practical lessons	Laborotory lessons	SSWWL	SSSW
1st semester								
HK 1101	History of Kazakhstan	135	5	30	15		23	67
K(R)L 1106	Kazakh (Russian) languages	135	5		45		23	67
FL 1107	Foreign language	135	5		45		23	67
Mat 1203	Mathematics	135	5	15	30		23	67
CS 1102	Computer science	135	5	15	15	15	23	67
Phys 1204	Physics	135	5	15	15	15	23	67
	Total	**810**	**30**	**75**	**165**	**30**	**138**	**402**
2nd semester								
FL 1107	Foreign language	135	5		45		23	67
K(R)L 1106	Kazakh (Russian) languages	135	5		45		23	67
Mat 1203	Mathematics	90	3	15	15		15	45
EM-1	1. Engineering and computer graphics 2. Descriptive geometry and plotting	135	5	15	30		23	67
LSESD 1105	Life safety, ecology and steady development	180	6	30	30		30	90
SPS 1110	Sociology and political science	180	6	30	30		30	90
	Total	**855**	**30**	**90**	**195**	**0**	**144**	**426**
3rd semester								
PK(R)L 2201	Professional Kazakh (Russian) languages	90	3		30		15	45
Chem1205	Chemistry	180	6	30		30	30	90
EM-2	1. Microbiology 2. Microbiological control of food production	90	3	15		15	15	45
BR 2109	Basis of right	90	3	15	15		15	45

TBPPGP 2301	Technology bases of processing plant growing production	210	7	45		30	30	105
PIRS 2111	Philosophy and introduction to religious studies	225	8	45	30		45	105
	Total	**885**	**30**	**150**	**75**	**75**	**150**	**435**
	4th semester							
BETIF 2108	Bases of the economic theory and Islamic financing	90	3	15	15		15	45
EM-3	1. Biochemistry 2. Nutriental chemistry	135	5	30		15	23	67
APCC 2206	Analytical and physical colloid chemistry	180	6	30		30	30	90
EM-4	1. Theoretical and applied mechanics 2. Foundations of the theory of mechanisms and machines	135	5	30	15		23	67
EM-5	1. Methods of the research properties of raw materials and the processing and storage of crop production 2. Methods of the research properties of raw materials and post-harvest handling and storage of grain	225	8	45	15	15	38	112
UP	Educational practice	90	3				15	75
	Total	**855**	**30**	**150**	**45**	**60**	**144**	**456**
	5th semester							
POFL 3202	Professionally oriented foreign language	90	3		30		15	45
EM-6	1. Seed growing with Basics of plant growing 2. The study of the properties of raw materials in the processing industry	135	5	30		15	23	67
EM-7	1.Processes and devices of processing manufactures 2. Bases of hydraulics and heating engineers	135	5	30	15		23	67
EM-8	1. General technology of processing manufactures 2. Commodity Food	135	5	30		15	23	67
EM-9	1. Theoretical basics of processing manufactures 2. Technology bases of processing plant growin	210	7	45		30	30	105

EM-10	1. Characterization of raw materials for the production of flour, groats 2. Characteristic of raw material for manufacture of bread, confectionery and macaroni manufacture 3. Characteristic of raw materials for manufacture of sugar, starch and starch product 4. Ampelography with basics of viticulture	135	5	30		15	23	67
	Total	**840**	**30**	**165**	**45**	**75**	**137**	**418**
	6th semester							
EM-11	1. Safety of foodstuff/Food chemistry 2. Metrology, standardization and certification 3. System of quality management on processing manufactures	180	6	30	30		30	90
EM-12	1. Technological machines and equipment of processing manufactures 2. Electrical engineer and electric equipment	180	6	30		30	30	90
EM-13	1. Technology of flour-grinding manufacture 2. Technology of baking production 3. Innovation in the production of sugary foods 4. Technology brewing industry	135	5	30		15	23	67
EM-14	1. Technology of drying and grain storage 2. Technology of macaroni manufacture 3. General technology of sugar and sweetener 4. Technology of alcohol	135	5	30		15	23	67
EM-15	1. Technology of elevator industries 2. Technology of product of raised food value 3. Thermal facilities of sugar factories 4. Technology of winemaking	135	5	30		15	23	67
IP	Industrial practice	90	3				15	75

	Total	**855**	**30**	**150**	**30**	**75**	**144**	**456**
	7th semester							
EM-16	1. Economics, organization and planning of the industry enterprises 2. Business plan at enterprises of food processing industry	135	5	30	15		23	67
EM-17	1. Basics of industrial construction 2. Safety precautions 3. Labor protection	90	3	15	15		15	45
EM-18	1. The technology chemistry control of grain processing productions with quality management bases 2. The technology chemistry control of bakery, macaroni and confectionery production with quality management bases 3. The technology chemistry control of fermentative productions and winemaking with quality management bases 4. The technology chemistry control of sugar and starch – treacle productions with quality management bases	180	6	30	30		30	90
EM-19	1. Technology of feed manufactures 2. Technology of confectionery manufacture 3. Technology of sugar manufacture 4. Technology distillery manufactures	135	5	30		15	23	67
EM-20	1. Technology of groats manufacture 2.Technology of flour products of special designation 3. Technology of production of starch and starch 4. Technology of non-alcoholic manufacture	135	5	30		15	23	67
EM-21	1. Design of elevators and the grain processing enterprises with SAD	180	6	30	30		30	90

	2. Design of bakery, macaroni and confectionary productions enterprises with SAD 3. Design of sugar and starch -treacle productions enterprises with SAD 4. Design of fermentative productions and winemaking enterprises with SAD							
	Total	**855**	**30**	**165**	**90**	**30**	**144**	**426**
	8th semester							
PdP	Pre-diploma practice	270	9				15	255
FQWB	Final qualifying work of bachelor	630	21				60	570
	Total	**900**	**30**				**75**	**825**
	Total on EP:	**6855**	**240**	**945**	**645**	**345**	**1076**	**3844**

Vice-rector for educational-methodical work **Rskeldiev B.A.**

Head of the educational-methodical department **Ahmetova N.K.**

Head of the subdepartment **Zhienbaeva S.T.**

According to self-assessment report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Technology and design of the light industry products:

Aim of EP "Technology and design of light industry products" - training highly skilled and competitive in the market of professional services in the field of technology and design of garments.	
Competence code	**Competence formulation**
General Cultural Competences (GCC)	
GCC 1	to have basic knowledge in the field of natural-science, social and economic disciplines and disciplines pertaining to the humanities, promoting the formation of highly educated and broad- minded personality with thinking culture;
GCC 2	to know the basic laws of social, economic, natural sciences and sciences pertaining to the humanities necessary in professional activity, to have general idea about science and scientific thinking, to know tendencies of social development of socie-
GCC 3	to know social and ethnic values, based on public opinion, traditions and customs, public norms and use them as a guideline in their professional activity;
GCC 4	to have thinking culture, to be able to generalize, analyze, sense information, to formulate task and the ways of its solution, to be able for adequate behavior indifferent social situations;
GCC 5	to be able to speak and write logically, reasonably and clearly, have a good command of literary and business writing, to have a good command of public and scientific speech, to work out and edit professional text, to analyze logic of reasoning and expressions;
GCC 6	to be able to use economic laws and theories, to determine economic indicators**;**
GCC 7	to be able to realize the social importance of their future profession, to have high motivation for professional activity, be able to analyze social important problems and processes;
GCC 8	to be able to realize public and ethnic responsibility for decisions making , to have a good idea of up-to-date information flow, be able to adapt to phenomena and processes, dynamically changing in the world economy;
General Professional Competences (GPC)	

GPC 1	to know the peculiarities of production of raw materials and materials for production products and goods, as well as variety of the main materials of different appli-
GPC 2	- to know the main conceptions, terms and definition so metrology, standardization and certification in the field flight industry products designing;
GPC 3	- to put into practice the basic laws of social, economic, naturalsciencesandsciencespertainingtothehumanitiesnecessaryinprofessionalactivit ya s well as methods of mathematical analysis and designing;
GPC 4	- to be familiar with methods of collection, storage and processing computer information, used in professional activity;
GPC 5	- to carry out standard testing on determination of physical and mechanical characteristics of different types of materials, used in light industry;
GPC6	-to be able to reveal and satisfy the customers' requirements for goods; be able to form them by means marketing communication, to explore and forecast the customers' demand, to analyze marketing information, goods market state;
GPC7	- to be able to evaluate technical solution from the point of view of technical and economic indicators, unification and standardization level, providing ecological cleanness of production, mechanization and automation production level and industrial safety measures;
	Professional Competences (PC)
PC1	-to be familiar with mechanism of processes which occur during the production of light industry products;
PC2	-to be familiar with methods of calculation and design of garments details and technical equipment units;
PC 3	- to know the requirements necessary for designing of goods of different assortment, taking into consideration modern fashion tendency;
PC4	- to be familiar with methods of conducting of basic technological processes of sewing and foot wear production and production of leather and fur;
PC 5	- to know methods of optimization of technological process of light industry goods on the base of system approach to the raw material quality analysis, analysis of technological process and end product requirements;
PC 6	- to be able to develop technical documentation for clothing industry products;
PC 7	**-** to be familiar with applied character works as well as stylize and transform decorative and constructive forms;
PC 8	**-** to be able to use scientific and technical information, national and international experience during developing new innovative technologies;
PC 9	- to demonstrate independence during working out of standard and scientific projects taking into consideration mechanical and technological, aesthetic and economic parameters;
PC 10	- to be able to manage the goods assortment, quality of goods and services, to evaluate the in quality ,to reveal defects, to provide necessary level of goods quality and storage of goods, effectively realize the control concerning quality of goods and services, acceptance and accounting of goods according to their quality and quanti-
PC 11	- to be able to realize standard and scientific projects in the field of light industry
PC 12	- to be able to take part in programs on developing proposals assortment formation concerning clothing industry products and their promotion in the market.

The following **curriculum** is presented:

MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF KAZAKHSTAN
ALMATY TECHNOLOGICAL UNIVERSITY

«ANGREED» by
Chairman of the Council of Trustees
R.G. Mnatsakanyan
27 марта 2015

«APPROVED»
Rector of ATU
T.K. Kulazhanov
2015

WORK STUDY PLAN (CURRICULUM)
for the full-time students on speciality 5B072600 - Technology and design of the light industry products

Module	Name of module	Hours	ECTS	Weekly course hours				
				Lectures	Practical lessons	Laborotory lessons	SSWWL	SSSW
1st semester								
HK 1101	History of Kazakhstan	135	5	30	15		23	67
FL 1107	Foreign language	135	5		45		23	67
K(R)L 1106	Kazakh (Russian) language	135	5		45		23	67
CS 1102	Computer Science	135	5	15	15	15	23	67
Chem 1205	Chemistry	135	5	15	15	15	23	67
EM-1	1. Drawing 2. Art graphics 3. Academic drawing	135	5	15	30		23	67
	Total	**810**	**30**	**75**	**165**	**30**	**138**	**402**
2nd semester								
Pol 1110	Political science	90	3	15	15		15	45
EM-2	Life safety, ecology and steady development	180	6	30	30		30	90
Math 1203	Mathematics	180	6	30	30		30	90
K(R)L 1106	Kazakh (Russian) language	135	5	0	45		23	67
FL 1107	Foreign language	135	5	0	45		23	67
Phis 1204	Phisics	135	5	15	15	15	23	67
	Total	**855**	**30**	**90**	**180**	**15**	**144**	**426**
3rd semester								
PK(R)L 2201	Profeccional Kazakh (Russian) language	90	3		30		15	45
EM-3	Fundamentals of social and legal Science	**315**	**11**	**60**	**45**		**53**	**157**
EM-4	Basics of applied anthropology	90	3	15	15		15	45
	Biomechanics Basics							
	Somatology basics							
BET 2108	Basics of economy theory	90	3	15	15		15	45
TAM 2206	Theoretical and applied	135	5	15	15	15	23	67

	mechanics							
EM-5	Physics and chemistry of high-molecular connections	135	5	30	15		23	67
	Total	**855**	**30**	**135**	**135**	**15**	**144**	**426**
	4th semester							
MSPLI 2207	Materials science of products of light industry	135	5	30		15	23	67
EM-6	1. Religious 2. Ethics 3. Culturology	90	3	15	15		15	45
EM-7	1. Chromatics 2. Colouristics 3. Decorative painting	90	3		30		15	45
EM-8	1. Engineering and computer graphics 2. Descriptive geometry and drawing 3. AutoCAD	90	3	15		15	15	45
EM-9	**Construction and technology of products of light industry**	**360**	**13**	**45**	**15**	**60**	**61**	**179**
EP	Educational practice	90	3				15	75
	Total	**855**	**30**	**105**	**60**	**90**	**144**	**456**
	5th semester							
POFL 3202	Professionally oriented foreign language	90	3		30		15	45
EM-10	The foundations of engineering disciplines	**180**	**6**	**30**	**15**	**15**	**30**	**90**
EM-11	1. Materials for clothes 2. Materials for products from leather and fur 3. Confectioning materials for clothes	135	5	15	30		23	67
EM-12	1. Constructive modeling of garments 2. Constructive modeling of products from leather and fur 3. Constructive modeling of products of light industry	135	5	15		30	23	67
EM-13	1. Technology of light clothing 2. Technology of products from leather and fur I 3. Technology of garments I	135	5	15		30	23	67
EM-14	1. Suit composition 2. Composition bases 3. Figurative and associative composition	180	6	30	30		30	90
	Total	**855**	**30**	**105**	**105**	**75**	**144**	**426**

6th semester								
EM-15	Equipment and automation of production	**225**	**8**	**30**	**45**		**38**	**112**
EM-16	1. Labor protection in light industry 2. Safety measures 3. Fire-and-explosion danger at clothing companies	90	3	15	15		15	45
EM-17	1. Production economy 2. Marketing bases 3. Management bases	90	3	15	15		15	45
EM-18	1. Technology of outer clothing 2. Technology of products from leather and fur 3. History of costume and fashion	135	5	15		30	23	67
CC DPSP 3301	Design of products of sewing production	225	8	15	30	30	38	112
IP	Industrial practice	90	3				15	75
	Total	**855**	**30**	**90**	**105**	**60**	**144**	**456**
7th semester								
EM-19	1. CAD Grafis 2. CAD of products of light industry 3. CAD clothing	225	8	15	60		38	112
EM-20	1. Methods and means of research 2. Bases of research studies 3. Design of products of light industry	90	3	15	15		15	45
EM-21	1. Bases of technological preparation of garments 2. Bases of technological preparation of products from leather and fur 3. Fabric decorating	180	6	15	45		30	90
EM-22	1. Bases of design preparation of garments 2. Bases of design preparation of products from leather and fur 3. Work in a material	225	8	15	60		38	112
EM-23	1. Organization and production planning 2. Economy of small business 3. Economic analysis of economic activity	135	5	15	30		23	67

	Total	**855**	**30**	**75**	**210**		**144**	**426**
		8th semester						
PdP	Pre-diploma practice	270	9				15	255
FQWB	Final qualifying work of bachelor	630	21				60	570
	Total	**900**	**30**				**75**	**825**
	Total on EP:	**6840**	**240**	**675**	**960**	**285**	**1077**	**3843**

Vice-rector for educational-methodical work **Rskeldiev B.A.**

Head of the educational-methodical department **Ahmetova N.K.**

Head of the subdepartment **Nurzhasarova M.A.**

According to self-assessment report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Technology and design of textile materials:

Aim of EP "Technology and design of textile materials" - training of highly qualified, creative thinking, competitive and well adapted to the constantly changing conditions of professionals in the field of technology and design textile materials.	
Competence code	**Competence formulation**
General cultural competence (GCC)	
GCC 1	**Knowledge:** - have a basic knowledge in the field of natural sciences, social, humanitarian and economic disciplines that contribute to the formation of a highly educated person with a broad outlook and a cultural thinking;
GCC 2	- demonstrate the knowledge for self-development, improve its qualifications and skills;
GCC 3	- know one of foreign languages on the communication level, understanding the basis terminology of the field of their professional activity;
GCC 4	- know the foundation of the legal system and legislation of Kazakhstan;
GCC 5	- know traditions and culture of the people of Kazakhstan; to be tolerant to the traditions, culture of other nations of the world;
GCC 6	**Skills:** - be able to analyze socially significant problems and processes;
GCC 7	- be able to navigate in ideals and values of a democratic society;
GCC 8	**-** be able to critically assess their own strengths and weaknesses, plan ways and choose means of developing the strengths and eliminate weaknesses;
GCC 9	- be able to recognize the social importance in their future profession, have a high motivation to perform professional activity;
GCC 10	- be able to logically true, justified and clearly build oral and written speech;
GCC 11	**Ably** - be able to decide organizational and managerial decisions in unusual situations and be ready to take responsibility for them;
GCC 12	- be able to generalize, analyze, receive an information;
GCC 13	- be able to independently set goals and choose the ways to achieve it;
GCC 14	- be able to use methods and means of physical culture for ensuring full-value social and professional activity;
GCC 15	- be able to apply the main laws of science, social, humanitarian, economical disciplines in professional activity.
General professional competence (GPC)	

GPC 1	**Knowledge:** - know the regularities of processes, which happen in the process of design and production of textile materials;
GPC 2	- know the safety regulations, industrial hygiene, fire safety and standards of occupational safety;
GPC 3	- know the main methods, ways and means of getting, storing, processing information;
GPC 4	- know basics of management and planning of small and medium business enterprises;
GPC 5	**Skills:** - to use main laws of science disciplines in professional activities, apply methods of mathematical analysis and experiential research;
GPC 6	- demonstrate the ability to work with the information in global computer networks;
GPC 7	- use methods of protection production personnel and population from the possible consequences of accidents, disasters, natural disasters;
GPC 8	- be able to work with the computer as an information management tool; possess the main methods, ways and means of getting, storing, processing information;
GPC 9	**Ably** - be able to control independently, analyze technological process on the textile industry enterprises;
GPC 10	- be able to conduct marketing research of commodities markets: raw materials, equipment, textile auxiliary materials, textile products and develop proposals for the selection of suppliers;
GPC 11	- the ability to choose technical means and technology taking into account the environmental consequences of their application;
GPC 12	- demonstrate the ability to predict market conditions of textile products.
Professional competence (PC)	

PC 1	**Knowledge:** - know the theoretical and practical foundation of developing of technological process parameters of production textile materials and products;
PC 2	- demonstrate the knowledge on developing and using modern technologies in their field, as well as in related fields;
PC 3	- demonstrate knowledge of equipment and rules of exploitation of technical and laboratory equipment;
PC 4	- know basic principles of design technological processes with using the automated systems of technical preparation of products and computer programs;
PC 5	**Skills:** - use technical means to measure the main parameters of technological process, the properties of raw materials and textile products;
PC 6	- be able to use regulations on qualities, standardization and certification of textile products, elements of the economic analysis in the practical activity;
PC 7	**-** be able to apply modern methods of exploring the structures of textile fibers, yarns, carry out standard and certification testing of textile materials, products and technological processes;
PC 8	**-** be able to use scientific and technological information, domestic and foreign experience in the design new technological processes;

PC 9	**Ably** **-** be able to justify the adoption of specific technical solutions in develop- ing technological processes and designing textile materials;
PC 10	**-** demonstrate the independence to develop projects of textile products are based on mechanical and technological, aesthetic, economic parameters;
PC 11	- be able to participate in programs on developing proposals for the for- mation assortment of textile products and promoting it on the market;
PC 12	- be able to cooperate with colleagues and work in collective.

The following **curriculum** is presented:

MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF KAZAKHSTAN
ALMATY TECHNOLOGICAL UNIVERSITY

«ANGREED» by
Chairman of the Council of Trustees
R.G. Mnatsakanyan
27 march 2015

«APPROVED»
Rector of ATU
T.K. Kulazhanov
27 march 2015

WORK STUDY PLAN (CURRICULUM)
for the full-time students on speciality 5B073300 - Technology and Design of Textile Materials

Module	Name of module	Hours	ECTS	Weekly course Hours				
				Lectures	Practical lessons	Laborotory lessons	SSWWL	SSSW
1st semester								
HK 1101	History of Kazakhstan	135	5	30	15		23	67
FL 1107	Foreign language	135	5		45		23	67
K(R)L 1106	Kazakh (Russian) languages	135	5		45		23	67
CS 1102	Computer Science	135	5	15	15	15	23	67
ICG 1206	Engineering and computer graphics	135	5	15	15	15	23	67
Chem 1205	Chemistry	135	5	15	15	15	23	67
	Total	**810**	**30**	**75**	**150**	**45**	**138**	**402**
2nd semester								
PS 1110	Politics science	90	3	15	15		15	45
LSESD 1105	Life safety, steady development	**180**	**6**	**30**	**30**		**30**	**90**
Math 1203	Mathematics	180	6	30	30		30	90
K(R)L 1106	Kazakh (Russian) languages	135	5		45		23	67
FL 1107	Foreign language	135	5		45		23	67
Phys 1204	Physics	135	5	15	15	15	23	67
	Total	**855**	**30**	**90**	**180**	**15**	**144**	**426**
3rd semester								
PK(R)L 2201	Professional Kazakh (Russian) languages	90	3		30		15	45
Soc 2104	Sociology	90	3	15	15		15	45
BR 2109	Basis of right	90	3	15	15		15	45
EM -1	Bases of physics and chemistry of polymers, dyes and textile	**270**	**10**	**60**		**30**	**46**	**134**

	excipients							
EM -2	1. Electrical engineering and electric equipment 2. Electric drive 3. Electrical engineering	90	3	15	15		15	45
PIRS 2111	Philosophy and introduction to religious studies	**225**	**8**	**45**	**30**		**38**	**112**
	Total	**855**	**30**	**150**	**105**	**30**	**144**	**426**
		4th semester						
TMS 2207	Textile material science	135	5	30		15	23	67
EM-3	Bases of engineering disciplines	**225**	**8**	**30**	**15**	**30**	**38**	**112**
BE 2108	Bases of the economy	90	3	15	15		15	45
EM-4	1. Technology of preprocessing of textile raw materials 2. Bases of technology of chemical fibers 3. Processes of production of natural and chemical fibers	180	6	30	15	15	30	90
EM-5	1. Metrology, standardization and certification of textile materials 2. Basics of qualimetry 3. Fundamentals of metrology	135	5	15	15	15	23	67
EP	Educational practice	90	3				15	75
	Total	**855**	**30**	**120**	**60**	**75**	**144**	**456**
		5th semester						
TTI 3301	Technology of textile industries	225	8	30	30	15	38	112
POFL 3202	Professionally orientated foreign language	90	3		30		15	45
EM-6	**Composition of textile drawing**	**225**	**8**	**30**	**45**		**38**	**112**
EM-7	1. Safety basics of textile materials 2. Fundamentals of merchandizing of textile goods 3. Commodity research basics of textile products	135	3	15	15	15	23	67
EM-8	1. Physical and chemical basics of processes of furnish textile materials 2. Technical examination of textile materials 3. Technical analysis of	135	5	15	15	15	23	67

	colorants and textile auxiliaries							
EM-9	1. Automation of technological processes in industry 2. Automation of typical technological processe 3. Automated control systems	90	3	15	15		15	45
	Total	**900**	**30**	**105**	**150**	**45**	**152**	**448**
			6th semester					
EM-10	1. Labor safety 2. Safety precautions 3. Fire and explosion hazard at textile enterprises	90	3	15	15		15	45
EM-11	1. Economy of manufacture 2. Economics of small and medium enterprises 3. Economic analysis of economic activities	90	3	15	15		15	45
EM-12	1. Methods and means of technological processes researches 2. Methods of research in textile chemistry 3. Methods of identification of textile materials	135	5	15	15	15	23	67
EM-13	1. Designing of the structure of textile materials 2. Technology of knitted manufacture 3. Introduction in nanjtechnology	180	6	15	30	15	30	90
EM-14	Technological equipment of textile production	270	10	30	60		46	134
IP	Industrial practice	90	3				15	75
	Total	**855**	**30**	**90**	**135**	**30**	**144**	**456**
			7th semester					
EM-15	1. Organization and planning of manufacture 2. Marketing of textile materials 3. Production management	90	3	15	15		15	45
EM-16	1. Designing of cotton technology 2. Technology of final	135	5	15	30		23	67

	finishing of textile materials with use of water-soluble polymers 3. Designing of picture structure and combined knitted interlacing							
EM-17	1. Technology of hardware spinning of wool 2. Technology of non-woven materials 3. Chemical cleaning technology of textiles	180	6	30	15	15	30	90
EM-18	1. Software of engineering tasks 2. Designing of knitwear with CAD 3. Technological calculations in chemical technology of textile materials	135	5	15	30		23	67
EM-19	1. Designing of technological processes of branch 2. Structure and design of fabrics 3. Painting of textile materials	135	5	15	30		23	67
EM-20	1. Technology of coloring textile materials 2. Technology of weaving 3. Bases of designing and art modeling of knitted products	180	6	30	15	15	30	90
	Total	**855**	**30**	**105**	**135**	**45**	**144**	**426**
		8th semester						
PdP	Pre-diploma practice	270	9				15	255
FQWB	Final qualifying work of bachelor	630	21				60	570
	Total	**900**	**30**				**75**	**825**
	Total on EP:	**6885**	**240**	**735**	**915**	**285**	**1085**	**3865**

Vice-rector for educational-methodical work **Rskeldiev B.A.**

Head of the educational-methodical department **Ahmetova N.K.**

Head of the subdepartment **Kutzhanova A. Zh.**