Ministry of Education and Science of the Republic of Kazakhstan
Holding "Kasipkor" Non-profit Joint-Stock Company

EDUCATIONAL PROGRAM

Specialty: 0601000 - Standardization, metrology and certification

Qualification: The laboratory technician on grain testing, derived products, grain products

Standardization technician

Junior metrology engineer of food production

Astana – 2016

ELABORATED

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"Kasipkor" Holding" Non-commercial Joint Stock Company

EXPERTS:

EVOLVE Global Solutions Ltd (Great Britain);

Union of food enterpises of Kazakhstan;

Educational and methodological association on profile “Metrology, standardization and certification” on the basis of College of business and service

SUBMITTED "Kasipkor" Holding Non-commercial Joint Stock Company

CONSIDERED, APPROVED AND RECOMMENDED

At a meeting of the Republican educational-methodical Council for Technical and Vocational Education of the MES RK,

protocol No_4_ dated "_21__"_12_ 2016 year

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1. Description of the program

Currently, around the world, a state's social and economic outlook is determined by the development level of of education and science.

The State programme for the development of education and science of the Republic of Kazakhstan for 2016-2019 has ushered in fundamental changes in the system of education and science of the Republic. The foundation for the next phase of modernization of the educational and scientific system has been laid down. Openness and international cooperation along with the best national experiences have contributed to the accelerated development of the system of education and science in Kazakhstan.

This educational program has been developed on the basis of modular & competence-based approach, taking into account relevant international requirements for applied undergraduate, mid-level professionals and skilled workers, with the participation of our foreign partner Dudley College (United Kingdom).

Development and implementation of the educational program is carried out in accordance with:

– the law of the Republic of Kazakhstan "On education";

– General compulsory state standard of technical and vocational education. General provisions;

– State programme for industrial and innovative development of the Republic of Kazakhstan for 2015-2019;

– State programme for the development of education and science in the Republic of Kazakhstan for 2016-2019;

– Development strategy of Holding “Kasipkor” non-profit joint-stock company for 2012-2021;

– National plan "100 positive steps" to implement the five institutional reforms proposed by N.A. Nazarbayev.

International practice shows that the most effective educational programs are those designed on the modular training principle. Compulsory parameters of development process of educational programmes include the observance of the principles of:

– three-level education system;

– mobility of students, teachers;

– quality control of the educational programs.

Precatory parameter of the development of educational programmes is the provision of:

– the active involvement of students;

– life-long education.

In order to determine the list and titles of professional (specialty) training modules, the developers have studied the full production process of acceptance, sorting and processing of grain products.

We have also compiled a functional map for testing of food including grain within specialty "Standardization, metrology and certification".

Functional analysis of the specialty has identified at least 3 types of professional

activities to be performed within the given specialty. The content of the educational programs allows you to obtain the following qualifications:

1. Laboratory Assistant for testing of grain products, by-products, cereals;

2. Technician for Standardization of food production;

3. Assistant Engineer inspecting food production.

Requirements for the structure and content of educational programs within this specialty at the level of technical and vocational education provide an opportunity to:

1) obtain the established and/or advanced qualification levels (rank, category) in this specialty upon completion of training and final appraisal - laboratory assistant for testing of grain products, by-products and cereals;

2) obtain mid-level specialist qualification upon completion of the appropriate level of training and final appraisal - technician for standardization of food products;

3) obtain Bachelor's degree (assistant engineer inspecting food production) upon completion of training at post-secondary college and final appraisal.

Thus, educational programs designed alongside modular competence-based approach, allow:

1) preserve the fundamental character of existing educational programmes (all humanities, social and economic and (general professional disciplines);

2) convert a set of the professional and specialty disciplines into the training modules aimed at the formation of professional competences;

3) integrate modular programmes for teaching in colleges based on related qualifications;

4) individual modules can be used for course training, retraining and advance training of the staff;

5) include in modules practical training in order to use the dual training technique.

2. Abbreviations and symbols

T&VPSE - technical and vocational, post-secondary education;

EP - educational program - a single set of basic characteristics of education that includes objectives, results and content of training, structure of the educational process, ways and methods of its implementation, as well as the criteria for assessment of learning outcomes;

NQF -national qualifications framework defines a uniform scale of qualification levels of professional competencies to develop sectoral qualification frameworks and professional standards. NQF provides intersectoral comparability of qualifications and competences; is the basis for the system of conformity attestation and award of professional qualifications;

SQF - sectoral qualifications framework is a structured description of the qualifications recognized in industry;

PC - professional competency;

BC - basic competency;

CM - compulsory modules;

GEM - general educational modules;

GHM - general humanities modules;

SEM - social and economic modules;

PM - professional (dpecialty) modules;

BGPM - basic general professional modules;

MEO - modules, defined by the educational organization;

IT&PP - industrial training and professional practice;

ISO - International Standardization Organization;

IEC - International Electrotechnical Commission;

HACCP - hazard analysis and critical control point;

GD RK - Government Decree of the Republic of Kazakhstan;

SCTR - State Committee for technical regulation;

QMS - quality management system;

OHSAS - Occupational Health and Safety Assessment System

3. Functional analysis

0601000 Standardization, metrology and certification

Testing of food products

Qualifications	Qualification requirements
Laboratory technician on grain testing, derived products, grain products	– Sampling – Determination of moisture content of grain; – Identification of impurity content in grain; – Identification of natural weight; – Identification of color, smell, taste and crunch – Determination of ash – Determination of kernel size – Quantity and quality of fibrin – Determination of metal magnetic admixture – Definition of infection and contamination of grain stocks by pests
Standardization Technician	- undertake analytical studies at the acceptance control of raw materials; - fill in the necessary documentation (sampling certificates, test reports, expert opinions); - analyse the filled documents (sampling certificates, test reports, expert opinions); - carry out the conformity acknowledgement procedures of foodstuffs (declaration, certification); - be able to test food products (sampling, definition of determination of grain moisture; definition of impurity content in grain, etc.); - be able to work with the regulatory documents (standards, procedural guidelines, reference material); - be able to find the correct and informed solutions at disagreements with customers; - identify the product in accordance with the requirements of the regulatory documents (RK ST, GOST, standard organizations, etc.); - know the accreditation procedure
Junior food metrology engineer	- to recognize types of measurements; - to establish the frequency of verification of measuring instruments; - Develop calibration schedules for measuring instruments; - determine measurement methods; - carry out measurements of thermophysical and temperature parameers, mass, pressure, flow rate of liquids and gas; - use the legislative basics of metrology; - organize a metrological expertise and state supervision; - establish the procedure for carrying out the audit in accordance with metrological maps

4. Requirements for the students' training level

Section "Requirements for students' skills" sets out the required basic and professional competencies by levels of related specialty qualifications (Table 1) in accordance with the National qualifications framework, Sectoral qualifications framework and professional standards

Table 1

<table>
<tr><td>Competencies</td><td colspan="4">Industry/company requirements for the training level of students</td></tr>
<tr><td rowspan="3">Basic competencies</td><td rowspan="3">"Junior food metrology engineer "(Bachelor of Applied Science)</td><td rowspan="2">" Standardiza-tion Technician" (mid-ranking specialist)</td><td>"Laboratory technician on grain testing, derived products, grain products" (advanced level)</td><td>BC1. Awareness of essence and social significance of the future profession, manifestation of sustained interest;
BC 2. Organization of the workplace;
BC 3. Observance of safety rules at works performance;
BC 4. Possession of professional vo-cabulary;
BC 5. Teamwork skills;
BC 6. Application of knowledge about the rights and responsibilities of workers in the sphere of professional activity.
BC 7. Work under the guidance of skilled specialists
BC 8. Possession of computerized methods for information collection, storage and processing</td></tr>
<tr><td colspan="2">BC 9. Organization of work with documents;
BC 10. Selection of the most rational methods and means of work implementation;
BC 11. Knowledge of research methods;
BC 12. Possession of computerized methods for information collection, storage and processing;
BC 13. Willingness to constant professional growth, acquisition of new knowledge.</td></tr>
<tr><td colspan="3">BC 14. Organization of work qualitative analysis;
BC 15. Sufficient training to acquire knowledge in the field of advanced technologies;
BC 16. Choose the best solutions;
BC 17. Definition of methods and types of measurements.</td></tr>
<tr><td>Professional competencies</td><td>"Junior food metrology engineer " (Bachelor of Ap-plied Science)</td><td>" Standardiza-tion Techni-cian" (mid-ranking specialist)</td><td>"Laboratory technician on grain testing, derived products, grain products " (advanced level)</td><td>PC 2.1. Preparation of the equipment for use;
PC 2.2. Set-up of laboratory equip-ment and its monitoring;
PC 2.3. Preparation and sampling to perform the inspection;
PC 2.4. Examination of the product quality;
PC 2.5. Data Recording in the logs of pre-determined form;
PC 2.6. Product identification
PC 2.7. Selection of the suitable re-search methods
PC 2.8 Use of measuring instruments for monitoring</td></tr>
</table>

			PC 3.1. Organization of quality control PC 3.2. Quality control and evaluation of the products quality; PC 3.3. Determination of kernel size and category of grain; PC 2.1. Characteristics of product quality in terms of quality indica tors; PC 3.5. Use of conformity assessment schemes at conformity attestation; PC 3.6. Declared and mandatory confirmation of conformity; PC 3.7. Use of conformity assessment regulatory framework; PC 3.8. Application of the legislative basis for conformity approval; PC 3.9. Registration of technical documentation in accordance with the current regulatory framework
		PC 4.1. Definition of methods and types of measurements; PC 4.2. Implementation of measurements; PC 4.3. Use of legislative framework of metrology; PC 4.4. Organization of metrological examination and general oversight.	

5. Program structure

Professional competencies	Curricular module	Training objectives			The code of generated basic competence
		Knowledge	Abilities	Skills	
Qualification "Laboratory technician on grain testing, derived products, grain products"					
PC 2.1 Preparation of the equipment for use; PC 2.2 Set-up of laboratory equip-ment and its monitoring; PC 2.3 Preparation and sampling to per-form the inspec-tion;	PM 1 Sampling	- types of small grains; - characteris-tics of grain and its by-products; - grain and by-products sampling equipment; - laboratory equipment for assessing grain quali-ty; - methods of determina-tion of grain quality indi-cators; - consistence of grain by moisture content and methodology for grain quality indicators de-termination;	-be able to identify grain, its by-products; -be able to work with equip-ment for sampling of grain and its by-products; -be able to define quality indicators of grain;	- accept grain; - place grain for storage; - carry out quality control of stored grain.	BC 1 BC 2 BC 3
PC 2.4 Examination of the product quality; PC 2.5 Data Recording in the logs of pre-determined form; PC 2.6 Product identification	PM 2 Determination of physical and chemical and perceptible properties	- about test methods (perceptible, measurement) - about test equipment - about test reagents; - about test methods for grain and its by-products.	- be able to apply regulatory documentation for perceptible assessment; - conduct perceptible assessment of grain and its by-products; - document the test results	- use instruments for measuring the quality of grain - conduct comparative analysis for conformity with the regulatory requirements and assess the test results - work with equipment and reagents for grain and its by-products testing.	BC 2 BC 4 BC 7
PC 2.2 Set-up of laboratory equipment and its monitoring; PC 2.8 Use of measuring facilities for monitor-ing	PM 3 Application of the measuring equipment and metrological support of production facility	- of the ex-isting measuring tools; - of engi-neering procedure con-trol using particular measuring tools, - of creation of metrolog-ical maps; - of methods of reading of measuring indications and recording of these data in logs of pre-established form; - of work with regulatory documents	- be able to take readings of measuring tools; - be able to record the ob-tained data in logs of pre-established form; - diffe-rentiate physical quanti-ties; - use various methods of measure-ments; - identify types of measure-ments;	- identify methods and types of measurements - take measurements - measure errors of tools - use legislative framework, metrological examination and metrology supervision	BC 2 BC 4 BC 7 BC 8

			- use the sections of the law in practice; - identify the parameters and properties of measur-ing tools; - identify errors and faults	- organize verification - measure errors	
PC 2.4 Examination of the product quality; PC 2.5 Data Record-ing in the logs of pre-determined form; PC 2.6 Product identification PC 2.7 Selection of the suitable research methods	PM 4 Conformity assessment of grains, its by-products and cereals	- of legisla-tive, regulatory & technical as well as procedural framework of conformity assessment - of general procedures of conformity assessment in the Republic of Kazakhstan and EEC countries - of results of conformity assessment applied in foreign states	- be able to apply the rain by-products conformity assessment procedure; - be able to differentiate certification pro-cedures; - be able to differentiate certification types, - be able to differentiate conformity marks and their applica-tion procedure.	- drawing up of conformity re-presentation through familiriazation with the current legislation; - documenting of the conformity assessment procedure; - awareness of the state system of technical regulation in the area conformity as-sessment; - understanding of basic provisions to assess conformity, pro-visions on obligatory conformity assessment	BC 1 BC 2 BC 3 BC 4 BC 6
Qualification "Standardization Technician"					
PC 3.9 Registration of technical documentation in accor-dance with the current regulatory frame-work.	PM 5 Maintenance of document centre and updating of regula-tory documents	- of the cat-egories of regulatory documents - of types of regulatory documents; - of the mainten-ance process of RDC; - of RD updating procedures; - of the RD classification - of the RDC according to their category;	-be able to choose from a proposed list of national, interstate, international, etc. types of standards; -be able to work with indexes and manuals. -be able to place them in the RDC according to their categories; -be able to distinguish between standards of technical conditions type and standards of test methods type.	- work with documents; - identify the types of regulatory documents - explain the differences between the standards for technical conditions and standards for test methods; - explain the updating procedure	BC 9. BC 10 BC 12. BC 13

PC 3.7 Use of conformi-ty assess-ment reg-ulatory frame-work; PC 3.8 Applica-tion of the legislative frame-work for conformi-ty approval	PM6 The develop-ment of stan-dards (national and company standards) for food products	- the stages of standard develop-ment; - standards structural elements; - standards examina-tion	- be able to develop a standard; - be able to review the standard; - be able to divide a standard into structural elements.	- collect data for standard development; - prove the need for the development of the standard; - create a draft standard;	BC 9 BC 12 BC 13
PC 3.7 Use of conformi-ty assess-ment reg-ulatory frame-work; PC 3.8 Applica-tion of the legislative frame-work for conformi-ty approval PC 3.9 Registra-tion of technical documen-tation in accor-dance with the current regulatory frame-work.	PM 7 Develop-ment of food prod-ucts data sheets and use of bar codes	- the stages of product data sheet develop-ment; - structural elements of a data sheet; - examina-tion of a bar code.	- be able to develop product data sheet; - be able to review a data sheet; - be able to read a bar code.	- collect data for develop-ment of the standard; - use the avai-label informa-tion for the de-velopment of the product data sheet; - assess the correct devel-opment of a product data sheet;	BC 9 BC 10 BC 11 BC 12
PC 3.6 Declared and man-datory confirma-tion of conformi-ty; PC 3.7 Use of conformi-ty assess-ment reg-ulatory frame-work;	PM 8 Declared con-formity as-sessment of food products	- forms for confirma-tion as-sessment of food products; - declara-tion proce-dures; - declara-tion proce-dures ac-cording to selected schemes; - evidence provided by the ap-plicant; - declarations of conformity.	- be able to choose the declaration schema for serially manufac-tured prod-ucts and imported goods; - be able to fill out dec-larations of conformity; - be aware of the forms for conformity attestation, declaration schemes; - be able to analyse the technical documentation and evidence, fill in dec-larations of conformity	- conduct the analysis of technical do-cumentation at application of certain declaration schemes; - use evidence to fill in the declarations; - understand the declaration procedures and functions of evidence; - explain each of the declara-tion procedures	BC 4 BC 6 BC 8 BC 9

PC 3.9 Registra-tion of technical documen-tation in accor-dance with the current regulatory frame-work.					
Qualification "Junior food metrology engineer"					
PC 4.1 Definition of methods and types of mea-surements; PC 4.2 Implemen-tation of measure-ments; PC 4.3 Use of legislative framework of metrol-ogy	PM 9 Metro-logical maintе-nance of manufac-ture of foods-tuff; mea-surement of thermo-physi-cal para-meters and tempera-ture, weight, pressure, flow quantity of liquids and gas	- types of measure-ments; - measuring tools ap-plied in the production of enter-prises ac-cepting grain and producing grain by-products, cereal products, meat and dairy prod-ucts; - local me-trological procedures; - calibra-tion of measuring tools; - calendar schedules for measuring tools verifica-tion; - indicators of measuring accuracy.	- be able to recognize which types of measure-ments these or those types of measure-ments refer to; - be able to establish the fre-quency of measuring tools veri-fication; - be able to develop schedules of measuring tools verifi-cation.	- explain the operation principles of appliances for measurement of temperature parameters measurement of weight, pressure, flow of fluids; - identify caus-es of failures of technological regimes, de-fects, waste of raw materials, energy and other produc-tion losses as-sociated with the measuring tools, controls and testing fa-cilities; - know the types of mea-surements.	BC 2 BC 3 BC 14 BC 17
PC 4.1 Definition of me-thods and types of measure-ments; PC 4.3 Use of legislative frame-work of metrology PC 4.4 Organiza-tion of metrolog-ical	PM 10 State metro-logical con-trol and su-pervision	- forms of state con-trol; subjects of state con-trol; - notice of inspection; - inspection procedure.	- be able to prove that they are subject to the state metrological control; - be able to fill out the Commission appointment act; - be able to set out the verification procedure, verify the correct im-plementa-tion of me-trological control of MT (in ac-cordance with pro-duction metrologi-cal maps);	- define forms of the state metrological control - identify the subjects of the state metrolog-ical control.	BC 14 BC 16 BC 17

e x - amination and gen-eral over-sight;			- know the forms and subjects of state metro-logical con-trol; - perform the neces-sary mea-surements; - determine their accu-racy and select the appropriate measuring and test equipment; - examine the tech-nical do-cumenta-tion, certify measuring instru-ments, eva-luate the products quality		
Industrial training and professional practice					
PC 2.2 Set-up of laboratory equip-ment and its moni-toring; PC 2.3 Prepara-tion and sampling to per-form the inspec-tion; PC 2.4 Examina-tion of the product quality; PC 2.5 Data Re-cording in the logs of pre-deter-mined form; PC2.6 Product identifica-tion	I n t r o - d u c t o r y training	- descrip-tion of the goods properties - assort-ment based on classifi-cation fea-tures - consumer properties - main quality re-quirements to the products	- distin-guish the types of the raw materials used in a production process; - distin-guish c o m m o d i t y properties of different types of products;	- carry out grain acceptance; - carry out placement of grain for sto-rage; - carry out quality control of the stored grain.	BC 1 BC 2 BC 3 BC 4 BC 5
PC 3.1 Organiza-tion of quality control; PC3.2 Quality control and eval-uation of the prod-ucts quality; PC 3.5 Use of conformi-ty assess-ment schemes at con-formity attesta-tion;	Industrial training	- perfor-mance of company divisions and servic-es; - require-ments to specialists; - operating procedure of testing services; - perfor-mance of reference centre; - conformity assessment procedure; - perfor-mance of conformity assessment body and test labora-tory;.	- perform n o r m a l i z i n g s u p e r v i s i o n of technical documenta-tion; - develop new stan-dards and review the existing ones, speci-fications and other documents on standar-dization and certifica-tion; - perform regular verification of the stan-dards ap-plied at the company and	- work with documents; - determine types of regula-tory documents - document the conformity a s - s e s s m e n t procedure; - understand the system of state technical regulation in the area of conformity	BC 9 BC 10 BC 11

PC 3.6 Declared and man-datory confirma-tion of conformi-ty.		- the docu-ments used at conformity assessment and testing; - the status of the works in the field of quality manage-ment	other documents on standar-dization and certifica-tion; - control performance of works on standardization within the compa-ny depart-ment; - study and systematize the ad-vanced do-mestic and foreign ex-perience in area of standardization, me-trology and certifica-tion.	assessment; - understand the main provisions of conformity assessment, provisions on mandatory conformity assessment	

6. The content of educational program (modules)

MODULE

1. INFORMATION TECHNOLOGIES AND APPLICATION SOFTWARE

1.1 The purpose of the module

The module will allow future specialists to familiarize with the fundamntals of theoretical knowledge and practical skills in order to operate in the field of development, function and use of information technologies and systems to be applied in the field of quality management at the enterprises in the current conditions.

1.2 Overview of the module

The students will study and become aware of:

- the fundamntals of computer safety;
- what information is; types of information; information encoding;
- data representation forms;
- information computer representation;
- units to measure the amount of information;
- the form of data computer representation;
- the principle of functioning of operating systems;
- purpose of application programs;
- distinguish between the functional features of application programs.

Students will obtain theoretical and practical knowledge aimed at the practical application of the fundamentals of personal computer; purpose and features of the WINDOWS operating system; computer information processing technology by means of Microsoft Word, Microsoft Excel, Microsoft PowerPoint, computer networks, Internet.

1.3 Module content

- Computer science and information;
- Basic concepts of Windows;
- Operations with file structure;
- Data archiving;
- Computer viruses;
- General information about the Microsoft Word Word processor;
- Overview of a PowerPoint presentation;
- General information about Microsoft Excel spreadsheets;
- Local and global networks.

1.4 Learning outcomes and module assessment criteria

Learning outcomes After the successful completion of the module student:	**Assessment criteria Student**
LO 1 Knows how to handle the information transfer, storage and update	1.1 encodes information using binary, octal and other systems 1.2 stores information on computer-based media 1.3 updates information 1.4 creates files and folders

LO 2 Understands the purpose of applications	2.1 works with text 2.2 creates and edits new documents 2.3 creates and works with tables 2.4 creates a presentation based on a template
LO 3 Knows how to find, analyze, select, convert, save, and interpret the information, including through modern information and communication technologies.	3.1 configures the operating systems 3.2 works with directories and files 3.3 views and sends the documents in the local network

MODULE
2. ECONOMIC BASIS OF FOOD PRODUCTION

2.1 The purpose of the module

This module will enable students to acquire the necessary theoretical knowledge in economics and production management at the enterprises of the grain industry and develop skills to use acquired knowledge in practical activities to ensure the effective functioning as both as separate economic entities and in society in general.

2.2 Overview of the module

The students will study and become aware of:

- the development of forms of social economy;
- the functions of money, lay-out of resources in the economy, basic production factors,
- the classification of market structures, types of markets,
- the organizational form of businesses in market economy,
- the market system in the economy,
- the market competition,
- state regulation of the market economy,
- the risks in the market economy,
- the organization of market infrastructure.

In doing so, students will learn the content and organization of market infrastructure. Objective necessity of market relations in the modern conditions of human civilization, where the content of the basic elements of market - prices, supply and demand, competition, government regulation of market relations is dislosed. They will also study the ways to deliver goods from the manufacturer to the consumer.

2.3 Module content

- Economics and its role in society;
- Classification of market structures. Types of market structures;
- Organizational forms of business in market economy. The organization of business in modern conditions;
- System of the markets in economy. Market of intellectual products. Market of finance. Market of labor power, land resources;
- Prices. Pricing;
- Demand and supply. Concept of the offer, its functions. Law of supply. Market balance;
- Market competition;
- State regulation in market economy;

- Risk in market economy;
- Commodity and stock exchanges;
- Financial system;
- Taxation system.

2.4 Learning outcomes and module assessment criteria

Learning outcomes After the successful completion of the module student:	**Assessment criteria Student:**
LO 1 Knows the basic provisions of the legislation governing employment relationships	1.1 Analyzes production process 1.2 Gives the evaluation of overall performance of the enterprise 1.3 Explains the mechanism of salary formation
LO 2 Understands techniques of creation of the strategic and tactical plan	2.1 Collects data about the company income and expenses 2.2 Explains the ways of increase in overall performance of personnel 2.3 Plans production costs
LO 3 Is able to develop and make management decisions	3.1 Analyzes the most important company performance indicators 3.2 Carries out calculations of production capacity 3.3 Estimates the status of work management and use of working hours

MODULE
3. THE FUNDAMENTALS OF MANAGEMENT AND MARKETING

3.1 The purpose of the module

This Module will allow students to deeply and comprehensively understand the management issues of farm production and technical service, the market requirements, its amounts and promotion on the market of the corresponding types of works, services, goods; be able to creatively apply obtained knowledge in the course of making and implementation of management decisions.

3.2 Overview of the module

Students will study and become aware of:

- domestic and foreign experience of application of management and marketing in agro-industrial complex;
- the principles and methods of rational management structures and marketing researches;
- the organizational and economic mechanism of management;
- the social and psychological aspects of management;
- the mechanism of motivation of managerial work.

At the same time students will gain theoretical and practical knowledge of the controling mechanism of technical works and services, assessment criteria of market requirements, determination of its amount in technical service, methods of calculation of cost of the services rendered by the equipment, workers, quality management methods of repair works and technical services.

3.3 Module content

– Social and psychological framework;
– Marketing as specific management function;

– Project management;
– Resources of work and development;
– Attraction of financial resources based on business plans;
– Management functions;
– Production management and determination of number of vocational structure;
– Techniques of the portfolio analysis;
– Analysis of consumer behavior;
– Information sources and collection;
– Management decisions on pricing;
– Communication policy;
– Marketing environment of the organization;

3.4 Learning outcomes and module assessment criteria

Learning outcomes After the successful completion of the module student:	**Assessment criteria Student:**
LO 1 Knows the principles of effective functioning of the companies and their divisions	1.1 Interprets management process within the organization 1.2 Informs on methods and the management principles introduced by a group of people 1.3 Explains external and internal environment of the organization
LO 2 Understands the principles of a quality management system, its implementation and functioning	2.1 Explains the efficiency of different types of advertizing 2.2 Determines the directions of marketing researches 2.3 Reveals factors of increase in efficiency of sales of goods in market economy and the amplifying competition
LO 3 Is able to develop the company motivational policy	3.1 Develoips the effective program of adaptation in workteam 3.2 Develops an organizational structure of production divisions 3.3 Implements strategy and tactics regarding pricing

MODULE
4. OCCUPATIONAL HEALTH AND SAFETY

4.1 The purpose of the module

This Module will enable students to form the necessary knowledge on occupational safety and health, learn methods of analysis of injuries and diseases in the workplace, develop professional skills evaluation to ensure a occupational health and safety conditions in the enterprise.

4.2 Overview of the module

Students will study and become aware of:
- the labor law;
- occupational health and safety in the enterprise;
- production sanitation and hygiene;
- ways to ensure fire safety in the enterprise.

At the same time students will gain the theoretical and practical knowledge aimed at occupational health and safety issues, production sanitation, safe engineering and fire safety. Implementation of the principle of priority of protection of life and health of workers in relation to results of productive activity. Creation on each workplace of safe working conditions, safe operation of the equipment, reduction or complete elimination of actions of hazardous and harmful factors for human body, decrease in level of industrial traumatism and occupational diseases.

4.3 Module content

- Basic provisions of the labor legislation;
- Employment contract;
- Occupational health and safety service;
- Development and approval of occupational health and safety guidelines;
- Major and harmful production factors, and their impact per capita;
- Rules of fire prevention regime in buildings and premises;
- Ensuring electrical safety in the enterprise;
- First pre-medical aid.

4.4 Learning outcomes and module assessment criteria

Learning outcomes After the successful completion of the module student:	**Assessment criteria Student:**
LO 1 Knows the basic concepts of labor protection	1.1 Is able to use personal protection equipment 1.2 Develops occupational safety instructions 1.3 Establishes terms of instructions amnd briefings in the enterprise 1.4 Knows types of liabilty for violation of the occupational safety legislation
LO 2 Understands basic causes of industrial traumatism	2.1 Carries out the analysis of injury-causing and harmful factors in the field of production 2.2 Provides occupational safety training 2.3 Organizes events for the fire prevention
LO 3 Is able to provide safe condition in the workplace, of the equipment, devices, tools	3.1 Differentiates and fulfills safety requirements prior to work, in the course of operation, upon termination of work, in emergencies 3.2 Provides safe condition in the workplace, of the equipment, devices, tools 3.3 Provides first aid

MODULE 5 STANDARDIZATION OF PRODUCTION OF GRAIN, ITS BY-PRODUCTS AND CEREALS

5.1 The purpose of the module

This Module will enable students to study material taking into account the enactive, regulatory and constructive documents on standardization and their practical implementation in the field of quality management in the eneterprises in modern conditions.

5.2 Overview of the module

Students will study and become aware of:

- the history and current state of standardization in the country and abroad;
- domestic and foreign systems of product quality management;

- the organization of activities for standardization in developed countries;
- the international and regional standardization organizations.

At the same time students will gain the theoretical and practical knowledge aimed at development and establishment of requirements, regulations, the rules providing the consumer's right to purchase the goods of proper quality, to ensure the health and safety of citizens, property of individuals and legal entities, ecological safety, safety of life and health of animals and plants and assistance to observance of requirements of technical regulations. They study and familiarize with the fundamentals of the state system of technical regulation and learn how to apply standards.

5.3 Module content

– Essence and content of standardization;
– Standardization purposes;
– Principles of standardization;
– Standardization functions;
– Regulation of standardization subjects;
– General concept of standardization methods;
– Legal framework of the State system for technical regulation;
– Regulatory documents on the standardization used in the territory of RK;
– The law of the Republic of Kazakhstan "On technical regulation";
– General characteristic of standards of different categories and types.

5.4 Learning outcomes and module assessment criteria

Learning outcomes After the successful completion of the module student:	**Assessment criteria Student:**
LO 1 Knows legislative, regulatory and technical framework, fundamentals of standardization and technical regulation, regulatory framework for researches and the analysis of physical and chemical properties of products assessment	1.1 Analyses standard documentation on determination of quality and physical and chemical properties of products 1.2 Safety of chemical engineering procedures and productions, development of environment safety system against harmful effects of production wastes 1.3 Knows assistance principles at experiments at testing and analysis within the area of specialization 1.4 Knows fundamentals of preparation of material and equipment and is able to collect and prepare samples for an experiment and analysis
LO 2 Understands the fundamentals and the essence of standard requirements for engineering procedures for handling, production, processing and determination of quality, storage and utilization of analized products	2.1 Determines the objectives of standardization and classification of standards and standard and methodical documents 2.2 Understands classification of the international, interstate and national standards of foreign states 2.3 Possesses data on standardization levels

LO 3 Is able to apply the specifications and technical documentation according to the current needs	3.1 Identifies the list of necessary regulatory documents for the specific analysis or testing 3.2 Is able to work with standards of different levels 3.3 Is able to select and complete batches, in strict accordance with quantity and names, identified in consignment note and the specification

MODULE
6. SAMPLING

qualification «Laboratory technician on grain testing, derived products, grain products"

6.1 The purpose of the module

This Module will enable students to familiarize with the characteristics of the products, examine equipment used at sampling, familiarize with the technology of sampling along with the recording of the test results, work out the sampling process of grain, by-products and cereals, undertake a comparative analysis with requirements of regulatory documents and evaluate the test results.

6.2 Overview of the module

Students will learn and become aware of:

- the tested products (grain, flour, cereals);
- the equipment used in sampling;
- production technology (grain, flour, cereals);
- the methods of sampling.

Students obtain theoretical and practical knowledge, aimed at the refinement of the practical skills in sampling of grain, by-products and cereals

6.3 Module content

– Merchandizing of separate groups of food;

– Sampling equipment;

– Production of grain, by-products and cereals;

– Record keeping in respect of paperwork at products sampling;

– Sampling of grain, by-products and cereals;

– The comparative analysis of test results with requirements of the regulatory document;

– Analysis of quality indicators of grain, by-products and cereals;

– Analysis of regulatory documents (ST of RK, state standard specifications) on selection of grain, by-products and cereals;

– Recording of test results.

6.4 Learning outcomes and module assessment criteria

qualification «Laboratory technician on grain testing, derived products, grain products"

Learning outcomes After the successful completion of the module student:	**Assessment criteria Student shall:**

LO 1 Knows characteristics of grain, its by-products and cereals; equipment for sampling of grain, its by-products and cereals; production technology of grain, its by-products and cereals;	1.1 be able to identify grain, its by-products and cereals; 1.2 be able to work with the equipment for sampling of grain, its by-products and cereals; 1.3 use knowledge of the production technology of grain, its by-products and cereals;
LO 2 Understands the production technology of grain, its by-products and cereals; sampling process of grain, its by-products and cereals;	2.1 use knowledge of the production technology of grain, its by-products and cereals at sampling process; 2.2 explain sampling process; 2.3 obtain data for the analysis of the testing
LO 3 Is able to apply the specifications and technical documentation; to make sampling of grain, its by-products and cereals; to record test results;	3.1 be able to work with the regulatory documentation on sampling of grain, its by-products and cereals 3.2 make sampling of grain, its by-products and cereals 3.3 receive sampling results of grain, its by-products and cereals 3.4 use sampling results of grain, its by-products and cereals in further testing

MODULE
7. DETERMINATION OF PHYSICAL AND CHEMICAL AND PERCEPTIBLE PROPERTIES OF GRAIN, ITS BY-PRODUCTS AND CEREALS

qualification «Laboratory technician on grain testing, derived products, grain products"

7.1 The purpose of the module

This Module will enable students to familiarize with the methods to determine the properties of products (perceptible, measuring); examine the equipment, reagents used for the tests; become familiar with the technology of the production with the recording of the test results; practice test processes for grain, by-products and cereals; comparisons with requirements of regulatory documents and evaluate test results.

7.2 Overview of the module

Students will learn and become aware of:

- test methods (perceptible, measuring);
- the equipment used in the test process;
- the reagents used in the testing processes;
- test methods of grain, cereals and its by-products.

Students will gain theoretical and practical knowledge aimed at the refinement of the practical skills in perceptible evaluation and test methods of grain and grain by-products,

7.3 Module content

- Product quality determination methods (perceptible, measuring);
- Testing facility of grain, its by-products and cereals;
- Reagents for testing of grain, its by-products and cereals;
- Production technology of grain, its by-products and cereals;

- Record keeping in respect of registration of products test results;
- Carrying out perceptible assessment and physical and chemical testing of grain, its by-products and cereals;
- Carrying out the comparative analysis of testing with requirements of the regulatory document;
- Analysis of quality indicators of grain, its by-products and cereals;
- The analysis of regulatory documents (ST of RK, state standard specifications) using perceptible assessment and test methods of grain, its by-products and cereals;
- Recording of the test results.

7.4 Learning outcomes and module assessment criteria

qualification «Laboratory technician on grain testing, derived products, grain products"

Learning outcomes After the successful completion of the module student:	**Assessment criteria Student shall:**
LO 1 Knows product quality determination methods (perceptible, measuring; the equipment for determination of physical and chemical properties of grain, its by-products and cereals in further testing; knows the equipment and reagents for production of grain, its by-products and cereals in further testing; the production technology of grain, its by-products and cereals in further testing.	1.1 explain the methods of determining the quality; 1.2 be able to work with the equipment and reagents for testing of grain, its by-products and cereals; 1.3 use knowledge of production technology of grain, its by-products and cereals;
LO 2 Understands the production technology of grain, its by-products and cereals; testing of grain, its by-products and cereals;	2.1 Use the knowledge of production technology of grain, its by-products and cereals in the testing process; 2.2 Explain the processes of perceptible assessment and testing of grain, its by-products and cereals ; 2.3 Obtain information to analyze the test of grains, its by-products and cereals
LO 3 Is able to apply the regulatory documentation on perceptible assessment; to carry out perceptible assessment of grain and test methods of grain, its by-products and cereals; to record the test results;	3.1 Be able to work with standard documentation for perceptible assessment and determination of physical and chemical parameters of grain, its by-products and cereals 3.2 Produce perceptible assessment and physical chemical testing of grain, its by-products and cereals 3.3 Obtain the results of perceptible assessment and test methods of grain, its by-products and cereals 3.4 Evaluate test results

MODULE
8. APPLICATION OF MEASURING TOOLS AND METROLOGI-CAL MAINTENANCE OF PRODUCTION

qualification «Laboratory technician on grain testing, derived products, grain products"

8.1 The purpose of the module

This Module will enable students to familiarize with metrology as a science; master the skills to provide the production with these or those measurements; learn how to fill out metrological maps; read the metrological characteristics using instruments and record them

in relevant logs; compare the taken parameters with requirements of regulatory documents

8.2 Overview of the module

Students will learn and become aware of:

- the existing measuring tools;
- the control of technological process using certain measuring tools;
- the drawing up of metrological maps;
- ways to read-out instrumentation and recording of these data in the logs of a specific form;
- work with the regulatory documents.

Students will obtain theoretical and practical knowledge aimed at the re-finement of the practical skills to implement metrological control over production, working with certain measuring tools,

8.3 Module content

-Metrology as a science;
-Measuring tools used in the workplace;
-Metrological maintenance of production;
-Metrological maps, filling out;
-The metrological characteristics of measuring tools;
-Regulatory documents for measuring tools.

8.4 Learning outcomes and module assessment criteria

qualification «Laboratory technician on grain testing, derived products, grain products"

Learning outcomes After the successful completion of the module student:	**Assessment criteria Student shall:**
LO 1 Knows metrology as a science; measuring tools applied in production	1.1 be able to select the necessary measuring tools select measuring tools according to the technological process of production prove that these measuring tools are applicable at this stage of the technological process
LO 2 Understands the principle of creation of metrological maps, placement of measuring tools in the course of technical process	2.1 Create maps 2.2 Use the applicable metrological measuring tools
LO 3 Is able to take readings from measuring tools, record the obtained data in logs of the specific form; apply the regulatory documentation for measuring tools; compare the obtained data with standard data	3.1 able to take readings from measuring tools 3.2 use the readings to assess the appropriateness of technological process 3.3 be able to record the data in the logs of specific form 3.4 identify deviations from existing standards (measurement errors)

MODULE
9. THE FUNDAMENTALS OF CONFORMITY ASSESSMENT OF GRAIN, BY-PRODUCTS AND CEREALS

qualification ""«Laboratory technician on grain testing, derived products, grain products""

9.1 The purpose of the module

Students learn the basics of conformity assessment of products, certification schemes, methods of assessing the quality of products, work and services; study

the issues and a set of procedures to assess the conformity of products, processes, and requirements set out in the regulations.

9.2 Overview of the module

Within the Module 4 students will learn anout general representations of conformity assessment by familiarization with the current legislation, the conformity assessment procedure of grain by-products, documentation of the conformity assessment procedure, the analysis of correctness of the conformity assessment procedure, creation of certification systems of uniform products through establishment of the products certification rules taking into account its production, delivery, requirements of the international systems and the relevant agreements; accreditation of the operating test laboratories, and creation and accreditation of new ones as well; determination of the nomenclature of compulsory safety indicators for a consumer and the environment, compatibility and interchangeability, their introduction into standards and other types of regulatory documents in order to develop a clear idea of certification essence, its types and schemes; roles in development of trade and economic cooperation; particular features of certified testing; development of requirements to the standards and other regulatory documents applied to certify products, processes and services.

9.3 Module content

-The history of the certification development;

-The conformity attestation procedure of products for processing of grain;

- Documenting of the conformity attestation procedures;

- Compilation of the representation on conformity attestation by familiarizing with the legislation in force;

- Basic guidelines on conformity assessment;

- Declaration of conformity;

- Certification and regulatory principles in the field of conformity assessment;

- Authorized agency in the field of conformity assessment

Compulsory and voluntary conformity assessment.

9.4 Learning outcomes and module assessment criteria

qualification «Laboratory technician on grain testing, derived products, grain products"

Learning outcomes After the successful completion of the module student:	**Assessment criteria Student shall:**
LO1 Knows the basic provisions of the conformity assessment and Declaration of conformity and the provision on mandatory conformity assessment	1.1 Knows legislative, regulatory and technical and methodical framework of conformity assessment 1.2 Knows general conformity assessment schemes applied in the Republic of Kazakhstan and EEC countries 1.3 Recognition of conformity assessment results obtained by a foreign state
LO 2 Understands the state system of technical regulation in the field of conformity assessment	2.1. Understands the conformity assessment principles of products 2.2 Understands distinctions mandatory and voluntary conformity assessment 2.3 Differentiates marks of conformity and their application procedure

LO 3 Is able to distinguish between certification schemes	3.1 Possesses the knowledge of marking, validity period, inspection check-up and productionverification 3.2 Distinguishes between the types of the issued documents 3.3 Is able to record the results of the analysis performed

MODULE
10. MAINTAINING OF REGULATORY DOCUMENTS CENTRE AND UPDATING OF REGULATORY DOCUMENTS

qualification ""«Laboratory technician on grain testing, derived products, grain products""

10.1 The purpose of the module

This Module will enable students to familiarize with the categories and types of regulatory documents, with the process of reference to the regulatory documents centre and updating of regulatory documents, place the documents in the Centre according to their classification.

10.2 Overview of the module

Students will learn and become aware of:

- the categories of regulatory documents;
- the types of regulatory documents;
- the maintenance process of RDC;
- the update of RD;
- the classification of the RD in the centre according to their category.

Students will gain theoretical and practical knowledge aimed at the refinement of the practical skills of work with the regulatory documents centre and its updating.

10.3 Module content

- Categories of regulatory documents;
- Types of regulatory documents;
- Maintainance of RD Centre;
- Updating of RD.

10.4 Learning outcomes and module assessment criteria

Qualified "Technician for standardization of food products"

Learning outcomes After the successful completion of the module student:	**Assessment criteria Student shall:**
LO 1 Knows the categories of regulatory documents, the types of regulatory documents	1.1 be able to choose from a proposed list of national, interstate, international, etc. types of standards 1.2 determine the types of regulatory documents 1.3 explain the differences between the standards of technical conditions and standard information indexes of test methods
LO 2 Understands the principle of reference to the regulatory documents centre, procedures of updating	2.1 Be able to work with standard information indexes and RD pointers. 2.2 Explain the updating procedure 2.3 Be able to place RDin the Centre according to their category

LO 3 Is able to distinguish between the categories and types of standards, carry out updating of RD indicators and standard information indexes	3.1 Assess the correctness of RD updating. 3.2 Perform filing out of the card indices in accordance with the requirements of ST RK 1.48. 3.3. Explain the processing principle of SII.

MODULE
11. THE DEVELOPMENT OF STANDARDS (NATIONAL AND COMPANY STANDARDS) FOR FOOD PRODUCTS

Qualified "Technician for standardization of food products"

11.1 The purpose of the module

This Module will enable students to familiarize with the stages of the development of standards; the structural elements of a standard; the examination of a standard.

11.2 Overview of the module

Students will learn and become aware of:

-the stages of the standards development;

-structural elements of standards;

-the examination of standards.

Students will gain theoretical and practical knowledge, aimed at the refinement of the practical skills in development of standards, their examination and development.

11.3 Module content

-The development stages of standards;

- Structural elements of standards;

- Examination of standards.

11.4 Learning outcomes and module assessment criteria

Qualified "Technician for standardization of food products"

Learning outcomes After the successful completion of the module student:	**Assessment criteria Student shall:**
LO 1 Knows standards development stages, structural elements of standards	1.1 Explain the steps involved in the development of standards 1.2 Be able to divide the standard into structural elements
LO 2 Understands the development principle of standards	2.1 Collect data for standard 2.2 Prove the need to develop a standard 2.3 Create draft standard
LO 3 Is able to develop and examine a standard	3.1 Works to develop a standard 3.2 Perform examination of the standard 3.3 Evaluate the standard correctness

MODULE
12. DEVELOPMENT OF FOOD PRODUCTION DATA SHEETS AND THE USE OF BAR CODES

Qualified "Standardization Technician"

12.1 The purpose of the module

This Module will enable students to familiarize with development stages and principles of data sheets; the development of the product data sheet and application of bar codes.

12.2 Overview of the module

Students will learn and become aware of:

- cataloging;
- bar coding;
- development of product data sheets.

Students will gain theoretical and practical knowledge, aimed at the refinement of the practical skills in the examination and elaboration of a product data sheet, the use of bar coding.

12.3 Module content

- Product data sheets;
- Product barcoding;
- Examination of the product data sheets.

12.4 Learning outcomes and module assessment criteria

Qualified "Standardization Technician"

Learning outcomes After the successful completion of the module student:	**Assessment criteria Student shall:**
LO 1 Knows the development stages of product data sheets	1.1 Explain the steps involved in the development of a data sheet 1.2 Be able to divide the data sheet into structural elements
LO 2 Understands the development principle of the product data sheet	2.1 Collect data to develop a data sheet 2.2 Prove the need for the development of a data sheet 2.3 Create draft standard
LO 3 Is able to develop product data sheet and examine a bar code	3.1 Perform works to design a data sheet 3.2 Use available information to develop a product data sheet 3.3 Perform examination of the product data sheet 3.4 Examine the bar coding

MODULE
13 FOOD PRODUCTS CONFORMITY ASSESSMENT BY DECLARATION

qualification ""Standardization Technician"

13.1 Module aim

This module will allow the learner to learn the basic forms of conformity assessment; existing declaration schemes; filling in the conformity declaration; analyzing evidentiary materials submitted by the applicant; assessing the correctness of declarations filling in

13.2 Module review

Learners will learn and have an idea on:

- basic forms of the conformity assessment;
- existing declaration schemes;
- evidentiary materials submitted by the applicant;
- filling in conformity declarations;

At the same time, learners receive theoretical and practical knowledge, aimed at drilling practical skills to select declaration schemes for different types of food products, to work with evidentiary materials for filling in conformity declarations.

13.3 Module content

- Forms of food products conformity assessment;
- Declaration schemes;
- Declaration order s according to the selected schemes;
- Evidentiary materials submitted by the applicant;
- Conformity Declaration.

13.4 Learning results and evaluation criteria according the module

qualification "Standardization Technician"

Learning results Upon successful completion of the module, the learner:	**Evaluation criteria The learner should**
PO 1 Knows the form of conformity assessment, declaration schemes	1.1 Identify the forms of conformity assessment for grain, its processing products, grain products, meat and dairy products 1.2 Be able to choose the declaration scheme for serially manufactured products and imported products batch
PO 2 Understands the declaration order and function of evidentiary materials	2.1 Explain each of the declaration orders 2.2 Prove the order necessity 2.3 Choose the evidentiary materials according to the declaration schemes
PO 3 Is able to analyze the technical documentation and evidentiary materials to fill in the conformity declaration	3.1 Analyze technical documents when applying certain declaration schemes 3.2 Use evidentiary materials for filling in the declaration 3.3 Be able to fill in a conformity declaration 3.4 Evaluate the correctness of the declaration filling in

MODULE
14 METROLOGICAL SUPPORT OF FOOD PRODUCTION: MEASUREMENT OF THERMOPHYSICAL TEMPERATURE PARAMETERS, WEIGHT, PRESSURE, FLOW OF FLUIDS AND GAS

qualification " Junior food metrology engineer "

14.9.1 Module aim

This module allows the learner to study the basic existing types of measurements; to choose measuring instruments in the enterprises taking grain and its processing products, grain products, dairy and meat products; arrange the measuring instruments during the manufacturing process; draft local measurement scheme by types of measurements, establish the frequency of calibration of measuring instruments and develop schedules of their execution; analyze the causes of violation of technological regimes, deffective products, overhead of raw materials, materials, energy and other production losses associated with the state of measuring instruments, inspection and testing; assess the measurements accurate fugures to be entered in the appropriate log.

14.2 Module review

Learners will learn and have an idea on:

- existing types of measuring instruments;
- controlling the technological processes in the enterprises taking grain and its processing products, grain products, dairy and meat products by certain measuring devices;

- drafting local measurement scheme by types of measurements;
- frequency of calibration of measuring instruments;
- developing schedules of calibration of measuring instruments;
- assessing measurements accurate fugures.

At the same time, learners receive theoretical and practical knowledge, aimed at drilling practical skills to control the technological processes, draft local measurement scheme, calibrate measuring instruments and develop schedules of calibration, operate with certain measuring devices.

14.3 Module content

- Types of measurements;
- Measuring instruments used in the enterprises, taking grain and producing grain processing products, cereals, meat and dairy products;
- Local metrological scheme;
- Calibration of measurement instruments;
- Schedules of the calibration of measurement instruments;
- Measurements accurate fugures.

14.4 Learning results and evaluation criteria according the module

qualification " Junior food metrology engineer"

Learning results Upon successful completion of the module, the learner:	**Evaluation criteria The learner should**
RO 1 Knows the types of measurements	1.1 Be able to recognize what types of measurements are given types of measurements 1.2 Explain the working principle of the instrument to measure the temperature parameters, weight, pressure, flow rate 1.3 Use appropriate measuring instruments
PO 2 Understands the principle of drafting the local measurement schemes, schedules of the calibration of measurement instruments	2.1 Draft local measurement schemes 2.2 Be able to set the frequency of calibration of measuring instruments 2.3 Be able to develop schedules of the calibration of measurement instruments
PO 3 Is able to analyze the causes of violation of technological regimes, defective products, overheads of raw materials, materials, energy and other losses in production associated with the state of measuring instruments, inspection and testing; assess the measurements accurate fugures to be entered into the corresponding log	3.1 Identify the causes of violation of technological regimes, defective products, overheads of raw materials, materials, energy and other losses in production associated with the state of measuring instruments, inspection and testing 3.2 Assess the measurements accurate fugures 3.3 Enter data to the corresponding log

MODULE
15 STATE METROLOGICAL CONTROL AND METROLOGICAL SUPERVISION

qualification " Standardization Technician"

15.1 Module aim

This Module allows to learn forms and objects of state control; the composition of the Commission; notice of inspection, inspection order , objects of the metrological control, check the correctness of the MI metrological control (in accordance with

the metrological production cards).

15.2 Module review

Learners will learn and have an idea on:

- the forms and objects of state control;
- the composition of the Commission, making state control;
- the inspection order ;
- the assessment of the correctness of the MI metrological control.

At the same time, learners receive theoretical and practical knowledge, aimed at drilling practical skills for the state metrological control and metrological supervision.

15.3 Module content

- State control forms;
- State control objects;
- Notice of inspection;
- Inspection order .

15.4 Learning results and evaluation criteria according the module

qualification " Standardization Technician"

Learning results Upon successful completion of the module, the learner:	**Evaluation criteria The learner should**
PO 1 Knows forms and objects of the state metrological control	1.1 Identify the state metrological control forms 1.2 Identify the state metrological control objects 1.3 Be able to prove the affiliation to the state metrological control objects
PO 2 Understands the commission formation principles, sequence of filling in the commission appointment act	2.1 From a state metrological control commission 2.2 Be able to fill in the commission appointment act 2.3 Explain the correctness of the act filling in and commission formation.
PO 3 Is able to write the inspection order, to check the correctness of the MI metrological control (in accordance with the metrological production card)	3.1 Determine the inspection order 3.2 Evaluate the correctness of the MI metrological control 3.3 Identify deficiencies in the commission work

7. Curriculum

of technical and vocational, post-secondary education

Specialty: Standardization, Metrology and Certification (by industry)

Qualification: Laboratory Assistant for testing of grain, its processing products and grain products
Standardization Technician
Junior food metrology engineer

Mode of study: Full-time

On the basis of: basic secondary education

Index	Name of modules, practices	form of control			Volume of studying time (hour)				Distribution by semesters
		exam	credit	course paper	Total	among them			
						theoretical lessons	practical training	Job training	
1	2	3	4	5	7	8	9	10	11
ОМ	Compul- sory modules								
ООМ 00	General subjects				1448				1,2,3
ОГМ 00	All humanities and economic modules (Professional Kazakh (Russian) language, professional foreign language, physical education)				426				3,4
СЭМ 00	(Cultural Studies)				32				3,4
	Total compulsory modules								
БОМ 00	Basic general professional modules				840	380	460		
БОМ 01	Information technology and application software		+		180		180		3,4,5
БОМ 02	Economic foundations of food production		+		180	90	90		3,4,5
БОМ 03	Management and Marketing Basics		+		120	70	50		3,4,5
БОМ 04	Occupational Health and Safety		+		100	70	30		3,4,5
БОМ 05	Standardization of grain production, its processing products, and grain products	+	+		260	150	110		3,4,5
ПМ 00	Professional modules				2340	1050	1290		4-9
	qualification «Laboratory Assistant for testing of grain, its processing products and grain products»				770	330	440		
ПМ 01	Sample collection	+			190	90	100		4,5
ПМ 02	Determination of physico-chemical and organoleptic characteristics of grain, its processing products and grain products				190	80	110		4,5

ПМ 03	Use of measuring equipment and metrological production support				160	60	100		4,5
ПМ 04	Conformity assessment of the grain, its processing products and grain products	+			230	100	130		4,5
	qualification «Technician of food production standardization»				930	430	500		
ПМ 05	Management of the documentation centre and updating of regulatory documents				230	130	100		5,6,7
ПМ 06	Development of standards (national and organization standards) on food products	+			230	100	130		6,7
ПМ 07	Development of food products catalog sheets and the use of bar codes		+		234	100	134		6,7
ПМ 08	Food products conformity assessment by declaring	+			236	100	136		6,7
	qualification «Junior Engineer Metrologist of Food Production»				640	290	350		
ПМ 09	Metrological provision of food production; measuring thermophysical and temperature parameters, mass, pressure, gas and liquids flow rate		+		340	170	170		9
ПМ 10	State metrological control and metrological supervision		+		300	120	180		9
МОО 00	Modules defined by the educational institution				670	300	370		3-9
МО 01									
ПО 00	Professional internship				1224		1224		8,9,10
ПП 01	Introductory internship				432		432		8
ПП 02	Job training				72		72		3,4,5
ПП 03	Job training workshops				432		432		8
ПП 04	Technological Pre-graduation practice				288		288		9, 10
ПА 00	Interim aseessment				180				
ИА 00	Final assessment				72				
ИА 01	Final assessment **				48				
ИА 02 (ОУППК)	Assessment of the professional training level and qualification				24				6,8
	Total for compulsory education:				7200				
К	Consultations	Not more than 100 hours for an academic year							
Ф	Extra curriculars	Not more than 4 hours a week							
	Total:				8100				

Explanatory note
to the curriculum in the specialty of
0601000 Standardization, Metrology and Certification
(Food industry)

The curriculum reveals the structural content of the professional training, the studying time volume by module, the sequence of study modules.

The educational process in educational institutions implementing educational programs of technical and vocational, post-secondary education, includes theoretical classes and job training to be performed in the job training workshops, instructional farms under the guidance of the master of vocational training, and directly on the production and organization of the appropriate profile.

The studying time volume allocated in the curriculum for **general educational modules** on the basis of basic secondary education with general secondary education remains constant.

All humanities modules.

The study of these modules provides mastering the specialty terminology, communication in the state language to work in the field of their own.

When developing working curricula to technical and vocational education institutions the right is granted to redistribute the study time available to study the modules: cultural studies, fundamentals of philosophy, fundamentals of economics, fundamentals of of law.

Educational programs aimed at the professional training include:

1) study general professional and vocational modules;

2) perform laboratory and practical classes on general-professional and vocational modules;

3) industrial training and professional internship;

4) make the thesis.

Basic general professional modules occupy an important place in the overall system of vocational training. The ability to solve professional issues with the full knowledge of the integrity of all processes and phenomena, competently perform course papers, graduation projects (papers) and practical works in the specialty depends on the basic knowledge and skills students acquire in the course of mastering these modules.

For professionals of all levels, the basic general professional modules are defined: "Information technology and application software", "Economic basics of food production", " Management and Marketing Basics", "Occupational health and safety", "Standardization of grain production, its processing products, and grain products ", where students will learn and acquire the necessary work skills in accordance with the qualification.

The professional modules defined for the laboratory assistants, may be reconsidered by the educational institution in view of industry specialization.

Studying professional modules forms the basis of students' professional training.

In the curriculum in accordance with the national qualifications framework of the RK it provides the possibility of training the qualified personnel in the specialty

"Standardization, Metrology and Certification" from qualification level 3 to 5.

The student can reach the level 3 "Laboratory assistant for testing of grain, its processing products and grain products" and find a job. If the student wishes to continue his education within the specialty, he/she will be trained for 10 months to reach the level of "Technician of food production standardization." Next, the student can continue his studying for 10 months to reach the level 5 of "Junior Engineer-Metrologist of food production."

According to the qualification "Laboratory assistant for testing of grain, its processing products and grain products" modules are defined: "Sample selection", "Determination of physicochemical and organoleptic characteristics of grain, its processing products and grain products", "Application of the measuring equipment and metrological production support", "Conformity assessment of grain, its processing products and grain products", as the study of these modules contributes to the acquisition of skills to determine the quality of the grain, its processing products, and grain products.

According to the qualification "Technician of food production standardization" modules are developed: "Management of the documentation centre and updating of regulatory documents", "Development of standards (national and organization standards) for food products", "Development of food products catalog sheets and the use of bar codes", "Food products conformity assessment by declaring," as the State Programme for the development of education and science for 2016-2019 is aimed at openness and readiness for international co-operation with the best national practices.

According to the qualification "Junior Engineer-Metrologist of food production" in accordance with the Law of RK "On Technical Regulation" of 2004 and the harmonization of regulatory technical documentations with international standards it is planned to study the modules: Metrological provision of food production; measuring thermophysical and temperature parameters, mass, pressure, gas and liquids flow rate, state metrological control and metrological supervision

The most important component of the programs is the emphasis on students' practical training. To this end, developed educational programs should combine professional modules and job training.

The professional practice is carried out in the respective organizations, in the workplace, provided by employers under the contract, and is aimed at the formation of professional competencies.

In colleges, the professional practice includes modules practical and laboratory classes. Classes are planned in classrooms, laboratories and are aimed at consolidating the knowledge acquired during the theoretical training. They are aimed at acquiring practical skills and professional competences according to conferred qualifications. Terms and content of the practical training are defined bythe curricula, educational process schedule and work training programs.

The professional practice includes "Introduction practical training" for assigning the work qualification, and "pre-graduation internship" on which completion, students receive a diploma with the qualification "Junior Engineer-Metrologist of food production."

Educational programs of technical and vocational education include modules

defined by educational institutions, which must take into account the students' personal inclination in the field of professional interests and employer's requirements to the personnel training in this specialty.

To determine the quality of students' mastering of educational programs in the curriculum it is provided for the interim and final assessment.

The interim assessment is provided in all subjects / modules, which the main forms are: exam, credit, test.

The interim assessment in modules of general education provides for examinations in: language, literature, history of Kazakhstan, mathematics and the choice of the technical and vocational education institution.

Number of examinations, credits and tests on the all humanities, social and economic, general professional modules is determined based on the requirements to the level of knowledge, skills and competences, the student should have.

Tests and credits are carried out at the expense of teaching time allocated to studying this module, exams - in the time allocated to the interiem assessment.

As a result of interim certification for a modular curriculum and passing the qualification exam for working professions which includes professional readiness level assessment and award students are assigned to the achieved vocational qualification level (category, class, category).

The final attestation of students of technical and vocational educational institutions includes:

- assess students in educational institutions;
- assess the professional training level and assign qualification (for the set and advanced training levels).

The final assessment of students in educational institutions is carried out to determine the level of students' educational programs mastering by the results of the full course of study.

Possible forms of the final assessment in educational institutions by the results of completion of educational programs are: passing exams on basic general professional modules and professional modules or performing and defending the graduation project, or performing and defending of the graduation project with the passing of the final assessment exam by one of the professional modules.

The professional qualifications and certification level assessment (hereinafter - PQCLA) by specialities consists of two phases:

1) theoretical test on modules, determining professional qualifications;

2) practical tasks by qualification level.

The study time volume to carry out the final assessment is determined for no more than 2 weeks. Among these, the organization and PQCLA are given at least 12 hours per group (depending on the specifics, the specialty and the educational process may vary upwards).

Consultations and extra curriculars.

Consultations and extra curriculars are aimed at ensuring the individual abilities and requests of students.

Consultations for students are provided for up to 100 hours per academic year

depending on the specialty and training period for a study group. Consultation time and form (group, individual, written, etc.) are determined by educational institutions.

Extra curriculars are provided by the educational institution's working curriculum at the rate of no more than 4 hours a week and are not required for the study.

Note:

1) * the practical training include practical (laboratory) works, course papers (projects), tests and other.

2) When developing and implementing curricula and programs, the technical and vocational educational institutions can:

˜ change of up to 30% of the study time devoted to mastering educational material for cycles and up to 30% in each subject (module) and up to 50% of the production learning and professional practice while maintaining the total number of hours for compulsory education;

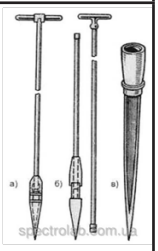
˜ select different training technologies, forms, methods of organization and educational process control;

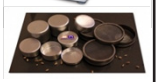
˜ in accordance with the employers' needs to change the curriculum content up to 30% in all humanities and socio-economic modules up to 50% on professional modules, job training and professional practice. Introduce additional modules in vocational modules at employers' demand while maintaining the total number of hours/credits for the compulsory education;

˜ select the form, procedure and frequency of the current control of students' progress and interim assessment;

3) The course distribution may vary depending on the learning technologies, the specialty specifics, regional specifics and other.

8. List of recommended equipment

No	Name	Technical specification	Equipment purpose / Topics covered	The module (s) in which the equipment is used	Equipment units / per students group	Total quantity	Comments	Picture (if possible)
Laboratory for flour testing Each workshop has 10 students								
1.	Sample selection	Mechanical sample containers and spears of various designs which exclude grain trauma	Sample selection/ grain test	ПМ 01	2/10	2		
		Laboratory balance to a weighing precision of no more than 0.01 g	Flour weighing/ testing		1/10	1		
		Balance with weighing limit of up to 20 kg	Flour weighing/ testing		1/10	1		
		Buckets with a capacity of at least 200 cm3	Sample selection/ grain test		1/10	1		
		Dividers	Test portion allotment/ grain test		5/10	5		
		Wood strips	Division of common sample / grain test		5/10	5		
		Scoops	Sample selection/ grain test		5/10	5		
		Containers for sampling and test portions	Placement of the samples and test portions / grain test		5/10	5		
2.	Determine odor and color	Test mill	Grain mil-ling/ testing	ПМ 02	1/10	1		
		Laboratory balance of the general purpose to a permissible weighing precision ± 0,1 g	Grain weighing/ testing		1/10	1		
		Plastic cassette with a lid, removable cup and metal screen	To place grain/ test grain		1/10	1		
		Tin with a lid of 500 cm3 capacity	To test/ grain test		1/10	1		
		Conical flasks with a pin of 100 cm3 capacity	To place grain/ test grain		5/10	5		
		Cup with 200-250 cm3 capacity	To place grain/ test grain		5/10	5		
		Petri dish	To place grain/ test grain		5/10	5		
		Metal mesh sieve No. 06	To place grain/ test flour		5/10	5		
		Folding board	To test/ grain test		5/10	5		
		Putty knife	To test/ grain test		5/10	5		
		Heat source providing the grain heat to 40 °C	To heat grain/ grain test		1/10	1		

3.	Determine the - type composition	Balance to a precision of no more than 0,01 g	To weigh test portions/grain test	ПМ 02	1/10	1		
4.	Detect the pest infestation	Laboratory balance to a weighing precision of no more than 0,01 g	To weigh test portions/grain test	ПМ 02	1/10	1		
		Grain magnifier (4.5 fold)	To detect infestation / grain test		5/10	5		
		Kit of laboratory sieves of the sieve plate with circular holes of 1.5 mm and 2.5 mm and shall rings diameter of 30 cm	For dressing average sample / grain test		1/10	1		
		Mechanized equipment for dressing grain	For dressing average sample /grain test		1/10	1		
		Analysis board	For overs and throughs from the shieve/ grain test		1/10	1		
		(With black and white glass)	To control the time / grain test		2/10	2		
		Sand hours for 1 or 2 minutes	To measure the grain temperature / grain test		5/10	5		
		Thermometer	To select the grain / grain test		5/10	5		
		Putty knife						
		Trowel	To select the grain/ grain test		5/10	5		
5.	Determine moisture	Analytical balance with a weighing capacity of up to ± 0.001 g	To weigh samples / grain test	ПМ 02	1/10	1		
		Mill	To grind grain / grain test		1/10	1		
		Metal sample bottle corrosion resistant or glass with a hermetically lid	For grain conditioning / grain test		5/10	5		
		Drying electric cabinet	To dry the test portions / grain test		1/10	1		
		Desiccator	For cooling / grain test		1/10	1		
6.	Bushel weight test	Litter schopper apparatus	Bushel weight test / grain test	ПМ 02	1/10	1		
		or 20 litter schopper apparatus	Bushel weight test / grain test		1/10	1		
7.	Define vitreous- ness	1 method: Drying cabinet	To dry the grain / grain test	ПМ 02	1/10	1		
		Laboratory balance to a weighing precision of no more than 1 g	To weigh test portions / grain test		1/10	1		
		DSZ-2 brand diaphanoscope with the cassette and the DSZ-2c brand counter	To test/ grain test		1/10	1		

		2 method: Folding board	To place grain/ grain test		2/10	2		
		Putty knife	Grain inspection/ grain test		5/10	5		
		Razor blade	To cut the grain / grain test		5/10	5		
		Laboratory balance to a weighing precision of no more than 1 g	To weigh test portions / grain test		1/10	1		
8.	Determine protein	Laboratory mill of U1-UML brand, LEM brand or other brand	To grind grain / grain test	ПМ 02	1/10	1		
		Wire mesh sieve No. 08	To determine the grind size / grain test		1/10	1		
		Laboratory balance of the general purpose to a permissible weighing precision of ± 0,1 g	To weigh test portions / grain test		1/10	1		
		Laboratory balance of the general purpose to a permissible weighing precision of ± 0,001 g	To weigh test portions / grain test		1/10	1		
		Electric drying cabinet SESh-3M or other type of with a thermoregulator, ensuring the creation and maintenance of the temperature in the working drying zone (100-140) °C to a precision of ± 2 °C	To dry the grain / grain test		1/10	1		
		Electric heaters or gas burners	To test/ grain test		2/10	2		
		Metal tank-converter or heat-resistant flask with a capacity of 2000 cm3	To test/ grain test		2/10	2		
		Kjeldahl flasks of 2 version with capacity of 100, 250 and 500 cm3	For the sample preparation / grain test		5/10	5		
		Burettes with a capacity of 25 or 50 cm3	To test/ grain test		5/10	5		
		Conical flasks of 2 version with a capacity of 250 and 500 cm3	To test/ grain test		5/10	5		
		Measuring flasks of 1 version with a capacity of 500 and 1,000 cm3	To test/ grain test		5/10	5		
		Ball-type refrigerator or with straight tube of 3 version	To test/ grain test		1/10	1		
		Drip pan of KO-60 version	To test/ grain test		1/10	1		
		Glass laboratory funnels of with 25 mm or 36 mm diameter, 38 or 50 mm height	To test/ grain test		2/10	2		

		Glass laboratory funnels of with 25 mm or 36 mm diameter, 38 or 50 mm height	To test/ grain test					
		Cylindrical tubes of 10 mm diameter, 90 mm height	To test/ grain test		10/10	10		
		Glass connecting tubes	To test/ grain test		5/10	5		
		Drop bottlefor the indicator	To test/ grain test		1/10	1		
		Porcelain mortar and pestle	To prepae reagents / grain test		5/10	5		
		Porcelain glass of 1000 cm3 capacity	To test/ grain test		5/10	5		
		Measuring cylinder of 1000 cm3 capacity	To test/ grain test		5/10	5		
		Reagents: Sulphuric concentrated acid, c.p., sulfuric acid solution or standard titer of 0.05 mol/dm3 con-centration; sodium hy-droxide, c.p., or p.a., solution of the mass concentration of 330-400 g/dm3 and sodium hydroxide solution 0.1 mol/dm3 concentration; 5-aqueous sulfuric cop-per; sulphate potassium; peroxide hydrogen, aqueous solution of 30% volume fraction; rectified ethyl alcohol; distilled water; methyl red; bromocresol green; selenium.	To test/ grain test		each by 1/10	each by 1		
9.	Determine the gluten amount and quality	Gluten washing device MOK-1 (MOK-1M, MOK-2)	To wash the gluten / grain test	ПМ 02	1/10	1		
		Laboratory mill providing the necessary grinding fineness	To grind the grain / grain test		1/10	1		
		Laboratory dough kneader U1-ETK with integrated water dispenser, with ± 2% dosage accuracy (or separately dough kneader TL -1-75 and water dispenser DVL-3)	To knead the dough/ product testing		1/10	1		
		Laboratory balance of the general purpose to a permissible weighing precision ± 0,1 g	To weigh test portions / grain test		1/10	1		

		Gluten deformation meter IDK-1M to measurement precision of ± 2,5 device scale units; IDK-2 to a precision of ± 1 device scale units; IDK-3 to a precision of ± 0,1 device scale units and other.	To test/ grain test		1/10	1		
		Drying cabinet SESh-3M, with a temperature range from + 50 °C to + 150 °C and temperature control accuracy of ± 2 ° C	To dry grain / grain test		1/10	1		
		Desiccator	To cool / test grain		1/10	1		
		Thermometer for measuring water tempera-ture with a measurement range from 0 °C to + 50 °C	To measure temperature / grain test		1/10	1		
		Wire mesh sieve No. 067	To sieve grain / grain test		1/10	1		
		Sieve of silk tissue No.38 or polyamide tissue No.41/43 PA	To sieve grain / test		1/10	1		
		Signal clock	To control time		1/10	1		
		Cup with 1 dm3 capacity with lid	To test/ grain test		1/10	1		
		Drinking water	To test/ grain test		10/10	10		
		Rubber circles 10 mm in diameter and 3 mm thick	To test/ grain test		10/10	10		
		Brushes, lab brushes	To test/ grain test		2/10	2		
		Grain rolling devices	To test/ grain test					
Laboratory for testing grain by-products (cereals)								

Each workshop holds 10 students								
1.	Sampling collection	Samplers mechanical or hand-held (probes of various designs) for sampling	For sampling / cereals testing	PM01	2/10	2		
		Weight or dial scales with a weighing error of ± 0,01 g	For weighing samples / sample testing		1/10	1		
		Laboratory general purpose balance (scales) with the weighing error ± 0.01g	For weighing samples / sample testing		1/10	1		
		Bucket	For sampling / cereals testing		2/10	2		
		Wooden strips with a beveled edge	To divide the combined sample / cereals testing		2/10	2		
		Shovels	For sampling / cereals testing		2/10	2		
		Containers for sam-ples and test portions	For sampling and their migrat-ing / cereals testing		5/10	5		

2.	Determination of the organoleptic characteristics, cooking quality of buckwheat and oatmeal	Laboratory general purpose balance (scales) with the weighing error ± 0.01g	For weighing samples /cereals sampling	PM02	1/10	1		
		Analysis board (with black and white glass) or black paper	For testing/ cereals testing		2/10	2		
		Water-bath	For cereals heating/cereals testing		1/10	1		
		Seconds timer	For time control-ling/ cereals test-ing		1/10	1		
		Porcelain	For cereals placing/ cereals testing		2/10	2		
		Glass chemical capacity of 500 cm3	For testing/ cereals testing		2/10	2		
		Slides	For testing/ cereals testing		10/10	10		
		Watch glass	For testing/ cereals testing		5/10	5		
		Sodium salt	For determining of cook quli-ties/ cereals testing		5г/10	5		
3.	Moisture determination	Drying electric oven DEO-3M with a dry-ing chamber heated to 150 ° C with the thermostat, ensuring the creation and maintenance of the drying temperature in the working zone (130-140) ° C with an accuracy of ± 2 ° C	For cereals drying/testing	PM02	1/10	1		
		Laboratory general purpose balance (scales) with the weighing error ±0.1 g and ± 0.01g	For weighing sample /cereals testing		1/10	1		
		Laboratory plansifter	For cereals screening/ cereals testing		1/10	1		
		Laboratory mill LM or other type ensuring grinding of cereals by size similar LM	For cereals grind-ing/ cereals test-ing		1/10	1		
		Thermometer electrocontact Glass mercury	For temperature measuring/ cereals testing		5/10	5		
		Screens made of wire mesh No 1 и 08	For cereals screening / cereals testing		1/10	1		
		Weighing bottle met-al with lids 20 mm high and 48 mm in diameter	For test portions placing/ cereals testing		10/10	10		
		Dessicator	For cooling/ cereals testing		1/10	1		
		Inserts porcelain for desiccator	For cooling/ cereals testing		10/10	10		

		Sampling shovel	For sampling/ ce-reals testing		2/10	2		
		Timing device	For time control-ling/ cereals test-ing		1/10	1		
		Mechanical seconds meter	For time control-ling / cereals test-ing		1/10	1		
		Crucible tongs	For weighing bot-tle removing / ce-reals testing		2/10	2		
		Technical petroleum jelly	To lubricate the edges of the de-siccator / cereals testin		1/10	1		
		Calcium chloride technical	For testing/ ce-reals testing		1/10	1		
		Sulfuric acid	For testing / ce-reals testing		1/10	1		
4.	Determination of size or number, impurities and high quality-tygrain	Laboratory general purpose balance (scales) with the weighing error ± 0.01g	For test portions weighing / cereals testing	PM02	1/10	1		
		Analysis board	For testing/ cereals testing		2/10	2		
		Spatula	For testing/ cereals testing		10/10	10		
		Tweezers	For testing/ cereals testing		10/10	10		
		Trowel	For testing/ cereals testing		2/10	2		
		Set of laboratory sieves, in relation to the analyzed cereal	For cereals screening / testing		1/10	1		
		Loop	For testing/ cereals testing		5/10	5		
		Mirrow	For testing/ cereals testing		5/10	5		
		Paper absorbent testing	For testing/ cereals testing		2/10	2		
		Potassium perman-ganate	For testing/ cereals testing		1/10	1		

Laboratory for testing flour Each workshop holds 10 students								
1.	Sampling	Samplers mechanical with local, remote and automatic control and probes of various designs	Sampling/flour testing	PM01	2/10	2		
		Scales with permissible weighing error o ± 10 g	Weighing/flour testing		1/10	1		
		Wooden strips with a beveled edge	Mixing, separa-tion of samples / flour testing		2/10	2		
		Showels, buckets	Sampling/flour testing		2/10	2		

		Containers for sam-ples and test portions	Samples mov-ing/flour testing		2/10	2		
2.	Determination of color, smell, taste and crunch	Laboratory balance (scales) with the weighing error ±0.1 g	Sample weigh-ing/flour testing	PM02	1/10	1		
		Thermometer according to GOST 28498, with an accuracy of ± 1 ° C	Water tempera-ture measuring/ flour testing		2/10	2		
		Beaker in accordance with GOST 25336, with a capacity of 250 cm3	For samples moving/flour testing		2/10	2		
		Glass plates 80x150 mm in size	Color determona-tion/ flour testing		4/10	4		
		Spattle	Sample leveling, cutting /flour testing		2/10	2		
		Spatula	Sampling/flour testing		2/10	2		
3	Moisture determination	Drying electric oven DEO-3M with a dry-ing chamber heated to 150 ° C with the thermostat, ensuring the creation and maintenance of the drying temperature in the working zone (130-140) ° C with an accuracy of ± 2 ° C	Samples dry-ing/flour testing	PM02	1/10	1		
		Laboratory general purpose balance with permissible weighing error ± 0,01 g	Sample weigh-ing/flour testing		1/10	1		
		Thermometer elec-trocontact Glass mercury according to GOST 9871	Temperature control in the oven / flour testing		1/10	1		
		Weighing bottle met-al with lids 20 mm high and 48 mm in diameter	Samples weigh-ing/ flour testing		10/10	10		
		Desiccators upon GOST 25336 version 2	Weighing bottle cooling /flour testing		1/10	1		
		Inserts porcelain for desiccator upon GOST 9147	Weighing bottle cooling /flour testing		1/10	1		
		Crucible tongs	For weighing bottle removal/ flour testing		1/10	1		
		Technical petroleum jelly	Desiccator lubri-cation / flour testing		1/10	1		
		Sampling showel	Sampling/ flour testing		1/10	1		
		Timing device	Countdown / flour testing		1/10	1		

4.	Ash determination	Laboratory general purpose balance with permissible weighing error ± 0,1 g and 0.0002 g	Sample weighing/ flour testing	PM02	1/10	1		
		Muffle furnace	Sample charring/ flour testing		1/10	1		
		Desiccators upon GOST 25336 version 2	Bottle cooling weighing / flour testing		1/10	1		
		Porcelain crucible upon GOST 9147	Sample weigting/ flour testing		10/10	10		
		Crucible tongs	For crucible removal/ flour test-ing		1/10	1		
		Glass plates 20x20 mm in size	Sampling/ flour testing		4/10	4		
		Pipette version 1, 1 class of accuracy, with a capacity of 2 cm3 upon GOST 29227	Selection of accelerator, ammonium acetate / flour testing		4/10	4		
		Timing device	Control ashing time / flour test-ing		1/10	1		
		Paper absorbent testing FTI upon GOST 12026	For alcohol solution and ethyl magnesium prep-aration / flour testing		1/10	1		
		Glass funnel 56 mmin diameter upon GOST 25336	Samples transmission/ flour testing		1/10	1		
		Flat showel	Sample mixing/ flour testing		1/10	1		
		Glaa or metal lass support	For cruci-ble/ product test-ing		1/10	1		
		Medical absorbent cotton wool upon GOST 5556	For winding wool / flour testing		1/10	1		
		Metal core	For alcohol solution and ethyl magnesium prep-aration / flour testing		1/10	1		
		Measuring flask round-botoom, ver-sion 2, 2 accuracy class, with a capacity of 100 cm3 upon GOST 1770	For ashing/ flour testing		2/10	2		
		Reagents: nitric acid, an alcoholic solution of ammonium acetate			2/10	2		
5.	Size determination	Laboratory general purpose balance with permissible weighing error ± 0,1 and ± 0,01 g	Samples weighing/flour testing	PM02	1/10	1		

		Laboratory sieving with a frequency 180-200 oscillations / min	Size testing/ flour testing		1/10	1		
		Set of laboratory sieves made of silk or synthetic fabric according to GOST 4403 and a wire mesh number 45 and number 067, sieve membranes 20.0 cm in diameter	Size testing/ flour testing		1/10	1		
		Sieve cleaners - rub-ber slices of about 1.0 cm in diameter, 0.3 cm thick and weighing about 0.5 grams each	Size testing/ flour testing		1/10	1		
		Capacity for the test portions	Sampling/ flour testing		1/10	1		
		Showel	Sampling/ flour testing		1/10	1		
6.	Quantity and quality of gluten	Device for gluten washing MOS-1, MOS-1M	Gluten wash-ing/flour testing	PM02	1/10	1		
		Labaratory dough-mixer DML1-75	Sample prepara-tion/ flour testing		1/10	1		
		Water dispenser DVL-3 with dispensing accuracy of ± 0,5 cm3	For dough preparation/ flour testing		1/10	1		
		Device У1-UFK for gluten forming	Gluten forming/ flour testing		1/10	1		
		Gluten deformation meter GDM-1 (GDM-1M) with er-ror of less than ± 2,5 scale units GDM-2 with error of 1,0 scale unit	Gluten deforma-tion/ flour testing		1/10	1		
		Water temperature stabilizer У1-ECT	Water prepara-tion/flour testing		1/10	1		
		Water composition stabilizer У1-ECC-60	Water prepara-tion/flour testing		1/10	1		
		Laboratory general purpose balance with permissible weighing error ± 0,01 g	Samples weigh-ing/ flour testing					
		Glass thermometers, liquid (non-mercury) with a measuring range from -30 ° C to + 50 ° C and -20 ° C to + 70 ° C	Water tempreture measuring/flour testing		1/10	1		
		Measuring cylinder with a capacity of 25 cm3 in accordance with GOST 1770	Water volime measuring/flour testing		2/10	2		
		Vessel with a capacity of not less than 4 dm3, not less than 300 mm in diameter	For dough plac-ing/flour testing		2/10	2		
		Porcelain cup and mortar with a diameter of 120 to 140 mm according to GOST 9147	For water and sample mix-ing/ flour testing		1/10	1		

		Spatula or pestle Timing device Testing cup No 2 and 3 Towel Sieve of silk number 27 according to GOST 4403 or po-lyamide fabric num-ber 27 PA-120	For kneading of dough/ flour test-ing Time control/ flour testing For samples/ flour testing Sampling/ flour testing		1/10 1/10 1/10 2/10 1/10	1 1 1 2 1		
7.	Deter-mination of metal magnetic admix-ture	Vaccum filtration device VFD and VFD-2 (as a set) to separate metal magnetic admixture Device for measuring metallic impurities or device for measuring metallic impurities -2 (as a set) to measure the size of metal magnetic admixture U-shaped permanent magnet made of alloy brand YUN 1 ZDK 24 according to GOST 17809 Dial scales with per-missible error of weighing ± 1,0 g Laboratory general purpose balance with permissible weighing error ± 2,0 g Board with borders 1000x500 mm in size with plexiglass or glass coating Trowels or planks for mixing and leveling of the product Clock glass Watch glass Wooden stick shar-pened Stick melted glass Porcelain crucible No 3 upon GOST 9147 Magnifier measuring the size of the divi-sions of 0.3 mm	For metal mag-netic admixture separation/ flour testing For measuring the size of metal magnetic admix-ture / flour testing To capture metallo- magnetic impurities / flour testing Samples weigh-ing/ flour testing For weighing me-tallomagnetic im-purities / flour testing For samples placing/ flour testing Samples mixing and levelling/ flour testing To collect metal-lomagnetic im-purities / flour testing For metallomag-netic impurities placing/flour testing To transfer metallo- magnetic impurities / flour testing To transfer metallo- magnetic impurities / flour testing For crushing m e t a l l o - magnetic im-purities / flour testing	PM02	1/10 1/10 1/10 1/10 1/10 1/10 5/10 5/10 2/10 2/10 1/10	1 1 1 1 1 1 1 1 2 2 1		

		Magnifying glass with an increase of not less than 6x upon GOST 25706	For viewing metallomagnetic im-purities / flour testing		1/10	1		
		Tissue paper upon GOST 3479	For viewing metallomagnetic im-purities /flour testing		1/10	1		
		Trowel	For viewing metallomagnetic im-purities / flour testing		10/10	10		
			For sampling/ flour testing		1/10	1		
8.	Determination of infestation and contamination by grain pests	Laboratory general purpose balance with permissible weighing error ± 1 g and ± 1 g	For samples weighing/flour testing	PM02	1/10	1		
		0,56 Laboratory sieve number 056 made of wire mesh with a mesh size of 0.56	For sieving flour / flour testing		1/10	1		
		Analysis board (with black and white glass)	For visual inspection of flour / flour testing		1/10	1		
		Thermometer according to GOST 28498 with an accuracy of ± 1 ° C	Determination of flour temperature/ flour testing		1/10	1		
		Loop with magnification of at least 4.5 according to GOST 25706	To view bubbles and grooves in flour / flour test-ing		1/10	1		
		Glass 20x30 cm in size	For samples pressing/ flour testing		1/10	1		
		Spatula	For sorting resi-dual/ flour testing		1/10	1		
		Trowel	For selecting test portions/ flour testing		1/10	1		
9.	Determination of toxic elements	Atomic absorption spectrophotometer equipped with burner for air acetylene flame, background absorption corrector and emission sources of a rational lead, cadmium, copper, zinc and iron (hollow cathode lamps, electrodeless discharge lamps or other equivalent sources).	Testing/ flour testing	PM02	1/10	1		

		It is allowed to use the spectrophotome-ter without back-ground absorption corrector subject to conducting extraction concentration	Testing/ flour testing		1/10	1		
		Air compressors complying with re-quirements of the technical instructions for a spectrophotometer, or compressed air in cylinders	Testing / flour testing		1/10	1		
		Acetylene dissolved and gaseous technical GOST 5457 in cylinders	For samples weighing/ flour testing		1/10	1		
		Laboratory general purpose balance with metrological characteristics according to GOST 24104 with the greatest limit of weighing 200 g not lower than the 2nd class of accuracy	For samples weighing / flour testing		1/10	1		
		Laboratory general purpose balance with metrological characteristics according to GOST 24104 with the greatest limit of weighing 500 g not lower than the 4th class of accuracy	Testing/ flour testing		1/10	1		
		Water bath	For reagents / flour testing		5/10	5		
		Burette 1-1-2-50-0,1 according to GOST 29251	For reagents / flour testing		5/10	5		
		Measuring flask 2-25-2,2-50-2,2-100-2 and 2-1000-2 according to GOST 1770	For reagents / flour testing		5/10	5		
		Pipettes 2-1-2-1 or 1-1-2-1, 2-1-2-2 or 1-1-2-2, 1-2-2-5 and 1-2-2-10 according to GOST 29169	For reagents / flour testing		5/10	5		
		Measuring cylinders 1-25 or 3-25, 1-50 or 3-50 according to GOST 1770	For reagents / flour testing		5/10	5		
		Glasses H-1-100 or H-1-150 according to GOST 25336	For reagents / flour testing		5/10	5		
		Separation funnel SF-1-100 or SF-1-250 according to GOST 25336	For reagents / flour testing		5/10	5		
		Test tube with joint TT-4-5-1423 or TT-4-10-1423 according to GOST 25336	For reagents / flour testing		5/10	5		

		Dropping bottle according to GOST 25336	For reagents / flour testing		5/10	5		
		Labarotary funnel	For reagents / flour testing		5/10	5		
		Ashless filters 7 or 9cm in diameter	For reagents / flour testing		1/10	1		
		Distilled water according to GOST 6709ammonium hydroxide, chemically clean, solution with mass fraction of 5 % according to GOST 3760	To filter / flour testing		5/10	5		
		Double-distilled wa-ter	To rinse flasks/ flour testing		5/10	5		
		Methyl-butyl etha-noate (isopentyl ace-tate), clean or butyl acetate clean accord-ing to GOST 22300	For reagents / flour testing		1/10	1		
		Cadmium metal	To rinse flasks/ flour testing		1/10	1		
		Zinc granular, analytical grade or zinc oxide, chemically clean according to GOST 10262	For testing/flour testing		1/10	1		
		Lead nitrate chemically clean according to GOST 4236	For testing/flour testing		1/10	1		
		Salt of the oxide of iron and ammonium double sulfate (Mohr's salt) chemi-cally clean according to GOST 4208	For testing/flour testing		1/10	1		
		Blue vitriol chemi-cally clean according to GOST 4165	For testing/flour testing		1/10	1		
		Nitric acid in accordance with GOST 11125, extra pure grade or other	For testing/flour testing		1/10	1		
		quali-fications distilled, dissolved in double distilled water (1: 1 by volume) and the solution with a mass fraction of 1%	For testing/flour testing		1/10	1		
		Hydrochloric acid in accordance with GOST 14261, extra pure grade	For testing/flour testing		1/10	1		
		or other qualifications distill-ed, dissolved in double distilled water (1: 1 by volume and solution with mass fraction of 1%	For testing/flour testing		1/10	1		
		Citric acid, reagent grade according to GOST 3652 dis-solved in distilled water with mass fraction of 20%	For testing/flour testing		1/10	1		

		Sodium N, N-diethyl, analytical grade according to GOST 8864, dissolved in double distilled water with mass fraction of 0.5% (prepared on the day of the analy-sis)	For testing/flour testing		1/10	1		
		Phenolphthalein, hydroalcoholic solution with mass fraction of 1% solution	For testing/flour testing		1/10	1		

9. List of recommended reading

Table 6

No	Name and number of publication	Author	Publishing house	Year* and place of publication	Module (s), which is used
1	Law of the Republic of Kazakhstan "On Technical Regulation"		Astana	09.11.2004 No 603-II	
2	Law of the Republic of Kazakhstan "On Protection of Consumer Rights"		Astana	04.05. 2010 No 274-IV	
3	Law of the Republic of Kazakhstan “On accreditation of Conformity Assessment”		Astana	05.07.2008 No 61-IV	
4	Law of the Republic of Kazakhstan "On Uniformity of Measurements"		Astana	07.06.2000 No 53-II	
5	Law of the Republic of Kazakhstan "Protection of Intellectual Property Rights"		Astana	12.01.2012 No 537- IV	
6	Law of the Republic of Kazakhstan "On food safety"		Astana	21 July 2007 No 301-III Law of the Republic of Kazakhstan	
7	Law of the Republic of Kazakhstan "On Grain"		Astana	19 January 2001 No 143-II	
8	Technical Regulations of the Customs Union "On grain security" TR CU 015/2011	approved by Decision of the Customs Union Commission		d/d 9 December 2011 No 874	
9	Technical Regulations of the Customs Union TR CU 005/2011	approved by Decision of the Customs Union Commission		d/d 16 August 2011 No 769	
10	ST RK 1.0 -2015 State system of technical regulation of the Republic of Kazakhstan. General Provisions			2015	
11	ST RK 1.1-2013 State system of technical regulation of the Republic of Kazakhstan. Standardization and related activities. Terms and Definitions			2013	
12	ST RK 1.48-2010 The state system of technical regulation of the Republic of Kazakhstan. The procedure for making changes in standards			2010	

13	ST RK 1.15-2013 The state system of technical regulation of the Republic of Kazakhstan. Technical Committees of Standardization. The Establishment and Functioning			2013	
14	ST RK 1.50-2013 The state system of technical regulation of the Republic of Kazakhstan. Products.Cataloguing Terms and Definitions			2013	
15	ST RK 1014-2000 Product Identification. General provisions			2000	
16	R RoK 50.1.1-2001. Standards and regulations implementation procedure. General provisions			2001	
17	ST RK 1.0-2006 State system of technical regulation of the Republic of Kazakhstan. General provisions			2006	
18	Technical Regulations of the Customs Union "On food safety"	approved by Decision of the Customs Union Commission		от 9 декабря 2011 г. № 880	
19	Technical Regulations of the Customs Union "Food products are part of its marking"	approved by Decision of the Customs Union Commission		от 9 декабря 2011 г. № 881	
20	ST RK 1.2-2013 State system of technical regulation of the Republic of Kazakhstan. The procedure for the development of national and preliminary national standards			2013	
21	ST RK 1.5-2013 State system of technical regulation of the Republic of Kazakhstan. General requirements for the building, presentation, design and content of standards			2013	
22	ST RK 1.6-2004 National system of standardization of the Republic of Kazakhstan. Original standards reconditioning procedure			2004	
23	ST RK 1.7-2009 State system of technical regulation of the Republic of Kazakhstan. Procedure for planning of works on Standardization			2009	
24	ST RK 1.9-2013 State system of technical regulation of the Republic of Kazakhstan. General requirements for the building, presentation, design and content of international and regional standards and standards of foreign countries used as national and preliminary national standards			2013	

25	ST RK 1.10-2013 The state system of technical regulation of the Republic of Kazakhstan. Products Cataloguing. General Provisions			2013	
26	ST RK 1.11-2013 The state system of technical regulation of the Republic of Kazakhstan. The procedure for filling, submission, registration and storage of the product catalog sheets			2013	
27	ST RK 1.12-2000 National system of standardization of the Republic of Kazakhstan. Regulatory text documents. General requirements for the building, presentation, design and content			2000	
28	ST RK 1.12-ST RK 1.12-2015 The state system of technical regulation of the Republic of Kazakhstan. Regulatory text documents. General requirements for the building, presentation, design and content			2005	
29	ST RK 1.12-ST RK 1.13-2005 The state system of technical regulation of the Republic of Kazakhstan. Standardization of public services. General requirements			2015	
30	ST RK 1.22-2015 The state system of technical regulation of the Republic of Kazakhstan. Standard Case. The procedure for forming, storing, updating and delivery to the archive			2015	
31	ST RK 1.12-ST RK 1.23-2013 The state system of technical regulation of the Republic of Kazakhstan. The procedure for development, approval, adoption, application, renewal and cancellation of interstate standards in the Republic of Kazakhstan			2013	
32	ST RK 1.12-ST RK 1.27-2013 The state system of technical regulation of the Republic of Kazakhstan. Standardization in terminology. Basic Principles and Methods			2013	
33	ST RK 1.12-ST RK 1.30-2002 National system of standardization of the Republic of Kazakhstan. General requirements for the development and application of technical regulations			2002	

34	ST RK 1.12-ST RK 1.33-2013 The state system of technical regulation of the Republic of Kazakhstan. The procedure for the examination and issuance of expert opinions on the normative documents on standardization			2013	
35	ST RK 1.12-ST RK 1.34-2003 National system of standardization of the Republic of Kazakhstan. The procedure for the definition and inclusion of mandatory standards and requirements in the technical regulations and normative documents			2003	
36	ST RK 1.12-ST RK 1.37-2013 The state system of technical regulation of the Republic of Kazakhstan. Funds of regulatory technical documents. Organization of work on information and regulatory support of enterprises and organizations			2013	
37	ST RK 1.12-ST RK 1.47-2010 The state system of technical regulation of the Republic of Kazakhstan. Standardization Service. The establishment, responsibilities and rights			2010	
38	P RoK 50.1.6-2006 Guidelines for the selection and development of draft technical regulations			2006	
	ST RK 2.0-2005 National system for ensuring the uniformity of measurements of the Republic of Kazakhstan. General Provisions			2005	
39	ST RK 2.0-2ST RK 2.3-2009 National system for ensuring the uniformity of measurements of the Republic of Kazakhstan. Measurement standards. Basic provisions, procedure for the building, approval, storage and application			2009	
40	ST RK 2.4-2007 National system for ensuring the uniformity of measurements of the Republic of Kazakhstan. Verification of measurement tools. Organization and procedure			2007	
41	ST RK 2.15-2013 National system for ensuring the uniformity of measurements of the Republic of Kazakhstan. The state metrological control and metrological control. General Provisions			2013	

42	ST RK 2.42-2002 National system for ensuring the uniformity of measurements of the Republic of Kazakhstan. Types of measurements. Classification			2002	
43	ST RK 2.154-2009 State system for ensuring the uniformity of measurements of the Republic of Kazakhstan. The procedure of the state metrological control over release, condition and application of measuring instruments, the use of measurement techniques, standards of measurements units and compliance with metrological rules and norms			2009	
44	Standartization	A.A.Shakkaliev A.T.Kanayev, A.T.Alchi-kanova	RSE Kazakhstan Institute of Standar-dization and Certi- fication	Astana-2013	
45	Product Standardization	G.Jumadilova	Foliant	Astana-2010	
46	Metrology, Standardization and Certification	L.I. Syzdykova	Foliant	Astana-2011	
47	Storage and technology of agricultural products	L.A. Trisvyatsky, B.V. Lesik, V.N. Kurdina; under the general editorship of L.A. Trisvyatsky		M-2014	
48	Technology of Public Food Production	V.P. Melnikov		M-2011	
49	Quality Management	S. Gembris		M-2013	
50	Quality Management	E.S.Askarov		A-Ата-2012	
51	Standardization, Certification and Management System	K.E.Karzhaubayev	Nur-Print	Astana -2011	
52	Course of lectures in the dicscipline "The standardization of food products"	I.I. Gaidai		Kostanai-2011	
53	Standardization, Certification and Management System	I.I. Gaidai		Kostanai -2008	
54	Metrology, Standardization and Certification	A.I.Aristov, L.I.Karpov	Academy	M-2008	
55	Fundamentals of Standardization, Metrology, Certification	O.P. Yablonsky	Unity-Dana	M-2010	
56	Standardization, Metrology and Certification	E.S. Askarov	Ekonomika	A-Ata-2011	
57	Standardization, Metrology and Conformity of Compliance	Lifits I.M.	Yurayt	M-2010	
58	Standardization and Product Quality Management	V.A. Shvandara	Unity-Dana	M-2010	
59	Standardization, Metrology and Conformity of Compliance	F.L. Tedeyeva	Feniks	Rostov-on-Don 2009	
60	Guidelines for the implementation of practices and seminars in the dicsipline “Standardization”	A.A. Muratov	KIPU	Kostanai -2011	

61	Fundamentals of Standardization, Metrology and Certification	M.I. Basakov	MarT	M-2007	
62	Commodity Merchandising, Examination and Standardization	A.A. Lyashko, A.P. Khodykin,	Dashkov i K°,	M-2011	
63	Metrology, Standardization and Certification	Z.A. Khrustaleva.-	Moscow: Knorus	M-2011	
64	Metrology, standardization and certification	Khrustaleva Z.A.	Moscow, Кнорус	M-2011	
65	Resolution of the Government of the Republic of Kazakhstan"On mandatory confirmation of compliance of products in the Republic of Kazakhstan"	Astana		**20 .04 2005 № 367**	
66	On the resolution of the Interstate Council of the Eurasian Economic Community	Decision of the EurAsEC Interstate Council		from 31.05.2001 № 3	
67	Formation of the legal framework for the customs union within the framework of the Eurasian Economic Community	Decision of the EurAsEC Interstate Council		06.10.2007 № 1	
68	Agreement on the Commission of the Customs Union		Dushanbe	06.10.2007	
69	Action plan on the implementation of the Agreement on the circulation of products, which are a subject to mandatory assessment (confirmation) of compliance in the territory of the customs union	Decision of the EurAsEC Interstate Council	Moscow	11.12.2007 № 27	
70	**AGREEMENT** on mutual recognition of accreditation of certification bodies (conformity **assessment**) and testing laboratories (centers) performing works on conformity assessment (confirmation)	Decision of the EurAsEC Interstate Council (Appendix 1)	Moscow	11.12.2007 № 27	
71	AGREEMENT on the circulation of products, which are a subject to mandatory conformity assessment (confirmation) in the customs territory of the customs union	Decision of the EurAsEC Interstate Council (Appendix 2)	Moscow	11.12.2007 № 27	
72	On technical regulation in the customs union	Decision of the Customs Union Commission	Saint-Petersburg	18.06.2010 № 319	
73	POSITION on the procedure for the application of standard evaluation schemes (confirmation) Compliance with the requirements of technical regulations of the Customs Union	Decision of the Customs Union Commission	Moscow	07.04. 2011 № 621	
74	On issues of technical regulation in the Customs Union	Decision of the Customs Union Commission	Moscow	17.08.2010 № 343	
75	On uniform of the certificate of conformity and declaration on compliance with the technical regulations of the Customs Union and the rules for their registration	Decision of the Collegium of the Board of the EEC	Moscow	25.12.2012 № 293	
76	On approval of the Regulations of Registration of declarations of conformity of products to the requirements of technical regulations of the Customs Union	Decision of the Collegium of the Board of the EEC	Moscow	09.04.2013 № 76	
77	On the Unified List of Products, which is a subject to a mandatory assessment (Confirmation) of Compliance within the Customs Union with the Issuance of Unified Documents	Decision of the Customs Union Commission	Moscow	07.04.2011 № 620	
78	Metrology, standardization and certification **http://antic-r.narod.ru/**	**Dimov Y.V.**			
79	http://slideplayer.com/slide/9147701/				