QUALITY MANAGEMENT SYSTEM

**STANDARD OF ORGANIZATION**

**General requirements to modular programS structure, statement and preparation**

**QMS SO 1.1.09 - 2012**

**Copy No. original**

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**Karaganda**

**Preface**

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**2** **SUBMITTED** by the Center of quality management and accreditation

**3 CONFIRMED AND PUT INTO ACTION** by KSTU order No.\_\_\_\_\_

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**6 INSPECTION INTERVAL** 1 year

**7 INTRODUCED INSTEAD OF** QMS SO 1.1.09-2012 (version 1) “General requirements to modular programs structure, statement and preparation”.

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**CONFIRMED by**

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**\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_, 2012**

QUALITY MANAGEMENT SYSTEM

**STANDARD OF ORGANIZATION**

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| **General requirements to modular programs structure, statement and preparation**  **QMS SO 1.1.09 - 2012** |

Date of introduction\_\_\_\_\_\_\_\_\_\_\_\_

(year, month, date)

**1 Scope**

The present standard of organization defines the purpose, tasks and characteristics of modular programs of training in the conditions of realizing the credit technology of training, contains the unified requirements to the structure and preparation of documentation which is a part of the educational module and establishes the order of the development, coordination and the approval of the educational module specification.

The present standard of organization is applied by heads of structural divisions, the faculty and the staff of all institutes of the RSE "Karaganda State Technical University" (hereinafter KSTU) and is a part of documents of the quality management system.

**2 Standard links**

For using the present standard there are needed the following standard links:

ST RK ISO 9001–2009 Quality management systems. Requirements.

IS ISO 9000:2005 Quality management systems. Basic propositions and glossary.

IS ISO 9001:2008 Quality management systems. Requirements.

RK SMSE 5.04.019 – 2011 State general obligatory standard of education of the Republic of Kazakhstan. Higher education. Bachelor’s degree. Basic provisions.

RK MES order of 20.04.2011 No.152 Regulations of organizing the teaching process according the credit technology of training.

QMS DP 01 – 2011 Quality management system. Documented procedure. Document management.

QMS DP 02 – 2011 Quality management system. Documented procedure. Records management.

QMS SO 1.1.01–2011 General requirements to structure, statement and preparation the quality management documentation.

QMS SO 1.1.02-2011 Regulations of training documentation preparation. General requirements to text documents.

**3 Definitions**

In the present standard there are used the terms and definitions in compliance with the Law of the Republic of Kazakhstan "Of education" (2007), the Bologna Declaration (1999) and other international documents in the sphere of education, the European system of credits transfer and accumulation, ISO 9000, RK SMSE 5.04.019.

The introduction of the credit technology of training demands for the development of a new conceptual framework. In recent years it is caused by the broad use of the English-language terms which were not used before in the system of training.

For this reason the present standard, in connection with the introduction of the credit technology of training, contains the glossary including the main concepts characterizing the credit system of training:

- **academic achievements of the trainee** is knowledge, abilities, skills and competences which are acquired by the students in the course of training and reflect the reached level of the personality development;

- **academic degree** is a category conferred by organizations of education to the trainees who mastered the appropriate educational training programs, by the results of final certification;

- **academic mobility** is the trainees’ or teachers’ travel for training or carrying out research for a certain academic period (term or academic year) at other higher educational institutions (within the country or abroad) with the obligatory re-accounting the mastered educational programs in the form of credits at the home higher education institution or for continuation studying at another higher education institution;

- **advisor** is a teacher of the chair rendering assistance to the trainees in a corresponding specialty in selecting the trajectory of training (formation of ITP) and the development of the curriculum within the period of training.

**- bachelor, master, doctor** are academic degrees conferred to the trainees who mastered the appropriate educational programs of higher and postgraduate professional education;

**- bachelor’s degree program** is a professional training program of higher education aimed at specialists training with conferring an academic degree of a bachelor in corresponding specialty with standard training period not less than 4 years;

- **competence** is an ability to use the knowledge, abilities, relations and experience e in familiar and unfamiliar labor situations;

- **control of academic achievements** is checking the academic achievements of the trainees in a concrete discipline on the basis of various control tasks (written works, tests, practical works, portfolio, oral polls, examinations, etc.); the control is subdivided into current, midterm and final ones;

- **credit, credit-hour** is a unified unit of measure of the volume of the academic work of a trainee/a teacher;

- **credit technology of training** is training on the basis of the trainees’ selection and independent planning the sequence of studying disciplines using a credit as a unified unit of measuring the volume of the academic work of a trainee/a teacher;

- **current control of the trainees’ progress** is a systematic examination of students according to the training program carried out by the teacher in class and in out-of-class studies within the academic period;

- **degree work (project)** is a final work with elements of scientific research representing generalization of the results of independent studying by the student of an urgent problem of a concrete specialty of the relevant branch;

**- descriptor** is the description of the level and volume of knowledge, skills and competences acquired by the trainees after completing an educational program of each level (step) of higher and postgraduate education. Descriptors are based on the learning outcomes, formed competences, as well as the total number of ECTS credits;

- **discipline code** is assignment to each discipline of the curriculum of the corresponding designation in symbols of alphabetic and digital expression;

- **distance learning (education at distance)** is one of the training forms, purposeful and methodically organized management of educational cognitive activity and development of persons who are at a distance from organizations of education by means of electronic and telecommunication means;

**- doctoral studies is a professional educational program of postgraduate education aimed at preparation of scientific and pedagogical staff with conferring an academic degree of a doctor of philosophy** (PhD) or a doctor on the profile with the standard term of training not less than 3 years;

- **elective component** is the list of subject matters and corresponding minimum amounts of credits or class periods offered by higher educational institutions selected by students in any academic period taking into account their prerequisites and post-requisites;

- **enrollment** is a procedure of preliminary fixing the trainees for subject matters in accordance with the established procedure;

- **European system of credits transfer and accumulation (ECTS)** is a way of assignment of test units (credits) to the components of educational programs (disciplines, courses, modules) by means of which there is made comparison and re-account of the mastered subject matters (with credits and marks) when changing an educational trajectory, educational institution and the country of training;

- **final certification of trainees (Qualification Examination)** is a procedure which is carried out for the purpose of defining the extent of the developing the volume of the subject matters provided by the state obligatory standard of education;

- **great point average (GPA**) is the average assessment of the level of academic achievements which of a trainee in one academic year according to the selected program (ratio of the sum of credits products for the digital equivalent of points of assessment of intermediate certification for disciplines to total of the credits for the current period of training);

- **intermediate certification of the trainee** is a procedure which is carried out in the period of examinations for the purpose of assessing the quality of the trainee’s development of the content of a part or the entire volume of a subject matter after completing its studying;

- **midterm examination** is a periodic checking the trainees’ academic achievements carried out by the teacher conducting educational classes according to the approved academic schedule;

- **module,** according to the UNESCO definitionis an independent and complete section of educationalprograms or a training period;

**- modular training** supposes the studied material/course structuring in the form of separate interconnected blocks that can be studied in a convenient for a trainee sequence and that can be complemented and combined without breaking the general content;

- **modular program**  is a training program constructed on the basis of such combination of modules which provides the necessary degree of flexibility and freedom in selection and completion of the demanded concrete training material for training and independent studying by the trainees;

- **office hours**, i.e. trainee’s independent work under the teacher’s supervision (further – TIWT), out-of-class work under the leadership of the teacher carried out according to the approved schedule. Depending on the trainee’s category it is subdivided on: student’s independent work under the leadership of the teacher (further - SIWT), undergraduate’s independent work under the leadership of the teacher (further – UIWT) and doctoral candidate’s independent work under the leadership of the teacher (further - DIWT);

- p**art-time education** is a training form realized by the combination of visiting studies, transferring training materials and distance learning at which the trainees mastering less than the established in a term quantity of credits within the bigger number of terms gains necessary total of the credits;

- **standard training program (STP**) is an educational document developed on the basis of the state obligatory standard of education which defines the content, the volume and the order of studying the disciplines of the core component of the standard curriculum reflects a circle of the main knowledge, abilities, skills and competences necessary for the development, the recommended literature and is approved by an authorized body in the field of education;

- **trainee’s independent work (TIW)** is the work by a certain list of subjects which are taken away for independent studying, provided with educational and methodological literature and recommendations, controlled in the form of tests, examinations, colloquiums, papers, compositions and reports. Depending on the trainee’s category it is subdivided into student’s independent work (SIW), undergraduate’s independent work (UIW) and doctoral candidate’s independent work (DIW). The entire volume of SIW is confirmed by the tasks requiring from the trainees daily independent work;

- **transcript** is a document containing a list of the mastered disciplines for the corresponding period of training with the indication of credits and marks in alphabetic and digital expression;

- **tutor** is a teacher who is conducting studies and acting in the role of an academic consultant of students for the development of concrete disciplines;

- **two-degree education** is a possibility of parallel training by two curricula for the purpose of obtaining two equivalent diplomas (Double Major) or one basic and a second additional diplomas (Major-Minor).

**4 Designations and abbreviations**

In the present standard there are used the following abbreviations:

RK ST – standard od the Republic of Kazakhstan;

SOSE – state obligatory standard of education;

SIW – student’s independent work;

SIWT – student’s independent work under supervision of a teacher;

WTP – working training plan;

WTPr – working training program;

ITP – individual training plan;

STP – standard training plan;

STPr – standard training program;

SО – standard of organization;

ARQ – administration representative for quality;

WG – working group;

CQM&A –Center of quality management and accreditation;

QMS - quality management system;

DP – documented procedure.

**5 Responsibility and authorities**

5.1 The present standard of organization (SO) is confirmed by KSTU rector.

5.2 Responsibility for the requirements introducing indicated in the present SO lies on the administration representative for quality (ARQ).

5.3 Responsibility for the development of the present SO requirements, their compliance with QMS SO 1.1.01 lies on the working group head.

5.4 Responsibility for the present SO management in accordance with QMS DP 01 lies on the head of the Center of quality management and accreditation (CQM&A).

**6 General provisions**

Fast changes in the present day society demand for new productive approaches to the training of highly qualified specialists. Therefore the teaching activity should be considered today as using the reliable technologies capable to make education flexible, combined, problem, aimed at activation and improvement of training quality. One of such technologies is the technology of modular training.

**The purpose of modular training** is stage-by-stage increasing the level and quality of the training process on the basis of developing focused on various results special programs.

The advantages of modular training are:

- a possibility of multilevel training (that is defined by the module structure);

- forming the conditions for the development of students’ communicative skills, close contact with the teacher through an individual approach;

- developing the conditions for more conscious and motivational studying the professionally significant disciplines;

- reducing stressful situations within the period of passing tests or examinations.

The birth of the ideas of modular training can be referred to the 60-s, when S.N. Postlezvaytt (USA) offered the concept of units of the training content according to which a small portion (unit) of the training material can be considered as an autonomous subject and integrate freely into the program of studies. S.N. Postlezvaytt called these units "microcourses", later on "minicourses". Their content and volume were defined by didactic tasks. For the first time minicourses were introduced and gained fast distribution at colleges and universities of the USA. Later on these concepts were generalized in the concept "module" and, respectively, "modular training" (modular instruction).

By the treatment of one of initiators of modular training, J. Russell, a module represents an educational package covering one conceptual unit of the training material. The semantic sense of the term "module" (Latin *module*) is a functional node.

The development and formation of modular training in various branches of education in the 60-70-s happened mainly in the developed capitalist countries: the USA, England, Canada, etc. Within this period there formed the conceptual base of modular training, there were studied various approaches to allocation of modules, the development of modular programs; there was defined the scope and efficiency of modular training.

In the early 70-s the International Labor Organization (ILO) began its independent work at studying and developing the concept of vocational education focused on quickly changing production, and the development of new types of the educational and methodological documentation suitable for self-training. The main difference of the modular system of training developed by the ILO from the traditional vocational education is the system approach to the analysis of studying a concrete production activity that excludes training in separate disciplines and subjects of the thematic plan. The basis of modular training programs are the production targets contained in works, specialties and professions.

After the World Conference of UNESCO of 1972 in Tokyo where there were discussed the problems of education of adults, the technology of modular training was recommended as the most suitable for continuous training.

At present there is most quickly developing the theory of modular training on the basis of competence-based approach.

In EU countries a **competence** is a measure of compliance of knowledge, abilities and experience to the real level of complexity of the carried-out tasks and the solved problems.

There are distinguished **technical competences** relating to the sphere of professional activity and **through competences** relating to the social, communicative, methodical and other competences demanded within various professions and fields of activity.

The development of the working curriculum and the modular programs of training based on competences is to be begun with the functional analysis.

The functional analysis is one of ways of describing the types of activity:

- knowledge and abilities;

- types of the performed works;

- the reached results.

Having carried out the functional analysis it is necessary to develop "a functional card" of a profession or specialty which defines the major functions demanded for when performing certain kinds of the graduate’s activity.

**7 Requirements to the development of a modular educational competence-**

**based program**

7.1 Specialty functional card structure

A functional card of specialty consists of five levels:

The 1st level defines the main objective which describes a profession but as a result of what is required to be reached. The purpose is to be MEASURABLE and OBSERVABLE.

The 2nd level establishes the main functions which permit to achieve the main objective. These functions will be analyzed later on in formulations, each of which will become an educational module.

The 3rd level: on the functional card this level is called functional modules which describe the specific actions making a concrete competence.

The 4th level describes the sphere of competences.

At the 5th level there are formed educational modules.

The structure of a functional card is presented in Figure 1.

The main objective

Function A

Функция А

Function В

Function С

Module А1

Module А2

Module В1

Module В2

Module С1

Module С2

Sphere of competences

Sphere of competences

Sphere of competences

Training module А1

Training

module А2

Training

module А3

Training

module В1

Training

module В2

Training module В3

Training

module С1

Training

module С2

Training

module С3

Adapting module

Adapting module

Adapting module

Figure 1 - Functional card of specialty

7.2 The main objective

The formulation of the main objective has the following grammatical structure.

The first part is a description of an action or the actions demanded for achieving the result. It is a verb or some verbs. Then there is described the object of an action, by means of a noun or several nouns. At last, if there is a need, there is described the context/situation of an action: this can be an action purpose, the person at whom the action is aimed.

*Example:*

A bachelor of mechanical engineering develops and designs technological processes of producing different types of production, equipment, facilities, tools; carries out the compliance assessment of specifications and technical documentation; solves design, technical and technological problems; organizes routine inspections and maintenance of means of production, measurement, testing and control; develops the design, technological and operational documentation, new technologies, techniques of testing the equipment and facilities for concrete productions.

Develops and designs technological processes of production of different types of production, equipment, facilities, tools; carries out the compliance assessment of specifications and technical documentation; solves design, technical and technological problems; organizes routine inspections and maintenance of means of production, measurement, testing and control; develops the design, technological and operational documentation, new technologies, techniques of testing the equipment and facilities for concrete productions

Figure 2 – Level 1 “Formulation of the main objective”

7.3 The basic functions

The basic functions permit to achieve the main objective of specialty and represent the description of those specific actions by means of which the main objective of the profession is achieved. The number of functions depends on the profession complexity. Each function contains a complete group of requirements to the carried-out actions.

*Example:*

The basic functions (qualifications) of a bachelor-mechanical engineer are: a job foreman, a process engineer, a design engineer, an engineer-welder, a mechanical engineer, etc. (Qualification and positions are defined according to the "Qualification reference book of positions of heads, experts and employees", approved by the order of the Ministry of Labor and Social Protection of Population of 22.11.2002, No. 273-P.)

Process engineer

Design engineer

Engineer-welder

Figure 3 – Level “Basic functions establishment”

7.4 Functional modules

After defining the basic functions, each basic function is subdivided into a number of smaller units making it, each of which is called "a functional module" or "a professional module" and describes specific actions making a concrete competence.

*Example:*

Defining functional modules (trajectories of training) is a possibility of working as a foreman of a mechanical site or a technologist determines the need of training by the trajectory "Technology of mechanical engineering, metal-cutting machines and tools".

Process engineer

Technology of mechanical engineering, metal-cutting

machine tools

Figure 4 – Level 3 “Defining the functional modules”

7.5 Sphere of competences

It is necessary to establish the sphere of competences, i.e. sphere of knowledge, skills and abilities (in some sources – experience) that is to be possessed by a graduate after training in the given specialty.

*Example:*

A bachelor of mechanical engineering is to be able to develop and introduce system, resource-saving technologies; technological processes of machining and assembling products; to have skills of automation of machine-building production; developing continuous line productions, automated complexes, flexible automated productions; to be able to introduce highly effective means of technological equipment, to have skills of ensuring environmental friendliness of machine-building production.

the development, introduction and operation of system, resource-saving technologies; development and deployment of technological processing and assembling products; automation of machine-building production; developing continuous line productions, automated complexes, flexible automated productions; introduction of highly effective means of technological equipment ensuring environmental friendliness of machine-building production

Figure 4 – Level 5 “Defining the sphere of competences”

7.6 Developing training modules

It is necessary to develop carefully each module. For the development it is necessary:

- to find out a contour of the exact content of the module;

- to provide standards which are to be used in the demanded training;

- abilities and knowledge which will be given and demanded;

- resources which will be required for training process supporting.

Functional modules are projected, that is formulated in the structure of the program of training as training modules. Training modules are subdivided into groups:

- training (technical) modules;

- adapting modules.

**Adapting modules** in themselves do not make tangible results, but the knowledge of an adapting module is necessary in a number of production functions, therefore, instead of their revising in each educational module, this type of qualification is allocated in one adapting module.

*Example:*

To obtain the corresponding competences in specialty 5B071200-Mechanical engineering it is required studying the following training (technical) modules:

A1 module: Mathematics;

A2 module: Physics;

A3 module: Engineering graphics, Information technologies in mechanical engineering;

A4 module: Theoretical mechanics, Resistance of materials;

A5 module: Theory of cutting, Cutting tools;

A6 module: Mechanics of liquids and gases, Bases of electric engineering, Metal-cutting machine tools;

A7 module: Theory of mechanisms and machines, Bases of design and machine parts;

A8 module: Technological preparation of production, bases of CAD;

A9 module: TP CAD, AO&APP

A10 module: Mathematical modeling in mechanical engineering, Bases of designing facilities;

A11 module: Technological processes of machine-building production;

A12 module: Constructional materials and heat treatment, Design and production of blanks;

A13 module: Bases of mechanical engineering technology, Technology of production.

Sphere of competences

А1 module: Mathematics

А2 module: Physics

А4 module: Theoretical mechanics, Resistance of materials

А5 module: Theory of cutting, Cutting tools

А6 module: Mechanics of liquids and gases, Bases of electric engineering

А8 module: technological preparation of production, Bases of CAD

А9 module: TP CAD, AO&APP

Figure 6 – Level 6 “Forming training modules”

Then we carry out the formation of the adapting modules, such as History of Kazakhstan, Philosophy, Political science, the Kazakh (Russian) language, the Foreign language, Sociology, Bases of the law, Bases of health and safety, etc.

History of Kazakhstan

Kazakh (Russian)

Foreign language

Informatics

Philosophy

Ecology and sustainable development

Political science

Bases of economic theory

Sociology

Bases of law

Profession-oriented foreign language

Bases of health and safety

Professional Kazakh (Russian)

Figure 7 – Adapting modules

A module is formed of:

1) large-volume (3 and more credits of the Republic of Kazakhstan or 5 and more credits of ECTS) and completed in time and content disciplines;

2) small-volume and mutually supplementing each other disciplines;

3) several related, adjacent subjects (further on - compound components) which provide the continuity of the training program and represent various levels of one discipline. The related subjects provide the module interdisciplinary character and are aimed at the formation of a wide range of needed competences which are beyond one module.

7.8 The total number of credits in a module should not exceed 9 credits of the Republic of Kazakhstan.

7.9 All types of practice and degree works represent separate modules.

7.10 The duration of one module makes not less than one academic period. Large-volume modules can proceed within one academic year but no more.

7.11 The requirements to the development and an example of the working curriculum based on training modules is presented in QMS SO 1.1.08 – 2012 “General requirements to construction, statement and preparation of working curricula in the European ECTS system.

**8 Assessment and monitoring of training modules**

8.1 Condition for obtaining the module credits is the positive evaluation by summative assessment and carrying out all types of the works provided by the module.

8.2 In case the module consists of one discipline, then a graduation evaluation of the module is the summative assessment result of this discipline. In addition the summative assessment includes estimates of types of the works provided by the training program of discipline (practical, laboratory, computational graphic and course works).

The summative module assessment consisting of one discipline on which only examination is provided and calculated by formula:

, (1)

where А1 and А2 are grades of the first and second midterm examinations;

E is an examination grade;

0,4 and 0,6 are accordingly coefficients of an examination grade weight and midterm examination grades.

The summative module assessment consisting of one discipline on which examination and a course work (paper) is provided and calculated as average by formula:

, (2)

where SMK is the summative assessment of a course work (paper) is calculated by formula:

, (3)

where DC is grade of course work (paper) defense.

8.3 In case the module consists of several disciplines, the share of each compound component as credit to total of the credits, i.e. weight coefficient is determined by each discipline.

*Example:*

**The Processing equipment module** consists of three disciplines: Fluid mechanics (**3 credits**), Fundamentals of electrical engineering (**2 credits**), Metal-cutting machines (**4 credits**). The total amount of the credits of the module makes 9 credits. Then coefficients of weight of each discipline are calculated as follows:

Fluid mechanics: **α1=3/9=0,33**

Fundamentals of electrical engineering: **α2=2/9=0,22**

Metal-cutting machines: **α3=4/9=0,45**

The sum of weight coefficients has to be equal to **1 (unit)**.

8.4 In case the module consists of several components (disciplines), then examination is carried out by the main component, and a form of summative assessments by other components are term paper, tests, computational graphic works, computational work, abstract.

The summative module assessment consisting of several disciplines is calculated as the sum of works of weight coefficients to the final grade on the corresponding discipline:

, (4)

where αi and Si are accordingly weight coefficient and final grade on “i” discipline.

The summative assessment on “i” discipline on which examination isn't provided, calculated by formula (3). The summative assessment on the main component on which examination or examination and term paper (project) defense is provided, calculated by formulas (1)-(3).

8.5 The main component of the module is considered the discipline:

- if it is a post requisite of others;

- if it has the largest weight coefficient among the disciplines which are complementing each other;

- if it makes a basis of specialty and is directed for formatting professional competences among the equal credits disciplines which are complementing each other.

8.6 In unsatisfactory assessment (less than 50%) of one of compound components of the module, the module credits aren't given.

8.7 For defining quantity of the module credits labor costs of the trained have to be calculated. All types of the module work (lectures, discussion sessions, independent work, educational practices, preparation for classes and examinations, outside preparations) include concept of labor costs.

8.8 The monitoring in the form of students questionnaire is regularly carried out to calculate labor costs. Trainees state time expenses spent for the certain type of work assumed by the module. Survey of the trainees is conducted two times a year by the Center for quality management and accreditation. Results of the conducted research are led up to the top management.

**9 Requirements to the content and preparation of training modules**

9.1 Developing the content of modules begins with planning of the expected results of training (hereinafter referred to as results of training). Results of training are described as knowledge, skills which the trainees show upon termination of the module.

Results of training on compound components promote achieving results of training of the whole module.

9.2 Content and preparation of training modules

According to the Order RK MES of April 20, 2011 No. 152 "Organization rules of training process according to the credit technology of education" the description of the module is presented as "The specification of the module" and has to include the following components:

1) title sheet;

2) preface;

3) name of the module and code;

4) responsible for the module;

5) module type;

6) module level;

7) number of hours a week;

8) number of credits;

9) mode of study;

10) semester;

11) number of trainees;

12) module prerequisites;

13) module contents;

14) results of training;

15) form of summative assessment;

16) conditions for obtaining credits;

17) module duration;

18) revision date.

**10 Coordination, storage, distribution**

10.1 Distribution of the present SO for review is carried out by the head of WG. The expert group which structure is stated in the preface gives a review.

10.2 Coordination of the present SO is carried out by ARQ and made out in "Sheet of coordination" (Appendix B).

10.3 Compliance assessment of the present SO is carried out according to QMS SO 1.1.05.

10.4 The head of WG is responsible for assignment of the present SO (first copy) to the storage to CQM&A.

10.5 CQM&A is responsible for storage, copying and distribution of the present SO to subscribers.

**11 Amendments**

Development, formatting, coordination and approval "Change notices" of the present SO, and also introduction of changes into it has to be made according to QMS GP 01 and registered in "Revision Record Sheet" (Appendix G).

**Appendix А**

(reference)

Example of preparing a training module specification

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| Ministry of Education and Science of the Republic of Kazakhstan  Karaganda State Technical University  **Confirmed by**  **Vice-rector for I&AMW, ARQ**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **\_\_\_\_\_\_\_\_\_ \_\_\_, 201\_\_\_**  **SPECIFICATION OF TRAINING MODULE**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (module code and name)  For students of specialty \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (specialty code and name)  Institute \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Chair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  20\_\_\_ |

**Continuation of Appendix А**

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| **Preface**  Specification of the training module is developed by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (academic degree, title, name)  Discussed at the meeting of the chair\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (chair name)  Minutes No. \_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_, 20\_\_\_.  Chair head \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_, 20\_\_\_.  (signature)  Approved by the Institute methodological bureau\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (Institute name)  Minutes No \_\_\_\_\_\_\_\_ of\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_. 20\_\_\_.  Chairman \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_, 20\_\_\_.  Agreed with the chair\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (chair name)  Chair head \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_, 20\_\_\_.  (signature) |

**Continuation of Appendix А**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **The module description form**   |  |  | | --- | --- | | Module code and name | Systems of computer-aided design - SAPR 23 | | Responsible for the module | Academic degree, title, position, name | | Module type | General obligatory module/obligatory module in specialization, elective module | | Module level | BA/MA/PhD | | Number of hours a week |  | | Number of credits |  | | Form of training | Full-time | | Term |  | | Number of students | Minimum/maximum number | | Module prerequisites |  | | Module content | AMCD “Technological preparation of production”  AMCD “Bases of CAD” | | Learning outcomes | Formulate in the form of subject and over-subject competences:  1.  2.  3. | | Form of final control |  | | Conditions for credits granting | Executing all types of works provided by the module, indicate them | | Module duration | One term or two terms | | Literature | 1.  2.  3. | | Updating |  | |

**Appendix B**

(obligatory)

F.1.01-01

Sheet of coordination

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| --- | --- | --- | --- |
| Position | Name | Date | Signature |
| Vice-rector for I&AMW, ARQ | Issagulov A.Z. |  |  |
| Vice-rector for AW | Yegorov V.V. |  |  |
| Expert | Portnov V.S. |  |  |
| Compliance assessment | Zhunussova A.Sh. |  |  |
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**Appendix C**

(obligatory)

F.1.01-02

Sheet of acquaintance

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**Appendix D**

(obligatory)

F.1.01-03

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| Sheet of registering amendments | | | | | | | | | |
| Amendment number | No of notification of amendment | Number of pages | | | | Total pages (after amendments) | Date of introducing | Name of the person who made amendments | Signature of the person who made amendments |
| Amended | Replaced | New | Annulled |
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**Appendix E**

(obligatory)

F.1.01-04

Sheet of registering periodic inspections

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| Date of inspection | Name of the person who made an inspection | Signature of the person who made an inspection | Formulations of remarks |
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