	COOMET Information Material	COOMET I/TR/12/2022
	Training systems for metrologists in COOMET member countries	
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This information material was prepared based on the results of the implementation of COOMET project 731/BY-a/17 "Review of national education & training systems for the NMIs and metrologists of the COOMET member countries", within the framework of which the systems of obtaining basic education, training, raising proficiency level and retraining of personnel, training of scientific personnel of the highest qualifications of NMIs/DIs and metrologists of COOMET member countries were analyzed.

The information material presents generalized data on the training of metrologists and scientific metrological personnel, on the qualification requirements for specialists who carry out verification, calibration and scientific research in the countries participating in the project.

Information about education systems in the COOMET member countries is given in the Annex.

## 1. TRAINING OF METROLOGY SPECIALISTS

The levels of professional education of metrology specialists and educational institutions that train them are shown in tables 1–2.

Table 1

Training of metrologists is provided by:	AZ	BY	KZ	KG	RU	UZ	UA
colleges	x	x	x		x	x	x
secondary schools	x	x			x		
institute	x	x			x	x	x
academy	x				x		x
university	x	x	x	x	x	x	x
graduate school		x	x				
doctoral studies							

Table 2

Additional professional education for metrologists – raising of proficiency level and retraining of personnel - is carried out:	AZ	BY	KZ	KG	RU	UZ	UA
on the basis of higher educational institutions	x	x			x	x	x
in a specialized center for raising proficiency level		x	x	x	x	x	x
at special courses at the bodies of the state metrological service	x	x	x	x	x	x	x

## 2. TRAINING OF SCIENTIFIC METROLOGICAL PERSONNEL

The levels of professional education of scientific metrological personnel and educational institutions that train them are shown in tables 3–4.

Table 3

Training of scientific metrological personnel is provided by:	AZ	BY	KZ	KG	RU	UZ	UA
institute	x					x	
university	x	x				x	
graduate school		x	x		x		x
doctoral studies	x	x			x	x	x

Table 4

Additional professional education for metrologists - raising of proficiency level and retraining of personnel - is carried out:	AZ	BY	KZ	KG	RU	UZ	UA
on the basis of higher educational institutions	x	x			x	x	
in a specialized center for raising proficiency level	x	x			x	x	x
at special courses at the bodies of the state metrological service	x	x			x	x	x

### 3. QUALIFICATION REQUIREMENTS FOR SPECIALISTS PERFORMING VERIFICATION

The qualifications of specialists performing verification, raising the proficiency level and retraining of verifiers and special requirements for admission to verification are given in tables 5–7.

Table 5

Qualification of specialists performing verification	AZ	BY	KZ	KG	RU	UZ	UA
Technician	x	x	x		x		x
Bachelor	x	x	x	x	x	x	x
Certified engineer	x	x	x	x	x		x
Master degree	x	x	x	x	x	x	x
Candidate	x	x	x	x	x		x
Doctor			x	x			x

Table 6

Additional professional education - raising of proficiency level and retraining of personnel:	AZ	BY	KZ	KG	RU	UZ	UA
on the basis of higher educational institutions	x	x			x	x	x
in a specialized center for raising proficiency level	x	x	x	x	x	x	x
at special courses at the bodies of the state metrological service	x	x		x	x	x	x

Table 7

Special requirements for admission to verification	AZ	BY	KZ	KG	RU	UZ	UA
Obligatory completion of courses for raising proficiency level	x	x	x	x	x	x	x
Voluntary completion of courses for raising proficiency level			x				x
Obligatory certification of personnel	x	x	x			x	
Voluntary certification of personnel					x		x

#### 4. QUALIFICATION REQUIREMENTS FOR SPECIALISTS PERFORMING CALIBRATION

The qualifications of specialists performing calibration, raising the proficiency level and retraining of the staff, special requirements for admission to performing calibration are given in tables 8–10.

Table 8

Qualification of specialists performing calibration	AZ	BY	KZ	KG	RU	UZ	UA
Technician	x	x	x		x	x	x
Bachelor	x	x	x	x	x	x	x
Certified engineer	x	x	x	x	x		x
Master of degree	x	x	x	x	x	x	x
Candidate	x	x		x	x	x	x
Doctor	x			x			x

Table 9

Additional professional education - raising the proficiency level and retraining of personnel	AZ	BY	KZ	KG	RU	UZ	UA
on the basis of higher educational institutions	x	x			x	x	x
in a specialized center for raising proficiency level	x	x	x	x	x	x	x
at special courses at the bodies of the state metrological service	x	x		x	x	x	x

Table 10

Special requirements for admission to calibration	AZ	BY	KZ	KG	RU	UZ	UA
Obligatory completion of courses for raising proficiency level	x	x		x	x	x	x
Voluntary completion of courses for raising proficiency level		x	x				x
Obligatory certification of personnel						x	
Voluntary certification of personnel	x		x		x		x

#### 5. QUALIFICATION REQUIREMENTS FOR SPECIALISTS CARRYING OUT SCIENTIFIC RESEARCH

The qualifications of specialists who carry out scientific research, raising proficiency level and retraining of personnel and other requirements for specialists who carry out scientific research are given in tables 11–13.

Table 11

Qualification of specialists performing scientific research	AZ	BY	KZ	KG	RU	UZ	UA
Technician							
Bachelor	x	x	x			x	
Certified engineer	x	x	x			x	
Master	x	x	x	x	x	x	x
Candidate	x	x	x	x	x	x	x
Doctor	x	x	x	x	x	x	x

Table 12

Additional professional education - raising the proficiency level and retraining of personnel	AZ	BY	KZ	KG	RU	UZ	UA
on the basis of higher educational institutions	x					x	x
in a specialized center for raising proficiency level			x			x	x
at special courses at the bodies of the state metrological service	x					x	x

Table 13

Other requirements for specialists carrying out scientific research	AZ	BY	KZ	KG	RU	UZ	UA
Obligatory completion of courses for raising proficiency level			x	x	x	x	
Voluntary completion of courses for raising proficiency level	x	x	x				x
Obligatory certification of personnel						x	
Voluntary certification of personnel	x		x		x		x

## INFORMATION ON EDUCATIONAL SYSTEMS IN COOMET MEMBER COUNTRIES



### Azerbaijan

#### *Education system in the Republic of Azerbaijan*

In the Republic of Azerbaijan, general school education consists of three stages - primary, general secondary and complete secondary education. General secondary school education begins at the age of 6. General secondary school education is carried out on the basis of relevant educational programs. In the country general secondary school education is carried out mainly in general education schools, in educational institutions of a special orientation, in gymnasiums, lyceums, in primary and secondary professional specialized schools, as well as in colleges and schools at higher educational institutions.

#### *Primary education*

The purpose of primary education is to develop in children the ability to read, write and count, to form their initial life knowledge about man, society, and nature, elements of logical thinking, aesthetic and artistic taste, etc. Primary education is carried out on the basis of appropriate educational program. In the Republic of Azerbaijan primary education begins at the age of six and covers from the first to the fourth years of schooling.

#### *General secondary education*

The task of general secondary education is to form students' oral speech and culture of writing, communication skills, mental activity and logical thinking, ideas and relevant knowledge in the minds in the subjects included in the educational program, as well as knowledge about the development of the world civilization, the ability to use modern information and communication means, evaluate events and the ability to determine the direction of their future activities. General secondary education covers 5 through 9 years of schooling. General secondary education is compulsory in the Republic of Azerbaijan. At the end of the stage of general secondary education, a final assessment of knowledge is carried out and the students who have completed their education are awarded the corresponding state document - a diploma (certificate). This document on general secondary education is considered as the basis for continuing education at the next stage.

#### *Complete secondary education*

The stage of complete secondary education ensures the realization of the talent and abilities of students, preparing them for an independent life and choosing a profession, the formation of an active civil position, respect for national and universal values, human rights and freedom and the ability to communicate in one or more foreign languages etc.

Complete secondary education presupposes full mastering of educational programs covering all three levels of secondary general education.

At this stage of complete secondary education, the direction of education is determined (humanitarian, technical, etc.).

Complete secondary education, being the last stage in the general secondary school system of education, covers 10–11 years of schooling and at this stage the final State attestation is carried out. And according to the results of this attestation, graduates get in the appropriate manner a state model document – a certificate. A document of complete secondary education is considered as the basis for continuing education at the next stage.

### *Primary and secondary professional specialized education*

Primary and secondary professional specialized education on the basis of general secondary education provides training for specialized workers in various specialties and mass professions in accordance with the needs of the society and the labor market.

Primary professional specialized education is carried out in institutions of professional and specialized education in individual organizations, institutions, labor exchanges, in employment organizations and similar educational structures and ends with the issuance of primary professional degrees to graduates in the relevant areas.

Primary professional specialized education is organized on the basis of the relevant educational programs.

Individuals who graduate from primary professional specialized schools on the basis of general secondary education, along with a certificate defining a profession, are issued a certificate - the corresponding State document on complete secondary education.

Secondary professional specialized education on the basis of a general secondary school provides training for specialists in various specialties with secondary education for the spheres of production and services.

Secondary professional specialized education is carried out mainly in colleges and the corresponding structures of higher educational institutions and ends with awarding of graduates with a professional specialized degree – "sub-bachelor". Those who entered educational institutions of secondary professional specialized education on the basis of general secondary education, at the same time receive complete secondary education.

Secondary professional specialized education is built on the basis of the relevant programs. Graduates who have completed secondary professional specialized education get a diploma - a State Model Document.

A document on secondary professional specialized education gives the right to enter a higher educational institution and is considered for obtaining higher education at the next stage of education.

### *Higher education*

Higher education provides training of highly qualified specialists, taking into account the needs of the society and the labor market, on the basis of complete secondary education and secondary professional education.

In Azerbaijan training of specialists in higher educational institutions consists of three cycles:

- first cycle – bachelor's degree;
- second cycle – master's degree;
- third cycle – doctoral studies.

### *Bachelor's degree*

Bachelor's degree - at this stage of education, training of multi-skilled specialists of higher education is carried out in various fields. Graduates who have completed their higher education in a bachelor's degree are awarded the title of a "bachelor" - a level of professional higher specialization.

The field of labor activity of those who graduated from this level of education - bachelor's degree - covers all areas, with the exception of research and scientific and pedagogical activity in higher education institutions.

### *Master's degree*

At the stage of education in the magistracy, specialists of higher education are trained who have the right to engage in scientific and pedagogical activities in higher education institutions and research activities in specialization. Master's degree education ends with the defense of a dissertation, upon successful defense of which, graduates are awarded the degree of the highest scientific specialization of a "master". Graduates who have successfully completed each stage of higher education are issued in the appropriate order a state model document - a diploma.

### *Doctoral studies*

Doctoral studies provide training on the basis of higher education of scientific and scientific-pedagogical personnel, provides an increase in their specialization and scientific degree, being the highest level of higher education. Education in doctoral studies is carried out in scientific organizations and higher educational institutions, in military education institutions - in postgraduate schools created with the assistance of doctoral studies.

In the Republic of Azerbaijan doctoral studies are two-staged and are determined by the following scientific degrees:

1. Doctor of Philosophy with the indication of scientific fields;
2. Doctor of Science with the indication of scientific fields.

Masters and equivalent specialists are admitted to the first stage of doctoral studies in higher educational institutions and scientific organizations in accordance with the established procedure by the relevant executive bodies, doctors of philosophy are admitted to the second stage.

The rules and conditions for awarding the scientific degrees of Doctor of Philosophy and Doctor of Science are determined by the relevant executive bodies. Admission to doctoral studies in higher educational institutions and scientific organizations of foreigners is carried out on the basis of international treaties (agreements) of the Republic of Azerbaijan, as well as on the basis of an agreement concluded between a foreign citizen and a higher educational institution on a payment basis.

Persons who have completed their education in doctoral studies and received the relevant scientific degrees, in the prescribed manner, are issued a diploma - a State Model Document, in a unified form, confirming the present scientific degree.

In the Republic of Azerbaijan obtaining of a scientific degree is also realized through the dissertation. Persons working in scientific and pedagogical higher educational institutions and scientific organizations are admitted to the dissertation program.

The rules for admission to a dissertation program and the award of scientific degrees are determined by the relevant executive authorities.



### **Belarus**

The national education system of the Republic of Belarus includes:

- preschool education;
- general secondary education;
- out-of-school forms of education;
- professional education;
- secondary special education;
- higher education;
- training of scientific and scientific and pedagogical personnel;
- advanced training and retraining of personnel.

The term of study for obtaining general primary education is 4 years, for general basic education - 9 years.

General secondary education includes the level of general basic education. General secondary education includes the level of general primary education and is a compulsory level. This stage is a condition for completing general secondary education. The latter can be obtained in institutions of general secondary, professional or secondary specialized education.

The duration of general secondary education is 11 years.

Professional education is carried out on the basis of general basic and general secondary education. The institutions providing professional education are: professional schools; professional lyceums; professional colleges.

The institutions providing secondary specialized education are: technical schools (schools); colleges (secondary specialized educational institutions); higher professional schools; professional colleges; higher colleges.

Higher education includes two stages: bachelor's and master's degrees.

Institutions providing higher education include the following higher education institutions:

classical university;

profile university (academy);

institute;

higher college.

The first three types of universities provide higher education at two levels, the fourth - higher education of the first stage in specialties integrated with the specialties of secondary specialized education.

Higher educational institutions, along with the training of specialists with higher education, prepare:

specialists with higher education in an additional specialty,

retraining and raising the proficiency level of specialists with higher education,

professional training,

training in selected certified higher education courses.

Postgraduate education provides training for highly qualified scientific personnel, which includes two stages:

- training of highly qualified scientific workers with the award of the scientific degree of candidate of sciences through postgraduate studies, postgraduate military studies, assistant internship;

- training of highly qualified scientific workers with the award of the scientific degree of Doctor of Science through doctoral studies.

Various institutions are engaged in raising the proficiency level and retraining of personnel. The main ones are: academy, institute, training center, training school, faculty and special faculty of a higher educational institution, a department of an institution that provides secondary specialized and vocational education, courses, a training center.

The main organization that provides raising the proficiency level and retraining of personnel in metrology is the educational institution "Belarusian State Institute of raising the proficiency level and retraining of personnel in standardization, metrology and quality management" (BGIPK for Standardization, Metrology and Quality Management).



## Kazakhstan

The education system in the Republic of Kazakhstan is carried out on the basis of the principle of continuity and acceptance of general educational and educational programs and includes the following levels of education:

preschool education and training;

primary education;

basic secondary education;



secondary education (general secondary education, technical and vocational education);  
post-secondary education;  
higher education;  
postgraduate education.

The main types of organizations of secondary education are general education school, small school, gymnasium, lyceum, specialized school. Secondary general education in Kazakhstan contains 3 stages: primary (1–4 years of schooling), basic (5–9 years of schooling) and senior (10–11 years of schooling). Children from six years of age are admitted to study in the 1st year of schooling.

Primary vocational education in Kazakhstan is acquired in 2-3 years in professional schools and professional lyceums on the basis of basic general education.

Secondary professional education is obtained in 3-4 years in colleges and schools on the basis of basic general education on a competitive basis.

Higher education is acquired by citizens with general secondary or technical and professional or post-secondary education. A citizen has the right to receive a free higher education on a competitive basis. A student who has passed the final certification for mastering the educational program of higher education is awarded a bachelor's degree or a specialist qualification. Upon graduation from the university, the graduate receives a bachelor's degree (4 years), a specialist (5 years) or a master's degree (6 years).

Postgraduate education is acquired by citizens with higher education. Training in educational programs of postgraduate education is carried out in the form of full-time education.

Postgraduate education is carried out in the magistracy, residency and doctoral studies of organizations of higher and (or) postgraduate education, scientific organizations in the main profile of activities and areas of training, as well as by sending scholars of the international scholarship "Bolashak" to study in leading foreign organizations of higher and (or) full-time postgraduate education in accordance with the list of specialties, approved annually in the manner prescribed by the legislation of the Republic of Kazakhstan. The term of study in a master's program does not exceed 1–2 years, in residency – 2–3 years, in doctoral studies – 3 years.

Qualification requirements for specialists performing verification

Bachelor

- no work experience is required;
- certificate of professional development or retraining of personnel;
- internship

Certified Engineer

- no work experience is required;
- certificate of professional development or retraining of personnel;
- internship

Master

- no work experience is required;
- certificate of professional development or retraining of personnel;
- internship

Candidate

- no work experience is required;
- certificate of professional development or retraining of personnel;
- internship

Doctor

- no work experience is required;
- certificate of professional development or retraining of personnel;

- internship

Qualification requirements for specialists carrying out scientific research

To a custodian scientist with qualifications:

Bachelor:

- work experience in the field of ensuring the uniformity of measurement for at least three years;
- passing theoretical training or advanced training in a qualification course;
- passing an internship to work with the declared standard;
- knowledge of English is preferable.

Certified Engineer:

- work experience in the field of ensuring the uniformity of measurement for at least three years;
- passing theoretical training or advanced training in a qualification course;
- passing an internship to work with the declared standard;
- knowledge of English is preferable.

To a custodian scientist with the title of:

Master:

- work experience in the field of ensuring the uniformity of measurement for at least three years;
- passing theoretical training or advanced training in a qualification course;
- passing an internship to work with the declared standard;
- knowledge of English is preferable.

Candidate:

- work experience in the field of ensuring the uniformity of measurement for at least three years;
- passing theoretical training or advanced training in a qualification course;
- passing an internship to work with the declared standard;
- knowledge of English is preferable.

Doctor:

- work experience in the field of ensuring the uniformity of measurement for at least three years;
- passing theoretical training or advanced training in a qualification course;
- passing an internship to work with the declared standard;
- knowledge of English is preferable.



## Kyrgyzstan

School education is the main link in the education system and includes 3 stages:

primary general education - 1-4 years of schooling;

basic general education - 5-9 years of schooling;

secondary general education - 10-11 years of schooling.

The duration of study for a complete secondary education is 11 years.

Children aged six and seven are admitted to primary school. Basic general (nine-year) education is compulsory.

Education at the final stage of general secondary education (10-11 years of schooling) presupposes the possibility of in-depth study of individual subjects (specialized training).

Students who successfully completed their studies in the 9th schooling year receive a state-recognized document - a certificate of basic general education, and graduates of the 11th year of schooling - a state-recognized document on obtaining a complete secondary general education - a certificate of secondary general education.

After the 9th year of schooling, graduates can continue their studies in the 10th grade, enter the labor market or continue their studies in organizations of primary and secondary vocational education. Graduates of such programs, along with mastering the profession, receive a complete secondary general education.

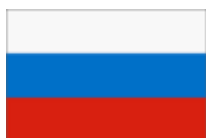
Having a Certificate of Secondary General Education is a prerequisite for admission to higher educational institutions.

Higher education institutions in Kyrgyzstan include universities.

Since 2012 the Kyrgyz Republic has switched to a two-level system of higher education, which makes it possible to obtain bachelor's, master's and specialist's degrees (5 years of study, a number of medical, engineering and creative specialties).

Postgraduate programs include postgraduate and doctoral studies. The defense of a dissertation allows to obtain a candidate (doctor) degree of sciences.

The Kyrgyz Republic also implements programs aimed at training, retraining and advanced training. Training under these programs can be aimed at both increasing/acquiring professional competencies of a person for more successful activities in the labor market, and realizing personal (creative) interests and abilities.



## Russia

The education system in the Russian Federation looks like this:

general education:

preschool education;

primary general education;

basic general education;

secondary (complete) general education;

professional education:

secondary vocational education;

higher education - bachelor's degree;

higher education - specialist, master's degree;

higher education - training of highly qualified personnel;

additional education:

additional education for children and adults;

additional professional education;

professional education.

General educational organization: primary school, school, gymnasium, national gymnasium, lyceum, educational complex, school with advanced study of subjects, specialized school, cadet school, cadet corps, boarding school.

Professional educational organization: vocational school, vocational lyceum, college, technical school.

Educational organizations of higher education: institute, academy, university.

Organization of additional professional education: institute, academy, university, specialized training center, GNMI, GNMC.



## Uzbekistan

Education in the Republic of Uzbekistan includes:

preschool education;

general secondary education;

secondary specialized, professional education;

higher education;

postgraduate education.

general secondary education has the following stages:

primary education (I-IV years of schooling);

general secondary education (I-IX years of schooling).

In order to obtain secondary specialized, professional education, everyone has the right, on the basis of general secondary education, to voluntarily choose the direction of study at an academic lyceum or vocational college.

Academic lyceums and professional colleges provide secondary specialized, professional education that provides the right and is the basis for working in the acquired profession or continuing education to the next degree.

Academic Lyceum is a three-year secondary specialized educational institution that provides intensive development of intellectual abilities, in-depth, differentiated and professionally oriented education of students.

A professional college is a three-year secondary vocational educational institution that provides in-depth development of professional inclinations, skills and abilities of students, obtaining one or several specialties in the chosen professions.

Higher education provides training of highly qualified specialists.

Training of specialists with higher education is carried out in higher educational institutions (universities, academies, institutes and other educational institutions of higher education) on the basis of secondary specialized, professional education.

Higher education has two stages: bachelor's and master's degrees, confirmed by state-recognized higher education documents.

*Bachelor's degree* - basic higher education with fundamental knowledge in one of the areas of higher education with a duration of study of at least four years.

*Master's degree* - higher education in a specific specialty with a duration of study of at least two years on the basis of a bachelor's degree.

Postgraduate education can be obtained in higher educational institutions and research institutions (basic doctoral studies, doctoral studies, independent research).

Professional development and retraining of personnel ensure the deepening and renewal of professional knowledge and skills.

The procedure for advanced training and retraining of personnel is established by the Cabinet of Ministers of the Republic of Uzbekistan.



## Ukraine

Professional (vocational) education is acquired on the basis of basic or complete general secondary education. The levels of professional (professional and technical) education are:

- the first (primary) level of professional (vocational) education (the level assumes that a person obtains a qualification corresponding to the second level of the National Qualifications Framework);
- the second (basic) level of professional (vocational) education (the level assumes that a person obtains a qualification corresponding to the third level of the National Qualifications Framework.
- the third (highest) level of professional (vocational) education. A person can obtain qualifications corresponding to the fourth level of the National Qualifications Framework.

Institutions of professional (vocational) education have the right to carry out training of specialists whose competencies correspond to the fifth level of the National Qualifications Framework according to the relevant standards.

Professional advanced education is acquired on the basis of complete or basic secondary education.

Institutions of professional advanced education also have the right to carry out the training of specialists whose competencies correspond to the third, fourth and fifth levels of the National Qualifications Framework, according to the relevant standards,

Higher education is acquired on the basis of complete general secondary education.

Training of specialists with higher education is carried out according to the relevant educational or scientific programs at the following levels of higher education:

- the initial level (short cycle) of higher education - corresponds to the sixth level of the National Qualifications Framework and provides for a person to receive general cultural and professionally oriented training, special skills and knowledge, as well as some experience in their practical application in order to fulfill the typical tasks provided for primary positions in the relevant industry professional activity;
- the first (bachelor's) level - corresponds to the seventh level of the National Qualifications Framework and provides for a person to acquire theoretical knowledge and practical skills and abilities sufficient for the successful fulfillment of professional duties in the chosen specialty;
- the second (master's) level - corresponds to the eighth level of the National Qualifications Framework and provides for a person to obtain in-depth theoretical and/or practical knowledge, skills, abilities in the chosen specialty (or specialization), general foundations of the methodology of scientific and/or professional activity, other competencies sufficient for effective performance of tasks of an innovative nature of the corresponding level of professional activity;
- the third (educational and scientific/educational and creative) level - corresponds to the ninth level of the National Qualifications Framework.

The educational and scientific level of higher education provides for a person to acquire theoretical knowledge, abilities, skills and other competencies sufficient to develop new ideas, solve complex problems in the field of professional and/or experimental and innovative activities, master the methodology of scientific and pedagogical activities, as well as performing their own scientific research, the results of which are of scientific novelty, theoretical and practical significance.

The educational and creative level of higher education presupposes mastering the methodology of artistic and artistic and pedagogical activities, the implementation of an independent creative artistic

project, obtaining practical skills for developing new ideas and solving theoretical and practical problems in the creative artistic sphere.

Scientific level - corresponds to the tenth level of the National Qualifications Framework and provides for the acquisition of competencies in the development and implementation of the methodology and technique of research work, the creation of new backbone knowledge and/or progressive technologies, the solution of an important scientific or applied problem that is of national or global importance.

Obtaining higher education at each level provides for the successful implementation by a person of the appropriate educational or scientific program and is the basis for the award of an appropriate degree of higher education:

- junior bachelor;
- bachelor;
- master;
- Doctor of Philosophy / Doctor of Art;
- Doctor of Science.

Adult education is a component of lifelong learning aimed at realizing the right of every adult to continuous learning, taking into account their personal needs, social development priorities and the needs of the economy.

The components of adult education are:

- postgraduate education;
- professional training of employees;
- retraining courses and / or advanced training;
- continuous professional development;
- any other components that are provided for by legislation, proposed by the subject of educational activity or independently determined by a person.

Postgraduate education includes:

- specialization - profile specialized training for a person to acquire the ability to perform tasks and responsibilities that have features within the specialty;
- retraining - adult education aimed at vocational training in order to master another (other) profession (s);
- advanced training - the acquisition by a person of new and/or improvement of previously acquired competencies within the framework of professional activity or field of knowledge;
- internship - the acquisition by a person of practical experience in performing tasks and responsibilities in a particular professional activity or field of knowledge.

Educational institutions that train metrological personnel are shown in the table:

Levels of professional education	Educational institutions	Training of metrology specialists	Training of scientific metrological staff	Training of specialists performing		
				verifica- tion	calibration	research
Secondary professional education based on basic general education	Professional schools					
	Professional lyceums					
	Colleges: - Drohobych Applied College of Oil and Gas	+		+	+	
	- Kharkov College of Mechanical Engineering (KhMK)	+		+	+	
	- College of the Odessa State Academy of Technical Regulation and Quality	+		+	+	
	Training schools					
Higher professional	Institute					

education	Academy: - The Odesa State Academy of Technical Regulation and Quality (ODATRIA)	+		+	+	
	- The National Metallurgical Academy of Ukraine (NMetAU), Dnipro	+		+	+	
	- The Prydniprovsk State Academy of Civil Engineering and Architecture (PSACEA), Dnipro	+		+	+	
	University:					
	- Vinnytsia National Technical University (VNTU)	+		+	+	
	- Oles Honchar Dnipropetrovsk National University (DNU)	+		+	+	
	- Donetsk National Technical University (DonNTU)	+		+	+	
	- Vasyl' Stus Donetsk National University (DonNU)	+		+	+	
	- Ivano-Frankivsk National Technical University of Oil and Gas (IFNTUOG)	+		+	+	
	- Taras Shevchenko National University of Kyiv (KNU)	+		+	+	
	- Kyiv National University of Technologies and Design (KNUTD)	+		+	+	
	- Lutsk National Technical University (Lutsk NTU)	+		+	+	
	- National Aviation University (NAU), Kyiv	+		+	+	
	- M.Y. Zhukovskiy National Aerospace University "Kharkiv Aviation Institute" (NAU "KhAI")	+		+	+	
	- National Technical University "Dnipro Polytechnic" (NTU "DP")	+		+	+	
	- National Technical University "Kharkiv Polytechnic Institute" (NTU "KhPI")	+		+	+	
	- National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" (NTUU "KPI")	+		+	+	
	- National University "Lviv Polytechnic" (NU "LP")	+		+	+	
	- Admiral Makarov National University of Shipbuilding, Mykolaiv	+		+	+	
	- Odessa National Polytechnic University (ONPU)	+		+	+	
	- Ternopil Ivan Puluj National Technical University (TNTU)	+		+	+	

	- Ukrainian State University of Chemical Technology (UDHTU), Dnipro	+		+	+	
	- Kharkiv National Automobile and Highway University (HNADU)	+		+	+	
	- Ivan Kozhedub Kharkiv University of Air Force (KhNUVS)	+		+	+	
	- Kharkiv National University of Radio Electronics (KNURE)	+		+	+	
	- Kherson National Technical University (KNTU)	+		+	+	
	- Cherkasy State Technological University (ChSTU)	+		+	+	
	- Yuriy Fedkovych Chernivtsi National University (ChNU)	+				
	- Chernihiv Polytechnic National University (CPNU)	+				
	other					
Postgraduate school	- Vinnytsia National Technical University (VNTU)		+			+
	- National Technical University "Kharkiv Polytechnic Institute" (NTU "KhPI")		+			+
	- National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" (NTUU "KPI")		+			+
	- National University "Lviv Polytechnic" (NU "LP")		+			+
	- Kharkiv National University of Radio Electronics (KNURE)		+			+
	- Ukrainian State University of Railway Transport (UkrSURT), Kharkiv		+			+
	- Sumy State University					
Doctoral studies	- Vinnytsia National Technical University (VNTU)		+			+
	- Ukrainian State University of Railway Transport (UkrSURT), Kharkiv		+			+
Additional professional education – raising proficiency level and retraining of staff	on the basis of higher educational institutions	+		+	+	
	in the specialized raising proficiency level centre: - NSC "Institute of Metrology";		+			+
	- SE "UkrNDNTs";		+			+
	- SE "Ukrmetrteststandard";		+			+
	at special courses under the bodies of the state metrological service					



## **Information**

1. Development coordinator: BelGIM, Belarus;
2. COOMET project: 731/BY-a/17;
3. The information material was approved at the 33rd COOMET Committee meeting.