

# European guidelines for CPD

## EucoLABS



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### Project partners:



# European guidelines for CPD (by EucoLABS)

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# 1 Introduction

Continuous professional development (CPD) is of the utmost importance to a professional biomedical laboratory scientist. This document will guide you through the aims, objectives and relevance of creating a European model for CPD registration, with recommendations of a CPD point system. A good continuing CPD program is necessary and should be mandatory and implemented at a national level.

The 1<sup>st</sup> European project towards creating a CPD portfolio was the Leonardo project “European Professional Dossier of Continuing Development (F/95/A/2010/9/1/1.1b/FPC)”. This paper based dossier was designed to collect all CPD activity through the working life of a BMS.

This project aims to bring this dossier to a next level, that of an electronic dossier. This has advantages for the BMS and facilitates the European objective of mobility.

A good CPD system aims to give the BMS the possibility to register his/her continuing professional development in a way that it captures all relevant information. It should be clear what kind of activities can be registered and how it can be done. It is also important to use a standardized credit system to be able to implement CPD similar in all the European countries.

This document provides a number of guidelines that can be used for CPD programs in Europe.

Countries that are already working with a mandatory CPD program will be asked to compare the guidelines, proposed in this EucoLABS project, and adapt their CPD wherever it is possible and necessary. Countries that are organizing CPD at an informal level can use these guidelines as a basic document for the organization of CPD at a mandatory level.

An important point of discussion is the cycle that can be used for CPD. We leave the decision for a cycle of CPD to the individual countries, depending on their own regulations. It should be a decision that emphasizes the lifelong learning process. A continuous cycle is recommended.

This project reviewed possibilities for a standardised credit system. The systems reviewed were those used in higher education systems (ECTS) and in professional educational systems (ECVET). Neither of these systems adequately captures the spectrum of activities that comprise CPD at a professional level so a system with CPD points was developed.

In the schedule below guidelines are listed up in different sections, counting work itself as the first important place where you can learn every day new techniques and tools. Other sections cover educational activities, dissemination of the competences, publications, self study and others.

The terminology is explained underneath the schedule and in a lexicon so that all BMS from different European countries understand and use the terminology in the same way.

## 2 Guide to CPD Portfolio

A professional portfolio is an essential element of the assessment criteria for every biomedical laboratory scientist. It is necessary for all those who work in an ISO 15189 accredited lab or want to maintain their professional recognition. The portfolio is expected to document and define the BMS's roles, responsibilities, goals and contributions to both the employer and the profession.

A professional portfolio must include information that characterises the BMS and distinguishing them from other professionals and colleagues. Brown states: "A portfolio is a private collection of evidence which demonstrates the continuing of skills, knowledge, attitudes, understanding and achievements. It is both retrospective and prospective, as well as reflecting the current stage of development and activity of the individual." (Brown R. *Portfolio development and profiling for nurses*. Lancaster: Quay Publishing CHS, 1992)

The aim of a professional portfolio is to provide evidence of the development of personal and professional standards to facilitate critical evaluation and reflective practice, leading to the developing of standards for a framework of progress, and the maintaining and developing of professional knowledge and competence.

A professional portfolio provides the opportunity to:

- develop skills in self-direction
- acquire knowledge from past and current experiences
- demonstrate application of theory to practice
- enhance self-motivation
- identify learning needs and select resources to facilitate this process
- demonstrate performance levels against standards
- collaborate with mentor and other colleagues
- demonstrate evidence of professional and expert practice in the context of benefits
- patient care and future developments
- validate progress and development.

The guidance set out for the portfolio gives some basic direction but is by no means exhaustive. It provides a brief summary of the types of information and evidence that may be included in a professional portfolio.

We recommend the BLS to attach training records, certificates, attestations and any lengthy evidence as an appendix, with a brief outline in the main portfolio document. All activities in the portfolio should be documented, and ready for use or inspection in case of audit.

A professional portfolio will remain with the BLS throughout their career and will be transferable between all the EU countries.

### 2.1 Part 1 – Personal details

- name and last name
- address(es)
- telephone(s)
- e-mail address(es)
- nationality(-ies)
- date of birth
- gender

- membership association and membership number

## **2.2 Part 2 – Formal education and approvals**

- evidence of professional qualifications
- further education  
research and development
- authorisation / licence / registration (if applicable)

## **2.3 Part 3 – Work experience**

- professional CV with indication of full time/half time
- professional area
- work place

## **2.4 Part 4 – Educational activities**

- attendance at relevant update theory and practical training courses
- attendance seminars and local/national conferences
- attendance at 'in house' clinical meetings or seminars
- attendance and participation in user groups
- taking a national or international test or exam
- tutor practice (person who is tutored)
- reflective learning statement

## **2.5 Part 5 – Dissemination of competences**

- lecturing locally in the lab (in house training)
- lecturing nationally/regionally/internationally
- teaching and tutoring
- poster presentation nationally/internationally
- examiner local/extern
- arranging professional activities locally/nationally/regionally/internationally
- chairperson at a conference
- written professional communication as standard operating procedures (SOPs) etc.
- introducing new technologies and techniques, technique/slide evaluation, involvement in the monitoring of internal quality assessment (IQA) or external quality assessment (EQA), clinical audit, risk assessment etc.
- specialist knowledge and laboratory expertise, product consultant

## **2.6 Part 6 – Publishing**

- scientific publications in peer reviewed national or international journals as first author, co-author or technical assistant
- peer reviewer for a scientific publication
- professional publications
- article in journal, not peer reviewed
- letter to editor, summary etc.

- other publications or media related work as chapter in a book, a book, DVD instruction material, editor or member of editorial board

## **2.7 Part 7 – Others**

- member of a national or an international board
- member of a professional working group or organisation
- management skills

## **2.8 Part 8 – Self study**

- journal based learning with assessment

## **2.9 Part 9 – Additional information**

- vocational objectives: relating to changing requirements of one's role within a specified window of time
- personal objectives: relating to plans discussed within one's current and future roles.

Additional specific information/documentary evidence of competencies should be included depending on the specialty involved and the requirements of the expert/extended role.

### 3 List of approved Activities – Credit Ratings

CONTINUOUS PROFESSIONAL DEVELOPMENT	AMOUNT of CPD POINTS
<b>Workexperience</b>	
Full time work	1 point /month
Part time work	Points according to work load (%)
<b>Educational Activities: CPD approved by national organization or similar</b>	
Attending 1h theory	1 point
Attending 1h practical training	1 point
Attending a conference	5 points/ full day
Taking a national or international test or exam	5 to 15 points depending on the work load
Tutor practice (person who is tutored)	1 point/day
Reflective learning statement	0,5 point
<b>Dissemination of competences</b>	
Lecturing locally in the lab (in house training)	5 points/lecture
Lecturing nationally/regionally	10 points/lecture
Lecturing internationally	20 points/lecture
Teaching	2 points/lecture
Poster presentation nationally, written or oral	5 points
Poster presentation internationally, written or oral	10 points
Tutoring	2 points/day
Examiner local/extern	15 points/exam
Chairperson at a conference	2 points/session (1/2 day)
Written professional communication	1-5 points
Introducing new technologies and techniques	2 points
<b>Arranging professional activities</b>	
Locally	3 points/arrangement
Nationally/regionally	6 points/arrangement
Internationally	12 points/arrangement

Examiner: someone who does the assessment and give grades, justifying qualifications

Tutor practice: person who is tutored

Tutoring: supervising

Teaching: repeated lecturing on the same topic

Written professional communication: making new procedures, manuals, website, information material etc.

CONTINUOUS PROFESSIONAL DEVELOPMENT	AMOUNT of CPD POINTS
<b>Publishing</b>	
<b>Scientific publications in peer reviewed journals</b>	
First author in a national journal	20 points
First author in an international journal	30 points
Co-author nationally	7 points
Co-author internationally	10 points
Technical assistant nationally	3 points
Technical assistant internationally	5 points
<b>Peer reviewer for a scientific publication</b>	
Professional publications	5 points/article
Article in journal, not peer reviewed	10 points
Letter to editor, summary etc...	3 points
<b>Other publications or media related work</b>	
Chapter in a book	20 points/chapter
Book	50-100 points
DVD instruction material	10 points
Editor	20 point/year
Member of editorial board	10 points/year
<b>Others</b>	
Member of a national board	15 points/year
Member of an international board	20 points/year
Member of a professional working group	5 points/year
Member of a professional organization	3 points/year
Management activities	5 to 15 points/year depending on the responsibilities
<b>Self study</b>	
Journal based learning with assessment	5 points/article/assessment

## **4 My Personal CPD Portfolio**

The CPD Portfolio can be accessed by every biomedical laboratory scientist that is member of a professional body or professional organisation.

You will find a link to „My CPD Portfolio“ on the website of EPBS (<http://www.epbs.net/>).

Download the document „Guidelines for CPD“ (optional) and the document „CPD Portfolio“.

Read the instructions in the „Guidelines for CPD“ very well before starting to fill out your CPD Portfolio.

Fill out the Portfolio very carefully:

write your own full name

use the terminology given in the schedule above

do not delete items of the CPD Portfolio

use the list with approved activities and the corresponding credits

All activities in the portfolio should be documented, and ready for use or inspection in case of audit.

Keep a copy of your CPD Portfolio in your personal file.

Provide updates on a regular basis.

## **Addendum: Glossary of EucoLABS project**

The glossary was produced within the EucoLABS project (2010 -2012).

It was established for better understanding and clarification of terminology used within the project.

The following documents resulting from the EucoLABS project are to be understood according to this glossary.

- European Guidelines for CPD
- Web based European Professional Dossier on CPD (=electronic portfolio)
- Questionnaire on education
- Questionnaire on CPD

The document “Glossary of EucoLABS project” will be submitted to the European shared treasure file.

## **Definitions of Biomedical Laboratory Scientist**

### **1. Names for the profession within the EU single market – regulated professions database**

“Medical/Biomedical laboratory technician”

[http://ec.europa.eu/internal\\_market/qualifications/regprof/index.cfm?fuseaction=profession.regProfs&profld=1480](http://ec.europa.eu/internal_market/qualifications/regprof/index.cfm?fuseaction=profession.regProfs&profld=1480)

“Bio-medical analyst”

[http://ec.europa.eu/internal\\_market/qualifications/regprof/index.cfm?fuseaction=profession.regProfs&profld=1455](http://ec.europa.eu/internal_market/qualifications/regprof/index.cfm?fuseaction=profession.regProfs&profld=1455)

These terms are outdated and don't reflect the scientific elements in the education and the skills and practice undertaken by the professionals.

### **2. Definition of Biomedical Scientist (BMS) in EucoLABS project**

Within the project BMS is used as an abbreviation for Biomedical Laboratory Scientist.

Abbreviations BLS, BMLS and BS are also very common.

BMS work in the field of biomedical laboratory services, mainly in the health sector, and are responsible for diagnosing and monitoring of diseases.

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*BMLS*

*BSc*

*CPD*

*CPE*

*EBM*

*EBP*

*ECTS*

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*EQF*

*FE*

*HE*

*MA*

*MSc*

*NQF*

*PBL*

*PhD*

*UEC*

9. Sources

## 1. Educational levels

### Compulsory education

Compulsory education is the period of education that is required of every person in a country.

### Primary education

Primary education is the first stage of compulsory education; it is preceded by pre-school or nursery education and is followed by secondary education, duration normally 7 years.

### Secondary education

Secondary education is the stage of education following primary education; except in countries where only primary or basic education is compulsory, secondary education includes the final stage of compulsory education and in many countries it is entirely compulsory. Depending on the system, schools for this period or a part of it may be called secondary schools, high schools, gymnasia, middle schools, sixth-form, vocational schools and preparatory schools, and the exact meaning of any of these varies between the systems, duration 5-8 years.

### Post secondary education

Post secondary education is also called higher or tertiary education; is an optional level of studying beyond what is required by law.

Higher, post-secondary, tertiary, or third level education refers to the stage of learning that occurs at universities, academies, colleges, seminars and institutes of technology. Higher education also includes certain collegiate-level institutions, such as vocational schools, trade schools, and career colleges that award academic degrees or professional certifications. Undergraduate, graduate and professional college programs are all types of post-secondary education

Vocational school (or trade school or career school), providing vocational education, is a school in which students are taught the skills needed to perform a particular job.

Traditionally, vocational schools teach job-specific skills, and as such have been considered to be institutions devoted to training, not education.

### Undergraduate education

Undergraduate education is an education level taken in order to gain one's first tertiary degree. In many educational systems, undergraduate education is post secondary education up to the level of a bachelor's degree; duration 3-4 years.

### Post graduate education

Post-graduate education (or graduate education) involves learning and studying for degrees or other qualifications for which a first or bachelor's degree generally is required, and is normally considered to be part of higher education; duration 1-4 years.

## 2. CPD

### Continuing education

See Further education

### CPD

**Continuing professional development (CPD)** is the means by which people maintain their knowledge and skills related to their professional lives.

CPD consists of any educational activity, which helps to maintain, develop or increase knowledge, problem solving, technical skills or professional performance standards. CPD

includes 'formal' activities, e.g. courses, conferences and workshops, as well as self-directed activities such as preceptorship and directed reading

CPD in the context of BMS: is a process of lifelong learning, which enables you to expand and fulfill your personal and professional potential, as well as meet the present and future needs of patients and deliver health outcomes and priorities. It assures that you meet the requisite knowledge and skills levels that relate to your evolving scope of professional practice.

### **CPD cycle**

A CPD program normally ranges over a set time, i.e. between 3-5 years, which is called a CPD cycle.

Effective CPD is the production of a structured learning plan, which leads to increased and improved performance.

The cycle is in four stages, outlined over these pages:

1. Appraisal
2. Planning
3. Development
4. Reflection

### **European Professional Dossier for Continuing Education**

European Professional Dossier of Continuing Development was a Leonardo project in 1996 including partners from Austria, Belgium, Germany, France, Ireland, Italy Norway Sweden and Spain. Only some of the countries worked out a hard copy and only the Netherlands have brought this on an electronic basis.

### **Further education**

Further education (often abbreviated FE; called continuing education in U.S. English) is a term mainly used in connection with education in the United Kingdom and Ireland. It is post-compulsory education (in addition to that received at secondary school), that is distinct from the education offered in universities (higher education). It may be at any level above compulsory education, from basic training to Higher National Diploma or Foundation Degree. A distinction is usually made between FE and higher education ("HE"), which is education at a higher level than secondary school, usually provided in distinct institutions such as universities. FE in the United Kingdom therefore includes education for people over 16, usually excluding universities. It is primarily taught in FE colleges (which are similar in concept to United States community colleges, and sometimes use "community college" in their title), work-based learning, and adult and community learning institutions.

## **3. Degrees / Diploma**

### **Academic BSc**

Bachelor of Science is an [undergraduate academic degree](#) awarded by a university or institution for higher education for completed courses that generally last three to five years (typically 180–240 ECTS credits).

### **MSc**

Master of Science is an academic degree conferred by a university or institution for higher education upon those who complete at least one year of prescribed study beyond the Bachelor's degree (90–120 ECTS credits (a minimum of 60)).

## PhD

Latin, *philosophiae doctor*, Ph.D. (Doctorate) is usually based on at least three years of graduate study and a dissertation; it is the highest degree awarded for graduate study.

## Post Secondary Diploma (Post. Sec. Diploma)

Post secondary education typically refers to education taken after completion of high school, but is not on higher education level (tertiary education, e.g. university). Post –secondary educational institutions issue diplomas, not academic degrees.

## Professional Bachelor

Professional Bachelor is an undergraduate degree (equivalent of a BSc), awarded by a HEI (= Higher Education Institution) for a course that generally lasts three years.

# 4. Educational Forms

## Clinical placement

Clinical placements are where knowledge gained through academic pursuits is applied to the reality of practice. Additionally, analysis and critical reflection on clinical experience will make explicit the areas where more knowledge and experience is needed. In this way knowledge pursuit and clinical application become an ongoing cycle of learning.

## Curriculum

In its broadest sense a curriculum may refer to all courses offered at a school. This is particularly true of schools at the university level, where the diversity of a curriculum might be an attractive point to a potential student. A curriculum may also refer to a defined and prescribed course of studies, which students must fulfill in order to pass a certain level of education. On the other hand, a high school might refer to a curriculum as the courses required in order for receiving one's [diploma](#).

## E-learning

E-learning comprises all forms of electronically supported [learning](#) and [teaching](#). The [information](#) and [communication systems](#), whether [networked learning](#) or not, serve as specific media to implement the learning process. The term will still most likely be utilized to reference out-of-classroom and in-classroom educational experiences via technology, even as advances continue in regard to devices and curriculum.

## Evidence-based-learning (practice)

Its basic principles are that all practical decisions made should 1) be based on research studies and 2) that these research studies are selected and interpreted according to some specific norms characteristic for Evidence-based practice (EBP).

The use of methods which have been thoroughly tested and proven to be effective

The judicious use of the best current evidence in making decisions about the care of the individual patient. Evidence-based medicine (EBM) is meant to integrate clinical expertise with the best available research evidence and patient values.

## Interdisciplinary courses/projects

Interdisciplinary course/projects combine methodologies of different disciplines to enable new scientific and artistic solutions (are designed to make connections between ideas in different disciplines)

### **Laboratory training**

To ensure safety of employees (staff and students) who work in laboratories with hazardous chemicals or biological materials, special laboratory training is required. Laboratory training for BMS includes training in specific competencies required for laboratory work, e.g. pipetting, etc.

### **Lectures**

A lecture is an oral [presentation](#) intended to present information or to teach people about a particular subject, for example by a [university](#) or [college teacher](#). Lectures are used to convey critical information, history, background, theories and equations. Usually the lecturer will stand at the front of the room and recite information relevant to the lecture's content.

### **Problem Based Learning**

Problem-based learning (PBL) is a student-centered pedagogy in which students learn about context of complex, multifaceted, and realistic problems. The goals of PBL are to help the students develop flexible knowledge, effective problem solving skills, self-directed learning, effective collaboration skills and intrinsic motivation. Working in groups, students identify what they already know, what they need to know, and how and where to access new information that may lead to resolution of the problem. The role of the instructor (known as the tutor in PBL) is that of facilitator of learning who provides appropriate [scaffolding](#) and support of the process, modeling of the process, and monitoring the learning. The tutor must build students confidence to take on the problem, encourage the student, while also stretching their understanding.

### **Project work**

Project Work and Project Based Learning as instructional approaches offer the opportunity to create innovative learning environments. They afford students with working in teams, engaging in meaningful activities (problem-solving, analyzing, evaluating, collaborating, reporting, presenting etc.) over a significant period of time, in order to create a product, realistic and relevant to the learners. Project Work creates a logical link to content-based instruction.

### **Reflective learning**

Reflective learning in an academic context is likely to involve a conscious and stated purpose for the reflection, with an outcome that is specified in terms of learning, action or clarification. The academic reflection may be preceded by a description of the purpose and / or the subject matter of the reflection. The process and outcome of the reflective work is most likely to be in a represented (e.g. written) form and to be seen by others and to be assessed.

### **Self study**

Self study is a form of study in which one is to a large extent responsible for one's own instruction.

### **Virtual training**

Virtual training is a training method in which a simulated virtual environment is used. In this environment an instructor is able to explain, show or test certain abilities that can contribute to the learning process. There are different types of virtual training methods, divided in the instructor supported (virtual instructor led training) and the non-instructor supported. In the instructor led training there are two screens; one for the instructor and one for the student. The instructors screen holds a number of tools to change and influence the environment. The

students screen holds the controls over the decision / steering unit in this area. Where the instructor is free to create challenging scenarios in which all of the former know attributes can suddenly change (flight simulator is one of the first examples of virtual training).

#### **Vocational training**

Vocational training /education is also known as career and technical education (CTE), this term covers studies linked to careers or non-academic occupations based more on manual or practical activities. It is usually undertaken at secondary or post-secondary level. In some cases, it can now be recognized as credits for tertiary education.

#### **Workload**

Workload gives an indication of the time students typically need to complete all learning activities (such as lectures, seminars, projects, practical work, self-study and examinations) required to achieve the expected learning outcomes.

## **5. Credits**

#### **ECTS**

European Credit Transfer and Accumulation System (ECTS) is a quantified means of expressing the volume of learning based on the workload students in higher education need in order to achieve the expected outcomes of a learning process at a specified level. *ECTS credits* are based on the workload students need in order to achieve expected learning outcomes. *60 ECTS credits* are attached to the workload of a full-time year of formal learning (academic year) and the associated learning outcomes. In most cases, student workload ranges from 1 500 to 1 800 hours for an academic year, whereby one credit corresponds to 25 to 30 hours of work irrespective of standard or qualification type and is used to facilitate transfer and progression throughout the European Higher Education Area.

#### **ECVET**

ECVET is a European system of accumulation (capitalization) and transfer of credits designed for vocational education and training in Europe. It enables the attesting and recording of the learning achievement/learning outcomes of an individual engaged in a learning pathway leading to a qualification, a vocational diploma or certificate.

ECVET is a system designed to operate at the European level, interfacing with national systems and arrangements for credit accumulation and transfer.

ECVET will also complement the ECTS by linking vocational education and training with higher education.

ECVET is fully compatible with ECTS.

#### **UEC –Dossier**

UEC is used in the European dossier. 1 UEC is equivalent to 1 hour (60 minutes) training multiplied by a coefficient which depends on the type of training.

#### **National point systems for CPD**

Points systems on a national level crediting different activities within CPD programs are used and refers to different amount of time/effort decided within a national organization or government.

## **6. Definitions from the European Qualifications Framework (EQF)**

In order to share a common understanding of key concepts related to the European Qualifications Framework (EQF), the recommendation establishing the EQF defines these key terms that are shared by all EU Member States, EEA and candidate countries participating in the EQF.

### **Competence**

Competence means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy.

### **Competency**

Competency is a dynamic combination of cognitive and meta-cognitive skills, knowledge and understanding, interpersonal, intellectual and practical skills, ethical values and attitudes. Fostering competences is the object of all educational programs. Competences are developed in all course units and assessed at different stages of a program. Some competences are subject-area related (specific to a field of study), others are generic (common to any degree course). It is normally the case that competence development proceeds in an integrated and cyclical manner throughout a program.

### **International Sectorial Organization**

International Sectorial Organization means an association of national organizations, including, for example, employers and professional bodies, which represents the interests of national sectors.

### **Knowledge**

Knowledge means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study. In the context of the European Qualifications Framework (EQF), knowledge is described as theoretical and/or factual.

### **Learning outcome**

Learning outcome is a statement of what a learner knows, understands and is able to do on completion of a learning process, which is defined in terms of knowledge, skills and competence.

### **EQF**

The European Qualifications Framework for lifelong learning (EQF) provides a common reference framework which assists in comparing the national qualifications systems, frameworks and their levels. It serves as a translation device to make qualifications more readable and understandable across different countries and systems in Europe, and thus promote lifelong and life-wide learning, and the mobility of European citizens whether for studying or working.

### **NQS**

National Qualifications System means all aspects of a Member State's activity related to the recognition of learning and other mechanisms that link education and training to the labor market and civil society. This includes the development and implementation of institutional arrangements and processes relating to quality assurance, assessment and the award of qualifications. A National Qualifications System may be composed of several subsystems and may include a National Qualifications Framework.

## **NQF**

National Qualifications Framework means an instrument for the classification of qualifications according to a set of criteria for specified levels of learning achieved, which aims to integrate and coordinate national qualifications subsystems and improve the transparency, access, progression and quality of qualifications in relation to the labor market and civil society.

## **Professional Association**

A professional association (also called a professional body, professional organization, or professional society) is usually a nonprofit organization seeking to further a particular profession, the interests of individuals engaged in that profession, and the public interest. The roles of these professional associations have been variously defined: "A group of people in a learned occupation who are entrusted with maintaining control or oversight of the legitimate practice of the occupation"; also a body acting "to safeguard the public interest"; organizations which "represent the interest of the professional practitioners," and so "act to maintain their own privileged and powerful position as a controlling body".

Many professional bodies are involved in the development and monitoring of professional educational programs, and the updating of skills, and thus perform professional certification to indicate that a person possesses qualifications in the subject area. Sometimes membership of a professional body is synonymous with certification, though not always. Membership of a professional body, as a legal requirement, can in some professions form the primary formal basis for gaining entry to and setting up practice within the profession. Many professional bodies also act as learned societies for the academic disciplines underlying their professions.

## **Qualification I**

The term qualification covers different aspects:

Formal qualification: the formal outcome (certificate, diploma or title) of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards and/or possesses the necessary competence to do a job in a specific area of work. A qualification confers official recognition of the value of learning outcomes in the labor market and in education and training. A qualification can be a legal entitlement to practice a trade (OECD);

Job requirements: the knowledge, aptitudes and skills required to perform the specific tasks attached to a particular work position (ILO).

## **Qualification II**

Qualification means a formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards.

## **Sector**

Sector means a grouping of professional activities on the basis of their main economic function, product, service or technology.

## **Skills**

Skills describe the ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments).

## **7. Activities – processes related to CPD**

### **Certification**

Certification is the process of issuing a certificate, diploma or title formally attesting that a set of learning outcomes (knowledge, knowhow, skills and/or competences) acquired by an individual have been assessed and validated by a competent body against a predefined standard.

### **Accreditation**

Accreditation is a process of quality assurance through which accredited status is granted to a program of education/ training or to an education/ trainer provider, showing it has been approved by the relevant legislative or professional authorities by having met predetermined standards.

### **License/ Authorization**

A license/authorization is a permission to work. In some countries license/authorization is required to work in a medical laboratory. In particular, a license may be issued by authorities to allow an activity that would otherwise be forbidden. It may require paying a fee and/or proving a capability. The requirement may also serve to keep the authorities informed on a type of activity and to give them the opportunity to set conditions and limitations. In the context of BMS, authorization is intended to ensure that practitioners are in possession of the necessary relevant qualifications. The main aim of authorisation is to ensure the patients' safety. Authorization protects the professional titles, and persons lacking authorisation or licence may not lay claim to the title or any title which may give the impression that the person in question is an authorised practitioner.

### **Qualitative validation**

Qualitative validation consists in showing that a model is able to mimic available observed data.

### **Quantitative validation**

Quantitative validation of a model consists in comparing the occurrence distribution of all behaviors of the real system with the occurrence distribution of all simulated behaviors. For such a validation, it is assumed that the observed data give a thorough description of all possible system behaviors.

### **Registration**

Registration means that as a professional one has to get inserted into an official register organized by a regulatory body. This register has standards for training, professional skills; behavior and health, which every registrant must meet in order to become registered and must continue to meet in order to maintain their registration/license (see also License / Authorization).

### **Validation**

Validation consists in showing that a model sufficiently represents the studied real system in describe the behavior of this system or to make decisions.

### **Validation of learning outcomes**

Validation of learning outcomes is a confirmation by a competent body that learning outcomes (knowledge, skills and/or competences) acquired by an individual in a formal, non-formal or informal setting have been assessed against predefined criteria and are compliant with the requirements of a validation standard. Validation typically leads to certification.

## **8. Abbreviations**

<b>BA</b>	Bachelor of Arts
<b>BLS</b>	Biomedical Laboratory Scientist
<b>BMS</b>	Biomedical Scientist
<b>BMLS</b>	Biomedical Laboratory Scientist
<b>BS</b>	Biomedical Scientist
<b>BSc</b>	Bachelor of (Applied) Science
<b>CPD</b>	Continuing professional development
<b>CPE</b>	Continuing professional education
<b>EBM</b>	Evidence-based medicine
<b>EBP</b>	Evidence-based-learning (practice)
<b>ECTS</b>	European Credit Transfer and Accumulation System
<b>ECVET</b>	European Credit Transfer for Vocational Education and Training
<b>EQF</b>	European Qualification Framework
<b>FE</b>	Further education
<b>HE</b>	Higher education
<b>HEI</b>	Higher Education Institution
<b>MA</b>	Master of Arts
<b>MSc</b>	Master of Science
<b>NQF</b>	National Qualification Framework
<b>PBL</b>	Problem Based Learning
<b>PhD</b>	Doctor of Philosophy
<b>UEC</b>	Unit of Euro Credits

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