



Twinning Project MD 13 ENPI OT 01 16 (MD/26)
*Support to promote cultural heritage in the Republic of Moldova
through its preservation and protection*

Component 3

Quality Vocational Education and Training (VET) programs related to the protection and restoration of cultural heritage at secondary vocational education and at Higher Education (HE) levels developed and implemented

Activity 3.1

Assessment of the current situation in VET (secondary) and HE regarding restoration of cultural heritage

ASSESSMENT REPORT ON HE AND VET AND RECOMMENDATIONS ON HOW TO STRENGTHEN HE AND VET EDUCATIONAL PROGRAMMES ON CONSERVATION OF CULTURAL HERITAGE

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TERMS OF REFERENCE.

The present document is realized for the **EU Twinning Project** between Italy and Moldova **MD 13 ENPI OT 01 16 (MD/26)** *“Support to promote cultural heritage in the Republic of Moldova through its preservation and protection”* within **Component 3** *“Quality Vocational Education and Training (VET) programs related to the protection and restoration of cultural heritage at secondary vocational education and at Higher Education (HE) levels developed and implemented”*, **Activity 3.1** *“Assessment of the current situation in VET (secondary) and HE regarding restoration of cultural heritage”* that sets out the following benchmarks:

- Analysis of the current curricula, courses rationale and content, didactic methods through desk work, interviews, meetings and visits to educational centres carried out by 5th month;
- Report with recommendations prepared by 6th month.

This assessment report consists in an analysis of the current organisation of courses, curricula and syllabuses in HE (architecture, archaeology and engineering) and VET with particular regard to conservation of cultural heritage subjects. A comparison is also made with EU requirements but also with specific organisation of didactic activities in EU countries with long tradition in HE and VET education related to conservation of cultural heritage. It also contains a series of recommendations on how to strengthen HE and VET educational programmes on conservation of cultural heritage, with specific regard to immovable properties. This activity was carried out through desk work, interviews with relevant stakeholders, visits to VET and HE educational institutions.

Through their commitment and openness to dialogue and exchange, the Beneficiary representatives strongly contributed to identify the educational needs and strengths, producing relevant documentation and laws, allocating time for discussing with the MS STEs the proposed amendment to curricula and syllabuses.

Finally, the present report contributes to the achievement of Mandatory Result 3 *“Quality education programmes linked with cultural heritage at VET and HE improved and implemented”* and represents a basis for the upcoming Activities to be realized under Component 3:

- Activity 3.2, consisting in the revision of the curricula and syllabuses of the courses for VET;
- Activity 3.3, consisting in the revision of the curricula and syllabuses of the courses for HE degrees in archaeology, architecture and engineering.

since the recommendations given will feed into the imminent development of practical courses and of the curricula for HE in architecture and engineering.

EXECUTIVE SUMMARY.

The present document assesses the current situation in Moldova for VET (secondary) and HE regarding restoration of cultural heritage, as established as project benchmark for the activity 3.1 of the Twinning Contract and presents the results of the analysis of the current organisation of courses, curricula and syllabuses in HE (architecture, archaeology and engineer) and VET with particular regard to conservation of cultural heritage subjects.

A comparison is also made with EU requirements and specific organisation of didactic activities in countries (e.g. Italy) with long tradition in HE and VET education related to conservation of cultural heritage.

The report summarizes the regulatory and institutional framework of Moldova concerning Higher Education (HE) and Vocational Education and Training (VET) sector, analyses current development processes and identify TVET-HE programs related to restoration of cultural heritage, in order to formulate recommendations to strengthen the educational and training offer in field connected to cultural heritage, with particular regard to conservation and protection of built heritage.

An Analysis of the current organization of courses, curricula and syllabuses in HE and VET has been carried out with particular regard, but not limited to, conservation of cultural heritage objects.

The analysis of **HE sector** has implied desk work, interviews, meetings and close exchange with the teachers of the relevant subjects of the Department of Architecture and Urbanism (DAU hereinafter) at TUM University, which represent the main department involved in the curriculum for Architecture. Also the meetings (through sample lectures) with the students were precious elements for the knowledge of the university context.

Analytical work carried out throughout the first months of the project implementation has made evident the need to reach out the engineers, however effective contacts with the Faculty of Construction, Geodesy and Cadastre could be established only recently (October 2018). Therefore, the present report only contains a desk – analysis of the courses, curricula and syllabuses, which still has to be discussed with the relevant teaching staff.

Preliminary considerations concerning the preferable model to be adopted to strengthen the education on architectural conservation/ restoration in the country have been anticipated already during the first months of Twinning implementation. Considering the size of the country, the consistence of the historic built assets, the number of inhabitants, the budget constraints of the public universities in the Republic of Moldova, combined with the high operation costs of university courses, it is recommended not to establish specialised post-graduate specialised courses (e.g. post- graduate Masters or doctoral studies) but to reinforce both the bachelor (level I) and the master degrees courses.

For the Faculty of architecture, it is suggested first to embrace fully the Bologna Process and to establish Level I and Level II curricula, in order to ensure that at the Master degree level, more options can be offered to students: as a matter of fact, at the moment the Twinning discussed with the DAU (June 2018) no real diversification of curricular path existed. The “Level I + Level II” model facilitate the effective differentiation of the curricula. This will also facilitate internationalisation and exchanges, which are much needed for the country.

Additionally, some concrete proposals for acting immediately upon the reinforcement of the curricula of the undergraduate course in the faculty of architecture in topics related to conservation have been put forth, following several meetings with the teachers of the TUM. This preliminary proposal has been shared with DAU at TUM since June 2018 (it is explained in full in Report for Activity 3.3).

As for **VET**, the analysis was carried out by:

- comparison with the relevant legislation;
- exchanges with the staff from the Ministry of Education, Culture and Research in Moldova;
- exchanges and meetings with teachers and didactic directors of VET schools;
- cross-reference to Project “Support for VET Sector in the Republic of Moldova” ref. n. *EuropeAid/133700/C/SER/MD/12*.

An examination of EU requirements and of the level of implementation in the sector by the Moldovan system was deemed useful as well as an overview of specific organisation of didactic activities in countries with a long tradition in VET education related to conservation of cultural heritage.

Meetings with didactic staff of VET Schools in the Republic of Moldova have revealed that there is no specific school in Moldova that forms conservators or restorers. Until the recent past, some of the professional schools provided courses on conservation / restoration of artefacts in different materials but today these courses have been discontinued either because of the lack of teachers or because of the lack of interest on the students’ side. These courses represent a useful reference for the reactivation of specific courses in the subject as well as to create ‘modules’ on conservation within existing courses. The present situation of the didactics in the VET sector makes therefore not possible a fully relevant comparison with Italy and other EU countries because of the differences between the current TVET European system and the VET system in Republic of Moldova before the recent reforms.

The present report has taken into account the recent reform in the sector: the 2014 Education Code, the VET Strategy 2013-2020 and the Education Development Strategy 2020 adjust the legal framework to the new socio-economic context. The project on VET recently concluded has assisted the Republic of Moldova also in to align the modernisation of the Classifier of Occupations, based on international standards and a new nomenclature of professions and specialisations for education and training area as a logical consequence of those adjustments. A new National Employment Strategy 2020 was adopted in March 2017 with a work plan aimed at improving the labour market prospects and further development of human capital. Moldova is also adjusting the regulatory framework for Small and Medium Enterprises.

Regulations and Ministerial Orders cover the development of curricula and qualifications, while the Education Code is an overarching policy, which is designed to modernize the VET system and encourage VET institutes to engage with the economic agents.

The policy environment, as evidenced by strategies, action plans and laws, has been implemented to a significant extent, and this is the right moment to push forward the VET reform implementation, including the built heritage restoration/ conservation sector. In particular, the adoption of the Laws on the establishing of the National Qualifications Framework and on the creation and functioning of the Sectoral Committees (November 2017) created a renovated impulse to the on-going reform.

The most visible elements of the reform of TVET are:

- the passage from an almost entirely public system of vocational training to a network of public and private organisations which have at its core new “Centres of Excellence” for TVET, each one specialised in a certain domain;
- the establishment of quality control system;
- the introduction of a dual education system modelled on the German and Austrian experience, based on periods of simultaneous school education and on-the-job training in companies.

Within the above-mentioned framework, the present Twinning project aims at providing specific recommendations for promoting within VET institutions and developing knowledge, technical skills and competences in the field of conservation/restoration of cultural heritage.

As a result of the analysis, it appears worth recommending a double-phased improvement of the curricula:

- immediately include elements of knowledge- and competence-building on topics related to restoration/conservation/ repair of materials and artefacts within the existing training courses for construction workers and managers (secondary and post- secondary VET);
- at a following stage, it will be necessary to establish mandatory minimum qualifications for workers and/or firms working on cultural heritage (updating the Classifier of Occupation) and, simultaneously, adjust the VET curricula to respond to the new adequate training courses on the issue in new Centres of Excellence for VET in the field of constructions.

Following the analytical phase on the Moldovan situation, it has been possible to develop proposals that can help strengthen VET educational curricula on conservation of built cultural heritage. These proposals are included in Report 3.2.

HIGHER EDUCATION (HE) SECTOR IN MOLDOVA.

Education in the Republic of Moldova can be public and private. Education can be organized as full-time education, part time education, and distance learning. The education system is open, ensuring the possibility of switching from one type to another, under the conditions established in the regulation, adopted by the Ministry of Education. Higher education aims to:

- forming a multilaterally developed and creative personality, training, retraining and requalification at a higher-level of specialists and scientific personnel in various fields;
- providing personality aspirations to deepen and expand the studies;
- promoting scientific research and implementation of its results;
- the preservation, enrichment and impartment of the scientific, technical, artistic and cultural heritage.

Higher education is delivered by higher education institutions: universities, academies and institutes.

MOLDOVAN CONTEXT.

Moldovan education sector has undergone significant reform during the last 5 years through intensive support from the EU and other European institutional. We outline here the current situation in Moldova.

LEGAL AND INSTITUTIONAL FRAMEWORK OF HIGHER EDUCATION.

The main reference laws and regulations ruling the sector of Higher Education in Moldova can be summarized as follows:

- **Code Nr. 259** on *science and innovation* of the Republic of Moldova -XV of 15 July, 2004;
- **Decision Nr. 482** of 23.04.2003 approving the *Concept of the training policy of the scientific and academic staff*;
- **Decision Nr. 1007** of 10.12.2014 *pentru aprobarea Regulamentului privind organizarea studiilor superioare de doctorat, ciclul III*;
- **Decision Nr. 464** of 28.07.2015 *pentru aprobarea Regulamentului cu privire la organizarea ciclului II – studii superioare de master*;
- **Decision Nr. 56** of 27.01.2014 *pentru aprobarea Regulamentului-cadru cu privire la mobilitatea academică în învățământul superior*;
- **Decision Nr. 4.1** of 22.10.2015 of the *Colegiului Ministerului Educației*;
- **Decision Nr. 4.2** of 22.10.2015 *cu privire la aprobarea Regulamentului de organizare a studiilor în învățământul superior în baza Sistemului Național de Credite de Studiu*;
- **Decision Nr. 173** of 18.02.2008 *on the organization and development of doctorate and post-doctorate studies (Regulation at Annex no.1)*;

- **Decision Nr. 24.4.1** of 19.03.1996 *on the organization and development of the license exams in higher university education (Regulation at Annex no.1);*
- **Decision Nr. 1455** of 24.12.2007 *on the organization of higher Master studies, cycle 2, Government (Regulation at Annex no.1);*
- **Law Nr. 547-XIII** on Education of 21 July 1995;
- **Law Nr. 142** of 07.07.2005 *privind aprobarea Nomenclatorului domeniilor de formare profesională și al specialităților pentru pregătirea cadrelor în instituțiile de învățământ superior, ciclul I;*
- **Order Nr. 127** of 25.04.2013 *cu privire la instituirea Registrului arheologilor și aprobarea unor acte normative privind punerea în aplicare a Legii privind protejarea patrimoniului arheologic nr.218 din 17 septembrie 2010;*
- **Order Nr. 225** of 16.11.2015 *cu privire la instituirea Registrului Arheologilor din Republica Moldova și atribuirea categoriilor profesionale la specialitatea “Arheologie”;*
- **Order Nr. 1045** of 29.10.2015 *PLAN-CADRU pentru studii superioare (ciclul I - Licență, ciclul II - Master, studii integrate, ciclul III – Doctorat);*
- **Order Nr.242-r** of 05.04.2011 *Regulation on study organization in higher education based on the National System of Study Credits;*
- **Order Nr.369** of 06.05.2014 *Regulamentul privind organizarea și dezvoltarea admiterii la studii superioare de licență (ciclul 1) în instituțiile de învățământ superior din Republica Moldova.*

The Law on Education (art. 26) states that higher education in Moldova is divided into three levels: bachelor, master, doctorate. The organization of the study process at cycle I and cycle II is defined in: Regulation on the organization of studies in higher education based on the National Study Credit System (*Regulamentul de organizare a studiilor în învățământul superior în baza Sistemului Național de Credite de Studiu*) and the Regulation on the organization of master's higher education, cycle II (*Regulamentul de organizare a studiilor în învățământul superior în baza Sistemului Național de Credite de Studiu și Regulamentul cu privire la organizarea studiilor superioare de masterat, ciclul III*).

Study programs at cycle I

After analysing the selected sources, it is found that in terms of establishing study programs responsibilities of the parties are defined by Article 2 of the Law on Nomenclature of fields of professional training [*Legea privind aprobarea Nomenclatorului domeniilor de formare profesională și specialităților pentru pregătirea cadrelor în instituțiile de învățământ superior, ciclul I nr. 142 din 07.07.2005*]. This Nomenclature aims at ordering the training of specialists with higher education, ensuring the comparability of study programs, creating conditions for internal and external mobility of students in cycle I. The Nomenclature is developed in accordance with the requirements of UNESCO (ISCED), based on the requirements of the national economy in specialists. When there appear needs for new study programs dictated by the requirements of the labour market, universities, jointly with businesses and associations, come with argued proposals, which are analysed by the Ministry of Education, Government and approved by Parliament by law.

Study programs at cycle II

For cycle II, there is no framework Nomenclature, universities are free to independently develop master programs for each area of training or at their interference based on generic and specific competencies prescribed for level 7 of the Qualifications Framework and the Law on Education (Article 28). The Ministry of Education only records the presence of mandatory documents for a master programme. The authorized programme will be delivered on a provisional basis until its accreditation. Accreditation will be required after the first promotion of graduates from the program. The share of budget funded study places is limited by educational fields and universities.

Thus, for this sub-criterion there is an extensive autonomy for universities, which in the absence of an appropriate external evaluation often leads to problems of incomparability, limits mobility, and causes problems related to the employment of graduates on the labour market. It seems necessary to develop a general framework for cycle II.

Study programs at cycle III

Article 26 paragraph (4) of the Law on Education, as amended by LP239 of 18.10.13 (MO297-303/20.12.13 art. 807) declares the doctorate as the third cycle of higher education – doctoral higher education. Fields and specializations for doctoral studies are determined by The Nomenclature of scientific specialties, approved by Government Decision No. 199 of 13 March 2013 (*Nomenclatorul specialitatilor stiintifice. Aprobat prin Hotărârea Guvernului nr.199 din 13 martie 2013*¹). Doctoral programs are introduced at the request of universities. To open a new doctoral programme, it is required the verification of capabilities (research in the field, supervisors trained in the field). The share of study places, funded from the state budget and based on tuition fees, is strictly limited per field and universities (decided by the Academy of Sciences).

In the Republic of Moldova post-doctoral studies are also organized (Article 31 of the Law on Education), involving the development and public defence of a thesis of a more advanced level in comparison with the doctoral thesis. The postdoctoral program is customized and defined under the Regulation on the Organization and Conduct of Doctoral and Postdoctoral Studies (art.81-98). Universities are autonomous in determining programs and selecting candidates for these programs. The degree offered, after the successful defending of the thesis, is Doctor Habilitate in the respective field.

The study process in higher education (first cycle, second cycle and integrated studies) is organized by applying the National Study Credit System (NSCS). The duration of studies is usually quantified in credits (one year of full-time studies in higher education corresponds to 60 credits of study).

Higher education at Bachelor level is full-time and part-time, and at the Master level, it is usually full-time. The duration of part-time studies is one year longer than for the full-time studies. In the areas

¹ <http://www.cnaa.acad.md/news/2013/02042013>

of Arts, Psychology, Medicine, Pharmacy, Veterinary Medicine and specialties like Architecture, Modern Languages the studies are only full-time.

The organization of the educational process during the academic year is set out in the timetable of the study process (approved at the end of the previous academic year according to the internal regulations of the educational institution), and for a semester - in the didactic activities' timetable approved at the beginning of the semester.

In developing both the schedule and timetable, each university takes into account the particularities of organization of studies in cycles and forms of education, which are displayed both at faculty's notice board and on the website of the institution and / or faculty.

The organization of the study process at cycle III - Doctorate, in general, is defined in art. 30 of the Law on Education: doctoral schools, duration, completion. Being a specific education, and taking into account the substantial change, too many activities are left undefined.

Elaboration of syllabuses and curricula

The normative document Framework Plan for higher education, approved by order of the Ministry of Education no. 455 of 03.06.2011, contains only norms / standards related to curriculum structure, the form of documents.

The educational plans for higher education institutions are developed / designed by specialized departments for each cycle, field of professional training / specialty and form of organization of education (full-time, part-time, distance learning), and are approved by the university Senate jointly with the Ministry of Education, in compliance with state educational standards. The educational plans approved by the Ministry, shall be recorded in a register at the Department of Studies of the higher education institution.

Syllabi (curricula) are developed by specialty departments and include a description of the course unit and the actual content. Based on the favourable opinion of the Faculty Council, they are approved by the University Senate. Curriculum development requirements of the course unit are set out in the Regulation on the organization of studies in higher education based on the National Study Credit System.

Both educational plans and curricula can be modified / amended provided their implementation in the following academic year, and their new version will apply to students enrolled in the respective year of studies, and provided that the changes were made in the manner prescribed by the end of the previous year of studies and have been made public through the information system of the institution.

Regarding the introduction of new study programs at cycle I – Bachelor, universities base the building of their curricula on the Law of Nomenclature of fields of training [*Legea privind aprobarea Nomenclatorului domeniilor de formare profesională și specialităților pentru pregătirea cadrelor în instituțiile de învățământ superior, ciclul I nr. 142 din 07.07.2005*]. If a new study program / specialty needs to be introduced, given the labour market demand in staff with such kind of qualifications, but it is not found in the Nomenclature already approved, then several stakeholders such as universities, businesses, professional associations, come with such a proposal to the Ministry of Education,

Government to be analysed, and if positive opinion, the new specialty is approved by Parliament by law.

To introduce new study programs at cycle II - Master, there is no such Nomenclature of professional training fields, and universities are free in their initiation. The Ministry of Education has not approval competence but shall ensure that all documents related to this process are in order.

At cycle III - PhD, introduction of new study programs is made based on the Nomenclature of scientific specialties, approved by Government Decision No. 199 of 13 March 2013 and given the fact that the number of places is strictly limited per fields, the Academy of Sciences of Moldova is the body that decides on their number.

The syllabuses for higher education institutions are developed by specialized departments / chairs for each cycle, field of professional training / specialty and organizational form of education (full time, part time, distance learning) according to the Framework Plan for higher education, approved by order of the Ministry of Education no. 455 of 03.06.2011 and are approved by the university Senates, in agreement with the Ministry of Education, and in accordance with state educational standards.

Liquidation of study programs, if needed, is initiated by the higher education institution, although the Ministry of Education has also this right, especially if negative results are obtained from the external evaluation procedure conducted by the National Agency for Quality Assurance in Professional Education (according to the new provisions of the Law on Education). If there are such cases, the Ministry of Education may even propose to the Government to withdraw the right of activity of the institutions or professional training programs.

Syllabuses are approved by the Ministry of Education, Culture and Research and are recorded in a register at the Department of Studies of the higher education institution. The registration number and date of approval are written down on the title page of the syllabus (*Plan-cadru provizoriu pentru ciclul I (studii superioare de licență)*).

Curricula are developed by a group of teachers from specialized chairs / departments and include the description of the course unit and the actual content. Based on the favourable opinion of the Faculty Council, they are approved by the University Senate. Requirements for curriculum development of the course unit are defined in the Regulation of organizing higher education studies based on the National Study Credit System (*Regulamentul de organizare a studiilor în învățământul superior în baza Sistemului Național de Credite de Studiu*).

Both syllabuses and curricula can be modified / amended provided that they will be implemented in the following academic year, and their new version will apply to students enrolled to studies in that year as long as the changes were made in the manner prescribed by the end of the previous year of studies and have been made public through the information system of the institution.

Government - University Interface

The **establishment** of a university is governed by Article 401 of the Education Law. According to this article, ministries and departments make proposals for the establishment, reorganization or liquidation of state institutions of secondary education, secondary vocational education, secondary specialized education, higher university education, subordinated to central public authorities, and submit them for review to the Ministry of Education. Further, the competencies are distributed as it follows:

The Ministry of Education:

- decides on the proposals of the education departments, local public authorities of 2nd level, as well as of the interested ministries and departments on the establishment, reorganization or liquidation of the state institutions of general secondary education, secondary and vocational education;
- proposes the establishment, reorganization or liquidation of state secondary education, special and complementary secondary education, secondary specialized and higher university education institutions subordinated to central public authorities and submits them to the Government for examination.

The Government:

- Decides on the proposals of the Ministry of Education on the establishment, reorganization or liquidation of state secondary education, special secondary education, complementary, secondary specialized and higher university education institutions subordinated to the central public authorities;
- confirms the proposals of the Ministry of Education on the establishment, reorganization or liquidation of state institutions of higher education and submits them for approval to the President of the Republic of Moldova;

The President of the Republic of Moldova:

- decides on the proposals of the Government on the establishment, reorganization or liquidation of state institutions of higher university education.

The establishment of faculties, creation of governing structures within the university (faculty councils, etc.) are approved by law or a regulation under the law².

Once an University is established, the Education Law also deals with its **functioning**. In particular, universities that are operating in the Republic of Moldova are recognized by a respective accreditation. The accreditation process comprises two stages:

- licensing, which gives the right to a provisional organization and functioning;
- accreditation, which gives all the rights provided by the respective law.

According to article 35(3) of the Education Law, after being accredited, educational institutions for adults can obtain the right to autonomy within the legislation limits.

Steps in the national reforms in Higher Education

2016

² For example, the establishment, reorganization or suspension of the activity of a faculty is undertaken at the proposal of the University Senate with the agreement of the resort ministry.

- - Authorisation of operation of doctoral schools and doctoral programmes within higher education institutions, consortia, national and international partnerships (Government Decision No. 1024 of 06.09.2016);
- - The approval of the Methodology of external quality evaluation for provisional authorization and accreditation of vocational education and training, higher education and lifelong learning study programs and institutions. (Government Decision No. 616 of 18.05.2016, <http://lex.justice.md/md/364908/>);
- - Ministry of Education regarding the participation of students in quality assurance (Ministry order nr. 738 of 05.08.2016, goo.gl/SXh20M).

2015

- - Authorisation of operation of 43 doctoral schools as part of higher education institutions (Government Decision No. 816 of 11.11.2015, <http://goo.gl/W236bC>);
- - Approval of the Regulation on organisation of cycle II Master studies (Government Decision No. 464 of 28.07.2015, <http://lex.justice.md/md/356044/>);
- - Amendment to the Nomenclature of Professional Development Domains with new specialties (amendment of 21.05.2015 to the Law No. 142 of 07.07.2005, <http://goo.gl/i3NR3E>);
- - Approval of the Regulation on the organisation and functioning of the National Agency for Quality Assurance in Professional Education (Government Decision No. 191 of 22.04.2015, <http://goo.gl/lduVRn>).

2014

- - Approval of the Regulation on the organisation of cycle III PhD studies. As a result, higher education institutions can set up doctoral schools. The doctoral study programmes are developed as part of higher education in continuation of cycle II studies (Government Decision No. 1007 of 10.12.2014, <http://lex.justice.md/md/356044/>);
- - Approval of the Regulation on the functioning of student self-governance structures (Order No. 969 of 10.09.2014, <http://goo.gl/FDFbJw>);
- - Establishment of the National Agency for Quality Assurance Professional Education (Government Decision No. 652 of 13.08.2014, <http://goo.gl/3pagfp>);
- - Adoption of the new Education Code – legal framework regulating the design, organisation, functioning and development of the education system in the Republic of Moldova, in force since 23.11.2014 (CODE No. 152 of 17.07.2014, <http://lex.justice.md/md/355156/>);
- - Amendment to the Nomenclature of Professional Development Domains with new specialties (amendment of 11.04.2014 to the Law No. 142 of 07.07.2005, <http://goo.gl/i3NR3E>);
- - Approval of the Framework Regulation on the participation and organisation of student and academic staff mobility at national and international levels (Government Decision No. 56 of 27.01.2014, <http://goo.gl/FjRWuX>).

2013

- Amendment to the Nomenclature of Professional Development Domains with new specialties (amendment of 28.06.2013 to the Law No. 142 of 07.07.2005, <http://goo.gl/i3NR3E>).

CURRENT STRUCTURE OF HE IN MOLDOVA.

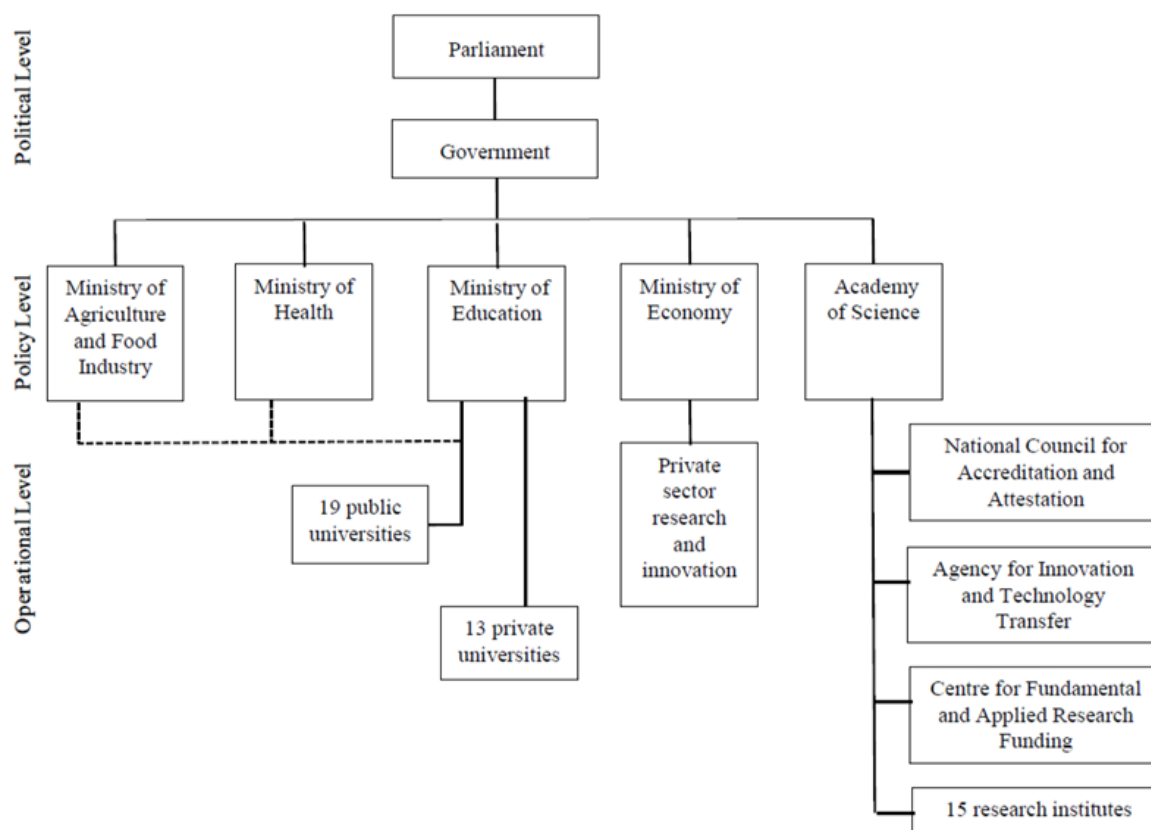


Figure 1 - The structure Moldovan Higher Education and Research sector

After joining Bologna Process in 2005, the Law on Education was amended to incorporate the basic Bologna Principles; a two-cycle system of higher education has been introduced. It should be mentioned that doctoral programs have not yet been changed in the light of the Bologna process. Doctoral studies are still regulated by the Science and Innovation Code and the Law on Education (TEMPUS, 2012).

Since 2017 (Decision No. 691 of 30.08.2017) school education is headed by Ministry of Education, Culture and Research. As part of the government reform occurred on that year, the Ministry of Culture absorbed the Ministry of Education and the Ministry of Youth and Sports therefore being renamed Ministry of Education, Culture and Research.

The HE educational organisation is actually structured in:

- Bachelor's degree 3-4 years;
- Master's degree 1-2 years;
- Doctoral degree 3-4 years;
- Postdoctoral studies

With the only exception represented by the faculty of architecture within the TUM that does not subdivide the course of study in Bachelor and Masters, even if this peculiarity is not reported in the TUM website.

Higher education studies consist of two major cycles of education: first cycle, that last from three to four years and master study that lasts from 1 to 2 years. The duration of studies depends on the field of education. The *Diploma de Licență* is awarded for the first cycle; it gives access to the second cycle, master degree. The Diploma de Master is awarded for the second cycle study and gives access to doctoral study. There are integrated studies such as medicine, dentistry, veterinary medicine, pharmacy and architecture that last from five to six years. The diploma awarded has the same level as master studies.

The new (2014) Code of Education provides three levels of higher education. However, doctoral study retains two stages: *Doctor* and *Doctor Habilitat*. Doctoral programmes last from three to four years and are completed by the public defence of an original research work (thesis). Doctor Habilitat represents the highest scientific degree conferred in all fields, it is awarded on the basis of the original contribution to a particular field and also requires a public defence of the doctor habilitate thesis. Since the late 1990s, private education as an alternative to state education has developed in Moldova. Today the private sector is growing, there are 13 private universities. These private universities follow the regulations established by the Ministry of Education and a few of them have already passed the process of state accreditation. The global University offer in Moldova appears to be very rich, counting on a series of several institutions³, both public and private.

PUBLIC INSTITUTIONS.

There are many public universities offering multiple faculties, such as:

- **Moldova State University⁴:**
 - Faculty of Social Assistance, Sociology and Philosophy;
 - Economics Faculty of Biology and Soil Sciences;
 - Faculty of Chemistry and Chemical Technology;
 - Faculty of Law;

³ <http://mecc.gov.md/ro/content/institutiile-de-invatamant-superior>

⁴ www.usm.md

- Faculty of Physics;
- Faculty of History and Psychology;
- Faculty of Journalism and Communication Sciences;
- Faculty of Foreign Languages and Literature;
- Faculty of Mathematics and Computer Science;
- Faculty of International Relations, Political and Administrative Sciences;
- Faculty of Economics;
- **"Ion Creanga" Pedagogical State University⁵:**
 - Faculty of Fine Arts and Design;
 - Faculty of Philology;
 - Faculty of History and Geography;
 - Faculty of Foreign Languages and Literature;
 - Faculty of Psychology and special psychopedagogy;
 - Faculty of Education and Informatics;
- **Technical University of Moldova⁶:**
 - Faculty of Energetics and Electrical Engineering;
 - Faculty of Mechanical Engineering and Transport;
 - Faculty of Electronics and Telecommunications;
 - Faculty of Computers, Informatics and Microelectronics;
 - Faculty of Food Technology;
 - Faculty of Textile and Polygraphy;
 - Faculty of Architecture and Urban Planning;
 - Faculty of Constructions, Geodesy and Cadastre;
 - Faculty of Economic Engineering and Business;
- **Academy of Economic Studies of Moldova⁷**

⁵ www.upsc.md

⁶ www.utm.md

⁷ www.ase.md

- **"Alecu Russo" State University of Balti⁸:**
 - Faculty of letters;
 - Faculty of real, economic and environmental sciences;
 - Faculty of educational sciences;
 - Faculty of social sciences;
- **Tiraspol State University⁹:**
 - Faculty of physics, mathematics, technology, computer science;
 - Faculty of biology and chemistry;
 - Faculty of geography;
 - Faculty of pedagogy;
 - Faculty of philology;
- **Comrat State University¹⁰;**
- **State University of Physical Education and Sport¹¹;**
- **"Nicolae Testimțanu" State University of Medicine and Pharmacy¹²;**
- **Agrarian State University of Moldova¹³;**
- **"Stefan cel Mare" Police Academy¹⁴;**
- **Moldova Institute of International Relations¹⁵:**
 - Faculty of international relations and political science;
 - Faculty of world economy and international economic relations;
 - Faculty of Law;
 - Faculty of foreign languages;
- **Academy of Music, Theatre and Fine Arts¹⁶;**
- **"Alexandru cel Bun" Military Institute¹⁷;**

⁸ www.usarb.md

⁹ www.ust.md

¹⁰ www.kdu.md

¹¹ www.usefs.md

¹² www.usmf.md

¹³ www.uasm.md

¹⁴ www.academy.police.md

¹⁵ www.irim.md

¹⁶ www.amtap.md

¹⁷ www.army.md

- **"Bogdan Petriceicu Hasdeu" State University of Cahul¹⁸:**
 - Faculty of public law and administration;
 - Faculty of philology and history;
 - Faculty of economy, engineering and sciences;
- **Taraclia State University¹⁹;**
- **University of Academy of Science of Moldova²⁰:**
 - Faculty of natural sciences;
 - Faculty of exact sciences;
 - Faculty of Socio-humanistic;
- **Academy of Public Administration²¹.**

PRIVATE INSTITUTIONS.

The private university sector also offers a wide range of proposals as well:

- **Free International University of Moldova²²:**
 - Faculty of Law;
 - Faculty of Economics;
 - Faculty of Biomedical and Ecology;
 - Faculty of Letters;
 - Faculty of Informatics, Engineering, Design;
 - Faculty of International Relations, Political Science and Journalism;
 - Faculty of Psychology, Education Sciences and Social Assistance;
- **"IMI-NOVA" International Management²³;**
- **"Perspectiva-Int" University²⁴;**

¹⁸ www.usch.md

¹⁹ <http://tdu-tar.md/>

²⁰ www.edu.asm.md www.mrda.md/asmu

²¹ www.aap.gov.md

²² www.ulim.md

²³ www.imi-nova.md

²⁴ www.perspectiva.md

- **Cooperative-Commercial University of Moldova²⁵;**
- **Slavonic University²⁶;**
- **University of European Political and Economic studies²⁷;**
- **University of European Studies of Moldova²⁸:**
 - Faculty of Law;
- **"High Anthropological School" University²⁹;**
- **Academy of Transport, Informatics and Communications³⁰;**
- **Institutul Nistean de Economie și Drept / Nistean Institute of Economics and Law³¹;**
- **Institute of Criminal Science and Applied Criminology of Moldova³²;**
- **The American University of Moldova³³:**
 - Accountancy;
 - Architecture;
 - Business and Economics;
 - Finance and Banking;
 - General Economic;
 - International Relations;
 - Law;
 - Marketing and Logistics
 - Political Science;
 - Psychology;
 - Tourism;

²⁵ www.uccm.md

²⁶ www.surm.md

²⁷ www.uspee.md

²⁸ www.usem.md

²⁹ www.ant.md

³⁰ www.aticmd.md

³¹ www.facebook.com/Institutul-Nistean-de-Economie-si-Drept-1428874314089445/

³² www.criminology.md

³³ www.aum.md

- **Technical University of Moldova (TUM) - Faculty of Architecture and Urban Planning**

The Department of Architecture of the Technical University of Moldova was created in 1964 with the foundation of the Polytechnical Institute (now Technical University of Moldova).

On average, in the last years, the number of enrolled students is around 120 and of these only 50% reaches the end of the course of study.

According to the Organic Law for modification and supplementing the Education Law no.547-XIII of 21 July 1995, from 1 September 2008, TUM organizes the training process in two cycles: Cycle I, License, through two types of studies: full-time studies and part-time studies, according to the Nomenclature of the educational programmes and specialities for the Cycle I of Higher education level approved by Law no. 142-XVI of 7 July 2005 and subsequently completed with some specialties and Master Degree Studies, Cycle II.

At the Faculty of Architecture, the two cycles, CYCLE I / CYCLE II - LICENSE / MASTER, are unified in a 6-year course of study.

The lessons and exams are divided into semesters, for a total of 360 credits and studies are organized under the European system of transferable academic credits (ESTC)³⁴.

Differentiated curricula paths does not seem to exist but there's a subdivision between different **groups of disciplines**:

- fundamental disciplines:
 - disciplines related to plastic art drawing, sculpture (46/360);
 - disciplines related to mathematics, descriptive geometry and applied mechanics (15/360);
 - history of architecture (12/360);
 - history of urban planning (4/360);
- general skills disciplines:
 - English language (8/360);
 - information technology (3/360);
 - doctrines in architecture and urban planning (4/360);
 - research theory (4/360);
 - video modelling (2/360);

³⁴ The ESTC facilitates mobility of students and young professionals in the European area with recognition of diplomas.

- disciplines of socio-urban orientation:
 - philosophy (3/360) credits;
 - economic theory and European integration (3/360);
 - legislation under construction, architecture and urban planning (2/369);
- orientation disciplines:
 - design disciplines (128/360);
 - disciplines concerning building materials, construction technology and "engineering equipment" (11/369);
 - landscape architecture (8/360);
 - urban theory (8/360);
 - technology interior spaces (8/369);
 - building physics (6/360);
 - building typology (6/360);
 - restoration (6/360);

The training is supplemented by 8 **summer practical courses**, one dedicated to survey, one to topography, one to drawing, the others to design.

The **credits of the disciplines relating to restoration** amount to 6 on 360 overall with an incidence of restoration material of **only 1,6%**:

- Architectural restoration I - 2 credits;
- Architectural restoration II - 4 credits;

The **credits for historical disciplines** (History of architecture) amount to 9 on 360, again very limited:

- History of Ancient architecture - 2 credits;
- History of Medieval architecture I - 3 credits;
- History of Medieval architecture II - 3 credits;
- History of Moldovan architecture - 2 credits;

The **competences to be developed for Architectural restoration I** (delivered at year IV of the curricula) as of year 2017 include:

- Knowledge of the concepts of monuments and restoration;
- knowledge of the history and theory of conservation and restoration of monuments;
- Knowledge of ways to detect and classify architectural monuments;
- Ability to determine the component and content of the restoration project;

- Knowledge of the stages and specific design for restoration;

The **competences to be developed for Architectural restoration II** delivered at year V of the Curricula) as of year 2017:

- Ability to identify the possible causes of the degradation of monuments;
- Ability to determine the component and content of the restoration project;
- Knowledge of the stages and specific design for restoration;
- Knowledge of the techniques applied to restoration works;
- Knowledge of the categories of restoration works;

The content of the course of Architectural Restoration I for year 2017 is very articulated and included the following:

Theme 1. Introduction. Conservation and restoration of monuments and historical sites as a component of architecture and urban planning.

Theme 2. Concept of the notion of monument. Classification of historical monuments and sites.

Chapter I. History and theory of conservation and restoration of monuments

T.I.1. Stage of empirical restorations

T.I.2. Phase of doctrinal restorations

T.I.3. role of the architect as a protagonist in the restoration process;

T.I.4. Stage of historical and scientific restoration

T.I.5. Stage of restorations after World War II.

Chapter II Researches related to the detection and classification of monuments.

T.II. I. The process of establishing architectural heritage protection. Generally valid and specific in the ontology of architectural heritage. Tools and legal categories defining the protection of architectural heritage

Chapter III Restoration as a modeling process

T.III. I. Component of documentation and design for restoration of architectural monuments.

T.III.2. Preliminary work

T.III.3. The Science Research Complex

3.1. Explanatory briefing;

3.2. Historical-archival and bibliographic research

3.3. Study analogies.

3.4 Fixing (documenting/ surveying) of architectural monuments

- The objectives of fixing the architectural monuments,
- Modalities for fixing the architectural monuments; Fixture with optical devices;
- Survey drawings. Methods of survey with optical instruments.
- Classification of survey according to accuracy graduates;

3.5. Architectural and archaeological investigations

3.6. - Investigations to the monument

- Laboratory research

3.7. - The archaeological investigations in the monument protection area

T.III.4. Project layout for restoration

T.III.5. Project execution for restoration.

T.III.6. Scientific report on the restoration of the monument.

In the course of the course the student must:

A. Know:

- Objectives and purpose of discipline;
- Definitions of monument and restoration nobles;
- Principles of classification of monuments and sites;
- the list of monuments in the historical area of the city. Chisinau.
- The evolution of the concepts of restoration;
- Stages of restorations in the process of establishing restoration as science.
- Criteria for the classification of monuments;
- The purpose and inventory methodology;
- Components / restoration process;
- Designing stages for restoration;
- Types of research for restoration;
- Component of restoration documentation and design documentation;
- Particularity of the design of the restoration;
- Components / Restoration Research Complex;
- Methods of fixing the architectural monuments;
- Methods of laboratory research, archaeological investigations, engineering;
- The component is the purpose of the project sketch;
- Component of the project to execute the restoration report.

be able to:

- Analyze problems in the field of restoration;
- determine the role of the architect as a protagonist in the restoration process;
- recognize the type and period of restoration of the monuments on the basis of the study of the examples.
- Select and make a classification of monuments,
- Perform inventory-related work.

As one can see, the programme is very articulated and informative, but would need much more credits and hours of lecturing and exercise/ studio work. The course is complemented by one-month summer exercise but indeed this does not suffice to get into all details of such well- designed programme. If one observation can be made, this refer to the literature of the course, which appears to need some updating (the most recent book dates back to 1996) and some internationalisation, since the literature is mostly in Russian language.

Anyway, it must be considered that programs are not fixed once for all and can change anytime, mostly depending on the teacher. For instance, between 2017 and 2018 there has been a change in the

professor of restoration/ conservation at TUM which has resulted in a drastic change of the programme, as it can be seen below.

The 2018 course of **Restoration I (year IV)** includes subjects as:

1. Cultural heritage protection. Generalities I (the evolution of the heritage concept, the basic categories of cultural heritage, historical monuments - basic categories)
2. Cultural heritage protection. Generalities II (the land of historic monument, monument protection area, historical-architectural environment, cultural patrimonial protection, authenticity, integrity)
3. History of the Restoration Concept I (Medieval - Fin.sec.XIX)
4. History of the restoration concept II (fin.sec.XIX - sec.XX)
5. Modern principles of intervention on historical monuments I (the basic purpose of the interventions, the basic types of interventions - the repair, conservation of historic monuments, the temporary preservation, the preservation of the ruins, the restoration of historic monuments (fragmentary, integral, reunification, liberation by analogy)
6. Modern principles of intervention on historical monuments II (monumental rehabilitation / adaptation, the restoration work of the restoration architect (restoration of monumental works of art, restoration of monuments - works of art, monument restoration - commemorative works, restoration of lost monuments, transferring monuments and creating open-air museums))
7. Research of historical monuments I (The composition of research papers, bibliographical and archive, historical and bibliographic, historical and archival materials, icons).
8. Research of Historical Monuments II (Fixing Historical Monuments - Types of Fixings; Architectural-Archaeological Measurement Methods Research by Archaeological excavation of monuments - Basic Tasks; Research Methods, Stratigraphy; Fixing in the Field, Conservation of Archaeological excavations)
9. Research of Historical Monuments III (Survey Research - Research Tasks; General Requirements; Basic Types of Surveys; Fixing Surveys.)
10. Research of historical monuments IV (Laboratory research - Basic tasks, identification of lithic materials, material dating, Research analogies in monist interventions - Basic tasks, Methodological bases of the analogy study.)
11. The project of the interventions in historical monuments (General characteristics, Project sketch, Executive project, Rehabilitation / adaptation project, Intervention project elaboration - basic peculiarities, Architect's tasks / function in the elaboration of the project, Scientific report).
12. The structural problems of the interventions on historical monuments. (Basic Factors of Damage / Destruction of Monuments - Diagnosis of Causes of Deformations and Destruction and Causes thereof; Causes and Destruction Types of Push Systems; Deformation of Vaults.)

13. Methods of structural / technical consolidation of historical monuments (Principles of consolidation, consolidation of foundations, consolidation of walls and posts, strengthening of pushing elements, consolidation of wooden constructions.)
14. Temperature and humidity regime and monostatic protection. (the notion of microclimate and its basic characteristics, the interaction of buildings and their elements with the environment, the necessary microclimate maintenance systems); Design of technical networks and equipment for historical monuments. Heating and ventilation design. Electrical networks and lighting. Fire extinguishing and signalling systems.
15. Traditional construction materials.

The 2018 course of **Restoration II (year V)** includes subjects as:

1. Site (definition). Site typology. Site built. Protected Site Build - General Principles. International Documents UNESCO and ICOMOS. National legislation.
2. Organic urban development. The Strasbourg case.
3. Researching the built site. Study of Historical and Architectural Foundations I.
4. Researching the built site. Study of historical and architectural foundation II.
5. The site of the built site protection project.
6. Formal-compositional and stylistic means of combining new and old within the built site.
7. Interventions in the protection zone I.
8. Interventions in the protection zone II.
9. Urban Reconstruction. The case of Warsaw.
10. Urban Reconstruction. The case of Chisinau.
11. Historic-cultural problems in urban reconstruction.
12. Social-functional problems in urban reconstruction.
13. The cultural heritage protection system at country level. Structure and basic composition. System operation. International practices. Situation in the Republic of Moldova.
14. Legislation of RM in the field of cultural heritage protection. Component parts (structure). Application and functioning of legislation. Financing the domain.
15. Protecting the World Cultural Heritage. UNESCO Documents. International practices. Situation in the Republic of Moldova.

Considering the little number of hours available for the two courses, it would be fundamental that the basics of the discipline are delivered, as it was the case for the syllabus of the 2017 course, which contains the fundamentals of the discipline and cannot be overlooked. The subjects proposed for the 2018 courses should not replace the content of the 2017 courses, rather should form the basis for two additional courses. The replacement of the content of the 2017 course with the 2018 course will

weaken the technical preparation of the future architect and will not ensure their capacity to tackle with the materiality of the built historical object.

- **American University of Moldova (AUM) – Department of Architecture:**

The American University of Moldova and its Department of Architecture was founded on 2 June 2015. It is member of different international networks such as European Association for Architectural Education (EAAE).

The course of study provides 1 + 4 year, divided into one year of Foundation studies and 4 years of BA (Hons) studies for 360 credits of which, dedicated to restoration/ conservation:

- Theory of restoration I - 5 credits;
- Theory of restoration II - 5 credits;
- Restoration project I - 5 credits

For a total of 15 credits altogether, that is to say almost three times more than what is offered by the curricula at the faculty of architecture at TUM. If the Moldovan credit system is applied, it would mean 225 hours of teaching concerning restoration/ conservation within a 4-year curriculum against the 90 offered by TUM within a 6 year- curricula.

Apparently, little dialogue between the Department of Architecture and Urban Planning at TUM and the Department of Architecture at AUM exists and from the 2017 – 2018 admissions, it seems that the number of applicants is very low for architecture (2 candidates have been evaluated) and it is unclear if the didactic activity has begun.

FACULTY OF ENGINEERING.

- **Technical University of Moldova (TUM) - Faculty of Constructions, Geodesy and Cadastre:**

The Department of Constructions of the Technical University of Moldova was created in 1964 with the foundation of the Polytechnical Institute (now Technical University of Moldova).

The Faculty is divided into three Departments:

- Department of Civil Engineering and Geodesy;
- Department of the Engineering, Management and Evaluation of Real Estate;
- Department of Right.

Considered as a whole, the Faculty departments can rely on 80 tenured university Teachers, of whom 29 people with scientific degree and title (36.25 % Ph.Ds and Habilitate Doctors) and 21 non-tenured university teachers of whom 9 with scientific degree and title (42.86 %).

According to the Organic Law for modification and supplementing the Education Law no.547-XIII of 21 July 1995, from 1 September 2008, TUM organizes the training process in two cycles: Cycle I, License, through two types of studies: full-time studies and part-time studies, according to the Nomenclature of the educational programmes and specialities for the Cycle I of Higher education level approved by

Law no. 142-XVI of 7 July 2005 and subsequently completed with some specialties and Master Degree Studies, Cycle II.

For Cycle I studies (License), the faculty envisages two possible different Durations:

- 4 years (full-time);
- 5 years (reduced attendance).

For Cycle II studies (Master), the duration is set to 1,5 years (full-time) for most programmes but in some few cases it can reach 2 years (full time).

For Cycle III studies (Doctorate), the faculty envisages two possible different durations:

- 3 years (full-time);
- 4 years (reduced attendance).

The **Department of Civil Engineering and Geodesy (DCEG)** provides teaching of the disciplines related to the calculation and design of buildings and engineering buildings: "Mechanics of Structures", "Theory of elasticity", "Reinforced concrete Constructions", "Metal constructions", "Wooden and Plastic Constructions", "The Finite and Border Elements Method", "Computer Aided Design", "Seismic Engineering". The DCEG has the following didactical-scientific subdivisions:

- Mechanics of Structures;
- reinforced concrete Constructions;
- Metal constructions;
- Wooden Constructions;
- Constructions Testing Laboratory;
- Tensometry Laboratory.
-

- **License (cycle I)** specialty is "Industrial and civil construction" providing 240 ECTS;
- **Master (cycle II)** specialty is "Structural engineering" providing 90 ECTS;
- **Doctorate (cycle III)** has two specialties: "Construction materials, elements and edifices" providing 180 ECTS and "Mechanics of Solid Body" providing 180 ECTS as well.

The Teaching staff consists of 78 people, among whom 32% – with scientific degree.

The **Department of Evaluation and Management of Real Estate (DEMRE)** is responsible for two specialties: "Evaluation of real estate" and "Engineering and Construction Management".

With the accession of RM to the Bologna Process in 2006, training of specialists was divided into two levels: license and master. The graduates of specialty "Evaluation of Real Estate" were given two options: training on technical profile within the program "Cadastre and Real Estate Development" (duration 1.5 years) or economic profile – "The Economics of Real Estate Business" (2 years). In order to ensure the continuous training and training of specialists in Evaluation of Real Estate domain, the department also organizes refresher courses lasting 90 hours. The training program was developed in cooperation with the National Chamber of Real Estate from Republic of Moldova. At the department are organized periodically round table discussions and master-classes for practitioners.

- **License (cycle I)** has two specialties: “Evaluation of Real Estate” providing 240 ECTS and “Engineering and Construction Management” providing 240 ECTS as well.
- **Master (cycle II)** specialty is “Cadastre and Real Estate” providing 90 ECTS.
- **Doctorate (cycle III)** specialty is “Economics, Finance and Management” providing 180 ECTS.

The Teaching staff is composed of 27 persons.

The **Department of Patrimonial Right (DPR)** works in synergy with the other two departments in subjects as property registration system, territorial organization in the plan of law and technique (cadastral works, including the formation of real estate, real estate valuation, appreciation of technical documents status in construction etc.) and in cooperation with organs of law enforcement, local public administration departments, private companies.

- **License (cycle I)** specialty is “Law” providing 240 ECTS;
- **Master (cycle II)** specialty is “Patrimonial Right” providing 90 ECTS.

The Teaching staff is composed of 16 persons, among whom 33.3% – with scientific degree.

All lessons and exams are divided into semesters, for a total of 240 credits (cycle I), 90/120 credits (cycle II) and 180 credits (cycle III). Studies are organized under the European system of transferable academic credits (ESTC).

The overall assortment of **Study Programmes** offers a wide range of specialties³⁵:

Cycle I, License (240 ECTS – 4 years full-time):

- Construction and civil engineering;
- Industrial and civil construction;
- Geodesic and Cadastre Engineering;
- Building evaluation and development;
- Engineering and construction management;
- Building evaluation;
- Geodesy, topography and cartography;
- Woodworking technology - since 2017;
- Fire protection and civil protection engineering;
- Law (Patrimonial Law).

Cycle I, License (240 ECTS – 5 years reduced frequency):

- Construction and civil engineering;
- Engineering and construction management;
- Building evaluation;
- Woodworking technology;
- Fire protection and civil protection engineering;

³⁵ <http://utm.md/subdiviziuni-universitare/facultati/facultatea-constructii-geodezie-si-cadastru/>

- Mining engineering and management;
- Law (Patrimonial Law).

Cycle II, Master (90 ECTS – 1,5 years full-time):

- Engineering of processes and mineral materials in construction;
- Structural engineering;
- Cadastre and development of the real estate;
- Fire protection and civil protection engineering;
- Patrimonial Law.

Cycle III, PhD (180 ECTS – 3 years full-time only):

- Economics and Management;

Cycle III, PhD (180 ECTS – 3 years full-time or 4 years with reduced frequency):

- Geodesy and Geoinformation Technologies;
- Cadastre, land monitoring and regulation;

Postgraduate studies of short-term retraining (3 years – second specialty):

- Building evaluation;
- Patrimonial Law;
- Cadastre;
- Design, consolidation and rehabilitation of buildings;
- Modern technologies in construction;
- Geotechnics (Protection of real estate against natural disasters).

Within the above-mentioned Study Programmes an even wider range of **Subjects** is offered³⁶:

³⁶ http://utm.md/studii/Ghid_student_FCGC-final.pdf

1. Accounting in construction
2. Administrative law
3. Administrative liability and administrative contingency
4. Architecture I, II
5. Architecture of Buildings I
6. Architecture of Buildings II
7. Architecture of buildings III
8. Auctions, offers, contracts
9. Automating topographic works
10. Banking and Foreign Currency Law
11. Basics of Entrepreneurship
12. Basics of the real estate market
13. Basis of Accounting
14. Branch economy
15. Branch statistics
16. Building construction technology
17. Building economy
18. Building evaluation I
19. Building legislation
20. Building technology
21. Business Planning
22. Cadastre I
23. Cadastre II
24. Cartography I
25. Cartography II
26. Chemical and radiation protection
27. chemistry

28. Civil and administrative law
29. Civil Law I
30. Civil law II
31. Civil Law III
32. Civil Law IV
33. Civil procedural law I
34. Civil procedural law II
35. Commercial law
36. Community law
37. Company's management
38. Computer's usage
39. Constitutional right
40. Construction Economics I
41. Construction Economics II
42. Construction machinery
43. Construction machines, machinery and equipment
44. Construction materials
45. Contravention of Law
46. Criminal law
47. Criminal Procedural Law
48. Customs law
49. Defectology of buildings and elements
50. Descriptive geometry
51. Development
52. didactic practice
53. Documentation practice
54. ECHR procedure and practice

55. Economic theory
56. Economic theory and European economic integration
57. Editing and automating cartographic work
58. Elasticity theory
59. Electrical engineering and electrical equipment
60. Electrotechnics and electromechanical drives
61. Engineering geology
62. Engineering graphics
63. Engineering topography and photogrammetry practice
64. Engineering Topography I
65. Engineering Topography II
66. English language
67. Environmental Law
68. Environmental protection
69. European Business Environment
70. European economic integration
71. Evaluation practice
72. Evaluation theory
73. Exploitation of the means of intervention
74. Family Law
75. Feasibility of prices
76. Finance and credit
77. Financial and fiscal law
78. Financial Management
79. Finite Element Method

80. Fire intervention tactics
81. Fire invention technique
82. Fire safety in construction
83. Fire safety of electrical installations
84. Fire security of technological processes
85. Fire-fighting water supply systems
86. fiscality
87. Fluid mechanics
88. Fluid mechanics, water supply and sewerage networks
89. Forensics
90. French Language
91. General course of construction
92. general history of the state and law
93. General theory of law
94. Geodesy I
95. Geodesy II
96. Geodesy III (physical geodesy)
97. Geodesy with satellites
98. Geodetic measurements by waves
99. Geodetic practice
100. Geographic information systems
101. Geoinformation systems
102. geometrical basis of photogrammetry
103. Geotechnics and foundations
104. Heat and gas supply networks
105. History of philosophy
106. Housing rights

107. Human resources management
108. Industrial automation and fire protection
109. Information systems
110. Information technologies
111. Inspection of real estate
112. Intellectual property law
113. International commercial principles
114. International public law
115. Investment Management
116. Land ownership
117. Law enforcement agencies
118. Legal protection of human rights
119. Legislation under construction
120. Local public administration
121. Machinery and machine tools
122. management
123. Management and marketing
124. Management in construction and professional ethics
125. Managerial practice
126. Marketing
127. Mechanics of Construction I
128. Mechanics of Construction II
129. medical-biological bases of the security of the viability
130. Metal constructions I
131. Metal constructions II
132. Metal structures I
133. Metal Study and Welding

134. Metrology in construction
135. Natural calamities
136. Normalization of resources in construction
137. notary
138. Notions of logic and psychology
139. Operational Management II
140. Organization of constructions I
141. Organization of constructions II
142. Organizing the evaluation activity
143. philosophy
144. Philosophy of Law
145. Photogrammetry I
146. Photogrammetry II
147. Photogrammetry III
148. Physical Education I
149. Physical Education II
150. Physics I
151. Physics II
152. Physics of construction
153. politology
154. practice of initiation
155. Practice of specialization initiation
156. Professional ethics and communication bases
157. Protection of the environment
158. Protection of work and the environment
159. Quality management in construction
160. Real estate economics I

161. Real Estate Economics II
162. Real estate finance
163. Real Estate Law I
164. Real Estate Law II
165. Real estate management
166. Real estate marketing
167. Reinforced concrete constructions
168. Remote Sensing
169. Resistance of materials II
170. Romanian language I
171. Romanian Language II
172. Safety and health at work
173. Security of rescue and emergency work
174. Seismic engineering
175. sociology
176. Special technologies in construction
177. Stability and dynamics of construction
178. Stability of buildings under fire conditions
179. Stability of economic objectives in exceptional situations
180. State and Law basis
181. State oversight of fire safety
182. Strategic management
183. Structural Statics I
184. Structural Statics II
185. Structures of reinforced concrete and masonry I
186. Structures of reinforced concrete and masonry II

187. Structures of reinforced concrete and metal
188. Superior Mathematics I
189. Superior Mathematics II
190. Supply management and logistics
191. Taxation of the real estate
192. Technical and intuitive drawing
193. Technical construction assessment
194. Technical evaluation of the building I
195. Technical expertise
196. Technical-material insurance of civil protection forces
197. technique of concluding contracts
198. Technological practice
199. Technology and mechanization of construction works
200. Technology of construction processes I
201. Technology of construction processes II
202. Technology of demolition of damaged buildings
203. Theoretical Mechanics
204. Theory of errors I
205. Theory of errors II
206. theory of reinforced concrete
207. Thermotechnics and the theory of burning and explosion
208. Topogeodic work management
209. Topographic practice
210. Topography and cadastral maps
211. Topography I

212. Topography II
213. Urban planning and systematisation of territories (2011)
214. Urbanism and landscaping
215. Urbanism and systematisation of territories (2016)
216. Value economy
217. Wooden constructions

Nevertheless, in spite of the strategic value of the Civil Engineering and Construction sector for the field of built heritage preservation and restoration, only one or two subjects of such a huge offer can be related to it. Strengthening the restoration/ conservation sector in this case would imply the insertion of additional courses dealing with traditional techniques and materials, structural behaviour of historical masonry buildings, rehabilitation of traditional masonry buildings (as a separate subject from structure of reinforced concrete and masonry) as well as integration of existing courses with modules related to historic buildings.

The subjects highlighted in yellow are those that offer possibility of integration of teaching 'modules' focussing on aspects of cultural heritage. Recommendations will be provided in this regard in the report on Activity 3.2 and 3.3.

FACULTY OF ARCHAEOLOGY.

In the Republic of Moldova there are currently four institutions of higher education specializing in historical archaeology. Two are public:

- the State University of Moldova and the "Ion Creangă" Pedagogical State University;

and two are private:

- the Free International University of Moldova and the Superior Anthropological School.

With regard to the training of Archaeologists, in 2013 the Ministry of Culture had already established a **registry of archaeologists**³⁷ through order n. 127 of 25.04.2013.

Later, with the "*Regulamentul privind Registrul arheologilor*"³⁸, order n. 225 of 16.11.2015, **three different categories** of professionals were defined depending on their level of expertise:

- novice archaeologist, featuring a mere degree in history;
- specialized archaeologist, also possessing a diploma issued after a specialized training;
- senior archaeologist, whose practical experience (or Master's Degree) received at least 4 points of assessment.

For example, according to the current laws, only professional Archaeologists that completed at least one year of a specialization training can work at the Archaeological National Agency (ANA).

Regarding the training of the archaeologists the Moldovan law provides for a high Education path three levels of different training:

- *licentia* (three years and 180 credits),
- master (one or two years 90-120 credits),

³⁷ <http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=347993>

³⁸ <http://lex.justice.md/viewdoc.php?action=view&view=doc&id=371359&lang=1>

- and doctorate (3-4 years).

The course of study that allows access to the profession of archaeologist is divided into several phases:

Cycle I = *licentia* (see “bachelor” as Bologna agreement) it allows to acquire a basic archaeological competence following curricula that are approved at national level. The curricula are the same in different universities in the respect of the law on framework plan for the superior instruction n. 455 03 June 2011

Cycle II = The master’s degree is structured into two years it allows access to the profession of archaeologist at facilities such as the Agency but only after the acquisition of practical skills. However, there is no established national curriculum for these masters who have different curricula at the discretion of each university.

Cycle III = The doctorate course is divided into three or four years, gives access to all the highest areas of an archaeologist's career and consists of an original research with dissertation of the final thesis like in all the other universities.

The basic course of study, structured over three years, is part of the Faculty of History and Philosophy. The course of study is structured chronologically for semesters (each semester 30 credits and the semesters are labelled from I to VI); during the first year the disciplines are referred to the antiquity, in the second year the courses are about the Middle Age Period and the third year the courses are focused on the modern age and on the history of philosophy.

Here are summarized the courses divided into hours and individual home work:

History and Philosophy faculty	I sem./hours	II sem/hours	Number cours	Lectures/hours	Individual work
I year Tot. hours 1860	930	930	13+1 (ed fisica)	960	900
II year Tot. hours 1800	900	900	14	930	870
III year Tot. hours 1800	900	900	12	660	1140

All the characterizing courses generally have a duration of 15 weeks (about 3.5 months) for a total of 6 hours per week; they are associated with practical workshops distributed as follows:

in the first year to the second semester (4 weeks)

in the second year first semester (3 weeks)

in the third year second semester (4 weeks).

In the following table are shown the *syllabuses* of the courses of *Licentia*. This education plan is developed and approved by the university Senate jointly with the Ministry of Education.

Code	Module/discipline	Total Hours	Including		Total no. of hours per week			credits
			Contact direct/ Classroom activities	Indiv. work	Curs/ lectures	Seminars	Lab. work	
	I YEAR							
	1 St SEMESTER							
F.01.O.001	<u>History of Ancient Orient</u>	120	60	60	2	2		4
F.01.O.002	<u>History of Ancient Greece and Rome</u>	180	90	90	3	3		6
F.01.O.003	<u>Ancient History of Romanians</u>	180	90	90	3	3		6
S.01.O.004	<u>Prehistory. World Archeology</u>	180	90	90	3	3		6
S.02.O.006	<u>Introduction in Anthropology</u>	120	60	60	2	2		4
G.01.O.005	<u>Foreign language</u>	120	60	60		4		4
	<u>Physical education</u>	30	30			2		
Total 1st semester		930	480	450	13	19		30
	2 St SEMESTER							
F.02.O.007	<u>State, society in the Middle Ages</u> 1. History of Western Europe in the Middle Ages 2. History of Africa and Asia in the Middle Ages	180	90	90	3	3		6
F.02.O.008	<u>History of Romanians in the Middle Ages</u>	180	90	90	3	3		6

S.02.O.009	<u>Eastern Europe in the Middle Ages</u> 1. History of Eastern Europe 2. Byzantine Studies	120	60	60	2	2		4
S.03.O.010	<u>Archival Studies and Museum Studies</u>	150	90	60	4	2		5
G.02.O.011	<u>Foreign language</u>	60	30	30		2		2
U.01.O.012	<u>History of Religions. Historical Geography</u>	120	90	30	4	2		4
	<u>Internship for Introductory Museum and Archival</u>	90		90				3
	<u>Physical Education</u>	30	30			2		
Total for 2nd Semester		930	480	450	16	14		30
Total for the 1st Year		1860	960	900	29	33		60
II YEAR								
F.03.O.013	<u>State, society and mentalities in the Modern Age</u> 1. History of Western Europe in the Modern Age 2. History of Africa and Asia in the Modern Age	150	90	60	3	3		5
F.03.O.014	<u>History of Romanians in the Modern Age</u>	150	90	60	3	3		5
S.03.O.015	<u>History Eastern Europe in the Modern Age</u>	90	60	30	2	2		3
G.01.O.010	<u>T.I.C./Informational and Communication Technologies</u>	120	60	60			4	4
U.03.A.017	<u>History of Romanian Culture</u> 1. History of Ancient Romanian Culture 2. History of Medieval Romanian Culture	90	60	30	2	2		3
U.03.A.018	<u>History of World Culture</u> 1. History of Ancient World Culture							

	2.History of Medieval World History							
M.03.A.019 M.03.A.020	<u>Psychology</u> <u>History of Anthropology</u>	180	60	120	2	2		6
	<u>Training in Archeology/Ethnology</u>	120	60	60			4	4
Total for the 3rd Semester		900	450	450	12	12	8	30
F.04.O.021	<u>State, society and mentalities in the Contemporary period</u>	180	90	90	3	3		6
F.04.O.022	<u>History of Romanians in the Contemporary period</u>	180	90	90	3	3		6
S.04.O.023	<u>Contemporary History of Africa and Asia</u>	150	90	60	3	3		5
S.04.O.024	<u>Eastern Europe in the Contemporary period</u>	120	60	60	2	2		4
U.04.A.025	History of Romanian Culture 1. History of Modern Romanian Culture 2. History of Romanian Contemporary Culture	90	60	30	2	2		3
U.04.A.026	<u>History of World Culture</u> 1. History of Modern World Culture 2. History of Contemporary World Culture							
M.04.A.027 M.04.A.028	<u>Pedagogy</u> <u>Cultural Anthropology</u>	180	60	120	2	2		6
Total for 4th Semester		900	450	450	15	15		30
Total for 2nd Year		1800	900	900	27	27	8	60
III YEAR								
S.05.O.029	<u>Studies of primary sources.</u> <u>World Historiography</u>	150	90	60	3	3		5
S.05.O.030	<u>Studies of primary sources.</u> <u>Romanian Historiography</u>	150	90	60	3	3		5

S.05.A.031	<u>Slavic-Romanian paleography</u>	180	90	90	2	4		6
S.05.A.032	<u>Romanian-Cyrillic Paleography</u>							
U.05.A.033	<u>Romanian lands in European context</u>	120	60	60	2	2		4
U.05.A.034	<u>History of the Idea of Europe</u>							
S.05.A.035	<u>Auxiliary disciplines of History</u> 1. Numismatics 2. Chronology	120	60	60	2	2		4
S.05.A.036	<u>Auxiliary disciplines of History</u> 1. Codicology 2. Heraldry							
M.05.A.037	<u>Didactics of History</u>	180	60	120	2	2		6
M.05.A.038	<u>Structural Analysis in Anthropology</u>							
Total for the 5th Semester		900	450	450	14	16		30
U.06.A.039	<u>History of philosophical ideas</u>	120	56	64	4	4		4
U.06.A.040	<u>Philosophy of History</u>							
S.06.A.041	<u>Methodology of historical research</u>	60	28	32	2	2		2
S.06.A.042	<u>New directions in the study on history</u>							
U.06.A.043	<u>Romanians in the South Eastern Europe</u>	90	42	48	4	2		3
U.06.A.044	<u>Church structures in Medieval Europe</u>							
S.06.A.045	<u>Special Course. History of RomaniansI</u>	90	28	62	2	2		3
S.06.A.046	<u>Special Course. World History I</u>							
S.06.A.047	<u>Special Course. History of RomaniansII</u>	90	28	62	2	2		3
S.06.A.048	<u>Special Course. World History II</u>							
M.06.A.049	<u>Professional Ethics</u>	60	28	32	2	2		2

M.06.A.050	<u>Ethnic and National Minorities</u>							
	Work on the graduation thesis	240		240				8
	Graduation Exams	150		150				5
Total 6th Semester		900	210	690	16	14		30
Total 3rd Year		1800	660	1140	31	29		60
Total/Total		5460	2505	2955	86	90		180

FACULTY OF LAW.

An extensive research performed on the institutional websites of the main public and private universities, proved that the Law Studies currently offered at HE level in Moldova, do not envisage any specific Study Programme or subject dedicated to *Cultural Heritage* Laws. The only sector that comes close is *Landscaping*, since most of the Law Faculties activated an **Enviromental Law** subject. Depending on the various Universities, it can be differently named as:

- Dreptul Ecologic;
- Dreptul Ecologic / Funciar;
- Dreptul Mediului;
- Dreptul Comunitar al Mediului.

but in all cases is described as strictly natural-environment-oriented with no reference at all to the artificial, built or cultural environment^{39 40}. These considerations apply to all cycles with no distinction based on the specialization level.

The only specific attention devoted to the built heritage (i.e. Historical Monuments) protection is due in the framework of the *Drept Penal* courses⁴¹ when touching those parts of the Moldovan **Penal Code** related to:

Capitolul VIII. Infrațiuni contra sănătății publice și conviețuirii sociale

Articolul 221. Distrugerea sau deteriorarea intenționată a monumentelor de istorie și cultură;

Articolul 222. Profanarea mormintelor;

³⁹ http://drept.usm.md/public/files/plan_invatamint/drept_ecologic.pdf

⁴⁰ <http://www.drept.usm.md/disciplinaview.php?l=ro&idc=146&id=374&t=/Subdiviziuni/Catedra-dreptul-muncii/Cursuri/Dreptul-ecologic-dreptul-funciar/>

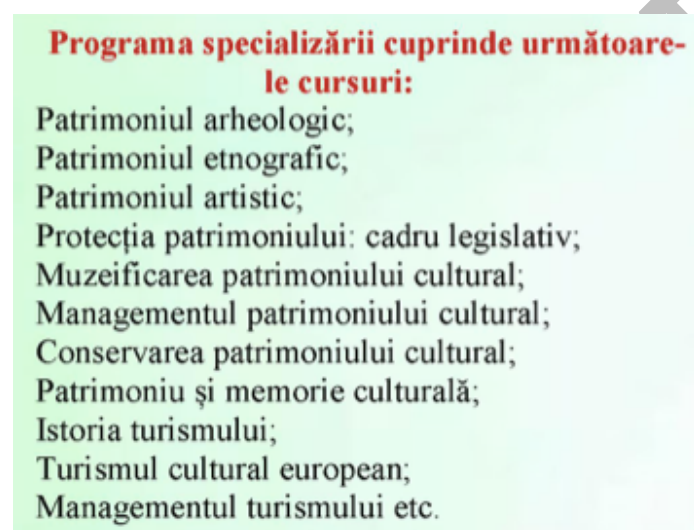
⁴¹ http://www.usem.md/uploads/files/Note_de_curs_drept_ciclul_1/041_-_054_-_Drept_penal_Partea_speciala_I,_II.pdf

In conclusion, it can be said that the law coverage of the legal aspects of built cultural heritage preservation and restoration seems to be dramatically insufficient and suffering from a general lack of a specific literacy.

In this regard, given the reported little sensitivity towards the cultural heritage within the juridical sphere, it would be crucial strengthening within the curricula the fundamentals on international rights and conventions related to cultural heritage, on crimes against cultural heritage and environment and on in general on the law governing cultural heritage and environment/ landscape, possibly offering also a Master degree with more focus on this aspect, e.g. by combining studies on human rights with the law on environment, landscape and cultural heritage, which are considered closely related to the defence of human rights.

MASTER DEGREES IN HERITAGE RELATED TOPICS

One Master is proposed by Ion Creanga Pedagogical University on Historic Heritage and Cultural Tourism. It lasts 18 months for 90 ECTS and include the following subjects:



In 2018, at the State University of Moldova (USM), within the Faculty of History and Philosophy, a Master in Cultural Heritage management of 24 months has been activated for a total of 120 ECTS. Although the curriculum is not made available yet.

POSTGRADUATE SCHOOLS AND RESEARCH DOCTORATES.

Moldovan legislation regulates two types of **Master's Degree**: research and professional. Research Master's Degree aims at developing the scientific research capacities of students and is a mandatory step prior to doctoral studies. Professional Master Degree provides deepening a specialization in a field, being focused primarily on skills with applied content.

Article 30 (paragraph 5) of the Law on Education states that there are two types of higher education **doctoral programs**:

- scientific doctorate, which is to produce original scientific knowledge relevant at international level based on some scientific methods. Scientific doctorate is a prerequisite for professional career in higher education and research;
- professional doctorate, in the field of arts or sports, which is to produce original knowledge, based on the application of the scientific method and systematic reflection, on artistic creations or on high level of sporty performance at national and international level and can be a basis for professional career in higher education and research in the field of arts and sports.

Based on the results of the external evaluation of higher education institutions and organizations in the field of research and innovation done in the manner provided by law, the Government, at the proposal of the Ministry of Education, grants or withdraws the right to organize doctoral higher education.

Admission to cycle III, doctoral higher education, is organized by higher education institutions or organizations in the field of research and innovation to programs accredited or provisionally approved in accordance with the legislation in the field of education. Master degree / diploma holders or those who hold an equivalent education document recognized by the national the authorized body can participate in the competition for admission to doctoral higher education.

University professors, associate professors, main scientific researchers, scientific researcher-coordinators and senior scientific researchers with scientific degree are allowed to be doctoral / PhD supervisors. Doctoral higher education ends with public defence of the PhD thesis, awarding the degree of Doctor of Science and issuance of the Doctor of Science Diploma by the program organizing institution, following confirmation by the National Council for Accreditation and Attestation.

Doctor of Science diploma certifies that the holder has received fundamental competences in an area of training and can occupy the corresponding positions in higher education institutions, organizations in the field of research and innovation, as well as other organizations in the national economy.

The Regulation on organization and running of the doctoral program is developed by the Ministry of Education and approved by the Government. The holder of the Doctor of Science diploma / degree can develop his/her professional and investigational skills in postdoctoral programs.

Article 31 of the Law on Education defines **Postdoctoral studies**:

- Postdoctoral studies can be carried out in higher education or scientific research institutions. Enrolment to postdoctoral studies is done for holders of the doctoral degree / diploma. Admission to postdoctoral studies is done upon request. Individuals enrolled in post-doctoral studies can benefit from creativity holidays of up to 2 years, keeping their salary.
- Post-doctoral studies end up with the public defence of a thesis before a scientific council approved the Higher Attestation Commission and with awarding the second scientific title - Doctor Habilitate.

Criteria for developing the thesis and awarding the title of Doctor Habilitate are set by the Higher Attestation Commission (see: Guidelines for postdoctoral students, approved by the decision of TUM's Senate of 04.02.2014 / *Ghid pentru postdoctoranzi, Aprobat prin Hotărârea Senatului UTM din 02.04.2014*).

DRAFT

EUROPEAN CONTEXT.

THE BOLOGNA PROCESS.

The Bologna Process is a series of ministerial meetings and agreements between European countries to ensure comparability in the standards and quality of higher-education qualifications consisting in an intergovernmental cooperation of 48 European countries in the field of higher education. It guides the collective effort of public authorities, universities, teachers, and students, together with stakeholder associations, employers, quality assurance agencies, international organisations, and institutions, including the European Commission, on how to improve the internationalisation of higher education. The main focus of the Bologna Process is placed on:

- the introduction of the three-cycle system (bachelor/master/doctorate);
- strengthened quality assurance;
- easier recognition of qualifications and periods of study;

THE ITALIAN AND EUROPEAN CREDIT SYSTEM.

The credit system provided by the university reform is based on the ECTS system. The decree implementing the new academic degrees in Italy makes explicit reference to the European system, and the design of the new courses is based on the "university credits" or CFU, which correspond exactly to the ECTS credits. According to ministerial decrees, 60 CFU represent a year of work of a typical student, just like ECTS credits.

In recent years, new steps have been taken towards the application of a single credit system in all European countries. With the Bologna Declaration, in which ministers from 29 countries have committed themselves to making higher education systems compatible in Europe, credits have become one of the main tools for the reorganization of national systems. The "European Credit System" is becoming the common basis for measuring the work required to obtain first or second cycle academic degrees within each country or university, even for those who do not intend to do part of their studies abroad. When the extension of the credit system is complete, the various European university systems will be immediately compatible. Also for Italy, compatibility with the European system will be immediate.

Some countries have been using credit systems similar or identical to ECTS for some time. In the Italian case, instead, the credits are used not to describe an existing system, but to organize a new one. They have therefore become a design tool. For the sake of clarity, the Italian legislation quantifies the working hours corresponding to a credit in absolute terms, and not only in relative terms: each CFU corresponds to 25 hours of student work.

Credits are "accumulated": the student, when he has obtained the credits required by his course of study, will achieve the relative academic degree. By "accumulation" it is not intended that credits can be obtained simply by attending lectures, seminars or other learning activities. Credit is always the

expression of a quantity of work and is obtained only when the quality of the work carried out has been ascertained by examination or trial. The number of credits, therefore, must be accompanied by other indications: the grade, level and contents.

Based on the EU approach, the Italian Credit system envisages that each credit is formed by two components: one based on hours of lecturing and one based on individual work by the student (again measured in hours). Additionally, there is a defined number of credits that need to be obtained through independent (but verified) activity (e.g. curricular training, conferences, workshops, summer courses, etc), which encourages students to be more protagonists of their own education and skill/ capacity building.

SCIENTIFIC-DISCIPLINARY SECTORS.

The scientific-disciplinary sectors (*settori scientifico- disciplinari* - SSD) are a disciplinary distinction used in Italy to organize higher education. The SSD were introduced by the law n. 341 of 19 November 1990, even if a grouping by thematic areas already existed since 1973. The current sectors are established by Ministerial Decree n. 855 of 30 October 2015 and are effective from 20 November 2015, date of publication in the Official Gazette of the Italian government. The scientific-disciplinary sectors are 367, corresponding to 188 sectors of competition (*settori concorsuali* - SC), 88 macro-sectors and 14 areas. Each professor of Italian universities belongs to a single sector. The curricula of the different degree courses (bachelor or master) are built with reference of the incidence of the disciplinary sectors within the didactic offer for each course. Therefore, any changes to the disciplinary sectors (e.g. merging of two or more disciplinary sectors into one) may have significant impacts on the profile and content of the didactic offer.

EXAMPLES OF TRAINING PROGRAMMES UNDER EU FLAG.

Moldova has started implementing Tempus projects in 1994. To 2011, the country's HEIs have gathered a great experience, being part of over 60 Tempus projects. Last Tempus projects ended in 2016 being replaced by the implementation of the new Erasmus+ Programme and by Capacity Building projects. Since 2004 over 900 students and 200 university staff from Moldova have benefited from nobilities with Erasmus+⁴².

- **EUniAM - TEMPUS IV Project (2007-2013)**⁴³:

⁴²Erasmus+:

<http://www.erasmusplus.md/en/article/higher-education-system-moldova>

Tempus:

http://eacea.ec.europa.eu/tempus/participating_countries/overview/moldova_tempus_country_fiche_final.pdf

⁴³ <http://www.euniam.aau.dk/euniam/>

The project, named “*EUniAM - Enhancing University Autonomy in Moldova*” aimed at enhancing the university autonomy in the Republic of Moldova by proposing legislative changes to the higher education legal framework and constituted an answer to the main objectives of national policies of the Republic of Moldova in the field of higher education related to enhancing university autonomy, namely:

- Consolidated Strategy of Education Development;
- Activity Program of Moldovan Government „European Integration: Freedom, Democracy, Welfare”;
- Harmonization of higher education systems of Moldova in line with principles of Bologna process.

The Danish University of Aalborg was the principal applicant and lead partner of the project.

- **QUAEM - TEMPUS IV Project (2007-2013)⁴⁴:**

The project, named “*QUAEM – Development of Quality Assurance in Higher Education in Moldova*” aimed at making quality assurance at Moldovan higher education institutions functional and conducive to strategy development at the universities. Its fixed goals were:

- Make the internal quality assurance offices of the Moldovan higher education institutions functional;
- Empower students to participate in quality assurance, foster quality culture on level of students and staff;
- Establish a functional dialogue between quality management structures and academic staff in order to complete the quality assurance cycle;
- Empower quality assurance offices to conduct self-evaluation and prepare accreditation process;
- Conduct international accreditation process of three study programs;
- Capacity building at the Ministry of Education and the Ministry of Health, including groundwork, a pool of experts and documentation for the activity of the Agency for Evaluation and Accreditation of the Republic of Moldova.

The German University of Leipzig was the principal applicant and lead partner of the project.

- **CRUNT - TEMPUS IV Project (2007-2013)⁴⁵:**

The project, named “*CRUNT – Création réseau universités thématiques en sciences appliquées et sciences économiques en Moldavie*” aimed at modernizing Moldovan higher education by

⁴⁴ <http://gesi.sozphil.uni-leipzig.de/quaem/welcome/>

⁴⁵ <http://crunt.utm.md/>

renovating the teaching methods by use of e-learning. Creating a digital network within Moldovan higher education institutions. Its fixed goals were:

- to inform MD teachers and students with technical methods of e-learning.
- to train MD teachers, by the Joint Working Group MD-EU, to produce online courses.

The French *Institut national supérieur des sciences agronomiques, agroalimentaires, horticoles et du paysage* (AGROCAMPUS – OUEST) was the principal applicant and lead partner of the project.

- **ATHENA - TEMPUS IV Project (2007-2013)⁴⁶:**

The project, named “*ATHENA – Fostering Sustainable and Autonomous Higher Education Systems in the Eastern Neighbouring Area*” aimed at contributing to the development, reform and modernisation of higher education systems in the Eastern Neighbouring partner countries Armenia, Moldova and Ukraine. Its fixed goals were:

- Elaborating of a study on the autonomy and financing of higher education in the universities of Moldova, Ukraine and Armenia;
- Strengthening the political dialogue on institutional and financial autonomy;
- Training of teaching and administrative staff through mobility training;
- Developing recommendations for improving management in higher education institutions.

The *European University Association* (EUA) was the principal applicant and lead partner of the project.

- **Erasmus+ European Project on Education in Architecture Schools (2014-2017)⁴⁷:**

The project, named “*Confronting Wicked Problems: Adapting Architectural Education to the New Situation in Europe*” included three main themes:

- Architectural Design and Professional Knowledge;
- Heritage;
- Sustainability.

Members of its Heritage section were Czech Technical University in Prague – Faculty of Architecture, Universiteit Hasselt – Department of Architecture and Università degli Studi di Genova – Department of Sciences for Architecture. Related reports are collected and available for download on the website⁴⁸.

⁴⁶ <http://www.athena-tempus.eu/>

⁴⁷ <http://www.eaae.be/eaae-academies/education-academy/erasmus-confronting-wicked-problems>

⁴⁸ Final report:

http://www.eaae.be/wp-content/uploads/2017/04/Erasmus-Project_CWP_00_Final-Report-1.pdf

Annex Heritage 1:

http://www.eaae.be/wp-content/uploads/2017/04/Erasmus-Project_CWP_07_Annexe-H.1.pdf

HIGHER EDUCATION ON BUILT HERITAGE CONSERVATION/ RESTORATION/ REHABILITATION IN ITALY AND IN EUROPE.

A good term of comparison for the incidence of the restoration subject in the training envisaged for **Architects** at EU level can be represented by the one adopted at:

- **University of Genoa, Polytechnic School - Department of Architecture and Design**, where the three-year course of Architectural Sciences envisages a total of 180 credits (*Crediti Formativi Universitari* - CFU), of which:
 - History of architecture (ICAR 18) – 16 credits;
 - Restoration/Conservation (ICAR 19) – 6 credits;

For a total of the heritage related subject amounting to 22 credits and with an incidence of restoration / conservation subject of 3,3% in the triennium.

The Master's Degree Program activated in the same department, envisages instead a total of 120 credits of which:

- Restoration (ICAR 19) – 12 compulsory credits;
- Restoration (ICAR 19) – 12 credits left at the student's choice;
- Architectural history (ICAR 18) – 16 credits left at the student's choice;

Computing together the three-year course and the Master's Degree Program, they produce a total of 300 CFU among which we find:

- Restoration (ICAR 19) – 18 compulsory credits;
- Restoration (ICAR 19) – 12 credits left at the student's choice;

with an incidence of the restoration subject ranging from 6% to 10%.

- **At the Polytechnic of Milan⁴⁹**, perhaps the largest technical university in Italy, the Bachelor Degree (three year course) in Architectural Design (Progettazione dell'Architettura) envisages a total of 180 CFU, of which:
 - History of architecture (ICAR 18) – 16 credits;
 - Heritage Preservation (ICAR 19) - 4 compulsory credits
 - Heritage Preservation Studio (ICAR 19, ING-IND/22 – materials of historical buildings) – 12 credits (student's choice – other option is Interior Design Studio)

Annex Heritage 2:

http://www.eaae.be/wp-content/uploads/2017/04/Erasmus-Project_CWP_08_Annexe-H.2.pdf

⁴⁹ <https://www.polimi.it/en/programmes/>

- History of Art (L-ART 03) – 4 credits

Totalling up to 36 credits related to topics relevant for conservation/ restoration and up to 16 credits for historic preservation with an incidence of the subject *ranging between 2,2% and 8,8% already at the bachelor level.*

At the level of Master Degree, the Polytechnic of Milan offers a variety of options with different orientations.

The Master Degree in 'Building Architecture' (two years for 120 credits) envisages the following topics related to the built heritage:

- History of Building construction (ICAR 18) – 4 compulsory credits
- Architecture and materials for historic heritage (ICAR 19/ ING IND 22) – 8 compulsory credits
- Heritage preservation studio (option with architecture construction studio) (which is an interdisciplinary studio with ICAR 06, ICAR 08, ICAR 09, ICAR 19) – 12 credits of which 4 directly for conservation and other ones oriented to historic buildings
- Architectural design studio for restoration of complex architecture (interdisciplinary studio including 9 disciplines) – 30 credits of which 4 directly for conservation and the other ones oriented to historic buildings.

The incidence on the Master degree of the restoration/ conservation subject ranges between 12 and 54 credits, that is to say between 10% and 22% for the biennium. Over the entire five-year course it ranges between a minimum of 16 credits and 70 credits out of 300 credits, that is to say between 5,3% and 22% dedicated to the intervention on historic buildings.

Sample of content of the courses of Restoration/ Conservation and Restoration/ Conservation studio at the Faculties/ Schools of architecture

In this paragraph the content of some courses on architectural conservation / restoration are presented to exemplify the objectives, content and expected competences to be acquired.

Fundamentals of Conservation/ restoration (University of Genoa)

The aim of the course is to provide students with the basic knowledge and skills of the disciplines of conservation and restoration, forming in them the ability to understand, critically re-elaborate and use them correctly to support future intentions and design choices. The following will be investigated: the theoretical and methodological foundations of a historical, philosophical and scientific nature; the methods and techniques of non-destructive analysis and diagnosis, including archaeological ones, of existing buildings, especially old ones; the theoretical, methodological and technical bases of the design and intervention phases on the analyzed products; the normative references, national and international, for the protection, conservation and restoration of the existing architectural, urban and landscape heritage.

Contents and articulation of the course:

- the question of the origins and legitimacy of the Restoration discipline;

- relations with the architectures existing between the Renaissance, the Middle Ages and classical Antiquity;
- relations with the ancient and pre-existing monuments between the Baroque and the eighteenth centuries;
- "Sciences of nature" and "Sciences of the spirit", the nineteenth-century disciplinary model and the current situation;
- birth and development of the restoration discipline in the nineteenth century, modernly understood
- main protagonists (E. E. Viollet Le Duc, J. Ruskin, W. Morris, C. Boito, L. Beltrami, A. D'Andrade, A. Rubbiani, ...)
- main protagonists of the restoration in the twentieth century (A. Riegl, G. Giovannoni, R. Pane, R. Bonelli, C. Brandi, G. De Angelis D'Ossat ...) and the subsequent developments up to the contemporary debate;
- Restoration-History relationships and "historiography" (the many possible, general and specific "Stories" of ideas and of material culture, the concepts of time and duration, of ancient, modern and contemporary);
- relations with the Arts and the expressive disciplines, the role of the subject and the question of creativity;
- relations with "Philosophy" and with Aesthetics, the role of the subject, the relationship with "the real" and the "beautiful";
- relations with the "Science" or the natural, physical, mathematical sciences;
- relations with the "Technique" and with the art of building; "Heritage" concept (architectural, historical, cultural, material, immaterial, etc.);
- National and international institutions, rules, documents and policies of protection, conservation and restoration;
- problems of scale, impacts and meanings (monument, historical center, consolidated city, cultural landscape);
- problems of scopes, times and purpose of the action (project, process, programming, management ...);
- relations with architectural, urban and territorial planning (social and economic sciences);
- methods, forms and techniques of non-destructive analysis and diagnosis for the study of existing buildings and their buildings state of conservation
- the contributions of the archaeology of architecture to conservation and restoration

Restoration/ Conservation studio (university of Genoa)

The Restoration/Conservation module and the Studio tend to build the skills and abilities necessary to:

- correctly use the references to the cultural and disciplinary debate on restoration, documents and normative texts, national and international, on the subject of protection, conservation and restoration, to motivate the objectives and the choices of the project and to be included in the project report
- select and control, in professional ways, the use of direct and indirect techniques of analysis and non-destructive diagnosis of architecture, with particular regard to: the rigorous survey, the analysis of indirect sources for the history of the artefact, the 'archaeological analysis of the built, the examination of the technological and constructive components of the artifacts, the chemical, physical, technological and mechanical characterization of the materials used in them, the recognition and evaluation of the degradation phenomena of the materials and of deficits or failure of the elements constructive and mechanisms of structural instability;

- draw up correct and rigorous analysis of the analytical and diagnostic phases (thematic maps, diagnostic frameworks, reports, themes ...) for communication and motivation of project choices;
- select and use, in accordance with the objectives of the project, the most appropriate and effective intervention techniques, to solve the problems of conservation, degradation and sanitary, plant and technological deficits identified during the preventive analysis phase of the selected products from teaching as a field of experimentation or deriving from the requests of the client;
- prepare according to professional standards and in compliance with current regulations on the technical and administrative documents for the final restoration project of the manufactured object being tested, including some in-depth analysis at the level of the executive project.

The teaching activities provide, in summary:

- ex-cathedra lectures, also with the participation of experts from the professional world,
- of companies and institutions, aimed at recalling knowledge already acquired over the years
- previous ones and to provide the necessary details and missing elements to allow students to acquire the skills and abilities highlighted above;
- laboratory operating activities, carried out in the classroom and / or in situ, through which the students will be guided by the analysis and diagnosis of the existing building chosen by the teaching as a field of experimentation and belonging to the architectural and monumental heritage of the City of Genoa.

The teaching of the discipline characterizing the laboratory provides, in addition to the coordination of all the planned activities, the development of the following thematic groups:

- the methodological approach of the project: non-destructive investigations, diagnostic frameworks, intervention techniques in the various sectors;
- the repertoire of non-destructive analytical techniques: analysis of "space", analysis of "time" and analysis of "matter";
- the repertoire of intervention techniques referring to: the static system, the material and the materials, the special treatments, the technical systems;
- acquisition and processing of digital images for reading and interpreting the material characteristics of the artefacts and degradation phenomena;
- quantitative treatments of digital images, with simple straightening and mosaics, for the relief and the prompt return of flat architectural surfaces;
- digital photogrammetry for the three-dimensional survey of the architecture;
- automatic DEM generation through image autocorrelation procedures;
- the restoration project: general project, final design and executive project, special tender specifications and estimates of works; notes on the management of the restoration site.

Restoration/ Conservation (University of Ferrara)

Course contents

The lessons of the two modules will provide students with a general framework on the discipline and specific insights on the theories of restoration between the nineteenth and twentieth centuries and on the main subjects subject to disciplinary reflection.

MODULE: THEORIES AND HISTORY OF RESTORATION

1) The lesson of the past for interventions on pre-existences

- 2) Cultural premises at the birth of restoration
- 3) The stylistic restoration
- 4) Architecture as a memory
- 5) The philological restoration
- 6) The "values" of monuments
- 7) Scientific restoration
- 8) Post-World War II and post-war reconstruction
- 9) The restoration as a "critical hypothesis"
- 10) The current debate

MODULE: FUNDAMENTALS OF ARCHITECTURAL RESTORATION

- 1) Post-war reconstruction towards contemporary restoration: approach and methodology
- 2) The operative principles of architectural restoration, with some notes on the concept of improvement in certain areas
- 3) The concept of patina and the intervention
- 4) Color in architecture: role, errors in tampering, interventions
- 5) The gap, theoretical positions and operational approaches
- 6) Historical centers, a long and always current debate
- 7) The formation of the protection service in Italy, an illustration of the fundamental concepts of the Code for Cultural Heritage and Landscape
- 8) Beyond restoration, the debate on the relationship between the 'new' and the 'ancient'.

Restoration/ Conservation Studio (University of Ferrara)

Course contents

The design exercise will take place on an existing, historical building and in conservation conditions that make restoration work justifiable. For the purpose of the exercise, the students will be taken to inspect the teachers in order to get to know the building in detail and the conservative, structural and functional problems to be considered in the project.

For the purpose of carrying out the design exercise, students' groups (composed of 3 or 4 people) will be asked to produce the following papers:

- Historical-critical reading
- Architectural survey
- Construction axonometric cross-section
- Photo-planes
- survey of the state of conservation
- Analysis of materials, degradation and indication of interventions
- survey and critical interpretation of the crack pattern
- Design status of architectural surfaces
- Analysis of vocations of use
- Architectural restoration project and functional redistribution
- Architectural detail of a distribution node
- The project work will be accompanied by an integrated program of theoretical lectures focusing on the disciplinary contents of the restoration, operative lectures focused on the technical-executive modalities of the project, seminar activities and conferences on specific themes. In particular, the issues of:
 - analysis of historical buildings and disciplinary principles aimed at restoration work;
 - restoration project;

- restoration site.

MODULE Architectural restoration

- The study of the building through direct examination: the architectural survey, the photographic survey, photo- planes and ortho- photo-planes; the drafting of the state of conservation;
- Critical reading of indirect sources as an act of knowledge aimed at understanding the historical process of the building: bibliographic research and archival research;
- Respect the building also in use: the analysis of vocations for use aimed at respecting the physiological limit of transformation;
- The overlapped state between status and project status as a tool for comparative reading and evaluation of transformations;
- The operative translation of the principles: the project status as a moment of definition of limits, purposes and intervention.

MODULE Constructive features in historic buildings

- Traditional materials: production, local uses, executive techniques and historical and formal meanings in architecture;
- Traditional construction techniques: wall fixtures, stairs, vaults, ceilings, floors, curtains, plasters, colours, stone structures.

MODULE Materials technology and chemistry for cultural heritage

- Traditional materials: nature, classification, provenance, employment;
- Analysis of materials and degradation: conservation status and degradation morphologies related to natural and artificial stone materials;
- Restoration interventions on surfaces and materials: pre-consolidation, cleaning, consolidation and protection for natural stones, bricks, terracotta, plaster, wall paints.

MODULE Fundamentals of consolidation of historic buildings

- Analysis of the mechanical behaviour of masonry;
- The study of the evolutionary analysis of the failure;
- The study of the main local kinematics of the masonry factory;
- Overview of consolidation intervention methods.

Restoration / Conservation (University of Parma)

1. Characterization of stone materials:

- Stone materials and their use in architecture.
- The classification of minerals and rocks: r. magmatic, r. metamorphic, r. sedimentary.
- Criteria for use of building stones.

The processing and characteristics of the building stones, with reference to the historical manuals.

2. Analysis of degradation and conservation techniques of stone materials

- Stone alteration phenomena and UNI Normal classification of the degradations affecting the stone surfaces.
- Analytical techniques for characterization of materials and alteration products.
- Indication on the cleaning and conservation systems of stone surfaces.

3. Characterization of ceramic materials (fired and bricks):

- The composition of the mixture of ceramic materials used in construction.

- Methods of moulding, drying and baking.
- The defects and impurities introduced during production.
- The use of ceramic materials in architecture.
- 4. Analysis of degradation and conservation techniques of ceramic materials
 - The types of alteration and degradation of fired bricks.
 - The methods of cleaning and preserving ceramic elements.
- 5. Characterization of lime-based mortars and plasters
 - The lime production cycle.
 - The composition and recipes of ancient mortars.
 - XIX century, the introduction of cement mortars.
 - Plaster: composition and use.
 - The fresco technique.
 - The natural and artificial pigments.
- 6. Analysis of the degradation and preservation techniques of plasters and frescoes
 - Compatibility and degradation problems.
 - Indications regarding the conservation and restoration of deteriorated mortars.
 - Degradation and conservation of plastered and frescoed surfaces.
- 7. Conservation project: mapping of degradations and indications of intervention
 - Preparation of the analysis and conservation tables
 - Preparation of the conservation intervention sheets and technical specifications

The above syllabuses are only a few examples that explain the approach to the education in conservation in the degree courses in Italy.

All programmes are required to set out the requirements (previous courses or exams), the knowledge, competences and capacities to be acquired and the topics taught.

Several faculties of architecture also offer courses on consolidation/ rehabilitation of traditional masonry structures as an optional course, within the Master-degree oriented to architectural conservation/ rehabilitation.

Below the syllabus of the course being held within the curriculum on Architecture at the Polytechnic of Milan and at University la Sapienza in Rome are reported, as examples of the content of these courses:

Structural Consolidation and rehabilitation (Polytechnic of Milan – course in architecture)

The course deals with the structural diagnostic, aimed at the design of strengthening and consolidation interventions on existing structures, either ancient or new. Thus, the themes of masonry structures, wooden structures and reinforced concrete ones will be analyzed, mainly focusing on pathologies, structural damages and, consequently, consolidation interventions.

- The course will show interesting study cases on ancient buildings, already consolidated or during processing, including visits on site and technical seminars by specialized companies in the field of consolidation.
- During the course the following topics will be deepened:
 - 1) Damage and diagnostics of buildings
 - Types of construction damages - level loss, settlements, out of plumb and geometric anomalies, e.g., cracks, loss of resistance of the material

- Tools for monitoring the state of conservation - historical research - methods of geometric control: level, photogrammetry - methods of control of cracks: deformometer - relief methods of stress state: flat jacks –survey methods of mechanical properties: ultrasound probes
 - definition of the state of damage and identification of the causes
 -
- 2) Methods of consolidation and structural rehabilitation of existing buildings
- Materials and Techniques - characteristics of the materials from traditional consolidation - innovative materials for consolidation - replacement techniques, integration and prosthesis
 - rehabilitation of timber structures - techniques for integration with other metal or wooden structures - techniques prosthesis beam elements - techniques prosthesis for trusses
 - rehabilitation of masonry structures - techniques for repairing cracks - techniques to tackle the walls - reinforced injections, braces assets and liabilities – hoops - consolidation of vaults and domes
 - rehabilitation of reinforced concrete structures - reinforcement elements pillar, hoops - reinforcement of beam elements to bending and shear - the use of fiber reinforced materials
- 3) consolidation of the foundations
- rehabilitation and expansion of the base for underpinning - new foundations
 - rehabilitation with micro piles – Advantages and disadvantages
 - soil consolidation - use of consolidating injections.

Course program "Consolidation of historical buildings"

COURSE OBJECTIVES

The course aims to provide sufficient knowledge tools for a correct approach to the design of the "Consolidation of Historic Buildings", designed in harmony with the rules of restoration and the principles of conservation, deepened and developed through the writing of a design project.

Content - First part

General concepts

- the concept of conservative restoration and restoration with brief notes on the history of restoration;
- brief references to construction science and technology;
- the solid planes, the isostatic lines and the pressure curve, the central core of the inertia;
- reading and understanding of the type of cracking, - subsidence, methods and techniques of consolidation of foundation soils;
- Materials in the buildings of historical and monumental buildings: binders, mortars, plaster, masonry, reinforced concrete, wood, steel;
- the instability and degradation of vertical, horizontal and vertical structures: crushing, bending under pressure, reversal and rotation, excessive thrust.
- The technical construction standards mentioned in D.M. 14.01.2008 and circular no. 617/2009 concerning in particular chapters 2 (safety and expected performance), 3 (actions on constructions) and 8 (existing constructions);
- critical historical analysis, survey, mechanical characterization of materials, levels of knowledge and knowledge factors;
- Concept of curvature and critical load, peak load;
- Diagnostics, damage analysis and fault diagnosis: in situ and laboratory investigations, load tests;
- Earthquakes, seismic damage and recovery of buildings for damage suffered: seismic improvement and seismic adaptation.
- prevention, seismic risk and seismic vulnerability;

- seismic in general, faults, scales of measurement, notion of regularity of buildings, etc., study of masonry buildings: vertical, horizontal, inferior, intermediate and covering bearing structures, physical and mechanical characteristics and their degradation;

The times

The vaulted ceiling, the vaulted ceiling, the vaulted ceiling vaulted ceiling, study of the barrel vault with the theory of the membrane;

the surfaces of revolution: the domes

the dome and the theory of the membrane, the concept of colatitude, latitude and longitude.

Second part

Disturbances: methods and techniques of consolidation

A) traditional methods

- masonry and columns: regeneration, buttresses, attachments, armed and unarmed injections, 'scuci-cuci', hoops, etc.

- foundational structures: enlargement, piling, etc.

- Horizontal structures and covers

- Wooden slabs and beams: regeneration, joints, additions with steel structures, etc.

- Time: lightening, tackle, pulling, etc.

- Wooden frames: regeneration, seams, additions.

- Hemispherical dome: structure of cracks, methods and techniques of consolidation.

B) Consolidation of horizontal and vertical structures, backdrops and roofing using fiber-reinforced composite materials and non-invasive techniques;

Glass fibres, aramid fibres, carbon fibres, steel fibres, etc.

Consolidation by applying tapes, plates, bars and staples, etc.

The C.A.M. (armed seaming of the walls), the RETICOLATUS system and other consolidation systems;

C) Notes on reinforced concrete buildings, their degradation, methods and techniques of consolidation

D) Directives of the Department of Cultural Heritage

Seismic analysis and seismic behaviour of historic masonry buildings;

Study of one of the following five application examples.

1) Rome, palatal antiquarium;

2) L'Aquila: De Amicis primary school;

3) L'Aquila: Church of Saints Marciano and Licandro;

4) Venice: the bell tower of the Sant'Antonin church;

5) Molise. Assessment of seismic safety at the territorial level.

For a wider overview on how architectural conservation/ restoration is taught in Europe, it is suggested to consult the proceedings of the 2007 workshop of the European network for the education of conservation "Teaching Conservation/Restoration of the Architectural Heritage: Goals, Contents and Methods", at the following URL: <http://www.eaae.be/publications/transactions/>

With regard to the faculties of **building engineering (construction)**, it is interesting to notice that in Italy, a number of them already include topics related to restoration/ conservation / rehabilitation of historic buildings to different extents.

For instance, at the **University of Genova**, the Bachelor degree (level I) of Building Engineering includes topics such as history of architecture (16 credits) and Restoration/ Conservation (6 credits) out of 180 credits, with an incidence of 3,3% of restoration topics on the overall credit amount, already much more than what is offered even in the faculty of Architecture at TUM.

The Master Degree (Level II) includes 4 additional credits for history of architecture and 9 credits for the Restoration/ Conservation studio, thereby increasing the amount credit over the five years dedicated to restoration/ conservation up to 15, for a percentage incidence of 8,8%.

At the **University of Bergamo**, according to the orientation of the Master biennium – two are offered – the students are offered the option of up to 6 credits on restoration / conservation in the first year and up to 18 credits in the second year (12 on restoration/ conservation and 6 on rehabilitation). Additionally 6 credits are offered on materials for structural restoration.

At the **Polytechnic of Milan**⁵⁰, the Bachelor degree (Level I) in Civil engineering does not include conservation / restoration but it does include 6 credit on durability of materials and technologies for the restoration of structures and 3 credits on ‘Lectures from the past: success and failures of civil engineering’, offering thereby an historicized perspective on the discipline. The Bachelor degree on Building engineering / Construction includes 6 credits on history of architecture and of construction techniques, 6 credits for adaptability and regeneration of buildings, 6 credits on rehabilitation of buildings (as optional courses among other ones).

At the Master Degree level, the Polytechnic of Milan offers several orientations, among which engineering of building systems includes 6 credits on durability and restoration, and at the second year either 9 credits on structural consolidation for the ‘Design’ path or 9 credits on structural consolidation + 6 credits on pathology and diagnosis.

Coming to the HE training path envisaged for **Archaeologists** by the best practices among EU countries, in most cases it results to be more robust and stricter in its requirements before accessing the profession.

In **Italy**, A Degree in Letters or Cultural Heritage (3+2) is needed. After the degree three years of specialization in archaeology (limited number) with compulsory attendance (classical, archaeology, medieval, prehistoric etc.) are requested or, alternatively, the research doctorate (limited number as well). The specialization in archaeology or, alternatively, the research doctorate in archaeology are set by art. 95 of Legislative Decree 63/2006 as essential requisites for the drafting of the document of prior verification of the archaeological interest for public works. After registration on the MIBACT list⁵¹, specialized or doctorated archaeologists can apply for the competition aimed at selecting public officers or, as freelancers, obtain a code to sign the documents of preventive archaeology. In case of

⁵⁰ <https://www.polimi.it/corsi/corsi-di-laurea-magistrale/>

<https://www.polimi.it/corsi/corsi-di-laurea/>

⁵¹ <http://www.archeologiapreventiva.beniculturali.it/>

a simple 3+2 degree, it is possible to participate in excavation sites as an archaeologist. There is no professional order and free-lance archaeologists have neither juridical recognition nor a trade union. There are no 'rules for the archaeologist' such as those for lawyers, architects, geologists, engineers etc. The recently introduced *Codice dei contratti pubblici* (Code for Contracts in Public Works) points out at Article 95 that the preliminary project must contain an integrated geological and archaeological survey investigation to evaluate the archaeological 'risk'. Only scholars who graduated in archaeology (with a no less than a five-year degree) and/or a department of archaeology are entitled to sign the report and to submit it to the superintendent.

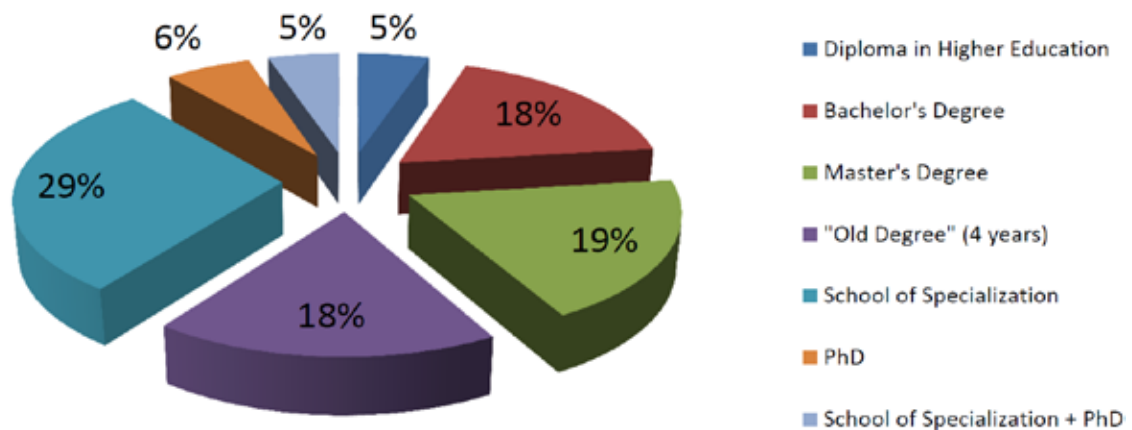


Figure 2 - The Education of Italian Archeologists (source ANA 2011)

In **Greece**, a Degree course (3+2 and thesis) is needed. After the degree, archaeologists can participate in excavations and in public competitions for State officers. Responsibility for the protection of cultural heritage lies exclusively with the central government. Regional and local authorities have no competence in those matters. Archaeological investigations (but no rescue excavations) may also be undertaken by universities, research institutes and foreign archaeological schools in Greece, after permission from the Minister of Culture. So far, the status of the state archaeologist has contributed to the minimization of antagonisms between public and private interests. In 2004, 430 state archaeologists worked for the Ministry of Culture on a permanent basis, whereas a varying number of archaeologists under contract were temporarily employed in the framework of major public works. In the latter case, the criteria for the employment of these staff are not imposed by law and the length of the contract is determined by the timeframe of the rescue excavation for which they are needed. Education and training of archaeologists is based on university courses. Professional training and continuous education for field archaeologists employed in archaeological investigations in the context of development projects is a desideratum.

In **Ireland**, criteria for eligibility for first-time licence applicants are an academic qualification with a substantial archaeological content and relevant archaeological excavation experience in a supervisory

capacity. Competency is further assessed in an interview where the applicant is examined with regard to his/her knowledge of Irish archaeology, excavation and survey techniques, knowledge and recognition of archaeological objects, knowledge of conservation techniques, post-excavation analysis experience, skills in preparation of material for publication and knowledge of relevant legislation. A list of all archaeologists eligible for licences is available from the Department of Environment, Heritage and Local Government. This list is sent to private developers who require professional archaeological services.

Compared to many other European countries, **England** is unusual in archaeological terms in two ways. First, there is no general system of state licensing of archaeological excavation work (or other archaeological work): permission is only required to excavate on protected monuments and in certain other limited circumstances. Beyond those, anyone can – as long as they have the landowner's permission – excavate any archaeological site they like. Second, there is no general state ownership of antiquities in England. Apart from some limited provisions relating mainly to 'treasure' – precious metal artefacts and associated items – all antiquities belong to the owner of the land on which they are found. The central government organisation which has the main responsibility for archaeology in England is English Heritage. This is a statutory body set up by an Act of Parliament. It is legally an independent body, but it receives about 80% of its annual budget from the Department of Culture. The Department of Culture has a key responsibility within the Government for archaeological matters, does not employ any archaeological specialists itself. Instead, it gets advice on archaeological matters from English Heritage. English Heritage has a wide range of archaeological functions. It recommends monuments for legal protection and gives advice on applications for permission to do things (such as new buildings) which would affect protected monuments. The actual legal protection and the permissions are given by the Department of Culture. English Heritage also carries out archaeological work itself. It has a number of teams of excavators, geophysical surveyors, field surveyors, archaeological scientists, aerial photographers and others who carry out projects, and who can also give advice to others about, for instance, scientific techniques. Important to be mentioned is also the Institute of Field Archaeologists, the professional body for archaeologists in the United Kingdom. This body has about 2000 members. It has a Code of Conduct, sets standards for archaeological work and has a disciplinary procedure if there are complaints of bad work or unprofessional conduct. It also has a scheme for registering archaeological organisations and inspecting them annually. In a world of commercial archaeology, the importance of having a strong professional body, and a clear professional ethos, cannot be emphasised too strongly.

In **FRANCE**, Preventive archaeology is organised by the Law of 17 January 2001, modified in 2003 and 2004, which constitutes the application to French law of the European Convention on the Protection of the Archaeological Heritage of Valletta (Malta) in 1992, ratified by France in 1994. This law is based on two principles: the developer pays for preventive archaeology ('the polluter pays'), and most of this activity is entrusted to an institute of public research, the *Institut National de Recherches Archéologiques Préventives* (INRAP), under the double supervision of the Ministry of Culture and the Ministry of Research. The initial law of 2001 set excavations as a public monopoly entirely entrusted to INRAP but it was amended in 2003 introducing the possibility to enter into commercial competition for the excavations. Nevertheless, INRAP still does most of the preventive excavations and, of the 3500

archaeologists of France, it employs 1800 permanently and about 200 with a short-term-contract. France also has an archaeological curriculum.

In **Spain**, archaeology is not taught as a degree subject. It is taught via a series of courses as part of history and humanities, from archaeology and prehistory departments in the 34 public universities spread throughout Spain. In order to overcome the 'irregular' status of the profession, the standards for protecting historical heritage have incorporated the need to guarantee the suitability and quality of professionals drafting archaeological intervention projects. In this way the responsibility for overseeing the professionalism of the sector is not left in the hands of universities or professional associations, but instead those of the public authority responsible for historical heritage. Since 1984, a series of efforts have been made to recognise archaeology as a profession, supported by professional bodies within the field and regional governments. Apart from a degree, the main requirements include experience in field or laboratory work (historical specialities, duration of work, drawing pottery, etc.), and scientific publications.

DRAFT

EMERGING ISSUES AND ANALYSIS OF THE CURRENT SITUATION OF HE EDUCATIONAL PROGRAMMES IN THE FIELD OF CONSERVATION/ RESTORATION.

Moldovan Higher Education does not seem to be fully equipped in overcoming the challenge of knowledge sharing between universities, research institutes and business enterprises. Research in universities is traditionally weaker than in the Academy and related institutes (e.g. Institute of Cultural Heritage). Limited financial and human resources, limited infrastructure and weak incentives for individual researchers make development of knowledge – building and sharing problematic. At the university level, no funds for research seem to be assigned to University Departments according to national programmes, professors and lecturers do their own research almost as a private activity. There are no formal planning, evaluation, funding and incentives mechanisms for research activities of the university teaching staff: this weakens the capacity of the teachers to remain updated and to provide up-to-date information to students. This primarily is due to the fact that universities are seen by policy makers only as teaching institutions with no or limited research competences and funding.

No Master (II level) exists in the Republic of Moldova with a focus on architectural conservation/restoration. As a matter of fact, the Faculty of Architecture at TUM is still organised according to one single cycle with no articulation in Level I and Level II and the curriculum is rather rigid, not allowing for characterisation of the curricula (e.g., new design, urban planning, conservation, landscape design, etc.).

Additionally, no third level higher education programme exists in Moldova concerning restoration/conservation of historic buildings/ built heritage.

This means that projects of conservation/ restoration are prepared by professional who have received only very limited knowledge about how to approach the intervention on existing buildings and could therefore build only very limited competences in this regard.

It appears therefore crucial and urgent that the faculty of architecture address this problem by strengthening the didactic offer in the field and increase the number of credits allocated to restoration/ conservation courses I and II as a first step. Additionally, it is suggested that at least one of the courses in design be dedicated to how to intervene and adapt existing buildings, with the joint contribution of the teaching staff in architectural design, restoration/ conservation, structures and technical installations (e.g. in the V year) in order to favour the development of the knowledge and competences needed for intervening in historic and existing buildings.

VOCATIONAL EDUCATIONAL TRAINING (VET) SECTOR IN MOLDOVA.

The educational policy of Moldova has undergone a significant evolution during the last 10 years. Indeed, subsequent Moldovan government have strived to bring the educational policy of Moldova in line with European Standards.

MOLDOVAN CONTEXT.

Moldovan education sector has undergone significant reform during the last 5 years through intensive support from the EU and other European institutional actors (most notably the German government). We outline here below the current situation in Moldova and analyse the most relevant international cooperation initiatives.

LEGAL AND INSTITUTIONAL FRAMEWORK OF TVET.

The legal and regulatory framework of higher education and TVET is well advanced and developed in Moldova, due to the intense work performed jointly by the Ministry of Education within the framework of EU-funded capacity development initiatives.

The cornerstone of the Moldovan Educational policy is represented by the 2014 **Education Code**, that has replaced the old 1995 Law on Education. The Code sets the legal framework for education and training in the country, to be complemented by more detailed legislative instruments for specific issues.

In particular, the legal basis for vocational education and training is set by a series of legislative and regulatory instruments. The following laws represent the most relevant legislative instruments in the field of TVET:

- The 2014 Education Code;
- The Regulation setting the organization of professional technical education through dual education of 22 January 2018;
- The government decision for the re-organization of institutes for professional and technical education of 20 July 2015;
- The government order on organization and functioning of institutes of professional and technical post-secondary education of 10 June 2015;
- The government order on approval of the framework regulation for the functioning and organization of institute of professional and technical secondary education;
- The government orders on Professional Technical training, complemented by Framework plans for different kinds of educational paths
- The order of the Ministry of Education No. 1158/2015 concerning the approval of the regulation of organisation and operation of the Centre of Excellence;
- The order Nr. 1080 DIN 20 October 2014, concerning the organization of the Internship/practicum.

The **Education Code of 2014** defines the overall structure of the TVET system in Moldova. In particular, the education code:

- defines the aim of the TVET system and sets access conditions.
- defines the types of training programmes, identifying:
 - secondary technical and vocational training programs (ISCED level 3);
 - post-secondary technical and vocational training programs (ISCED level 4);
 - post-secondary non-tertiary technical and vocational training programs (ISCED level 5).

The Law also sets the duration of training and education for the various types of programmes.

- defines the structure of the TVET system, identifying the following public and private (in this case they must be accredited or provisionally authorized) technical and vocational education institutions:
 - vocational schools;
 - colleges;
 - centres of excellence.
- defines the procedures to set standards (to be defined by the ministry of education in cooperation with other actors) and curricula (to be defined on the basis of the National Qualifications Framework) for TVET.
- defines the policy to ensure quality of professional education, identifying the National Agency for Quality Assurance in the Professional Education as the responsible institution.

The domains of TVET in the Moldovan educational system are defined in the Governmental Decree on ***Nomenclature of vocational training areas and professions***, of 14th December 2015, which approved the list of professional domains for which specific education is envisaged.

The actual organisation of the education system is defined in the following titles of the education system (Title 1 and titles 6-13 relates to general administration or very specific issues, such as military training):

- TITLE II EDUCATION SYSTEM;
- TITLE III GENERAL EDUCATION;
- TITLE IV TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING;
- TITLE V HIGHER EDUCATION;

The new Code of Education introduced several innovations. The most relevant innovations are the development of new university curricula or the organisation of the internal and external quality evaluation and monitoring system, by establishing the National Agency for Quality Assurance in Professional Education, the formalisation of Vocational education and Training system.

The Education code specifically mentions a second crucial legal instrument: the **National Qualifications Framework of Moldova 2017**. The document provides basic principles for aligning the national qualifications system with the European one.

The National Qualifications Framework of the Republic of Moldova (NQFRM), is modelled on the European Qualifications Framework, establishing 8 levels of qualifications that can be acquired

through formal education and training in Moldova and recognition of learning outcomes in the framework of non-formal and informal learning undertaken throughout and compatible with EQF.

Levels 1-5 are obtained through general secondary education and secondary vocational education (level 3), post- secondary vocational education (level 4), post-secondary non-tertiary vocational education (level 5) and levels 6-8 - through higher education

The NQFRM still lacks a functioning register yet both for VET and HE even though the register as such is still in development. At present, the NQF has been approved for 143 qualifications in the field of higher education. In VET 53 professional qualifications were approved in 2015. 14 qualifications in VET were developed and validated in 2016⁵².

The qualification framework classifies career paths and defines the required competences. Each professional qualification is identified through a 5-digit number (eg: Cadastre technician is identified with number 73120)

The future development of the Education policy is set by the **Education Development Strategy 2020**. This strategy, approved by the Government of the Republic of on 14th of November, 2014, strategy sets out seven strategic development directions (DS) for the education sector, oriented towards access, relevance and quality:

- To enhance life-long access to and participation in education and professional development;
- To ensure the relevance of studies for life, active citizenship and career success;
- To integrate efficiently information technologies in education;
- To develop, support and motivate academic staff so as to ensure quality education;
- To design and institutionalise an efficient quality evaluation, monitoring and assurance in education;
- To improve resource management in education;
- To ensure social cohesion so as to offer quality education.

The implementation of the strategy will be supported directly by the European union. More specific strategic documents are illustrated below.

⁵² The list of qualifications for TVET is available at the following link: <https://mecc.gov.md/ro/content/calificari>

Strategy for future developments

The national strategic document for TVET in Moldova is the VET Strategy 2013-2020. The Strategy that outlines various elements of the reform process from the lifelong learning perspective. This strategy aims to modernise and streamline VET provision and to re-conceptualise VET programmes. The plan is to establish a more efficient network of providers capable of responding to labour market needs, organised within a coherent framework that will provide quality-assured qualifications and tools for the recognition of lifelong learning achievements

The 6 specific objectives the achievement of which will lead to the achievement of the general objective are:

1. Reorganize the VET system in two levels – secondary and post-secondary, and reconfigure the network of VET institutions;
2. Ensure competence-based VET and align it to the labour market needs (indicators which can be checked = employment to increase by 10% as against 2012 for the VET graduates);
3. Improve VET quality by making better use of funds and by designing and putting in place a quality assurance system, so as by 2017 to have an operational entity in charge of the evaluation and accreditation of VET institutions;
4. Ensure that all research, curricula and guidelines are in place in the VET system, so as all curricula have been aligned to the National Framework of Qualifications by 2020;
5. Improve the quality of teaching staff, including by modernizing the initial and continuous training of teaching staff in the VET system and improve their motivation, so as all teachers will have received training in accordance with the NFQ by 2020;
6. Make VET more attractive and accessible, so as the number of students to grow by 10% by 2020.

The implementation of the VET strategy is currently ongoing. The last assessment report of the VET strategy outlined that many of the objectives above must still be achieved.

In this sense, the government of Moldova had adopted a well structured approach to the development of a functional TVET system based on best European practices in accordance to the following priorities:

- Implementation of the actions included in TVET policy documents
- Capacity building of institutions involved in TVET
- Implementation of the quality management system in TVET
- Enhancement of the Dialogue Platform with the labor market, social partners, etc. considering the promotion and extension of the partnerships for internships and dual training

A particular attention is being devoted to the following:

- Follow up to the adoption of the National Qualifications Framework through the creation of a National Register of Qualifications.
- The set-up of an effective quality control mechanism to ensure quality of training provided to pupils at a national level
- The set-up of a functional Dual Vocational education based on internship within private companies. This will encompass the development of a functional public-private network in the field of training.

Dual Vocational Education

In regard to Dual Vocational Education, that is to say, an education system that combines apprenticeships in companies and education at a vocational school, Moldova is implementing a comprehensive reform and has received extensive support by the German Federal Government under two distinct development cooperation project (better described below).

The dual vocational education is inspired by the German model in which students are trained in a company for part of the week and frequent courses at school during . The company is responsible for the provision of training in standard amounts and quality set up by law. The student is effectively hired by the company under a labour contract for the duration of its training.

Companies participating to the training of students have immediate benefits, such as tax discounts but, on the longer term, the most relevant benefit is represented by the substantial savings on costs for recruitment, given that they have the opportunity to ensure that the training of their future employee is in compliance with their needs.

The students themselves have substantial advantages under this system: a practical hand-on experience on the workplace, access to a wage since young age.

The implementation of the system, however, is quite complex and requires the establishment of a strong formal network of private and public actors characterised by relationships based on trust.

Moldova has recently finalised the regulatory basis for such system through the approval of the Regulation on organization and conduct of dual vocational education and training (VET) by Government decision.

The document provides a modernized regulatory framework for dual VET according to European standards and represented the culmination of work of working groups (composed by line ministries, business associations, individual companies, technical vocational training providers

The Regulation sets the regulatory framework for participation of economic operators to training and delivery of professional competences required on the labour market to young students. It defines elements for dual VET, as well as the time spent by apprentices on theoretical and practical training. At the same time, the rights and obligations of the training companies and of the technical vocational training providers, of the in-company trainers and teachers within VET schools, as well as of the apprentices, are defined.

The regulations sets rules for the remuneration of the apprentices' work within the training company. It also defines the tasks of the Chamber of Commerce and Industry representing the interests of the companies, which is now a competent body for education in the Republic of Moldova.

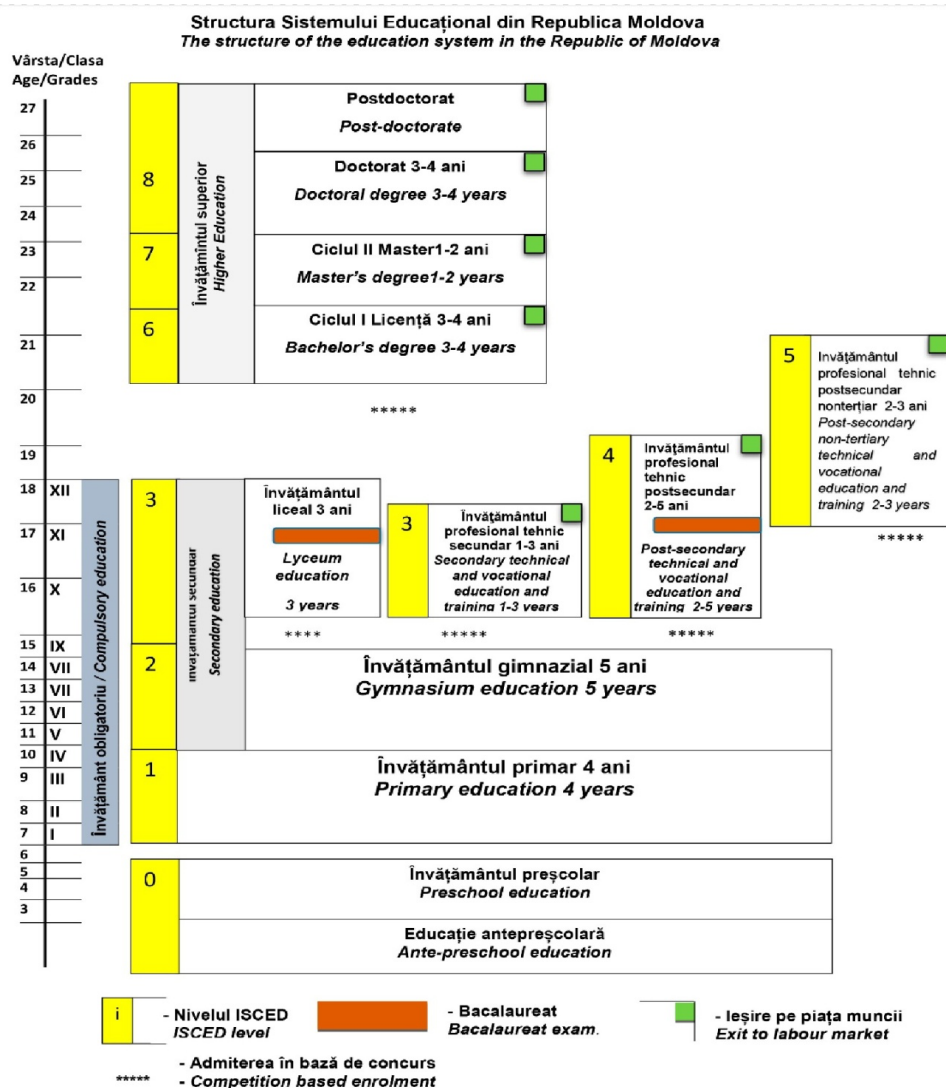
At the current stage, the government is proceeding the actual implementation of regulation above. In particular institutional arrangements are being made for setting up an effective public-private network in the field of TVET, while several pilot dual education initiatives have been activated for the 2017/2018 school year.

It is worth noting that Dual VET projects in the Moldovan construction sector are in particular important, because the construction sector is a growing sector of the Moldovan economy that suffers particularly from a lack of skilled staff. The VET centre for the Moldovan construction sector is owned by an international corporation (Strabag), but has also 30 Moldovan partner companies that benefit from the qualifications.

CURRENT STRUCTURE OF VET IN MOLDOVA.

Currently, school education in Moldova is structured as follows:

- from 7 to 10 years old - 4 years - primary education
- from 11 to 15 years old – 5 years - Gymnasium education



from 15 years old different educational paths can be taken:

- from 16 to 18 years old, lyceum education, completed by bacalaureat exam.
- from 16 to 17/18 years old, secondary technical and vocational education and exit to labour market
- from 16 to 19 years old, post-secondary technical and vocational education and training (college or excellence center) and with bacalaureat exam or exit to labour market

in Moldova there are 87 Professional Technical Education institutions^{53 54}:

- 12 Excellence Centers
- 31 Colleagues
- 42 Vocational schools

in 2017 there were :

- 6600 graduates in level 4 classification
- 7800 graduates in level 3 classification

In the data below we can see that the number of school and graduates is currently undergoing a process of decrease since the start of the 2010s.

Year	Statistic data							
	General education institutions	Graduates	VET Schools	Graduates	Colleges	Graduates	Universities* (since 2010, including II Cycle graduates)	Graduates
2011	1'489	62'999	75	12'000	48	7'166	33	27'788
2012	1'460	58'604	70	10'424	48	7'426	34	26'730
2013	1'397	54'604	67	10'380	47	7'43	34	24'848
2014	1'374	50'291	67	9'664	45	6'484	32	24'274
2015	1'347	46'329	61	9'220	45	6'252	31	23'630
2016	1'323	43500	47	3584	45	6789	31	21200
2017	1291	48873	43	7800	43	6600	30	21089

The structure of technical and vocational education and training in Moldova is set in a number of framework plans recently approved by the government of Moldova which describes the domains of teaching, teaching hours and other characteristics of different curricula or, in case of post-secondary education, the methodology to develop curricula⁵⁵:

- The framework plan for dual technical professional education.
- Framework plan for lyceum education in the domain of integrated programmes of post-secondary professional education in accordance to domains of professional education.
- Framework plan of education for connected specialties

⁵³ <http://mecc.gov.md/ro/content/institutii-de-invatamant-0>

⁵⁴ www.ipt.md

⁵⁵ Available at the following link: <https://mecc.gov.md/ro/content/invatamintul-profesional-tehnic>

- Framework plan for secondary professional technical education with a duration of studies of one year
- Framework plan for secondary professional technical education with a duration of studies of two years

A further plan sets the mechanism for credit transfer in post-secondary education:

- Framework plan for post-secondary and post-secondary non tertiary professional technical education on the basis of the System of transferrable study credits

These plans set the frame in which any proposal for new training offer should be inscribed. They define the general structure of the educational paths for achieving professional and technical qualifications.

The actual content of different educational paths is defined in the specific study plans envisaged for achieving qualifications for specific jobs envisaged in the national framework of qualifications. The achievement of each qualification requires the completion of studies and practical exercises defined in specific “disciplinary curricula” for each subject matter. Usually, the achievement of qualification requires the completion of one or more curricula.

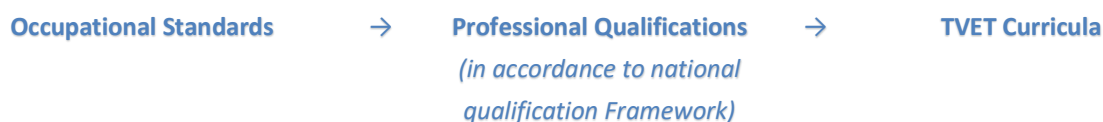
It is in the disciplinary curricula that the actual content of TVET is defined.

EDUCATIONAL OFFER IN THE FIELD OF CONSERVATION/RESTORATION IN MOLDOVA.

The educational offer for occupations linked to conservation and restoration of cultural heritage in Moldova is concentrated in curricula for secondary and post-secondary professional technical education.

The development of the educational offer for these levels have been expanded in the recent years, after the completion of EU-funded technical assistance to strengthen the professional and technical education sector. In particular, Moldova has adopted a specific methodology for the development of TVET curricula, in order to ensure quality and standardization of the current educational offer.

The “practical guide on development of curricula for post-secondary and post-secondary non tertiary professional technical education and training” in use by the Ministry of Culture and Education defines a process for curricula development aiming at ensuring compliance of educational offer with the needs of the labour maker in accordance to the following scheme:



The compliance with labour market needs is realized by identifying the necessary competences that students must acquire, classified in “units of competences”, which represent a coherent set of knowledge, skills and attitude required for the performance of a certain task.

The identification of units of competence for each professional qualification guides the process of defining the education and training plan for each curriculum.

Accordingly, the steps for defining each TVET curriculum are identified as follows:

1. Elaboration of basic documentation required to elaborate CV
2. Elaboration of the draft education plan.
3. Discussion on the draft education plan
4. Finalization of the education plan
5. Approval of the education plan by the ministry of education
6. Elaboration of draft disciplinary curricula.
7. discussion of draft disciplinary curricula with all stakeholders
8. Finalization of the disciplinary curricula
9. Approval by educational institutions of the disciplinary/modular curricula
10. Approval of the TVET curriculum by related ministries (when necessary) and by the Ministry of Education

The TVET curriculum will be composed by “course units”. Each course unit will aim at the acquisition by the student of one or more “units of competence”.

The course units are represented by theoretical studies divided in multiple connected modules or practical stage. Indeed, each unit course will have its own specific curriculum. There are three kind of curriculum for the course units, described below:

Type	content	Structure
Disciplinary Curriculum	A course unit of mainly theoretical study on a specific subject matter	<ul style="list-style-type: none"> - Introduction - Motivation and utility of the discipline for professional development - Specific professional competences for this discipline - Administration of the discipline - Educational units - Indicative repartition of study/work hours per educational units - Individual and guided study - Recommended practical work - Suggestion of methodology - Suggestion for evaluation of competences - Necessary resources - Necessary resources to develop study process - Recommended didactic material
Modular Curriculum	A course unit of mainly theoretical study linked to other modular	<ul style="list-style-type: none"> - Introduction - Motivation and utility of the discipline for professional development - Specific professional competences for the module

	course units on a specific subject matter	<ul style="list-style-type: none"> - Administration of the discipline - Educational units - Indicative repartition of study/work hours per educational units - Individual and guided study - Recommended practical work - Suggestion of methodology - Suggestion for evaluation of competences - Necessary resources - Necessary resources to develop study process - Recommended didactic material
Curriculum for practical stage	A course unit mainly based on practical training on a specific aspect of a job.	<ul style="list-style-type: none"> - Introduction - Motivation and utility of practical training in the professional development - Specific professional competences to be achieved through the practical training - Administration of the training - Description of the development process of the practical training (the description is provided through a table outlining specific working activities) - Methodology recommendation - Suggestion for evaluation of professional competences achieved - Requirements for the place of implementation of the practical training - Recommended didactic materials

In accordance to this methodology, Moldova has recently developed a number of new TVET curricula under assistance by the EU through the project “Support for the vocational education and training sector-EuropeAid/133700/C/SER/MD”. Among the new developed curricula, the courses for professions linked to cultural heritage currently identified by the present twinning project are listed here below.

- Course for Cadastre Technician (nr. 73120):
- Course for technician în real estate evaluation (nr. 73250)
- Course for design technician (nr. 73110)
- Course for Construction Technician (nr. 73220)
- Course for woodworks technician (nr. 72220)
- Course for technician of the construction material industry (nr. 73270)

Among these curricula, despite their variety, the current educational and training offer in the field of conservation and restoration is limited.

Indeed, no disciplinary curriculum explicitly dedicated to conservation and protection of cultural heritage exist for the qualifications above. An analysis of existing curricula has revealed that within the existing disciplinary curricula, elements of conservation/restoration are not well developed or completely absent.

Further two courses developed previous to the EU support project above are eligible linkable with the subject of conservation:

- Course for plaster (Nr 712307);
- Course for joiner (Nr. 711501)

In none of these courses is included any module on traditional historical techniques or restoration work on plasters or wood elements.

However, there is an important presence of lecture hours dedicated to physics and applied chemistry, which testify to the presence of a scientific elements that can be usefully integrated with topics related to conservation (e.g. physical and chemical processes of decay of materials and building components, physics and chemistry of products related to conservation/ restoration).

Nonetheless, in the past, there were professional courses partly aimed at cultural heritage conservation. In particular, the following professional qualifications were strictly related to conservation and restoration:

- In the *Nomenclature of vocational training areas and professions* on secondary technical and vocational training, **level III** of qualification, the only entry on the restoration in the list of "training Professional and Professions is the N ° 732033 **"decorative plaster restoration and moulding"**.
- In the *Nomenclature of vocational training areas and professions*- for IV and V level of qualification (Centres of Excellence), adopted by Government decision N ° 853 of 14 December 2015, there is a course on **"interior decorator"**, code 21210 (120 credits).

For what concerns actual training offer, in regard to decorative plaster restoration and moulding, which is the only matter specifically related to restoration, the course is planned/implemented for the school N ° 4 of Chisinau. In 2017 the course had no students, further confirming that the lack of demand for professionals in the field of restoration and conservation is a crucial factor.

However, School n. 4 conserves still the programmes of training courses related to restoration and conservation taught at the school in the past: they form an important basis for the strengthening of the existing courses and, in the future, of additional ones dedicated to repair/ conservation/ restoration.

ANALYSIS OF THE CURRICULA, COURSE RATIONALE, CONTENT AND DIDACTIC METHODS.

The structure of new courses linked to heritage conservation in disciplinary curricula is as follows:

- For the qualification of Cadastre Technician (nr. 73120):
 - Curriculum F.01.O.007 specialist drawing
 - Curriculum F.02.O.008 Topography
 - Curriculum F.03.O.011 General course of construction
 - Curriculum F.04.O.012 Photogrammetry

- For the qualification of technician in real estate evaluation (nr. 73250)
 - Curriculum F.04.O.012 real estate inspection
 - Curriculum F.05.O.014 valuation theory
 - Curriculum for practical training P.06.O.005 Practice of cadastre
 - Curriculum for practical training P.08.O.006 Practice of valuation
- For the qualification of design technician (nr. 73110)
 - Curriculum F.02.o.010 Specialist design
 - Curriculum F.03.o.011 Construction Materials
 - Curriculum F.04.o.014 Topography
 - Curriculum F.06.o.016 General Course of Construction
 - Curriculum F.07.o.018 Urban Planning and Land Management
 - Curriculum F.08.o.019 System Engineering and energy efficiency
 - Curriculum for practical training P.02.o.002 Practice of Graphic representation
 - Curriculum for practical training P.02.o.003 Practice of surveying
 - Curriculum for practical training P.02.o.004 Practice of *Plein Air*
 - Curriculum for practical training P.03.o.005 Lab Practice
 - Curriculum for practical training P.04.o.006 Practice of Topography
 - Modular disciplinary curriculum S.04.o.022 Basics of Architectural design
 - Modular disciplinary curriculum S.05.o.023_ Architectural design 1
 - Modular disciplinary curriculum S.06.o.024_ Architectural design 2
 - Modular disciplinary curriculum S.07.o.025_ Architectural design 3
 - Modular disciplinary curriculum S.08.o.027_ Architectural design 4
- For the qualification of Construction Technician (nr. 73220)
 - Curriculum F.01.o.008_ Construction Materials
 - Curriculum F.02.o.009_ Construction design
 - Curriculum F.03.o.010_ Theoretical mechanics and materials resistance
 - Curriculum F.04.o.011_ Engineering topography
 - Curriculum for practical training P.01.o.001_ Practice of brickworks
 - Curriculum for practical training P.02.o.003_ Practice of plastering
 - Curriculum for practical training P.02.o.004_ Practice of Carpentry
 - Curriculum for practical training P.03.o.005_ Practice of Refining
 - Curriculum for practical training P.04.o.006_ Practice of Plating
 - Curriculum for practical training P.04.o.007_ Practice of Welding
 - Curriculum for practical training P.05.o.008_ Topography Practice
 - Curriculum for practical training P.08.o.009_ Technological practice
 - Modular disciplinary curriculum S.07.o.020_ Economy of construction
 - Modular disciplinary curriculum S.08.o.021_ Management of Construction
- For the qualification of woodworks technician (nr. 72220)
 - Curriculum F.06.o.013_ Hydrotechnic and hydrothermal treatment
 - Curriculum F.07.o.016_ Raw materials in woodwork
 - Curriculum for practical training P.01.o.001_ Basic Practice
 - Curriculum for practical training P.02.o.002_ Lab practice
 - Curriculum for practical training P.02.o.003_ Practice of wood carving

- Curriculum for practical training P p.02.o.004 _practice of manual woodworks
- Curriculum for practical training P.03.o.005 _Practice of carpentry
- Curriculum for practical training P.04.o.006 _practice of furniture producing
- Curriculum for practical training P.06.o.007 _Technology practice
- Curriculum for practical training P.08.o.008 _Technology practice
- Modular disciplinary curriculum S.03.o.017 _technology for manual woodwork
- Modular disciplinary curriculum S.07.o.022 _Wood Structures and Constructions
- Modular disciplinary curriculum S.08.o.024 _Design and tools for furniture production
- For the qualification of Technician of the construction material industry (nr. 73270)
 - Curriculum F.01.o.013 _Phisics and analytic chemistry
 - Curriculum F.02.o.008 _Construction materials
 - Curriculum F.03.o.014 _Technoloy and chemistry for construction materials
 - Curriculum F.04.o.009 _ Theoretical mechanics and materials resistance
 - Curriculum F.05.o.011 _Building architecture
 - Curriculum F.05.o.015 _Basics of thermodynamics and thermotechnics
 - Curriculum for practical training P.03.o.004 _Practice of raw materials procuring
 - Curriculum for practical training P.04.o.005 _Quality control of cement and mortars
 - Curriculum for practical training P p.06.o.006 _Technology Practice I
 - Curriculum for practical training P.08.o.007 _Technology Practice II
 - Modular disciplinary curriculum S.07.o.018 _Technology of production of binding materials and foundation materials
 - Modular disciplinary curriculum S.07.o.019 Technical analysis and control of construction materials production
 - Modular disciplinary curriculum S.08.o.020 Technology for production of construction materials in ceramics

In regard to past courses:

- the course **No. 712307, for plasterers**, would involve:
 - 656 hours of general culture theory, of which 64 of chemistry and 64 of physics,
 - 1152 hours of lessons related to the training of the professional profile. Of which:
 - 458 to the realization of plaster,
 - 370 to the realization of decorative techniques,
 - 160 to flooring techniques,
 - 88 to the laying of plasterboard,
 - 58 to thermal insulation,
 - 62 are dedicated to workplace safety
 - 56 to assembly scaffolding.
- In the **course No. 711501 for joiners**, the following training program is envisaged:
 - 654 hours of general culture theory, of which 64 of chemistry and 64 of physics;
 - 1758 hours of lessons related to the professional profile of which:
 - 630 of practice;
 - 272 in wood technology;

- 112 study of the material;
- 80 technical drawing;
- 80 equipment;
- 48 design of wooden articles;
- 32 job security.

The course No. 732033 for decorative plaster restoration and moulding, was activated but was not successful in attracting students.

To ensure that it can really offer a prospect for the future, it is necessary to establish a closer connection between the Classification of occupations and the educational requirements: as a matter of fact, there are 16 types of restorers working with different materials but there is little if no connection with the training and educational requirements and offer. Additionally, there is no normative act establishing compulsory specific professional requirements.

RESULTS FOR PREVIOUS PROJECTS.

Based on the first priority of the NDS 2020 and following the adoption of the VET strategy, the Government of the Republic of Moldova and the EU signed a Financing Agreement⁵⁶ for a Sector Policy Support Programme (SPSP) in VET for the period 2014-2017, complemented a Technical Assistance (TA) project 2014-2017⁵⁷.

The SPSP aimed at re-conceptualising the education programme within the VET sector, streamlining the VET institutions network and increasing efficiency of VET to provide a competitive workforce for national and regional economy, to meet the labour market needs in terms of quality and quantity requirements.

On the other hand, the TA project, implemented by a Franco-German-Italian consortium had four main purposes, as follows:

- to assist the Government in implementing the structural reform in VET and to improve the social dialogue by establishing 5 or more Sector Committees in the most important economic sector;
- to develop the framework for quality assurance and quality management in VET, as well as to improve the quality of the learning processes and learning outcomes in the 5 selected sector;

⁵⁶ <http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=356440>

⁵⁷ Financing Agreement on "Support for the vocational education and training sector" (ENPI/2012/023-419)

- to strengthen the capacities of the key stakeholders involved in the upcoming VET Budget Support Programme and to assist them in the implementation, monitoring and evaluation of the Budget Support;
- to raise the awareness of the VET professionals and the general public on the new reformed VET system.

The action of the EU has been complemented by initiatives of other international actors and EU Member States. The most relevant initiative in this sense has been realised by the German Government. In particular, the Federal Ministry of Economic Cooperation and Development of Germany has financed:

- the 2010-2017 Vocational education partnership to support the VET system to adapt it to labour market requirements. The action has been implemented mainly through technical assistance and training activities
- the 2015-2018 Structural Reform in Vocational Education and Training, (implemented by GIZ to enhance education policy and institutional framework for the implementation of demand-driven dual VET focusing on three intervention areas:
 - Policy advice for strengthening the framework conditions for dual VET;
 - Promoting involvement of economic operations in piloting dual VET models;
 - Improving the image of VET.

After the completion of these cooperation actions and the legislative reforms they supported, the legal basis for the VET system is therefore in place and it is up to highest European standards. The next challenge is to effectively implement the system, in particular in regard to institutional capacities of actors of the VET system to achieve their objectives, improving the VET system capacity to reply to the labour market skills requirement.

In this sense, the EU delegation to Moldova has launched, as a follow up of the project above, a new EU Twinning project. The project will focalise on building institutional capacities and provide technical assistance to support the reform agenda in the education sector.

In particular the specific objective of the project will be to assist the Ministry of Education, Culture and Research and related VET bodies/institutions and actors to further implement the national VET strategy 2013-2020 by improving the capacities of key-institutions in charge of quality assurance, with a particular focus on teachers' competences and collaboration with private sector.

The mandatory specific results to be achieved at the end of this project are the following:

- Strengthened Institutional and operational capacities and staff competences of the National Agency for Quality Assurance in Education and Research (ANACEC);
- Implementation of National Qualifications Framework of the Republic of Moldova;
- Development of Capacities for effective cooperation between VET providers and private sector;

- Development of the multiplier effect of VET teachers of Centres of Excellence through pedagogical training,

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EUROPEAN CONTEXT.

From a legal point of view, the Moldovan education sector is quite advanced and coherent with EU policies and best practices. In particular, the Moldovan legislation has been developed in strict coherence with the two most relevant EU initiatives in education.

EUROPEAN FRAMEWORK FOR EDUCATION.

The most relevant EU policy in the field of education is represented by the establishment of a common framework of qualifications: the European Qualifications Framework (EQF).

The EQF is a common European reference framework whose purpose is to make qualifications more readable and understandable across different countries and systems. Covering qualifications at all levels and in all sub-systems of education and training, the EQF provides a comprehensive overview over qualifications in the 39 European countries currently involved in its implementation.

The core of the EQF is its 8 reference levels defined in terms of learning outcomes, knowledge, skills and autonomy-responsibility. Learning outcomes express what individuals know, understand and are able to do at the end of a learning process. Countries develop national qualifications frameworks (NQFs) to implement the EQF.

The main purpose of the EQF is to make qualifications more readable and understandable across countries and systems. This is important to support cross-border mobility of learners and workers and lifelong learning across Europe.

The implementation of the EQF was based on the Recommendation on the European Qualifications Framework for lifelong learning adopted by the European Parliament and the Council on 23 April 2008.

Reflecting the success in implementing the 2008 recommendation, a revised and strengthened Recommendation on the EQF was adopted on 22nd May 2017 by the Education, Youth, Culture and Sport Council. The purpose of this revised recommendation is to ensure the continuity as well as a further deepening of the EQF.

The EQF is strictly linked to the “Bologna Process”, through which European countries adopted common standards for higher education. However, the EQF sets a qualification framework for all educational levels.

EUROPEAN FRAMEWORK FOR VOCATIONAL EDUCATION AND TRAINING.

The Bologna process in the field of Higher education is mirrored, in the field of Vocational Education and Training, by the Copenhagen Process. This process is part of the ‘Education and training’ (ET 2020) strategy and aims at contributing to achievement of targets of the wider Europe 2020 strategy for what regards education and trainings. In particular, the Copenhagen process aims at internationalizing standards for non-scholastic education and assuring that skills of the workforce matches the demand of European industry.

The Copenhagen Process was initiated in November 2002 with an agreed Declaration on enhanced European cooperation in vocational education and training (VET). The Main objectives set by the Copenhagen declaration are:

- Single framework for transparency of qualifications and competences;
- Cooperation in quality assurance in VET;
- Credit transfer system for VET - a system that enables individuals to progressively obtain credit points based on the competences they acquire along their vocational learning route, in both formal and informal settings;
- Common principles for validation of non-formal and informal learning;
- Strengthening policies, systems and practices for lifelong guidance;
- Support to the development of qualifications and competences at sectoral level;
- Attention to the learning needs of teachers and trainers.

EXAMPLES OF TRAINING PROGRAMMES UNDER EU FLAG

There are no training programmes in the field of Conservation and Restoration directly implemented by EU institutions.

Many EU MS use Structural funds (European Regional Development Fund and European Social Fund) to finance implementation of training and education in the sector, in accordance to their national legal and regulatory framework.

However, there is no EU common approach to the professional requirements necessary for workers in the built heritage sector, which do not fall under the category of 'restorers'.

ITALIAN LEGAL AND INSTITUTIONAL FRAMEWORK.

The institutional framework of Italy in the field of training and education of professionals in the field of restoration and conservation is characterised by a rigid set of rules for qualifications of people and companies involved in works on buildings and objects of cultural significance.

Specific attention is devoted to the issue in the 2004 Code of the Cultural and Landscape Heritage. In particular, article 29, on conservation of cultural heritage, restricts any activity on cultural heritage objects and buildings to properly trained personnel:

Article 29

Conservation

[...]

6. *With the provisions of existing laws and regulations regarding the design and execution of works to be carried out on architectonic property remaining in effect, the work of maintenance and restoration of movable cultural properties and the decorated surfaces of architectonic properties shall be carried out exclusively by those who are qualified restorers of cultural property in accordance with the regulations in this regard.*

7. *The job descriptions of restorers and other workers who carry out activities which are complementary to restoration or to other activities of conservation of movable cultural property and of decorated surfaces of architectonic properties are defined by the Minister's decree adopted under article 17, paragraph 3, of law no. 400 of 23 August 1988, in agreement with the State-Regions Conference.*
8. *The criteria and quality control levels to be met by the teaching of restoration are defined by the Minister's decree pursuant to article 17, paragraph 3, of law no. 400 of 1988 in accord with the Minister of Education, Universities and Research, and with prior consultation of the State-Regions Conference.*
9. *Instruction in restoration is provided by schools of higher education and training established under article 9 of legislative decree no. 368 of 20 October 1998, as well as by the centres referred to in paragraph 11 and other public and private bodies accredited by the State. The Minister's decree adopted in accordance with article 17, paragraph 3 of law no. 400 of 1988 in accord with the Ministry of Education, Universities and Research, and with prior consultation of the State-Regions Conference, identifies the procedures for accreditation, the minimum requirements for the organisation and functioning of the educational bodies referred to in the present paragraph, the procedures for the supervision of teaching activities and of the final examination, which must include the participation of at least one Ministry representative, as well as the characteristics of the teaching staff.*
10. *The training of professional figures who carry out activities which are complementary to restoration or other activities of conservation is ensured by public and private entities in accordance with Regional regulations. The relative courses shall meet the criteria and quality control levels defined by agreement in the State-Regions Conference, pursuant to article 4 of legislative decree no. 281 of 28 August 1997.*
11. *By means of special arrangements or agreements, the Ministry and the Regions, with the participation of universities and other public and private entities as well, may together establish centres, which may also be of an inter-regional nature, and which are endowed with corporate personality and entrusted with activities in research, experimentation, study, documentation and execution of conservation and restoration work on cultural property, of particular complexity. Schools of superior training for the teaching of restoration may likewise be established within these centres, under paragraph 9.*

Therefore, in Italy, any action on certain type of objects is restricted to the specific professional category of qualified restorers. As well, other personnel carrying out complementary work must be properly qualified in accordance to the law.

The specific qualification of restorers and personnel carrying out complementary works are contained in the Ministerial Decree 86 of 26 May 2009, which identifies 4 categories of personnel involved in restoration and conservation works:

- The restorer of cultural goods. This professional qualification is tasked with overall direction and control of works of any kind and it is strictly regulated. The restorers are inscribed in a dedicated list hosted by the Ministry of Culture and their training and education are strictly regulated and require a 5 years education leading to the achievement of an EQF-5 equivalent post-secondary qualification as well as substantial experience in the restoration sector.

- The collaborator restorer of cultural goods (or restoration technician), a professional figure which supports the restorer in his/her activities. Also this professional figure is strictly regulated and must be inscribed in a dedicated list hosted by the ministry of culture.
- The restoration technician with sectoral competences is the professional figure supporting the restorers with specific expertise and craftsmanship. Also this figure is strictly regulated and must have undergone specific training (defined at the regional level in Italy)
- Other professional figures may concur to works (such as physicists, chemists etc) but the law mandates their activities to be strictly supervised by the restorers.

In Italy, persons tasked with activities on cultural assets therefore receive Post-secondary Technical Education and Vocational training usually equivalent to at least level 5 of the European Qualification Framework. Italian professionals of restoration and conservation are therefore highly qualified professionals, with a degree with a value comparable to that of an university degree.

To sum up the Italian law identifies a highly qualified professional (the restorer) as the ultimate arbiter in any process of restoration and conservation and sets rigid limits to the qualifications required to any professional cooperating with the restorer. The process for achieving qualification as a restorer is rigid and prescribed by law.

In order to ensure the respect of such provisions in works for restoration and rehabilitation, specific strict guidelines have been defined for the participation of companies to works in Italy.

In particular, works on buildings and objects of cultural significance are classified as follows:

- Category OG2 Works (Restoration and maintenance of protected buildings)
- Category OS2-A Works (works on decorated surfaces of cultural heritage buildings and cultural assets of historic, artistic, archaeological and ethno-anthropologic interest)
- Category OS2-B (cultural assets for library and archives)
- Category OS24 (works on historic green areas and urban furniture)
- Category OS25 (archaeological excavations)

In order to carry out works in these fields, companies must demonstrate that they respect certain requisites.

In particular, the technical director of works must be:

- For OG a qualified architect
- For OS2-A and OS2-B, a qualified restorer

Furthermore, companies must demonstrate the presence, among their organization, of an adequate number of qualified persons. For example, for works under category OS2-A, companies must demonstrate that a significant percentage (variable on the basis of the dimensions of the company) of their personnel is composed by restorers or analogous professionals.

Therefore, the set of rules for qualifications of companies to work on cultural buildings and objects, is very rigid and strictly based on the demonstration of availability of qualified personnel.

In Italy, adequate training of personnel for what concerns conservation and restoration is ensured not through dissemination of the competences among all workers but, rather, by assuring that highly qualified persons have a constant and effective supervision of all works.

ITALIAN EDUCATIONAL OFFER IN THE SECTOR OF CONSERVATION/ RESTORATION/ REPAIR.

The Italian educational offer in the sector of conservation and restoration is concentrated in higher education and high-level technical education and training.

Accordingly, most of the training and education offer is provided by Universities and by specialised institutes, including state institutes and accredited bodies.

As well, it is worth to mention the fact that, in accordance to the above-mentioned article 29 of the Culture Code, point 11, the educational offer for restoration technicians and other professional figures is provided by both the central state and the regions. In this sense, many regions in Italy have activated specific courses in the field of restoration and conservation, mainly within public-private training centers sponsored by professional associations and regional governments.

Therefore the training in the field is mainly provided through:

- Universities, which provides Bachelor and Master courses in Restoration and Conservation
- State institutes, such as the *Istituto Centrale del Restauro* and the *Opificio delle Pietre Dure*, which provide 5-year training for restorers
- Accredited public and public-private institutes that provide 5 year-training to restorers
- Public and public-private institutes that provide education and training to restoration technicians.

The type of educational offer for restorers and other professionals of the sector is set by the National law and can be summarised as follows:

- Restorers are highly qualified professionals which undergo a 5-year instruction in State Institutes or accredited institutes, articulated in a study path of 300 formative credits, whose key elements are established by Law.
- Restoration technicians are qualified personnel that have taken a 3-year course structured in accordance to national standards. The courses are organised on the basis of the national standards and involve at least 2700 hours of teaching, of which at least 60% must be practical training.

Therefore, it is understandable that, given the strict set of rules and specificity of the cultural heritage in Italy, the demand for qualified personnel in the field of restoration and conservation in Italy is strong and often exceeding the offer.

EXAMPLE OF ITALIAN CURRICULUM.

Below an example of Italian CV for professional education in Conservation and Restoration is proposed. The example of CV is that of Restoration Technician, a professional qualification of EQF-5 level, which is the lowest qualification level for professionals of restoration/conservation.

Course for Technician of Heritage Restoration (Expert Technician)

Duration:

3 years

Total Number of Hours:

2700 (900 hours/year)

Of which:

- 1100 Hours of theoretical Study.
- At least 1100 Hours of restoration practice
- At least 500 hours of practice on building/restoration sites

General competences courses:

- English language
- Art techniques: iconography, iconology, art history, art movements
- Basics of Biology, physics and chemistry
- IT skills and graphic elaboration
- Labour law
- Accountancy and business law
- Safety on the workplace
- Cultural heritage protection law
- Technical and professional deontology

Specific competences courses

- Survey techniques and degradation assessment
- Assessment of environmental factor
- Techniques for conservation of heritage
- Reproduction techniques
- Techniques for maintenance and repair
 - Includes differentiated courses on the basis of selected specialty (woodworks, stone, decorated surfaces etc.)
 - Innovative technologies (laser and pressurized restoration)
 - Techniques and tools for reporting and record-keeping
 - Techniques and tools for stockage and procurement of materials.

EMERGING ISSUES AND ANALYSIS OF THE CURRENT SITUATION OF VET EDUCATIONAL PROGRAMMES IN THE FIELD OF CONSERVATION/ RESTORATION.

In general, education and training in the field of conservation and restoration in Moldova appears to be limited. The reasons for this status of things come from both the supply side and the demand side.

Demand-side factors deserve a brief analysis:

- There is currently no regulation requesting workers involved in conservation/restoration of built cultural heritage. Therefore, although there is need for qualified workers, the legislation does not assist in supporting the creation of the necessary skills needed for intervention on cultural heritage, as the in the labour market is not compelled to refer to stringent qualification requirements.
- the requirements for specific qualifications for architects working on cultural heritage are limited; the issuance of the A4 category for professional architects is given upon frequency of a course which however mainly focus on normative matters rather than on professional content.
- The few regulations in place are seldom enforced due to the fact that both the national agencies and the local authorities tasked with their enforcement lack the manpower and capacity to do so.
- The lack of regulation is both cause and consequence of the lack of culture of restoration in Moldova. It is reported that most interventions on built heritage is not done in the perspective of conservation and restoration aimed at safeguarding artistic and cultural value but, rather as ordinary/extraordinary maintenance aimed at extending functionality of buildings.
- Therefore, it is common for interventions on built heritage to be actually damaging for the historic value of building themselves instead of having a positive impact on the buildings. This depresses the demand for specific skills.
- The lack of offer of professional skills in the field of conservation has led to the depression of demand. No competences of this kind are usually requested by final clients of building companies on the one side because of lack of awareness of the importance of quality interventions on the historic buildings and on the other because, despite this awareness, the lack of offer prevents for such a demand, triggering a vicious circle.
- Many stakeholders have reported that VET sector has suffered from a bad image, leading to reduced interest of Moldovan students. However, it has to be noted that the TA project has contributed to revive the interest in this form of education.

Most relevant supply-side factors are instead:

- The conservator/restorer professional figure, which is commonly recognized by law in EU countries (but not in all of them), is not envisaged by Moldovan law.
- The curricula of other professionals involved in interventions on built heritage (mainly

architects, engineers and construction workers) dedicate little to no attention to the issue of conservation and restoration.

- Despite the general lack of attention to the issue of restoration explained above, some companies have lamented the difficulty of finding construction workers with specific experience in cultural heritage. Therefore, it can be assumed that there is also a problem of awareness, especially among young people, on the importance of specific competences to work on historic buildings and/or monuments.

However, it has to be noted that both the VET Training on traditional techniques and the HE Training for professionals were both very positively received by the targeted public. This means that the demand can be triggered also by the offer and that a need for more competences in the sector of built heritage conservation is felt by many even if it might not have sufficient voice to be heard.

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Component 3

Quality Vocational Education and Training (VET) programs related to the protection and restoration of cultural heritage at secondary vocational education and at Higher Education (HE) levels developed and implemented

Activity 3.2

Development of practical course(s)/curricula to be integrated at VET schools for preparing workers specialized in the field of traditional building technologies and crafts, with a life-long-learning component

VET draft revised curricula and syllabuses

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ACTIVITY 3.2 - DEVELOPMENT OF PRACTICAL COURSE(S)/CURRICULA TO BE INTEGRATED AT VET SCHOOLS FOR PREPARING WORKERS SPECIALIZED IN THE FIELD OF TRADITIONAL BUILDING TECHNOLOGIES AND CRAFTS, WITH A LIFE-LONG-LEARNING COMPONENT

TERMS OF REFERENCE.

The present document is realized for the **EU Twinning Project** between Italy and Moldova **MD 13 ENPI OT 01 16 (MD/26)** *“Support to promote cultural heritage in the Republic of Moldova through its preservation and protection”* within **Component 3** *“Quality Vocational Education and Training (VET) programs related to the protection and restoration of cultural heritage at secondary vocational education and at Higher Education (HE) levels developed and implemented”*, **Activity 3.2** *“Development of practical course(s)/curricula to be integrated at VET schools for preparing workers specialized in the field of traditional building technologies and crafts, with a life-long-learning component”* that sets out the following benchmarks:

- Draft rationale for courses and curricula, with outline of competences to be built, content, disciplinary subjects and didactic methods developed for VET schools
- outline of strategy for life-long- learning component and experimental training programme.

This report contains a draft of the rationale for the strengthening of the course and curricula for VET in the construction sectors based on the assessment presented in the report on Activity 3.1, particularly for the short-term actions to be put in place. In the medium and long term, more substantial work is needed; i.e. setting out a system of qualification for the workers in the existing historic buildings and protected monuments (related to categories of works) and in parallel strengthening the courses and establishing dedicated courses to conservation (which partly existed in the past).

The definition of the competences to be built and of the content of the courses requires more direct cooperation with key teachers at VET schools, with the ministerial staff and some operators in the restoration works sector, in order to define clearly the skills and competences that are needed in the context.

An experimental Training programme has been proposed and carried out for the VET sector with the workshop held in Butuceni on 20 – 25 August 2018 on traditional techniques. It provided a model for experimental training programmes with a specific focus that can support the development of future activities both for students and workers. It is envisaged to carry out a second module before the end of the project, in conjunction with the HE Training on architectural conservation currently being implemented. This also represents an example of ‘experimental training’ that can be replicated either in its entirety or in separate modules (Module on assessment of decay phenomena, defects and functional deficiencies, on structural instabilities and reinforcement, on conservation restoration techniques, on rigorous survey, etc.) in life-long learning perspective.

It is expected that the continuous dialogue with the VET sector and particularly with the Centre of Excellence, will contribute to the elaboration of an outline for the lifelong learning strategy for the conservation of the built cultural heritage.

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RECOMMENDATIONS AND RATIONALE TO STRENGTHEN EDUCATIONAL COURSES AND CURRICULA OF VET SECTOR RELATED TO CONSERVATION/ RESTORATION.

In accordance to the analysis carried out in the previous report a series of recommendations have been developed. They are distinguished in recommendations for actions in the short-term (that can be achieved within the activity of the present twinning project) and recommendation for longer-term actions to be achieved in a wider time span (that goes further than the lifetime of the present twinning project).

Currently, in Moldova, competences of all personnel involved in maintenance, repair and restoration of buildings of cultural significance are very limited. This often leads to implementation of works that do not contribute to conservation of cultural heritage buildings and object and, often, actually damage said buildings and objects.

The Italian approach to the issue is based on the concentration of all decision making and supervision powers in highly qualified professionals (in possess of an EQF 5 or higher qualification).

The analysis of the situation in Moldova reveal that such an approach is probably unfeasible in the country, for the following reasons:

- The size of the country and the consistence of the built heritage do sustain a market demand for higher level qualifications for conservator/ restorer that would imply a substantial infrastructural investment on the State side (or even from private sector) and would demand a significant personal investment of time and resources by the applicants, who may not in the end find easily a job.
- The establishment from scratch of training and education institutes able to provide high-level qualifications in the field of conservation and restoration is expected to be extremely costly.
- The Moldovan law does not prescribe specific qualifications for personnel and companies working on heritage buildings and objects – this aspect can be improved but need to be developed in coordination with the education sector
- The existing laws are weakly enforced due to the limited institutional capacities of the central and local authorities tasked with their enforcement.

Therefore, it is recommended to adopt an approach based on dissemination of basic competences in all professionals of the construction sector. This could be achieved through:

- Awareness raising for professionals of the construction sector on the importance of safeguarding cultural heritage, by introducing elements of knowledge about the history of technology and building materials used in traditional architecture, and history of Moldovan architecture
- Introduction of basic competences on conservation of cultural heritage in TVET curricula, with particular reference to EQF levels 3 and 4 and, possibly, EQF level 5.

This approach would lead to the diffusion of awareness and competences in the field, as well as to generate and offer of professional competences to satisfy the potential market demand.

In this sense, the following specific recommendations are formulated:

In the **IMMEDIATE TERM**, Moldova needs to strengthen knowledge and skills of people involved in

intervention on historic buildings and protected monuments. In this sense, in order to achieve a sensitivity for the respectful intervention, it is proposed to introduce immediately in existing courses the concept and the basic techniques of repair and restoration, in order to clarify the distinction between repair / restore/ replace.

The VET Centre of Excellence in construction could become the leading agent within Moldova to coordinate the implementation of the proposed short – term reforms and could host pilot initiatives.

In particular, the following actions could be implemented in short term:

- in the **course No. 712307 for plasters**, it is proposed:
 - the insertion within the theoretical chemistry and physics hours of at least 24 hours dedicated to the plasters of the historical building, with attention to the composition, to the physical and chemical characteristics of conservation;
 - the insertion within the hours of realization of plaster and realization of decorative techniques of at least 40 hours relating to plasters and decorative apparatuses of historical buildings.
- in the **course No. 711501 for joiners**, it is proposed:
 - the insertion within the theoretical hours of chemistry and physics of at least 12 hours on the knowledge of the processes of wood degradation;
 - the insertion within the lectures of at least 50 hours of restoration of wooden artefacts (fixtures, furniture, etc);
 - the inclusion within the wood technology course of at least 30 hours relating to the techniques of the historical building.
- the **course No. 732033 for decorative plaster restoration and moulding**, deserves a separate discussion. it is proposed to strengthen the interest of young people to enrol in the course looking for a strategy between construction companies that deal with the preservation of historic buildings and the Ministry. The major problem is in fact the lack of job prospects since there is no clear definition of job duties in relation to training courses in the conservation sector. In order to be able to enhance and make the course of decorative plaster restoration and moulding attractive, it is necessary to create a closer connection between training and the world of work.

This could be pursued either through legislation that links vocational training to certain processes on cultural heritage, or through close collaboration between the companies operating in the field of restoration and the school itself.

The aim of these recommendations is to immediately make available basic skills for young people and professionals looking for career development.

A meeting with the association of building enterprises has revealed that this kind of skills are highly sought from certain companies, therefore a specific awareness-raising campaign could be coupled with the reform of the curricula. Meetings between demand (building companies) and offer (schools) would be beneficial.

An accompanying measure for the above -mentioned proposal is to establish a small working group involving at least one representative from each professional school dealing with construction and to prepare a jointly a training workshop for teachers to prepare them for the proposed short -term reforms. The workshop is aimed at addressing the necessary elements of knowledge to be integrated into the existing courses and the competences to be achieved by the students.

Coming to the **LONG TERM**, it is recommended to establish a system of mandatory minimum qualifications for professionals involved in works on built cultural heritage. In particular:

A- any reform of the VET system in the field of cultural heritage restoration should take into account both the reform process of the law body on top of cultural heritage and the reform process of VET education.

In this sense, all actors involved in these two policy reform processes should be involved. In regard to institutional actors, the most relevant are:

- The relevant Departments of the Ministry of Education and culture, in particular:
 - Department of Technical and Vocational Education;
 - Department of Cultural Heritage.
- The relevant department of the Ministry of Economy and Infrastructure:
 - Department for Urban Planning, Construction and Housing;
- Relevant agencies and institutes:
 - National council of historic monuments. Advisory body to the ministry of education and culture;
 - Agency of Archaeology;
 - Agency of Inspection and Restoration of Monuments;
 - The Republican Centre for Development of Vocational Education (CRDIP), subdivision of the Institute of Educational Sciences, aims at developing the framework of educational and scientific-methodological policies in the field of VET.
- The National Agency for Quality Assurance in Education and Research (ANACEC) aims at providing an integrated, credible, objective and transparent system of external evaluation and accreditation of vocational education and higher education institutions and programmes, as well as continuous training institutions programmes.
- Representative of stakeholders of the conservation/restoration sector, in particular construction companies

The establishment of a Working Group composed by representatives of these actors is recommended in order to jointly identify needs and potential proposals for solution.

- B- to introduce mandatory minimum qualifications for personnel involved in works on built cultural heritage. The mandatory minimum qualifications may be directly requested for the involved personnel or it may be requested that the company carrying out the works have these necessary competences within their personnel.**

Mandatory minimum qualifications should be differentiated for the different professional figures involved in works.

The mandatory minimum qualifications could be introduced in the implementing regulation for the new Law on monuments (currently under review)

The new prescription should be at the same time referred to in other relevant legislative and regulatory instruments, with particular reference to construction regulations. A transitional period should be envisaged in order to ensure that mandatory minimum qualifications can be obtained through existing training programmes.

- C- to activate, in at least two Vocational Training and Education institutions in Chisinau and Balti, specific training programs to achieve the mandatory minimum qualifications referred above.**

This could be achieved through one or more of the following options:

- Development of a specific course for qualification under the National qualification framework for restorers/conservators (to be established)
- Development of specific disciplinary curricula to be inserted in the studies for existing qualifications (with particular regard to construction workers and related fields) as mandatory and optional subject matters
- Revise existing disciplinary curricula to introduce elements of restoration and conservation for construction workers and workers of the related fields in more advanced disciplinary curricula.

- D- to take into consideration this need within the framework of the ongoing VET development process, with particular reference to the development of the NQF and the training to teachers of Centres of Excellence envisaged under the twinning project on VET to be launched in 2018.**
- E- to envisage specific actions targeted at young people to raise awareness on the importance of competences for cultural heritage in the construction sector.**

Component 3

Quality Vocational Education and Training (VET) programs related to the protection and restoration of cultural heritage at secondary vocational education and at Higher Education (HE) levels developed and implemented

Activity 3.3

Development of course(s)/ curricula (theoretical and practical educational programs) in HE for each relevant occupation (e.g. archaeologists, architects, engineers) in relation with the protection and restoration of cultural heritage

HE didactic activities, objectives, expected results, method

ACTIVITY 3.3 - DEVELOPMENT OF COURSE(S)/ CURRICULA (THEORETICAL AND PRACTICAL EDUCATIONAL PROGRAMS) IN HE FOR EACH RELEVANT OCCUPATION (E.G. ARCHAEOLOGISTS, ARCHITECTS, ENGINEERS) IN RELATION WITH THE PROTECTION AND RESTORATION OF CULTURAL HERITAGE

TERMS OF REFERENCE

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- Draft rationale for courses and curricula, with outline of competences to be achieved, educational methods, content, disciplinary subjects needed for building the identified competences developed for HE;
- Draft outline of strategy for networking with other Academic institutions for post graduate courses. Experimental training programme prepared for circulation and discussion by 8th month;
- Experimental programme endorsed for implementation by 9th month;

This report contains a draft of the rationale for the strengthening of the course and curricula for HE, in particular for what it concerns the curricula for architecture, as an early dialogue has been established with the Department of Architecture and Urbanism, which allowed for an exchange on the problems and shortcomings in the education system and in the curriculum for architects. In this regard, the main issue does not seem to concern the content or the competences of the courses on conservation / restoration, as they appear solid and overall appropriate. In particular the programme for year 2017 fully matches the needs of the students and future professionals, especially if the number of credits remain limited to 2 at year IV and 4 at year V). The newly proposed programmes for Restoration I and II for the academic years from 2018 onward would be more useful if more credits were allocated, because it opens to important topics that, however, are not the core of the fundamentals in the education of restoration/ conservation topic at HE undergraduate level. Rather key issues are posed by: a) the far too reduced number of credits assigned to the topic of restoration/ conservation and the lack of sufficient attention to the materiality of historic buildings within other courses that can be related to the conservation/ restoration; b) the need to build a new generation of competent teachers with the adequate theoretical, methodological background but also solid

experience in the field, an adequate turn-over is not guaranteed, due to low salaries and lack of incentives; c) the excessive isolation and separation of the courses, with little interdisciplinary integration, does not allow the student to build the necessary interdisciplinary, problem- solving oriented competences.

An exchange / cooperation agreement has been signed in October 2018 between the Department of Architecture and Urbanism of TUM and the Department of Architecture and Design of the Polytechnic School of University of Genoa, within nine months since the first contacts between the two institutions. This opens up to exchange activities within the Erasmus Plus programme, as well as other forms of collaboration, which the DAU- TUM has begun to harness by adhering to a proposal to join an EU funded COST Action for exchange of experiences on the study of structures of historic buildings. It is hoped that the experience may be replicated with the Faculty of Construction, with which only recently positive contacts have been established.

This experience can form the basis for jointly outlining a strategy for internationalization of the universities – both for the teaching team and the students – in relation to the education of the restoration / conservation of the built heritage.

An experimental Training programme on architectural conservation has been designed and is currently being implemented. Its formula of ‘one- week- per month’ of teaching (more time is needed for individual and group work) can be replicated either in its entirety or in separate modules (Module on assessment of decay phenomena, defects and functional deficiencies, on structural instabilities and reinforcement, on conservation restoration techniques, on rigorous survey, etc.) also with a life-long learning perspective. The participants in the training can also contribute in outlining the topics and the design formula for life-long learning programmes.

It is expected that the contact established with the faculty of Construction, Geodesy and Cadastre will enable the development of well- grounded and shared proposals for the reinforcement of the curricula of engineers with regard to the understanding of the structural behaviour of historic masonry buildings.

RECOMMENDATIONS AND RATIONALE FOR STRENGTHENING THE COURSES AND THE CURRICULA OF HE EDUCATIONAL PROGRAMMES WITH REGARD TO ARCHITECTURAL CONSERVATION/ RESTORATION.

The analysis of the HE sector has revealed that currently university curricula for architects and engineers provide insufficient knowledge and competences concerning the intervention on historic buildings and built heritage. This is due especially to the totally insufficient number of credits assigned to topic within the curriculum of architecture and the absence of other related topics (.e.g, technology of traditional buildings or history of technology, evolution of construction methods and materials).

The Master degrees activated at Ion Creanga Pedagogical University and at State University of Moldova cover other aspects, related to heritage management and enhancement but not the technical dimensions that is necessary to elaborate well – documented conservation projects and interventions.

Based on the dialogue established with the key members of the teaching staff of the Department of Architecture and Urbanism, it has been possible to formulate preliminary proposals that have been shared with the key members of the teaching staff and the director of the Department of Architecture and Urbanism at TUM already at the beginning of June 2018.

In order to bring future architects to acquire a greater capacity in dealing correctly and respectfully with historic buildings, prepare adequate and informative project documentation that can guide the implementation of the intervention in a compatible manner, it is proposed:

- An immediate reinforcement of the teaching of the disciplines inherent to the preservation of the built heritage, in order to reach at least a 3-4%% of the total credits (at the moment, the curriculum for architecture envisages a mere 1.6% of the credits for restoration);
- The adoption of the three – level system established through the Bologna Process either a unique cycle formula 3+2+1 or 4+2 or a Bachelor degree + Master degree and Post - graduate education;
- a final two-year period consisting of ‘specialist’ subjects, addressing sectors relevant to the country (conservation, urban planning, architecture, landscaping) that could be either as a Master

By doing this, the student would be enabled to direct his interests through the expression of options on different thematic orientations, one of which is inherent to the restoration/ conservation, centred on design but managed through different scientific-disciplinary sectors. This means that there will be a certain number of compulsory subjects for all students and some subjects, concentrated in the last two years, specific for each ‘orientation path’, so as to bring the credits related to architectural restoration/conservation, and to any other address, at least to the 10% of the total credits.

It appears urgent to act upon the current number of credits assigned to restoration/ conservation subjects by increasing the number of credits and/ or introducing topics related to conservation to

reinforce the education in architectural conservation/restoration, which must be compulsory for all. Improvements suggested concern the following existing courses:

- Architectural restoration I (*Restaurare arhitecturală I*) - to be brought from the current 2 to 4 CFT;
- Architectural restoration II (*Restaurare arhitecturală II*) - to be brought from the current 4 to 6 CFT;
- Construction Materials (*Material de construcție*) – to be added with 3 credits on traditional/ pre-modern building materials and techniques
- Legislation on construction (*Legislația în construcții*) - to be added with 2 credits on legislation protecting cultural heritage.

It is also considered that the reinforcement of the orientation of the last two years can be implemented through the inclusion of these new disciplines:

- **materials of historical architecture and their degradation**, also with the contribution of disciplines such as physics, geology, petrography, which deepen the knowledge of stone, wooden and metal elements, various mortars, clay, bricks, etc.
- **historical constructive and decorative techniques**. There is a need for understanding the specific constructive qualities of historic / traditional buildings, beginning with the construction frame, walls, ceilings, vaults, roofs, stairs, window frames, mosaics, frescoes and mural painting, stuccoworks, and other materials as a basis for any sound approach to existing buildings.
- **deterioration of traditional building materials and built elements and diagnosis and structural rehabilitation of historic buildings**. The ability to understand the structural behaviour of masonry buildings, the response to traumas (e.g. foundational failures, seismic actions), the safety conditions of an existing masonry construction; criteria for the design of possible rehabilitation of various structural types, such as masonry buildings, existing techniques and alternatives;
- **evolution of urban historical contexts and urban conservation**, that should be granted autonomous dignity, reducing the number of hours that are currently included in the course of Restoration II, leaving room for intervention techniques and restoration project
- **historical sources**, which could be extrapolated in part from the course of Restoration I, leaving space, in the course of restoration I, to the knowledge and degradation of materials.
- **Restoration/conservation studio**, culminating in the realization of a project of conservation/ restoration, including all aspects, e.g. technical installations, structural rehabilitation, change of function, if needed, accessibility, and all interventions and steps

In order to strengthen the curriculum, for disciplines related to the restoration 7 credits were absorbed in the first four years and 22 more in the last two years.

At present it seems that some predominant subjects receive an excessive number of credits compared to the range of knowledge, competences and skills that an architect should have, such as

- Plastic Arts, Drawing Painting - *Arte Plastice, Desen, Pictura* (currently 46 CFT * 15 hours = 690 hours);
- Architectural Design. Building Construction - *Proiectarea de arhitectură. Constructile cladirilor* (128 CFT * 15 = 1,920 hours);
- Philosophy (3 CFT * 15 = 45 hours).

It would be advisable that the courses of restoration, landscape architecture and interior architecture were anticipated in the four-year period so as to be able to provide a broader- spectrum training that is common to all students and be preparatory to the examinations.

The CFTs needed for the strengthening of the general course could be taken from the courses concerning:

- 6 CFT from Plastic Arts, Drawing Painting - *Arte Plastice, Desen, Pictura* (currently 46 CFT * 15 hours = 690 hours);
- 1 CFT from Architectural Design. Building Construction - *Proiectarea de arhitectură. Constructile cladirilor*. PAC.

Finally, with regard to the 22 credits of the two-year period, it is necessary to proceed with a more extensive and comprehensive restructuring as indicated above.