

PBL Teaching and Learning Sustainability Strategies

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PBLMD

PBL TEACHING AND LEARNING SUSTAINABILITY STRATEGIES

Editors

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www.pblmd.aau.dk



Erasmus+

Chisinau, 2020



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Erasmus+

Sustainability Strategy

Consolidated Report

Work Package 5

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Angela Niculiță (SUM)

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Chisinau/Aalborg, 2019

Executive Summary

This report summarizes the findings, visions and recommendations of the Universities of the Republic of Moldova, members of the project, provided in the reports for the work package 5. The document includes a review of the experience gained in the development and implementation of the pilot study programmes of problem-based learning (PBL), as well as an overview of the universities' visions of ensuring sustainability of student-centred PBL in the institutions.

The report also includes a brief analysis of the roadmaps and action plans proposed by the universities for fully implementing the problem-based learning in pilot study programmes developed during the deployment period of the PBLMD project, but also with a view to extending the PBL at institutional level.

The document in question presents the consolidation of the reports for the work package 5, drawn up by each university and which are annexed to this report.

List of definitions

Problem-based learning (PBL) - student-centered educational strategy, in which the student learns of one or more subjects through the experience of resolving an open problem identified in the source material. The PBL process does not focus on solving problems with a defined solution, but allows the development of other wanted competences and skills. This includes the acquisition of knowledge, collaboration and group communication.

Student-centered learning - teaching and learning process in which the student becomes a partner in the educational process, and the teacher-student relationship is based on cooperation and collaboration.

Self-guided learning is a process in which the student forms independently the values, attitudes, knowledge and skills necessary to make responsible decisions and undertake actions corresponding to his own learning, being cultivated, stimulated, encouraged and favoured by academia, which is flexible, democratic and sensitive to the needs of the student.

Learning objectives – projected learning outcomes, expressed in terms of knowledge, skills, attitudes, values, general competences required for graduates of study programmes by training areas.

Learning outcomes - clear results, describing the knowledge, skills, attitudes of the student, expected from the teaching–learning–assessment process.

Progression – succession of expectations from the teaching-learning process in several stages.

Assessment – a multi-dimensional process of stating learning outcomes; part of the educational process, which reveals the efficiency of teaching and learning.

Project – method/strategy of experiential knowledge, or by investigation, based on solving of tasks/problems, which can be applied individually and in group.

Semester projects – are the projects carried out by students (usually in the group) during a semester. These projects may have inter-disciplinary character (may refer to two or more disciplines studied during the same semester).

Group/team work – the joint work of a group of 4-5 students in carrying out a single task, which is based on communication, collaboration and self-discipline, each member of the group contributing to the achievement of the final result.

Research-based teaching and learning - the process of acquiring knowledge, as well as training or development of skills that are based on tasks that require identification, discovery of information, formulation of solutions through the use of empirical methods, problem solving in order to facilitate the genuine learning process of students (including the individual one).

Sustainability strategy – is a long-term vision of an institution aimed at introducing key modifications in order to streamline the educational process. The strategy includes objectives and concrete actions, the deadline for achievement, as well as the potential outcomes that can be achieved.

(a) the course from a pilot programme to a full problem-based learning (PBL) study programme - concrete steps to introduce problem-based learning in a study programme

(b) supporting and promoting the PBL strategy through information and training activities.

ECTS – European Credit Transfer and Accumulation System (ECTS)

Credit – the credit is a conventional unit used to calculate the amount of work done by the student within a determined period in order to obtain certain competences. The credit is a tool to ensure the quality of the training. The Bachelor's degree studies correspond to 180-240 transferable study credits, 30 credits per semester.

Qualification profile – short document that includes the most essential information about a study programme: purpose, characteristics, employment opportunities, further studies, teaching–learning-assessment strategies, skills and objectives at study programme level.

Professional development of the university staff – opportunities offered to the university staff to strengthen their skills, competences and pedagogical approaches; continuous improvement of staff through trainings, traineeships, etc.

Facilitator – the person who helps a group of students understand their common goals and helps them plan how to achieve the objectives set out in the joint project.

Internship – the work carried out by students in accordance with the educational plan, which aims to capitalise on theoretical knowledge in a real context and facilitate the integration of students into professional life.

Quality assurance – a systematic monitoring and evaluation process of the different aspects of a project to ensure compliance with quality standards.

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1 INTRODUCTION

The purpose of this report is to make an analysis of the sustainability strategies of the problem-based learning, centered on the student, which were developed by the partner universities in the PBLMD project.

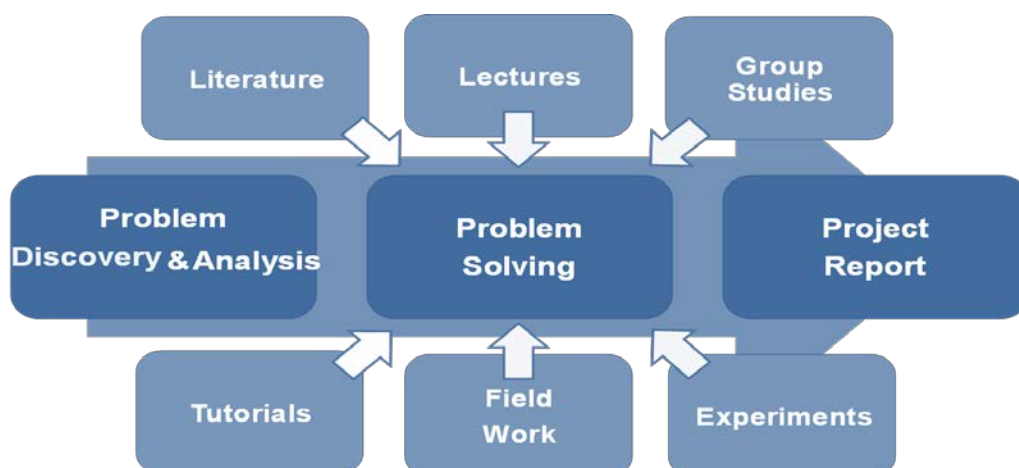
The report contains a review of universities' views on innovative PBL-based study programmes that they have begun to develop, as well as a cross-analysis of roadmaps and action plans that will guide staff and the management of universities in the implementation of the problem-based learning centered on the student in both study programmes and at institutional level.

When developing their sustainability strategies, roadmaps and action plans, universities based on the results of work packages 2-4, implemented during the years 2015-2017, which materialised in launching six pilot study programmes based on PBL. Universities also used the experience gained during study visits and the mobility of academic staff at EU partner universities, as well as during the PBL training sessions offered by the EU project partners in Moldova.

1.1 KEY ASSUMPTIONS

There is no problem-based learning (PBL) model suitable for all purposes, for all areas of professional training. However, PBL models are based on two key assumptions. The first assumption is that the teaching-learning process must be centered on the student and designed to equip students with knowledge, understanding and the ability to implement their knowledge and understanding. For this purpose, PBL is focused on the project work, the study activity including the identification, analysis and solving of the problems, as well as the report on the project carried out. An example of such an approach is the model of the Aalborg University (Figure 1).

Figure 1. PBL model of the Aalborg University



The second assumption assumes that the other teaching and learning (face-to-face) activities, such as working with literature, lectures, group studies and tutorials, are designed to support the work on the project.

The degree of implementation of the problem-based learning in the study programme is reflected in the relationship between project work and traditional teaching-learning/face-to-face activities (such as lectures, seminars, laboratories, experiments). Universities started from the Aalborg University (AAU) model, in which a “fully developed” study programme based on PBL means a study programme in which this ratio is approximately 50:50.

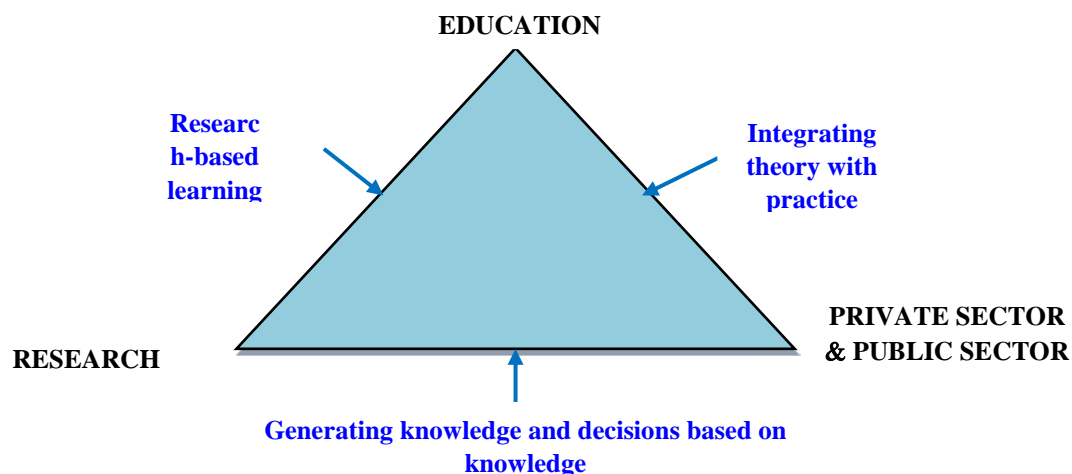
These two assumptions and the AAU approach to PBL are the basis for innovative study programmes, based on the active teaching-learning, problem-based, student-centered learning, which were proposed by the partner universities in the work package 5.

1.2 EXPECTED OUTCOMES

In their roadmaps and action plans, universities envisage a series of results that they aim to achieve. Thus, at least six study programmes of the universities, partners in the PBLMD project, are expected to be redesigned in accordance with problem-based learning, with the methodologies and active teaching-learning methods centered on the student by the year 2022, and starting with 1 September 2022, potential students will be able to register for these programmes. Similarly, a better adjustment of the knowledge, competences and skills of the students to the needs of the labour market is expected.

The successful implementation of innovative PBL study programmes, as well as its institutional enlargement effects, will contribute to the development and consolidation of the process of integrating education, research and the real sector (Figure 2).

Figure 2: Socially committed university. Source: Olav J. Sorensen, 2015



2 SYNTHESIS OF LESSONS LEARNED FROM THE DEVELOPMENT AND IMPLEMENTATION OF PBL PILOT STUDY PROGRAMMES

By conducting an analysis of the reports for the work package 5 developed by universities, we further present a summary of the reflections of the members of the teams of the PBLMD project on the development process and the results of the implementation of the pilot study programmes with the use of PBL, mentioning the constraints and problems faced.

Rethinking the educational plan

I. In the process of elaboration/adaptation of the educational plans to the PBL method, which, in their full (integral) variant, implies the establishment of a ratio of 50 to 50 between the lectures/seminars and project hours, an impediment that was found are the restrictions in the existing framework plan. Thus, this document for the elaboration of the educational plans provides for the compulsory inclusion of the *course units for the training of general skills and competences* - between 9 and 18 credits, and *the socio-humanistic ones* - between 9 and 18 credits. In this context, the compulsory inclusion of course units that do not develop the specific professional skills, even on the minimum limit - 18 ECTS, constitutes 10% of the total number of credits of the study programme, which leads to the natural exclusion of the course units inherent in the formation of the future specialist.

Another restriction of the framework plan consists in “allocating maximum 4-6 study credits for a module”, which does not allow the *project* to be allocated with a higher number of credits, and in this regard, nor diminishing the number of course units for one semester.

II. PBL-based pilot study programmes provide that in each semester students must develop a group project. In this context, it would be necessary to transfer a number of lecture hours to supervision hours. Teamwork requires from the teacher a particular involvement from this perspective.

III. During the implementation of the PBL-based pilot programmes, it was identified the need to introduce a module on *Academic writing and research methodology*, with students being familiarized with the research methods, the way of structuring the papers, the use of bibliographical sources, the rigors of the independent study avoiding plagiarising, etc.

Interdisciplinary approach

The interdisciplinary approach is one of the prerequisites for achieving the problem-based learning process. In the pilot programmes, modules were carried out which merged two courses and provided for an interdisciplinary project. At TUM, semester structuring was achieved on study themes, with dedicated disciplines and interdisciplinary projects.

In the process, difficulties were encountered in formulating interdisciplinary problems with the application of research methodologies. Interdisciplinary projects led to a collaboration between teachers of the disciplines in the same module/semester with the formulation of joint themes or problems.

Multidisciplinary study requires more intensive collaboration between teachers, so it is necessary to have a manager (responsible) of the programme, which would coordinate the work of teachers, taking into account the theme of the semester, learning objectives and outcomes, student workload, etc.

Elaboration of methodical support and case studies for students

The academic staff that implemented the pilot PBL programmes mentioned the need to develop a methodical guide on the elaboration and defense of PBL projects.

An important aspect of the PBL relates to the definition of complex and real problems. Even if students have some experience in developing the project, they focus largely on the study and development of the subject, encountering difficulties in defining the problem and resolving it. Following the survey conducted among students, they noted that they encountered the greatest difficulties at the stage of identifying the problem and organizing the activity within the team.

It is also welcome and necessary to elaborate case studies/simulations that would constitute a support for teachers and motivate students to identify certain problems more easily and to look for real solutions to existing problems.

Changing the teacher's role

PBL requires another approach to the teacher's role in the teaching – learning process, thus becoming a facilitator who guides and supervises the work of students. At the same time, in order to maintain the expert position, teachers must be open to lifelong learning, adjust their working methods, activities to the rigors of the time.

Thus, the application of the PBL requires the teacher to rethink the methods of presentation of the study material, the organisation of training activities, but also the method of assessment. As a result, the student becomes more confident in his own forces, more eager to argue and reflect critically on various problems.

In this respect, it is necessary to give interested teachers the possibility of training on the problem-based learning method – PBL.

Group work

During the implementation of the pilot programmes, several methods were tried to train teams for group work on various tasks and project: random formation, formation at the free choice of students; formation of teams by the teacher responsible for the project. Along the way there was found: the lack or insufficiency of group work competences, the desire to work in a group with only certain colleagues, interpersonal conflicts involving each other in the elaboration of the project, as well as related to the distribution of roles in the group, lack of interpersonal communication skills and reduced accountability for decision making, non-compliance with the deadlines imposed by team members for carrying out tasks.

In order to overcome the challenges outlined, a series of measures on students' empowerment were undertaken, including: meetings of the supervisor with the work group, in which the supervisors explained to the teams that the final product and team performance is directly proportional to the sum of individual performances; monitoring the progress of the project by the supervisor and introducing the interim assessment of the project.

Monitoring the project development process

At the beginning of the implementation of the pilot study programmes, difficulties were encountered with regard to the establishment of the project supervisor's tasks and conduct of the project monitoring.

Based on the experience gained from work visits to partner universities, ways of monitoring the project development process have been established, which involve set thematic weekly meetings of students with the supervisor and communication with the supervisor through the Moodle platform and by means of cooperative e-mail. In turn, the supervisor's role is to guide students and monitor the process of project development according to the objectives specified in the curriculum.

Changing the knowledge assessment method

A sensitive aspect in the implementation of the PBL is related to the correct assessment of students, taking into account the fact that when carrying out a series of tasks and projects they work in groups/teams.

The problem encountered when assessing a team was to identify the contribution of each member's involvement in achieving the project. During the deployment of the pilot study programmes, different types of team assessment were tested: group assessment, individual assessment, peer review, team assessment by representatives of the private sector.

It was found that the objective assessment was achieved when taken into account: both group and individual assessment, and peer-review.

A questionnaire has been compiled that is offered to team members when assessing the project to reflect on the contribution of each team member.

Collaboration with the business environment

The PBL method implies a close cooperation with stakeholders both at the stage of the elaboration of the educational plan/curriculum, but also at the stage of the formulation of problems and real current tasks for projects and assessment of the student work. This work can be accomplished through the organisation of round tables, joint conferences, student study visits and internships in the respective institutions.

Unfortunately, during the implementation of pilot programmes, there was a low interest of stakeholders to work with academia in the initiation and work on projects, to be involved in the elaboration of educational plans and curricula. Even though universities have signed several cooperation agreements with economic agents, they refer, in particular, to providing places for students' internships.

Most often stakeholders are willing to provide answers to students' questions, but not to provide concrete data/reports needed to implement projects, explaining this refusal by trade secret.

The development of a mutually beneficial collaboration with stakeholders would allow teachers to develop case studies and to formulate problems in the real environment, i.e. students could benefit from information for designing problems and developing projects. In turn, companies would benefit from new ideas that would give them the opportunity to solve certain problems they face.

Preparing the teaching infrastructure based on PBL methodology

The PBL teaching methodology cannot be performed on the full without a well-formed infrastructure. This implies: the existence of several halls and workspaces, where teams can have free access for teamwork; equipping of rooms with ICT equipment; the existence of specialised communication environments such as the Moodle platform, or corporate email; the literature supply of libraries.

3 VISION AND GOALS

3.1 DESTINATION

Most of the six universities in the consortium, following the study of student-centered teaching methods in several universities in the European Union, and taking into account the experience gained during the implementation of the PBLMD project, propose amplification of the use of PBL at the level of the programme selected for the project, but also its extension for other study programmes in the institutional offer.

The purpose of each programme is the formation of specialists with multiple theoretical and applicative competences in the field, which will facilitate the integration of future graduates into the labour market.

When developing new educational plans, using PBL, universities were led by the provisions of normative acts in the Republic of Moldova:

- The National Qualifications Framework, which ensures national recognition, as well as the compatibility and comparability at international level of qualifications acquired in the higher education system. Through it, there are recognized, measured and connected all the learning outcomes obtained in higher education institutions.
- Framework Plan for higher education, which is part of the state educational standards in higher education, establishes the general principles for organising and conducting the study process in higher education institutions, reflects the basic requirements for the elaboration of educational plans in different fields of professional training/specialties, master's degree programmes, doctoral degree programs.

To implement PBL-based learning, universities will create an appropriate, qualitative and productive educational environment, centered on the student, which will be characterized by the following characteristics:

- Creating an authentic learning environment close to the real sector and relevant to the student's interests in achieving the projected objectives; acquisition of knowledge, training of skills and personal and professional competences;
- Merging theoretical aspects with the cultivation of skills related to the realities of activities in the appropriate field;
- Structuring the educational approaches on the concept of "problem-based learning" and the development of practical dexterities;
- Ensuring the conditions for facilitating access, progress in the university career and the mobility of students and graduates in the European area.

At the same time, the consortium came up with some proposals to extend the autonomy of universities in establishing the structure of the educational plan and its constituent elements. Starting with the possibility of extending freedom in this regard, each university developed educational plans, which would allow for more complete integration of the PBL principles. The vision of each university on the educational plan for the selected programme is presented in its report drawn up in the work

package 5. In table 1 we present the main elements, called indicators, which characterize the vision of universities on selected study programmes.

As we note, the level of implementation of the problem/project-based learning (PBL) is, in most cases, the institutional one. This means that for the period 2019-2022, universities (AESM, SUARB, SUC, SUM, TUM) are geared towards extending PBL to other study programmes, not only the pilot ones. TUM will continue to focus on *Software engineering* programme, and the SUMPh, which within the project implemented PBL in the *Neuroscience* pilot discipline (part of the *Public health* programme), will expand this teaching-learning method to *Optometry* study programme.

The ***PBL learning: traditional forms of learning*** ratio that the universities of AESM, SUC, TUM are planning are the same as in the PBL model at the Aalborg University, i.e. 50:50. SUARB and SUM are planning this ratio of 45 to 55 percent, and SUMPh - 35 to 65.

The knowledge assessment methods are almost identical for all universities. There are provided oral, in writing and computer aided assessments, group and individual assessments of projects, peer review. The involvement of the external assessors in the student assessment process is provided by the SUM.

For the initiation of students in terms of PBL, AESM, SUC and SUMPh provide for the introduction of a particular discipline with a different number of ECTS, in the first semester of the study year. The SUARB plans an interdisciplinary project in the first semester under the name of “Research methodology in PBL”, to which 8 ECTS will be allocated.

The SUM proposes the introduction, in the year 2020, of the discipline “*Academic writing and research*”, which aims to train students with reference to the methodology of research and writing of study works, projects, theses, articles.

In the visions of their study programmess, which they presented, all universities (excluding the SUMPh) structured the educational plan on semester themes according to which the disciplines and projects are included, to be achieved during the study period. The SUMPh provided for this only for semesters V and VI.

All universities in the consortium foresee the expansion of PBL: AESM, SUC, SUARB and SUM – at institutional level, i.e. for other various study programmes, including at Master’s degree level, and the SUMPh and TUM – for some concrete programmes.

Extending PBL at the level of various programmes implies the involvement of an increasing number of teachers. This determines the need for continuous training of academics. All universities provide for the organisation of continuous training for teachers throughout the whole period.

Table 1. University vision on study programmes with PBL application launched in 2017

Universities	SAEM	SUARB	SUC	SUM	SUMPh	TUM
Indicators						
PBL implementation level	Institutional	Institutional	Institutional	Institutional	Study programme	Institutional
PBL: Traditional forms of learning ration	50:50	45:55	50:50	45:55	35:65	50:50
Methods to assess knowledge, including the presence of external assessors	Exam (written, oral, computer aided), group and individual assessment of projects	Exam (written, oral, computer aided, individual and group assessment, peer review)	Exam (written, oral, computer aided), group and individual assessment of projects	Examination, testing, assessment of the group and individual project. External assessor – where applicable	Tests, exam (oral, written)	Exam, project assessment.
Initiation into PBL and group work (initiation course)	Discipline Introduction in problem-based learning	Interdisciplinary project Sem. I: Research methodology in PBL – 8 ECTS	“Learning by problem research (PBL – Problem Based Learning)”- separate discipline	-	Discipline “Introduction into problem-based learning, communication and medical practice” – 10 ECTS	-
Introduction of the writing and academic research course				Planned in year 2020		
Structuring the programme on semester themes	Existent	Existent	Existent	Existent	Planned for semesters V and VI	Existent
Extension of PBL	It is planned for different study programmes	It is planned for different study programmes	It is planned for different study programmes	It is planned for different study programmes	It is planned for different study programmes	It is planned at programme level
PBL training for academic staff	It is planned for the whole period	It is planned for the whole period	It is planned for the whole period	It is planned for the whole period	It is planned for the whole period	It is planned for the whole period

3.2. ROADMAPS

In order to ensure the sustainability of problem-based learning – PBL, each university has developed its roadmap. This includes several activities necessary to be implemented at institutional and programme level in order to achieve the objective put forward. To mention that the realization of the roadmaps has already begun, some activities being completed, others are in full swing or are to be implemented in the coming period.

In order to ensure the quality of teaching, a number of objectives have been identified that will be achieved through the implementation of several activities: continuous teacher training, consultation of employers and their involvement in teaching activities, consultation and guidance/coordination of internships, conducting surveys to get feed-back from students. It is also envisaged to consult the opinion of employers through questionnaires on conducting student internships and their level of preparedness for the activity in question.

In Table 2 all activities planned by universities are divided into groups oriented towards the achievement of the objectives formulated. These objectives will be achieved during certain time periods. The entire period of implementation of the roadmaps is 2019-2022, being structured on semesters.

Each university has formulated its objectives, presented in the work package 5 reports. Even if they are generically not exactly identical, their essence, in many cases, is almost the same. This has facilitated our emphasis on the objectives specified in Table 2.

Thus, all universities provide for *the connection of the study programme to good PBL practices of European universities and of their own experience* (pilot programmes). Since 2017 the universities have implemented PBL in the pilot programmes, which has allowed to accumulate their own experience. There have been and there are still found some good aspects, which need to be expanded or deepened, as well as some shortcomings, deficiencies or even problems that have emerged along the way. Obviously, they must be resolved, or, where possible, eliminated. This connection will be made during the whole period, periodically analyzing the progress of things.

The implementation of PBL is impossible without a *well-prepared infrastructure*. Although the universities within the project have arranged several dedicated halls for PBL lessons, in the case of extending this learning method, which is provided for by universities, it is necessary to continuously adapt the university infrastructure to PBL specifics. All universities aim to *develop the educational infrastructure dedicated to PBL*. This also includes the development of information resources by acquiring the bibliographical sources required for PBL learning.

We consider it important to ensure the continuity of training under the PBL, which is why universities aim to *further promote programmes in which training is carried out on the basis of PBL*. For this purpose, advertising materials will be prepared, various dissemination events will be organised, and other methods will be implemented to help promote PBL study programmes.

Table 2. Objectives of the university roadmaps

Objectives	Implementation period (month, year)							
	01-06. 2019	07.-12. 2019	01.-06. 2020	07.-12. 2020	01.-06. 2021	07.-12. 2021	01.-06. 2022	07.-12. 2022
Connection of the study programme to good PBL of European universities and of their own experience (pilot programmes).	AESM SUC SUM SUARB SUMPH TUM	AESM SUC SUM SUARB TUM	AESM SUC SUM TUM	AESM SUC SUM TUM	AESM SUC SUM TUM	AESM SUC SUM TUM		
Development of educational infrastructure dedicated to PBL	AESM SUM	AESM SUM SUARB	AESM SUM SUARB	AESM SUM SUARB	AESM SUM SUARB	AESM SUM SUARB	AESM SUM SUARB	AESM SUM SUARB
Promoting PBL-based study programmes	AESM SUM TUM	AESM SUM TUM	AESM SUM TUM	AESM SUM TUM	AESM SUM TUM	AESM SUM TUM	AESM SUM TUM	AESM SUM TUM
Collaboration with stakeholders (employers, graduates, etc.)	AESM SUC SUM SUARB TUM	AESM SUC SUM SUARB TUM	AESM SUC SUM SUARB TUM	AESM SUC SUM SUARB TUM	AESM SUC SUM SUARB TUM	AESM SUC SUM SUARB TUM	AESM SUC SUM SUARB TUM	AESM SUC SUM SUARB TUM
Training and continuous development of PBL teaching staff	AESM SUC SUM SUMPH	AESM SUC SUM	AESM SUC SUM SUARB	AESM SUC SUM SUARB TUM	AESM SUC SUM SUARB TUM	AESM SUC SUM SUARB TUM	AESM SUC SUM SUARB TUM	AESM SUC SUM SUARB TUM
Extension of PBL to other study programmes in universities	AESM SUC SUM	AESM SUC SUM	AESM SUC SUM SUARB	AESM SUC SUM SUARB SUMPH	AESM SUC SUM SUARB SUMPH	AESM SUC SUM SUARB	AESM SUC SUM SUARB	AESM SUC SUM SUARB
International evaluation and accreditation of the programme						SUMPH		
Internationalisation of the study programme			TUM	TUM	TUM	TUM		
Introduction of the discipline Academic writing and research at Bachelor and Master's degree level		SUM	SUM	SUM				

The achievement of effective training under the PBL is possible only if universities manage to establish collaborative relations with the main stakeholders: employers, economic agents, public administration, NGO representatives, etc. Agreements between universities and the real sector must provide for internships, the involvement of stakeholders as experts in the development of educational plans and curricula, the contribution to the identification and formulation of the problem for project development, participation as external assessors in exams and project defences. Universities are planning closer relations with graduates as potential employers. These activities are planned for the entire period concerned.

In order to succeed in the successful implementation of the PBL an important role rests with the well-trained teaching staff, familiar with PBL-based training. *The training and continuous development of teachers* is a goal stated by each university, virtually for the entire period of the roadmap.

The positive effects universities noticed following the implementation of PBL led them to *extend* this experience to other study programmes. They differ only in times when universities will achieve this expansion. Thus, some universities - AESM and SUC - plan for gradual enlargement during the whole period concerned. Other universities have drawn up more concrete periods of enlargement mentioned in Table 2.

The international evaluation and accreditation of the programme is provided only by the SUMPH. This university, in the PBLMD project, has implemented PBL at the Neuroscience discipline for the Public Health Bachelor's degree programme. In the roadmap of the SUMPH, it is foreseen the extension for a new programme – Optometry, which by the end of the first promotion – year 2021 is to be subjected to international evaluation and accreditation.

The internationalisation of the study programme as a separate objective was mentioned only by TUM, but through the actions they promote, all universities plan certain internationalisation activities (*academic mobility*, attracting in the programme as visiting professor or for co-teaching of teachers from international universities promoting PBL, *continuous analysis and implementation of good practices in international universities, promoters of the PBL, etc.*).

The introduction of the discipline of *Academic writing and research* at the Bachelor and Master's degree level is an objective, which in the reference period, is provided only by the SUM, although that course is a useful one, which is meant to teach students how to do research and how to present it in written form.

3.3. ACTION PLAN

The action plan is intended to materialize in specific actions, for the periods set, the objectives outlined in the abovementioned roadmaps. Once again, the realisation of these actions requires various resources: financial, material, human, time, etc. In the reports drawn up within the work package 5 universities mentioned the concrete actions to be achieved. In Table 3 we will present a synthesis of the most important or most frequently found activities mentioned by most universities.

We note that the measures taken under the PBLMD project on the procurement of equipment required for the application of the PBL methodology, the experience gained by teachers in mobility,

have enabled us to perform various dissemination activities and organise workshops for teachers and students.

However, with a view to strengthening PBL culture in universities, as well as for the operation of changes in educational plans and conducting studies in projected visionary programmes, actions to reconceptualise the University curricula will be performed, practical strategies – an important part of the study process, of the preparation of didactic materials in line with the PBL approach, as well as actions to analyse the satisfaction of students and academic staff on group work on projects, etc.

All these require various resources; which we will mention in the way they were determined by the universities.

Human resources. These resources include representatives of higher university management, responsible for implementing PBL culture at institutional level; interested academic staff, co-opted for extending PBL for various study programmes; collaborators of structures responsible for pedagogical/continuous training of academics and, in particular, *members of the PBLMD project's implementation teams.*

Material resources. In order to achieve the action plan, it will require suitable IT equipment for PBL, consumables and spaces for discussion, group work and other accompanying activities. All this will be made available by universities in the volume and structure corresponding to the needs of each institution.

Information resources. These resources can be accessed from open sources on the Internet, by subscribing to various databases, as well as by acquiring didactic and research materials for university libraries.

Time resources. All activities foreseen in the action plans will be carried out outside basic hours, where teachers have lessons with students, perform research or administrative activities. It will be used, in case of necessity, the free time to complete certain activities on time.

Financial resources. Universities will allocate the necessary financial resources to ensure the PBL teaching-learning process with IT equipment, quality Internet access, consumables, with spaces required for specific PBL activities, as well as for the training of academic staff, dissemination activities, etc.

We will mention the following actions, and the allocation for periods can be seen in Table 3.

I. Connection of the study programme to good PBL practices of European universities and of their own experience (pilot programmes).

- Monitoring, improvement and revision of the pilot study programme;
- Coverage of educational disciplines with necessary didactic materials, methodological materials for teaching-learning-assessment
- Review of the curriculum on disciplines, sheets on disciplines, case studies.
- Enhancing the international compatibility of PBL study programmes
- Participation in international projects of academic mobility. Academic exchange under bilateral agreements.
- Providing English language courses for teachers.

II. Development of educational infrastructure dedicated to PBL

- Adaptation of spaces for teaching based on PBL methodology
- Diversifying the information resources needed to ensure students' access to information and knowledge needed to develop projects;

III. Promoting PBL-based study programmes

- Elaboration of informative materials (information leaflets, periodical publications, audio, video spots) for PBL programmes

IV. Collaboration with stakeholders (employers, graduates, etc.)

- Consultation and endorsement of new educational plans with the business environment regarding the correlation of the objectives with the skills required in the labour market
- Attracting employers to participate as external assessors of group work, projects and the formulation of problems foreseen for research in projects
- Attracting companies, including international ones, for knowledge transfer support at the level of content, teachers and student internships.
- Development of research-oriented scientific partnerships with other universities, institutions.

V. Training, continuous development and motivation of PBL teachers

- Ensuring institutional support to subdivisions providing PBL training
- Designation and training of the semester responsible, project tutors, etc.
- Elaboration of methodical support for PBL for teachers
- Training of the team of trainers/teachers that will provide the courses of the continuous training programme
- Organising the continuing training of teachers, including on PBL
- Launching a national and institutional scholarship competition for teachers applying PBL
- Adjusting the rules on workload and providing performance enhancement incentives for teachers applying the PBL methodology

VI. Extension of the PBL practice to other study programmes in universities

- Extending the pilot programme to other disciplines or other Bachelor's degree programmes
- Promoting good PBL practices
- Elaboration of educational plans for new programmes with PBL learning
- Implementation of PBL for new programs
- Periodic evaluation of the implementation of the PBL methodology

VII. International evaluation and accreditation of the programme

- Preparation of all documents necessary for the international accreditation of the PBL study programme
- Initiation of the international accreditation procedure

Tabelul 3. Main objectives and actions specified in the action plans of universities.

Objectives	Actions	Implementation period (month, year)							
		01.-06. 2019	07.-12. 2019	01.-06. 2020	07.-12. 2020	01.-06. 2021	07.-12. 2021	01.-06. 2022	07.-12. 2022
Connection of the study programme to good PBL practices of European universities and of their own experience (pilot programmes).	Monitoring, improvement and revision of the pilot study programme	SUC SUARB	AESM SUC SUM	AESM SUC SUMPH	AESM SUC	AESM SUC	AESM SUC	AESM SUC	AESM SUC
	Coverage of educational disciplines with necessary didactic materials, methodological materials for teaching-learning-assessment	AESM SUM SUMPH	AESM SUC SUM SUMPH	AESM SUC	AESM			SUC	
	Review of the curriculum on disciplines, sheets on disciplines, case studies.	SUM TUM SUMPH	SUM SUARB	SUC		SUC	AESM	AESM	
	Enhancing the international compatibility of PBL study programmes	TUM	TUM	TUM	TUM	SUC TUM	TUM	TUM	TUM
	Participation in international projects of academic mobility. Academic exchange under bilateral agreements	AESM TUM SUM SUARB TUM	AESM SUM SUARB TUM	AESM SUM SUARB TUM	AESM SUM SUARB TUM	AESM SUM SUARB TUM	AESM SUM SUARB TUM	AESM SUM SUARB TUM	SUM SUARB TUM
	Providing English language courses for teachers.	AESM TUM	AESM TUM	TUM	TUM	TUM	TUM	TUM	TUM
Development of educational infrastructure dedicated to PBL	Adaptation of spaces for teaching based on PBL methodology.		AESM TUM	TUM	AESM SUARB TUM	SUARB TUM	AESM SUARB	SUARB	SUARB
	Diversifying the information resources needed to ensure students' access to information and knowledge needed to develop projects;	AESM SUM	AESM SUM SUARB	AESM SUM SUARB	AESM SUM SUARB	AESM SUM SUARB	AESM SUM SUARB	AESM SUM SUARB	AESM SUM SUARB

Promoting PBL-based study programmes	Elaboration of informative materials (information leaflets, periodical publications, audio, video spots) for PBL programmes	AESM SUM TUM	AESM SUM TUM	AESM SUM TUM	AESM SUM TUM	AESM SUM TUM	AESM SUM TUM	AESM SUM TUM	AESM SUM TUM
Collaboration with stakeholders (employers, graduates, etc.)	Consultation and endorsement of new educational plans with the business environment regarding the correlation of the objectives with the skills required in the labour market	AESM SUM SUARB	SUM SUARB	AESM SUM	SUM SUARB	AESM SUM	SUM SUARB	AESM SUM	SUM
	Attracting employers to participate as external assessors of group work, projects and the formulation of problems foreseen for research in projects	SUARB	SUARB	SUM SUARB	SUM SUARB	SUM SUARB	SUC SUM SUARB	SUM SUARB	SUM SUARB
	Attracting companies, including international ones, for knowledge transfer support at the level of content, teachers and student internships.	AESM SUC SUM TUM	AESM SUC SUM TUM	AESM SUC SUM	AESM SUC SUM	AESM SUC SUM	AESM SUC SUM	AESM SUC SUM	AESM SUC SUM
	Development of research-oriented scientific partnerships with other universities, institutions.	TUM	TUM						
Training, continuous development and motivation of PBL teachers	Providing institutional support to subdivisions providing PBL training	AESM SUC SUM	AESM SUM SUARB	AESM SUM SUARB	AESM SUM	AESM SUM	AESM SUM	SUM	SUM
	Designation and training of the semester responsible, project tutors, etc.		AESM	SUC					

	Elaboration of methodical support for PBL for teachers	AESM SUM SUARB TUM	AESM SUM SUARB TUM	AESM SUM SUARB TUM	AESM SUM SUARB TUM	AESM		AESM	
	Training of the team of trainers/teachers that will provide the courses of the continuous training programme	AESM SUC SUM SUARB TUM SUMPH	AESM SUC SUM SUARB TUM SUMPH						
	Organising the continuing training of teachers, including on PBL		AESM SUC SUM SUARB TUM SUMPH	AESM SUC SUM SUARB TUM SUMPH	AESM SUC SUM SUARB TUM SUMPH	AESM SUC SUM SUARB TUM SUMPH	AESM SUC SUM SUARB TUM SUMPH	AESM SUC SUM SUARB TUM SUMPH	AESM SUC SUM SUARB TUM SUMPH
	Launching a national and institutional scholarship competition for teachers applying PBL							SUM	SUM
	Adjusting the rules on workload and performance enhancement incentives for teachers applying the PBL methodology	SUARB	SUARB						
Extension of the PBL practice to other university study programmes	Extending the pilot programme to other disciplines or other Bachelor's degree programmes			SUM SUMPH	SUM	AESM SUM	SUARB		
	Promoting good PBL practices		AESM SUM TUM	AESM SUM SUARB TUM	AESM SUM SUARB TUM	AESM SUM SUARB TUM	AESM SUM SUARB TUM	AESM SUM SUARB TUM	AESM SUM SUARB TUM
	Elaboration of educational plans for new PBL programmes	TUM SUMPH	SUM TUM	SUM	AESM SUM	SUARB	SUC		AESM
	Implementation of PBL for new programmes			TUM SUMPH	SUM	SUM	SUM SUARB	SUC	AESM

	Periodic evaluation of the implementation of the PBL methodology	SUC TUM	SUC SUM SUARB TUM	SUC TUM	AESM SUC SUM SUARB TUM	SUC TUM	AESM SUC SUM SUARB TUM	SUC TUM	SUC SUM SUARB TUM
International evaluation and accreditation of the programme	Preparation of all documents necessary for the international accreditation of the PBL study programme					SUMPH			
	Initiation of the international accreditation procedure						SUMPH		
Internationalisation of the PBL study programme	Cooperation and partnership activities based on international projects with universities abroad	TUM	TUM	SUM TUM	TUM	AESM TUM	TUM	AESM TUM	TUM
	Attracting international teachers to teach courses							TUM	TUM
	Conducting international academic mobilities	AESM SUC SUM SUARB TUM SUMPH	AESM SUC SUM SUARB TUM SUMPH	AESM SUC SUM SUARB TUM SUMPH	AESM SUC SUM SUARB TUM SUMPH	AESM SUC SUM SUARB TUM SUMPH	AESM SUC SUM SUARB TUM SUMPH	AESM SUC SUM SUARB TUM SUMPH	AESM SUC SUM SUARB TUM SUMPH
	Providing PBL study programmes in English						AESM	AESM	AESM
Introduction of the discipline <i>Academic writing and research at Bachelor and Master's degree level</i>	Elaboration of the curriculum and course support for the discipline of <i>Academic writing and research</i>		SUM						
	Introduction into the educational plan and ensuring the teaching of the course <i>Academic writing and research</i>			SUM					

VIII. Internationalisation of the PBL study programme

- Cooperation and partnership activities based on international projects with universities abroad
- Attracting international teachers teach courses
- Conducting international academic mobilities
- Providing PBL study programmes in English

IX. Introduction of the discipline *Academic writing and research* at Bachelor and Master's degree level

- Elaboration of the curriculum and course support in the discipline of *Academic writing and research*
- Introduction into the educational plan and ensuring the teaching of the course *Academic writing and research*

From Table 3 we can deduce that some actions are identical or similar to all or most universities. This seems absolutely natural to us, given that the aim and activities promoted during the implementation of the PBLMD project were similar. At the same time, the SUMPH aims at international accreditation of the new Bachelor's degree study programme – Optometry, and the SUM - to develop and introduce the discipline “Academic writing and research”.

4. POLICY RECOMMENDATIONS AT NATIONAL AND INSTITUTIONAL LEVEL

4.1. INTRODUCTION

The recommended policies take into account all parties involved in ensuring quality education through the implementation of the PBL - university, students, teachers, economic agents.

With reference to *students*, in order to facilitate employment, *they* must acquire the skills, knowledge and transferable competences required by the real sector.

In this regard, universities are proposing to modernise their study programmes, teaching materials and student assessment systems. To improve quality, ensure relevance and increase the number of students, flexible and innovative methods and approaches are needed. An essential moment is to exploit the advantages of information and communication technology (ICT) and other new technologies in order to enrich the teaching-learning process, improve learning experiences and support the PBL, so that each student can benefit from high-quality education.

The reform and modernisation of higher education depends on the competence and motivation of *academic staff* – teachers and researchers. In this respect, it is necessary to ensure better working conditions, the implementation of transparent and equitable recruitment procedures, continuous professional development at a higher level and better recognition and rewarding of excellence in teaching and research.

Theoretical training in the training of a specialist is important, but we believe that it needs to be complemented with relevant and effective practical activities. Without these practical activities, the theory cannot be assimilated correctly, nor can it be useful for students, future professionals. In this respect, we believe that one of the key actions in ensuring the quality and relevance of higher education is *to improve relations between universities and the economic environment and to develop a much closer, mutually advantageous cooperation.*

The recommended policies below come in full compliance with the ones presented above.

4.2. STUDY PROGRAMME LEVEL

At the study programme level, universities come up with the following recommendations:

- Developing new educational plans for selected study programmes, taking into account the specifics of the PBL method.
- Review/elaboration of the curricula for each discipline, included in these educational plans. The continuous adaptation of the study programmes and the contents of the course units to the needs of students and society.
- Inclusion in the educational plan, beginning in the first semester, of the discipline *Introduction into PBL*, which would form the basic skills in organizing and implementing teamwork based on project/problem;

- Providing students with methodical and didactic material: through the Moodle platform, printed works.
- Creation of the system for the collection of feedback of students and graduates on the quality of the study programme.
- Elaboration of a guide for students, which would facilitate the activities of the formulation of the problem and the group development of the project.
- Introduction of the discipline of *Academic writing and research*;
- Encouraging and stimulating the use of ICT technologies in the educational process.
- Integrating the research aspect into the teaching-learning process.
- Appointment of mentors, who will handle the monitoring of work on the project(s), follow-up and conclusion of the evaluation of the activities in the projects of students and teachers (assessment of students, teachers).

4.3. DEPARTMENT AND FACULTY LEVEL

At the department level:

- The departments are responsible for employment and promoting academic staff according to the performances achieved.
- The departments, in line with other institutional structures, are responsible for establishing the appropriate way of communicating and collaborating with stakeholders in order to adjust the educational plans to the labour market requirements, identify problems which economic agents face to be investigated/resolved within projects, Bachelor's, Master's or Doctoral degree theses, as well as students suitable for recruitment; organise laboratories and training centres to be used together by the university and interested economic agents.
- To create the research group for the development and improvement of PBL-based teaching, which will investigate the specifics of the PBL application process, taking into account the particularities of the disciplines.
- Active involvement in the continuous training of academic staff and increasing the number of staff with scientific degrees and science-didactic titles.
- Periodic monitoring and analysis of PBL application in the teaching-learning process.

At the faculty level:

- Faculties have to ensure greater flexibility in setting schedules for practical lessons and optimise the use of study rooms, equipped for PBL.
- Based on the experience of the Aalborg University, it is welcome to appoint a semester coordinator from among experienced teachers who teach courses in that semester. Their role is to coordinate the work of all academic staff that provides the teaching-learning process in the respective semester, to communicate with students about learning experiences, to consult them on the educational path, etc.
- Promoting good practice of implementing PBL in the faculty/university.
- Organizing campaigns to promote academic mobilities with the involvement of Erasmus+ students and academics and the dissemination of their experience.

4.4. ACADEMIC STAFF LEVEL

- Ensuring the regular training of academic staff on the application of the PBL method.
- Stimulating academic staff for the study and application of PBL in the teaching-learning process.
- Providing support through various methods of academic staff in order to implement lifelong learning and participation in academic mobility programmes.
- Establishing as an academic promotion criterion the high-level knowledge of an international language.
- Promoting a performance-based payroll system.
- Organizing at least once a year *team building activities by departments/faculties* outside the institution because they have proven to be the most effective forms of training.

4.5. STUDENT LEVEL

- Active involvement of students in the process of accumulation of knowledge and development of communication skills, group work, etc., in response to new modern approaches and techniques in the teaching-learning process, which calls for problem solving/development of projects. Engaging students in promoting good PBL practices.
- Students of the year II and III will share experience in applying PBL to students of the year I.
- Student involvement in peer review.
- Ensuring a feedback from students on the quality of teaching on the basis of PBL throughout the studies.
- Create a *Student Support Center* to facilitate the integration of first-year students into the university community by organising different activities of mutual knowledge of students, planning the educational path, time management, professional career development, etc.
- Active participation of students in academic mobility programmes.

4.6. PEDAGOGICAL TRAINING LEVEL

- Creation/designation of a subdivision (at institutional level) responsible for pedagogical training of academic staff, including on PBL.
- Organizing pedagogical training programmes for academics in universities.
- Elaboration of a series of guidelines/methodologies/procedures on the principles of training the work group on the problem/project, which would provide the possibility to avoid critical or deadlock situations that may arise in the given process.
- Elaboration of a guide for students and academic staff on the principles and rules of defence/examination of the project, time allotted for presentation and examination, examination criteria, etc.
- Establishing a collaboration between universities implementing study programmes with the application of the PBL, on the periodic organisation of the exchange of experience.

Thus, good practice will be shared in the implementation of the PBL method, problems will be traced and solutions will be sought jointly.

- Launching an institutional and national scholarship competition for academic staff applying PBL.
- Creating a methodological support platform in PBL for students.

4.7. SOCIETY LEVEL

An important role in the elaboration/improvement of study programmes and curricula is given to employers and graduates, who are consulted in the process of drafting and reviewing them (the form of expertise), in organizing the in production and Bachelor's degree internship (the form of the appropriate agreements), the elaboration of the theses and during the period of defence of the Bachelor's degree exam (formulation of the theme of the Bachelor's degree theses and examination problems) (participatory form), etc. In this context, the following recommendations have been made:

- Working with business, NGOs, public administration for the purpose of identifying subjects that could be tackled and developed under PBL-based study programmes.
- Involvement of practitioners in the process of teaching courses and assessment of projects.
- Inviting stakeholders to formulate project problems and assess the results of student work on these projects.
- Organizing workshops with the participation of the representatives of the business environment/real sector in order to determine their requests and needs.
- Establishing collaboration agreements with various institutions/businesses, which would be open to provide information to students for work on projects. Creation of bi-/tripartite partnerships with mutual benefits: students will have the opportunity to investigate real case studies, solve real problems, based on truthful data, and businesses and organisations will obtain from students new ideas, calculations and solutions for existing problems.
- The creation of professional associations in order to involve practitioners, prospective employers and even students or graduates in consultations on the formulation of complex and real problems, but also interesting for the student learning process.

4.8. ADMINISTRATION AND MANAGEMENT LEVEL

- Extension and consolidation of the PBL culture at institutional level.
- Creation/designation of a subdivision (at institutional level) responsible for pedagogical training of academic staff, including on PBL.
- Ensuring the conditions for academic staff to study the PBL method within and outside the institution (payment of courses organized by third persons/structures, providing periods for training).
- Creation of a pedagogical group for the training/improvement of academic staff in the field of interactive teaching methods, including PBL.
- Development of the technical-material base to conduct practical, laboratory and scientific research.
- Development of study infrastructure for PBL.

- Ensuring the existence in all the university subdivisions responsible for the study process of the strategic objectives on the relationship with the real sector/business environment. Assessment of the activity of those subdivisions, including in relation to these categories of objectives.
- Review of the concept/model of establishing the teachers' workload by increasing the number of hours devoted to guidance and monitoring of group work and student assessment, so that the teacher can pay sufficient attention to group work activities on tasks/projects, meetings with project teams and appropriate assessment.
- Supporting the internationalisation of study programmes: launching study programmes in international languages; supporting academic mobility of students and academic staff; attracting international students; international accreditation of study programmes.
- Elaboration and implementation of support and motivation mechanisms for the improvement and professional development of academic staff.

5. CONCLUDING REMARKS

Ensuring the sustainability of the problem-based learning in the universities of the Republic of Moldova implies a revolutionizing of the study process. It started from the fact that learning outcomes should not only provide knowledge but also develop skills and competences both professional and personal. We acknowledge that today, university study programmes still have gaps in the development of skills currently required in professional activity (interpersonal communication, professional guidance and employability and adaptation to the labour market, etc.).

Activities that should lead to the creation of skills and competences needed in the labour market (case studies, projects, internship) are not always efficiently developed or are formally carried out (e.g. students' internship).

We want, through the implementation of the PBL, to bring students closed to the real-life the real sector is facing, facilitate the mobility of students by deepening the knowledge of English language, in particular, in the specialty disciplines, but also by offering quality training, comparable to EU universities.

Obviously, all this will take time and effort from both the teachers and the university, but also the representatives of the real sector, who must be fully involved in the training activity through various activities carried out jointly. We want, in partnership with stakeholder, to propose a considerable number of themes for the project, Bachelor/Master's degree theses or joint research topics annually. We consider it necessary to develop the involvement of the real sector in such activities as student internship, student research activities, case studies, projects and other activities included in the study programme.

We believe that through the implementation of the PBL within the universities of Moldova we will be able to encourage and stimulate innovation and creativity, as well as entrepreneurial spirit.

We are aware that all these cannot be ensured immediately, namely from these considerations, the roadmaps and action plans were developed by which universities committed, step by step, in a timely manner, to achieve the intended purpose.

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Appendix 1. Report for Work Package 5: AESM

Appendix 2. Report for Work Package 5: SUARB

Appendix 3. Report for Work Package 5: SUC

Appendix 4. Report for Work Package 5: SUMPh

Appendix 5. Report for Work Package 5: SUM

Appendix 6. Report for Work Package 5: TUM

Sustainability Strategy

Problem-based learning and teaching at the Academy of Economic Studies of Moldova

Work Package 5

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Summary

The report presents the Work Package no. 5. Its purpose is to develop a sustainability strategy for the implementation of the problem-based learning - PBL, active student-centered teaching and learning at the Academy of Economic Studies of Moldova. Specifically, this report proposes an innovative Bachelor's degree study programme based on PBL - Business and Administration, a roadmap and a detailed plan of actions that will guide staff and university management in their efforts to fully implement PBL. When drafting this report we relied on the results of the reports from Work Package 2, Work Package 3, and Work Package 4.

We started from our vision of the Business and Administration programme, as we see it implemented in AESM, based on student-centered education – PBL. The study of the existing PBL learning at Aalborg University, Denmark, and the one in Gloucestershire, Great Britain served as a starting point in its elaboration, but we also guided on the existing legislative acts in the field of higher education in Moldova.

In the report we present the brief description of each semester, highlighting also the projects that will be developed, ensuring a progression in this regard. Thus, if in the first semester the workload for project development is 10 ECTS, in the fourth semester this is 20 ECTS. The total number of ECTS for the elaboration and defence of the projects for all 6 semesters is 90 ECTS, constituting 50% of the student's total workload.

At the same time, we are aware that this outline of the educational plan will not be implemented if the Ministry of Education, Culture and Research does not make changes in the framework plan for Bachelor's degree studies (cycle I), Master's degree studies (cycle II) and integrated studies. It now contains provisions referring to the compulsory inclusion of some courses/disciplines in the educational plan, as well as the recommendation for allocating 4-6 studies credits for a module. Also, at the institutional level, there will be needed human, financial, informational, additional time resources. In the elaborated roadmap and action plan we describe step by step the efforts we need to make to ensure the sustainability of PBL in AESM.

List of definitions

PBL - student activity model with group task assignment to solve a problem, which is the cumulative result of activities from several courses, constituting an interdisciplinary product, guided by the teacher responsible and evaluated by practitioners in the field.

Student-centered learning - teaching and learning process in which the student becomes a partner in the educational process, and the teacher-student relationship is based on cooperation and collaboration.

Self-guided learning – teaching and learning process that emphasizes the student's responsibility to create learning and experimentation environments, in which they discover knowledge, make discoveries and solve problems on their own.

Learning objectives – general competences by training fields required for graduates of study programmes.

Learning outcomes - clear results, describing the student's knowledge or skills, expected from the teaching-learning process.

Progression – succession of expectations from the teaching-learning process in several stages.

Assessment - multicriterial examination of students' knowledge accumulated in the learning and teaching process.

Projects – are tasks given to students which consist of research and analysis of a problem (both theoretical and practical) and the generation of new approaches or solutions. Projects can be individual and in group.

Semester projects – are the projects carried out by students (usually in the group) during a semester. These projects may have inter-disciplinary character (may refer to two or more disciplines studied during the same semester).

Group/team work – is the joint work of a group of 4-5 students to perform a single task, which is based on communication, collaboration and self-discipline, each member of the group contributing to the achievement of the final result.

Research-based teaching and learning - the process of transmission and accumulation of knowledge, as well as the creation or development of skills that are based on some research tasks and aims to facilitate the learning (including individual) process of students.

Research-based teaching - is the process by which the student is involved in research exercises and is encouraged to reach his/her own conclusions and solutions using the results of the research carried out.

Sustainability strategy – is a long-term vision of an institution aimed at introducing key modifications in order to streamline the teaching-learning process. The strategy includes objectives and concrete actions, the deadline for achievement, as well as the potential outcomes that can be achieved.

(a) the path from a pilot programme to a comprehensive study programme based on problem-based learning (PBL) - the concrete steps to introduce PBL in a study programme

(b) support and promotion of PBL for teaching and learning - performing information and training measures about the advantages and efficiency of PBL.

Credit (ECTS) – the credit is a conventional unit used to calculate the workload performed by the student within a determined time period to achieve certain outcomes and competences. The credit is a tool to ensure the quality of the training.

ECTS (European Credit Transfer and Accumulation System) - European system of accumulation and transfer of credits. The Bachelor's degree studies correspond to 180-240 of transferable study credits, with 30 credits per semester.

Profile degree – the educational framework to be known by graduates in order to obtain the title of Bachelor, Master.

Professional development – opportunities offered to the teacher to strengthen their pedagogical skills, competences and approaches; continuous improvement of staff through trainings, internships, etc.

Facilitator – the person who helps a group of students understand their common goals and helps them plan how to achieve the objectives set out in the joint project.

Internship placement (training/practice) – institution/organization where students will conduct internship/training.

Quality assurance – a systematic monitoring and evaluation programme of the different aspects of a project in order to ensure compliance with quality standards.

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1 INTRODUCTION

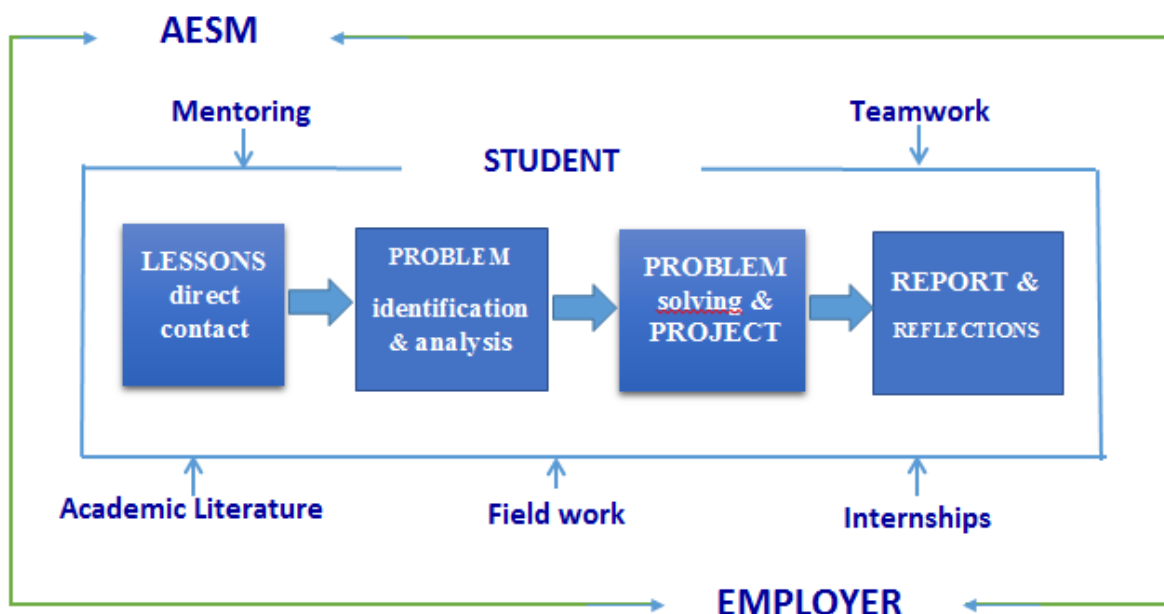
The purpose of the Work Package 5 is to develop a sustainability strategy for the implementation of the problem-based learning - PBL, active teaching and learning, centered on the student at the Academy of Economic Studies of Moldova. Specifically, this report proposes an innovative Bachelor's degree study programme based on PBL - Business and Administration, a roadmap and a detailed plan of actions that will guide staff and university management in their efforts to fully implement PBL, active student-centered teaching and learning at the respective study programme and in the university.

In this report we rely on the material accumulated during the implementation of Work Package 2 (WP2), Work Package 3 (WP3) and Work Package 4 (WP 4), which we elaborated in the period 2015-2018. We also rely on the experience gained during study visits and staff mobility at EU partner universities, as well as during the PBL training sessions offered by EU project partners in Chisinau.

1.1 KEY ASSUMPTIONS

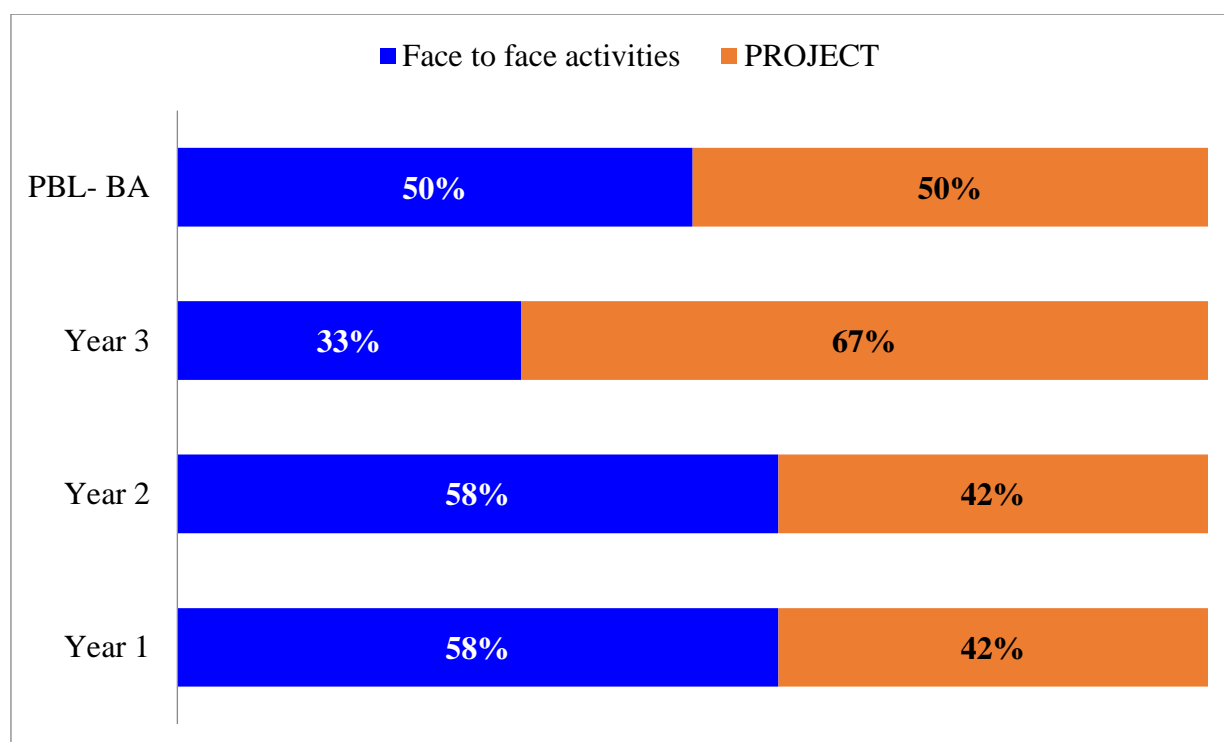
There is no PBL model suitable for all purposes. However, PBL-based models are primarily based on two key assumptions. The first assumption is that the work on the project is in the *center*, at the base, consisting of discovering and analyzing problems, solving problems and the report on the project (Figure 1). The second assumption provides that the other teaching and learning (face-to-face) activities, such as literature, lectures, group studies and tutorials, are designed to *support* the work on the project. These two assumptions will also be at the base of our PBL, the PBL based Bachelor's degree study programme "Business and Administration", active teaching and learning, centered on the student.

Figure 1. PBL model at AESM



Another assumption relates to the relationship between work on the project and the face-to-face activities (direct contact with the teacher). In the context of this report, in full, based on PBL means a study programme in which there is a share of approximately 50:50 between the work of students on the project and the face-to-face activities (such as lectures, seminars, workshops, laboratories and experiments). An example of progression is shown in Figure 2. Of course, there are many ways to distribute the relationship between project work and face-to-face activities during the semester; the main purpose is to achieve approximate time sharing of 50:50 for the entire duration of the study programme.

Figure 2. 50:50 time sharing between project work and face-to-face activities, PBL-BA study programme



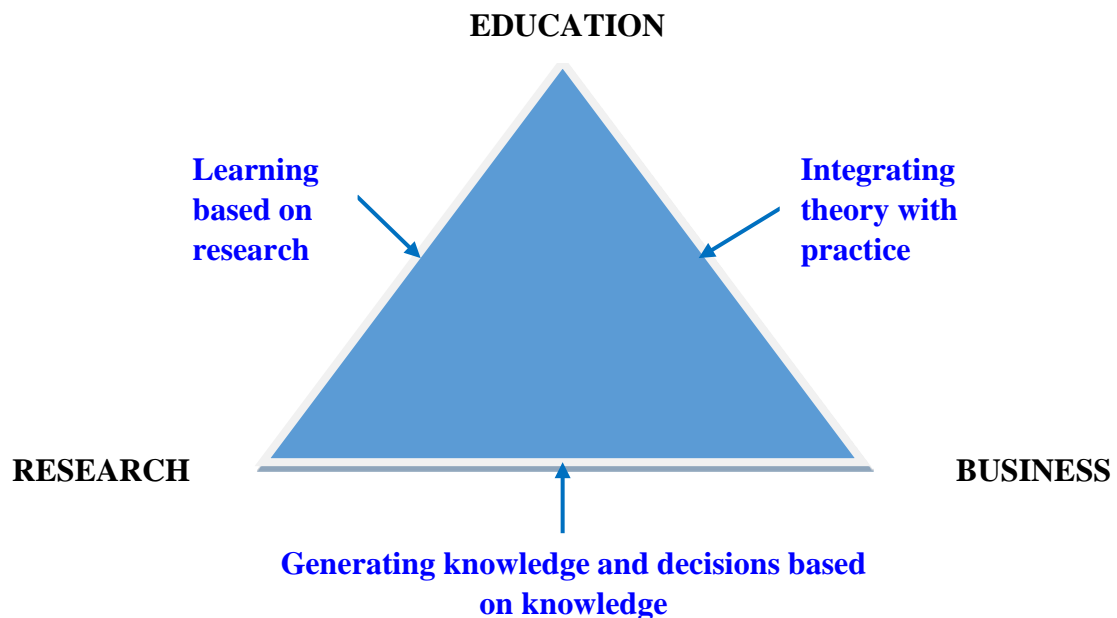
1.2 EXPECTED RESULTS

A number of results are foreseen following the successful implementation of the "Business and Administration" Bachelor's degree program, based on PBL, active, student-centered learning. It is expected that by 2020 this study programme will become internationally recognised, which will attract European and international students as full-time students or by exchange students. It is also expected that by 2022 at least five Bachelor's degree programmes from our university to be redesigned under the PBL, with methodologies and active methods of teaching and learning, centered on the student, and that prospective students will be enrolled at these programmes on 1 September 2022. Similarly, a better adjustment of the knowledge, competences and skills of the students to the needs of the labour market is expected.

The successful implementation of the study programme, as well as its effects of spreading throughout the university, will contribute to the further development and consolidation of the integration of the collaboration of education, research and business environment / policymakers

(Figure 3). Academic staff will excel in engaging in research-based teaching, our students will learn and will be able to apply theories in practice, either in the private or public sector, and our researchers will collaborate with private and public organisations to create and transfer new knowledge.

Figure 3. Socially committed university



Source: Olav J. Sorensen, 2015

1.3 THE PLAN

We begin the report by presenting our vision of the PBL-based Bachelor's degree study programme "Business and Administration". In particular, we will begin with a general description of the study programme, the objectives and learning outcomes, and then a presentation of each semester, including its learning objectives and the learning outcomes, the transition from one semester to the next, the description project and semester projects' work, including learning objectives, results and their evolution. Later on, we will present a detailed roadmap that will guide us in the process of implementing the visionary PBL-based Bachelor's degree study programme "Business and Administration". We will continue presenting and discussing the action plan that will detail, for example, specific activities, resources and internal policies needed to successfully implement our visionary study programme. We will conclude by providing university management and the University Council with a set of policy recommendations on how to improve teaching and learning through the introduction of PBL, active methodologies and learning methods centered on the student at our university.

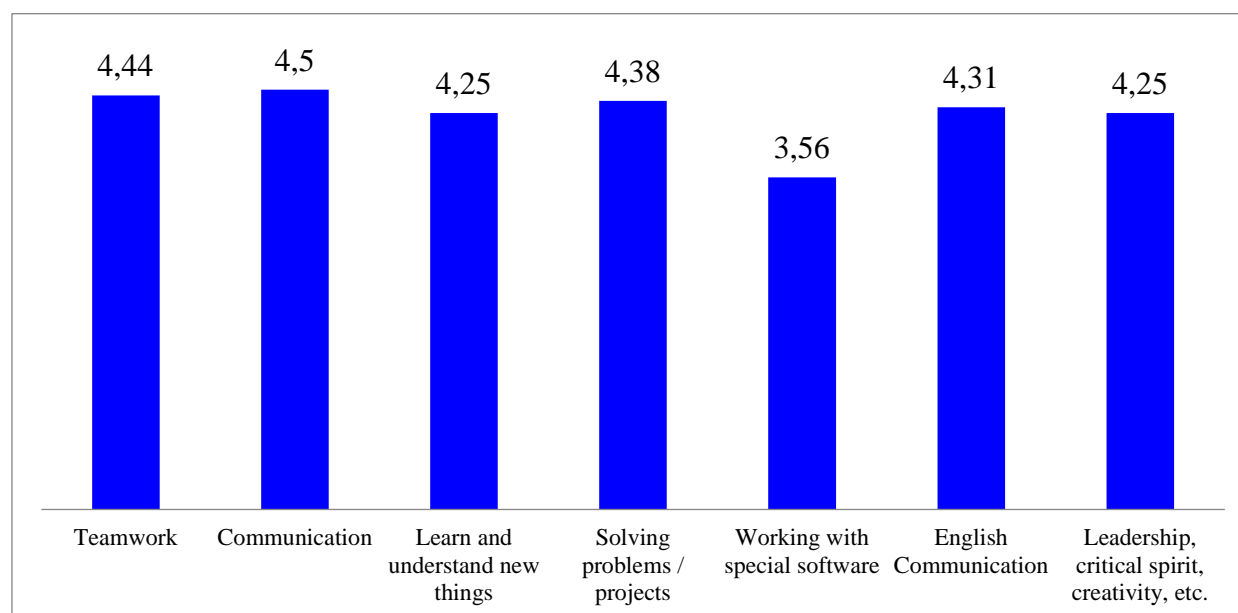
2 LESSONS LEARNED FROM THE DEVELOPMENT AND IMPLEMENTATION OF THE PILOT STUDY PROGRAMME - PBL

6 students and teachers involved in the PBLMD project were interviewed to analyze the experience of the Academy of Economic Studies in Moldova in the development and implementation of the pilot study programme with PB applicationL, the results of the the survey conducted among the pilot group students and their reflections on the use of PBL were analyzed.

Currently, at AESM, PBL is incorporated into 1 – 3 disciplines per semester under the pilot study programme - Business and Administration – taught in English. Also, the teachers involved in the PBLMD project, apply PBL in courses taught at other study programmes, both at the Bachelor's degree cycle: Marketing and logistics, Business and administration, Accounting, World economics, and International economic relations, and at the Master's degree cycle: Business administration, European project management, Information management.

Although AESM has only one and a half year experience in the application of the PBL, both teachers and students consider this learning/teaching/assessment model quite useful and appropriate. Thus, the parties involved in the project said that PBL contributes not only to the development of the competences specific to the course, but also to the transversal competences highly appreciated by the employer and necessary for lifelong learning, including: teamwork, ability to communicate and argue their own point of view, time management and compliance with project deadlines, solving real problems (Fig. 4).

Figure 4. AESM students' opinion on the development of skills in the PBL-based study programme „Business and Administration”



Note: The evaluation was made from 1 to 5 points: 1 total disagreement, 2 disagreement, 3 - neither / nor, 4 - agreement, 5 - total agreement.

Summarising the lessons learnt from the development and implementation of the PBL method in ASEM we mention the following aspects:

- The need to rethink/adjust the educational plan;
- Interdisciplinary approach;
- The importance of developing methodical support and case studies;
- Empowering students;
- A new pedagogical approach;
- Change the way knowledge is evaluated;
- Intensification of collaboration with the business environment;
- Institutional flexibility.

Rethinking the educational plan

The educational plan of the pilot- programme "Business and administration", based on PBL, foresees that in each semester students draw up a group project. In this context, it would be necessary to amend the plan with a view to transferring a number of hours-lectures to hours of supervision. Teamwork requests from the teacher a particular involvement from this perspective.

Also, working on the project requires a greater amount of time also from the student, so it would be welcome for the respective courses to be given a higher number of credits. At present, the student's mark for the project developed during the semester constitutes between 15-40% of the general mark for the course, to which almost 4 – 5 credits are assigned. Only in the 4th semester, according to the educational plan, students will develop a project that is estimated to be worth 3 credits (ECTS).

For the second consecutive year, the first 2 days of the academic year are devoted to familiarizing with the PBL. Students benefit from fun and useful activities, learn to introduce themselves and interact with others, develop their skills of group work. Students then apply the PBL method in a pleasant and encouraging way, being enthusiastic and eager to learn in the new form. We opt for the continuation of this introductory practice.

It was identified the need to introduce a module on the Methodology of economic research, with students being familiar with research methods, how to use bibliographical sources, the rigor of independent study avoiding plagiarism, etc.

Interdisciplinary approach

The interdisciplinary approach is one of the prerequisites for solving the problems in the real economy. In the third semester, the "Business and Administration" study programme included the discipline "Entrepreneurship and business culture", combining 2 courses "Entrepreneurship" and "Business culture". The new discipline is provided by 2 university professors and 1 invited entrepreneur. The course was provided 2 times a week (4 hours each component), with 8 credits.

Students, organized in teams of 2-4 people, developed the business model – Lean Canvas and analysed the aspects of its sustainability (social and environmental aspect). Teachers evaluated separately the preset tasks and students' ability to apply the knowledge acquired within the course.

Depending on the interests and experiences of the team members, students, guided by teachers, identified the business idea (3D printing, drone photo-video services, production of Hande Mande jewellery or online app for the order in a restaurant, etc.), elaborated and presented the business model. During the semester following the analysis of the market, the consumer, trends, etc. some teams amended/changed the business idea which they initially opted for.

At the end of the course, each team presented the Lean Canvas model and the sustainability aspects of the business idea. Carrying out tasks was a prerequisite to act as entrepreneurs, learning from practice, through their own experience. Students developed a business idea, taking into account the real environment, and became more competent and confident in the research area, but also susceptible to support academic competition.

The experience described is the first attempt to integrate the courses. In the educational plan of the pilot study programme "Business and Administration" (English), there are also foreseen other courses integrated in the following semesters, respectively, there are needed more complex analyses on the compatibility of the disciplines to be integrated, in order to develop the ability of students to make the connection between them and to apply the concepts from one discipline to another, and then in real life.

Elaboration of methodical support and case studies

Although the teachers from the courses where PBL is implemented have made recommendations on the structure and content of the project, it is necessary to elaborate, in particular for students of the year I, a methodical guide on the development and defence of PBL projects.

An important aspect of the PBL relates to the definition of complex and real problems. Even if students have some experience in designing the project, they focus largely on the study and development of the subject, encountering difficulties in defining the problem and resolving it. Following the survey conducted among students, they noted that they encountered the greatest difficulties at the stage of identifying the problem and organizing the activity within the team.

It is also welcome and necessary to elaborate case studies/simulations that would constitute a support for teachers and motivate students to identify certain problems more easily and to look for real solutions to existing problems.

Empowering students

One of the lessons learnt from the implementation of the PBL at AESM is that the given method requires more active involvement of students in the educational process.

Students, still from school, are accustomed to the traditional learning model, which is based on the participation in lessons, learning/memorizing the material and the taking the exam. In the case of PBL, they, working in teams, must independently learn, solving real problems within the course, which require additional knowledge, unusual thinking, and time to organise meetings with employers and members of the group.

Not having the experience of teamwork, some of the students don't trust their teammates and/or hardly integrate into a working group. However, if initially, in some teams, students simply shared a complex problem on tasks, during the work on the project they understood that in order to

solve the problem it is necessary to cooperate and collaborate with responsibility and respect for teammates.

By applying the PBL, students were encouraged to take greater responsibility for their team and the final product, to organise and manage independently the project's learning/elaboration process.

Changing the teacher's role

A novelty of the PBL would be way the teacher involves in the teaching-learning process. The role of the teacher focuses on supervising the student, but not providing accurate solutions, which they must follow. At the same time, in order to maintain the expert position, teachers must be open to continuous learning, adjust their working methods, activities to the rigors of the time.

Thus, the application of the PBL requires the teacher to rethink the presentation way of the didactic material and the organisation of the lessons. At theoretical courses, their task is not to transmit the material, but to show its usefulness, therefore, teachers place the course materials on Moodle, and in the lesson there are presented current examples, they discuss with students to check whether they have understood the theoretical aspects, encourage students' ideas and opinions.

As a result, the student becomes more confident in his/her own forces, more eager to argue and reflect critically on various issues.

Although the "Problem-based learning – PBL" course for teachers (40 hours) is organized at AESM annually, the method is largely applied only by the teachers involved in the PBLMD project. A more active promotion of the PBL method is needed among all AESM teachers in order to also apply the method in other study programmes at all faculties, including the II cycle – Master's degree studies.

Changing the way knowledge is assessed

A sensitive aspect for teachers in PBL implementation is related to how to properly assess students, taking into account the fact that they are working in team.

Projects are defended in front of the colleagues and teachers, but apart from its overall assessment it is necessary to determine the contribution of each team member to the elaboration and achievement of the project, as well as the theoretical and practical competences acquired by the student.

In this respect, personal reflections are welcomed, as well as the assessments provided by the student on his/her contribution and colleagues' contribution to the project achievement. If there was initially a resistance from students on the need to develop/present personal reflections, they subsequently realised that reflections on lessons learnt from group activity and challenges arising is an opportunity to be heard, to present their own opinion, to learn by learning.

However, it is necessary to formulate the assessment criteria for both the project and the overall course, which are to be announced to students at the beginning of the semester, including on the course page on Moodle, so that students know how they will be assessed and what is expected from them. In this respect, it is required to develop appropriate methodological indications.

Collaborating with the business environment

An impediment to the implementation of the PBL is caused by the low interest of the business environment to work together with academia.

Despite the fact that the AESM has signed several cooperation agreements with economic agents, they refer, in particular, to the provision of places for students' internships. In the case of PBL, even if managers are willing to collaborate, largely, they prefer to answer students' questions, but not to provide concrete data/reports, explaining sometimes the refusal of their non-disclosure by commercial secret.

The development of a mutually beneficial collaboration with the business environment would allow teachers to develop case studies and to formulate problems in the real environment, i.e. students could make visits to companies and benefit from information for the formulation of problems and project development. In turn, companies would benefit from new ideas that would give them the opportunity to solve certain problems they face.

Institutional level

PBL needs institutional flexibility. Multidisciplinary study advertises more intensive collaboration among teachers, so it is necessary to have a supervisor (responsible) of the programme, who would coordinate the work of teachers, taking into account the topic of the semester, objectives and learning outcomes, student workload, etc.

Another vulnerable moment would be the flexibility of the schedule. Because, when carrying out certain tasks on the project, the student sometimes needs the first part of the day, and the compulsory hours of the auditorium lessons create certain impediments that lead to psycho-social discomfort.

With regard to the existence of an infrastructure corresponding to the organisation of the PBL-based learning process, there are no issues relating to the provision of classrooms. But if the PBL model were integrated into the whole study programme, then the need for small halls for team meetings, and certain reorganization of the study spaces, would appear.

3 VISION ON THE PBL-BASED STUDY PROGRAMME - BUSINESS AND ADMINISTRATION

3.1 OVERVIEW

Historically speaking, the majority of Moldovan universities focused, on a rather lengthy period, mainly on teaching and learning. In universities, the classic system of centring activities on the teacher is still prevalent, which we consider outdated, at least starting from the fact, that it was designed to integrate graduates into a stable and inflexible labour market to the changes in the society, especially in relation to international influences. However, taking into account the speed at which the changes are made today, the flexibility of the labour market, it is evident that a student-centered education gives society more benefits, offers the possibility to train specialists, who would have those competences that employers require. *The change from teacher-centered education to the student-centered one implies a cultural transformation, and therefore behavioural and attitude changes, both from students and teachers' side, but also of the institution in general. Not involving one of these factors makes it impossible to achieve this method.*

Following the study of student-centered teaching methods in several universities in the European Union, and taking into account the experience gained during the implementation of the PBLMD project we propose the use of PBL at the level of the "Business and Administration" programme.

The **aim of the programme** consists in the formation of specialists with multiple competences in the field of business, potential managers and entrepreneurs, contributing to the creation of a new status of the businessman in general and of the entrepreneur, in particular, as the main actors of the competitive economic system. The theoretical and applicative competences offered by the programme will facilitate the integration of future graduates into the labour market.

The programme is developed according to the **National Qualifications Framework (NQF)** for the "Business and Administration" specialty¹. The NQF is a tool that establishes the structure of qualifications and ensures national recognition, as well as the international compatibility and comparability of qualifications acquired in the higher education system. Through it, there can be recognized, measured and connected all the learning outcomes acquired in the higher education system. The National Qualifications Framework respects the traditions and experience of Moldovan higher education and is compatible with the General Qualifications Framework in the European higher education area.

The **title awarded** to graduates is "Bachelor in economic sciences". At the completion of the Bachelor's degree programme, Cycle I, the Bachelor's degree (diploma) is awarded, equivalent to 180 academic credits in the ECTS system.

¹ Cadrul Național al Calificărilor: Învățământul superior: ciclul I, studii superioare de Licență; ciclu II, studii superioare de Masterat; Doctorat: Domeniul general de studiu 36. Științe economice: Domeniul de formare profesională 812 Turism / Min. Educației al Rep. Moldova. - Ch.:S. n., 2013 (Tipogr. "Bons Offices"). p. 67 - 91 http://edu.gov.md/sites/default/files/cnc_36_812-stiinte_economice.pdf

The training of highly qualified specialists in the "Business and Administration" speciality lasts for 6 semesters or 3 years of study. In each academic semester, the students have the possibility to accumulate 30 study credits, so that at the end of the period they obtain 180 ECTS. In each semester, students will have both theoretical courses and practical courses, in which they will work in a team or individually, elaborating different projects.

In order to successfully achieve this educational offer, a suitable, qualitative and productive educational environment will be created, centered on the student, which will be characterized by the following characteristics:

- Creating an authentic learning environment close to the business environment and relevant to the student's interests in achieving the projected objectives; acquiring knowledge, training of skills and personal and professional competences;
- Merging aspects of a theoretical nature with the cultivation of skills related to the realities of business management activities;
- Structuring the educational approaches on the concept of "problem-based learning" and the development of practical dexterities;
- Ensuring the conditions for facilitating access, progress in the university career and the mobility of students and graduates in the European area.

The teaching within the programme will be based on the consensus currently existing among researchers on learning and the brain bark, according to which we do not learn if we are receiving passively the information and then remembering what has been taught to us. So the student will be actively involved in what is done in the course and outside classes:

- This type of learning requires a stage in which students are asked to process the information they are given. They will benefit from activities, concrete or potential situations, which require them to interpret the material personally and thus create their own meanings. It is important, and the teacher will consider, that significance is a personal and unique thing; it builds on the basis of previous learning and experience, which differs from person to person. There is no unique, suitable way for everyone to learn something; it takes a multitude of tasks and experiences to meet individual needs.
- Learning must include processing activities of the new learned material, which must be linked to what the student already knows. The tasks will be authentic, established in a meaningful context and related to the real life of economic agents, highlighting some real problems that either the teacher or the students present. In view of the fact that learning will involve errors, the tasks will be designed in such a way as to give students the opportunity to self-evaluate, to correct, to discuss with colleagues, to receive the teacher's feedback, as well as to make other checks of "complying with reality".
- Group work will be used extensively, which requires students to discuss the learned material, so that together with colleagues to check with each other and learn from each other.

The "Business and Administration" study programme will comprise 5 compulsory projects, 15 compulsory courses and two optional courses and a Bachelor's degree thesis.

Student assessment will have various forms: written exams with open questions, multiple-response tests, oral examinations. In the context of PBL some exams will be in the form of a project,

consisting of the elaboration and presentation of the written report and individual oral examination. The advantage of this model consists in combining group work, solving the problem, holistic approach (problem-theory-methodology), reflections, communication and skills. We will also opt for the use of innovative forms of assessment, e.g.: computer exam, video exam, peer evaluation through the Moodle platform.

Certain progression requirements will be set up, which are reduced to:

- The linear learning model, which provides an analytical progression, from macro to micro level, each learning module being based on the modules previously studied;
- From the fundamental elements to the domain, specialty ones;
- Holistic progression - solving real business problems from the first day, increasing the complexity of problems, the circular learning model.

We hope for an easier employment of the graduates of this programme, for the following reasons:

- Active learning methods will implant students-graduates the skills to actively engage in solving various tasks at the organization level, to be more responsible for carrying out tasks, with a pronounced spirit of initiative, critical thinking, creativity, availability to find more original solutions, will be more cooperative, listening to others opinions and arguing their own opinion.
- PBL-based learning will provide graduates with a better knowledge of the real-life problems of the domestic business, which will ease the insertion within the organization.
- Learning to work as a team, designing projects will be an important asset for graduates, making it possible to lead a group, coordinate communication, establish a climate of confidence in the team, be able to make decisions, mediate conflicts arising.
- The given model implies permanent self-assessment, so it increases awareness of the need for lifelong learning.

The overall learning outcomes of the programme (in strict compliance with the NQF for the "Business and Administration" programme) are as follows:

- Demonstrate functional knowledge in the following areas:
- Economic theory - genesis, essence, methodology and method, economic legality;
- Management - evolution of the management science, the content of main processes and managerial functions;
- Marketing - elaboration and realization of the company's marketing policy; markets - study, operation and development of the markets of resources, goods and services;
- Customers - influence factors, purchasing and consumption processes, consumption patterns;
- Law - knowledge of the legislation on entrepreneurship and businesses, small business, consumer protection, advertising in the Republic of Moldova;
- Finance - finance management, use of accountancy and other financial systems;
- Informational systems - development and exploitation of informational systems with an impact on the realization of managerial functions in the organization;

- Human resources - human resources management within organizations, theories and managerial practices.
- Operations - management of resources and operations.

Upon completion of the study programme, students will have the following relevant academic and business skills:

- To solve complex problems in the field of business administration;
- To set up and develop a business;
- To know ways of identifying business ideas and assessing opportunities;
- To possess methods of assessing and minimising risks in business;
- To ensure that activities are carried out in accordance with the legislation in force;
- To adjust the organisation's activity to the requirements of the environment;
- To adopt optimal decisions in conditions of risk and uncertainty;
- To develop the organizational structure of the organization;
- To assess and improve the efficiency and effectiveness of activities in the organization;
- To apply quality management systems;
- To organise the research process in the business and administration field;
- To develop and coordinate project implementation;
- To know the area of competence and involvement of managers at different hierarchical levels;
- To use and manage available resources efficiently;
- To apply the principles, values and norms of professional ethics.
- To self-motivate and increase the efficiency of their own activity;
- To form teams and develop collaboration;
- To motivate and create productive work relationships;
- To communicate convincingly and efficiently, including in an international language.

The objectives and generic learning outcomes

The concern for the continuous increase in the amount of knowledge acquired by students, from different domains, no longer corresponds to the current education. The amount of information grows at an extremely rapid pace, training education in pursuing this increase is virtually unachievable. The emphasis is on the formative aspect, the student to learn how to master and use the information, using the skills and capacities that the faculty has developed. However, this accent displacement does not imply a disregard for the knowledge and the role they have, because even the training and development of skills and capacities are achieved through them within the framework of the learning processes.

In the context of the above, we advance the following objectives:

The **objectives of the Business and Administration Bachelor's degree programme** can be summarized as follows:

- ✓ Training of specialists in business management through Bachelor's degree studies;
- ✓ Creating skills in the business area by organizing courses on specialty disciplines such as: Finance, Accounting, Marketing, Management etc.;
- ✓ Use of student-centered teaching methods, including problem-based learning;

- ✓ Offering the possibility to study business through a holistic approach in different contexts and from different perspectives;
- ✓ Preparing students for the challenges of a 21st century management;
- ✓ Promoting employability by involving students in the search and finding of answers to a variety of genuine business issues;
- ✓ Preparing students for further Master's degree studies or others.

Learning objectives:

- ✓ Knowledge of business management functions and how business and management integrate with each other;
- ✓ Understanding the complexity, changing nature, ambiguity and other challenges generated by the business environment;
- ✓ Knowledge of contemporary aspects in business management, including sustainability, globalisation, corporate social responsibility, diversity and governance.
- ✓ The ability to work efficiently both individually and in the team with others.

3.2 SEMESTERS

3.2.1 Semester 1

Semester theme: ORGANIZATION – AS A KNOWLEDGE CREATION ENVIRONMENT

In the first semester, the "Business and Administration" study programme will include 5 courses: Microeconomics, Economic mathematics, Business information technologies, Introduction to PBL and Organization management.

Microeconomics is a fundamental course that familiarizes students with the foundations of the contemporary market economy. Microeconomics aims to study the behaviour of individual economic agents and the relations between them in the market of goods and services and on the market of production factors. Students study different market structures: the market with perfect competition, monopoly market, oligopol, monopolistic competition.

Economic mathematics increasingly finds its application in economic life. The major purpose of studying the given course is to familiarize students with the machine and the mathematical methods necessary to solve the various economic problems.

The *Business information technologies* course aims to form skills and practical abilities for the exploitation of ICT.

Introduction to PBL provides students with basic knowledge of the method of problem-based learning: how to correctly formulated a problem, what is the structure of a project, how to work with bibliographical sources, how to avoid plagiarism, etc. During this course, students will get the first group work experiences on a mini-project.

Organization management is a specialized course, which will allow the initiation in the speciality chosen by the knowledge obtained within the course, but also through the development of skills to work in the team, communication, identification of problems and early-stage search for certain solutions. A project will be developed within this course.

Learning objectives:

- Providing students with a specific framework for understanding the foundations of the contemporary market economy;
- Training of skills necessary for formulating and solving various problems of behaviour of the consumer, producer, evaluation of production costs, etc.;
- Explaining the manifestation of economic laws at the microeconomic level;
- Awareness of the importance and role of mathematical methods in shaping economic and social activity;
- Deeper knowledge of the methods of higher mathematics in order to shape and manage economic phenomena;
- Analysis of concrete situations and problems and the choice of those methods as effective as possible for their solving;
- Application of modern tools (IT) for the processing and presentation of information in all disciplines in the field of economics;
- Knowledge of the basic components of the PBL;
- Acquiring of the main concepts, principles and functions of management, the logic of the evolution of managerial science;
- Developing skills to apply individual and group decision-making methods and the creative approach to their realization;
- Developing communication skills and appropriate skills to achieve success in activity.

Learning outcomes:

Upon completion of the semester, students will have the following competences:

1. Knowledge of the foundations of the contemporary economy, the theoretical bases of the balance and imbalance of the market, various market structures.
2. Designing the behaviour of individual economic agents, relationships that form between them in different markets.
3. Information management in order to assess the optimum choice of the consumer, the valuation of production costs and the efficient operation of the manufacturer.
4. Application of economic models in the study of economic processes and phenomena.
5. Interpretation of economic problems and modalities of settlement in terms of current systematic transformations of the economic and social environment.
6. Elaboration of models, schemes for obtaining results through the use of modern features specific to applications (IT) to automate the process of processing and analysis of data.
7. Application of classical software in the assessment of economic operations in order to obtain timely information to be proposed as a support for decision making.
8. Argumentation of their points of view on a problem, expressing the advantages and inconvenience of various options.
9. Knowledge of organization activities, management and professional realization of people within organizations.
10. Working techniques and skills needed in carrying out a project.

Year I, Semester I

	Module	ECTS	Assessment form
1.	Microeconomics	5	E
2.	Economic mathematics	5	E
3.	Business information technologies	5	E
4.	Introduction to PBL	5	E
5.	Organization management: Project	10	E/P
TOTAL		30	

At the end of the semester, which lasts 15 weeks, the examination session takes place. To be admitted to each exam in part the student must show that he/she is ready for this exam. This is done by:

- Two Tests (T1, T2), which take place during the semester. The student is admitted to the exam if he/she got the promotion mark in both tests (higher than or equal to 5);
- Obtaining the pass mark in the current success (CS), that is, the activism that the student showed at the discipline in question during the semester and the degree of preparation for each seminar;
- Obtaining the promotion mark in the individual work (IW). The individual work is appreciated through the student's realization of the tasks that were assigned by the teacher to each student.

The student, to be admitted to the exam, must have promotion marks on each component listed above. The final mark (FM) that the student gets after the final exam (FE) shall be determined, taking into account the following:

$$Nf = 0,15 \cdot T_1 + 0,15 \cdot T_2 + 0,2 \cdot Rc + 0,1 \cdot Li + 0,4 \cdot Ef \quad (1)$$

To be promoted in the second semester, the student must pass the exams in the session. If the student has arrears in any discipline, he/she can take the exam in two additional sessions: one with a one-week duration - at the end of the year of study, and one lasting two weeks at the beginning of the following year of study.

Each discipline, according to the educational plan plan, requires a certain workload from the student, depending on the number of ECTS allocated to the discipline in question. An ECTS represents 30 hours of work. Some of these hours are performed in the auditorium, face-to-face with the teacher, the other part, the larger one, represents the individual work of the student. The individual work of the student is monitored and evaluated by the teacher and involves the student's realization of some reports, the study of certain additional specialty sources of the programme, the elaboration of projects.

Assessment is an integral part of the course unit. The teaching and training elements at AESM are planned using different types of assessment, the use of which is in strict accordance with the

AESM regulation on the assessment of student learning activity². According to this regulation, at AESM, the following forms of assessment are used:

Formative or progress assessment. It is carried out throughout the training, in small and successive steps; ensures an effective periodicity of the professional training process, is designed to identify the weaknesses and strengths of the training, resulting in a sufficiently objective analysis of the mechanisms and the causes of the failure or success of the students. The formative assessment of the students is continuous during the course unit/module/academic year, through knowledge and skills tests, seminar reports, practical laboratory work and projects, and applications in the specifics of specialization.

Cumulative or final assessment. It is carried out at the end of a training period (semester, academic year, schooling cycle). The main purpose of the cumulative assessment is to highlight the effects, efficiency, overall learning outcomes. This type of assessment highlights the level and quality of student training by reporting on the objectives set for the professional training. The final assessment methods are laid down in the educational plan and be be: exam, verification, project, portfolio, defence of the Bachelor's degree thesis / graduation project, depending on the graduated study programme. The assessment procedures are described in the curriculum of the discipline.

The marking system is of 2 types:

1. by marks offered from 1 to 10. The final mark is two digits after the comma;
2. by ECTS grading.

The student assessment and marking scale is shown in Appendix 8.

In order to increase the quality of the teaching and meeting of the requirements formulated by the beneficiaries, the "Business and Administration" study programme is monitored and evaluated periodically through the following activities:

- Student questioning:
 - Assessment of the quality of teaching
 - Assessment of students' satisfaction with the conditions and services offered by AESM;
- Questioning employers;
- Questioning the AESM graduates.

More and more the teaching-learning-assessmenty process at AESM is carried out through the use of ICT tools, in particular the e-Learning platform is applied - MOODLE. It is highly appreciated by students, as they can learn in their personal rhythm, anywhere and at any time; all the materials relating to the course are focused in one place; they can self-assess, and the Forum allows students to interact with the teacher and inform themselves from the first source, etc.

In the first semester students will develop a project, which is based on the knowledge of the organization and its internal environment through the processes, which take place within it, through the knowledge, identification and characterization of the variables of the internal environment but

² http://ase.md/files/documente/regulamente/interne/3.1_evaluare_stud_1.pdf

also through knowledge and identification of factors of direct and indirect influence. In this project students will show that they master economic terminology, know the main economic indicators, which characterize an organization, and are able to carry out those calculations.

3.2.2 Semester 2

Semester theme: THE COMPANY IN THE NATIONAL AND INTERNATIONAL CONTEXT

The second semester contains course modules that allow students to advance in the knowledge of economic sciences: Macroeconomics, Economy of economic units, World economy and European integration, as well as to know research methods for business and accumulate project experience. The project in the second semester contributes to the development of critical thinking, analysis and synthesis skills, drawing conclusions based on the analyzed materials.

Macroeconomics is a fundamental course, which contributes to the training in students of the competence to analyse the mechanisms of functioning of the market economy and implementation of macroeconomic analysis in practical activity, macroeconomic models, imbalances of the open and closed economy, macroeconomic outcome indicators.

Economy of economic units is a theoretical and applicative course and is aimed at training in students a complex, systemic image on the structure and mode of organisation and functioning of economic units; a coherent economic thinking that will serve to properly assess the opportunities and risks in the actions undertaken by economic units and decisions taken to streamline their business; familiarizing students with evaluation and methods of calculating economic activity indicators and resource efficiency in economic units.

World economy and European integration form and reinforce the knowledge and ability of students to analyse the structural elements and processes within the world economy, interdependencies and interaction of national economies, the world economic circuit, the evolution and mechanisms of European integration.

Research methods for business - the module familiarizes students with the basis of the collection, presentation and analysis of data, as well as the application of the model of research and decision-making in business practice. The course also includes the elaboration of a project with the generic "The company in a national and international context", which aims to provide students with knowledge of how to develop the company, taking into account economic, political, socio-cultural, technological factors, etc.

Year I, Semester II

	Module	ECTS	Assessment form
6.	Macroeconomics	5	E
7.	World economy and European integration	5	E
8.	Economy of economic units	5	E
9.	Research methods for business Project: The company in a national and international context	15	E/P
	TOTAL	30	

Learning objectives and outcomes

Upon completion of the semester, students will have the following competences:

- To explain the concepts of the category system of Macroeconomics: aggregate demand, aggregate offer, labour market, monetary market, inflation, unemployment, macroeconomic indicators, economic growth, open economy;
- To acquire skills in the field of macroeconomic phenomena analysis;
- To know the particularities of the functioning of the national economy markets;
- To know the methods and mechanisms for assessing the results at macroeconomic level;
- To be able to develop and assess balancing policies, macroeconomic processes;
- To know the most effective methods and techniques to influence the activity of economic units with a view to maximising the results of economic activity;
- To obtain skills in conducting economic calculations and assessing the results of economic units activity;
- To estimate the efficiency of resource use in economic units;
- To propose ways to improve the economic performance of the economic unit;
- To know and apply various research methods for business.
- To be able to perform the primary processing of gross statistical information, a work following which the indicators are obtained: with an advanced degree of generalization;
- To analyse and interpret the results obtained from conducting statistical studies as well as testing, assumptions on the future trend of the evolution of statistical phenomena and processes;
- To establish the role and place of the main elements of the world economy system, to determine the impact of community policies on the evolution of the European economy as a whole and of the company in particular.

The progression within the semester, the assessment of students, the methods used in the assessment, the types of assessment, the marking system, the monitoring of student activity are identical to the information presented for the first semester.

It is necessary to note the promotion of the year of study, which in AESM is carried out in accordance with the AESM regulation on the promotion of the year of study³. It is promoted in the following year of study the student who accumulated during the full academic year the number of compulsory study credits provided for in the educational plan for that year.

At the same time, the student's enrollment in the next year of study is conditional on the accumulation of minimum 40 (30 for part-time education) ECTS at the compulsory course units/modules provided for in the annual study Contract for the current year of studies and accumulation of the total number of credit points, provided for by the educational plan for previous years of study, as well as for the year of completion of university studies.

The elaboration of the project involves the use of a more complex research methodology, it must lead to students' understanding of the actuality of the different components of the development visions, and even more, to the understanding that they do not exclude each other, but are living in

³ http://ase.md/files/documente/regulamente/interne/3.6_promovare.pdf

theory today and especially in the practice of development. We believe that this is the most open and fertile context in which a systematic reflection and an academic debate, even a political one, about the possibilities of developing the own contemporary society, can really bear fruit.

3.2.3 Semester 3

Semester theme: MARKETING AND MARKETING RESEARCH

The third semester contains 4 important modules like: Marketing, Marketing research, Business culture and ethics, Qualitative research methods, which also includes the elaboration of a project.

The Marketing course aims to deepen students' knowledge in the field of marketing theory and practice, familiarizing them with the application of the principles and techniques of business marketing, including the realization of marketing research and their use in optimizing management decisions.

Marketing research gives students the opportunity to know in detail the operation of the informational marketing mechanism in companies and to form practical skills for decision-making based on truthful and accurate market information.

Business culture and ethics informs the students about the peculiarities of ethical behavior in business, to develop knowledge and skills to evaluate and modify organisational culture, to solve ethical dilemmas, to elaborate a corporate social responsibility programme, as well as gain knowledge in business etiquette.

The course of *Quantitative research methods* will give students the opportunity to know and apply quantitative research methods, critically interpret the results and perform analyses based on statistical models. Quantitative research methods allow accurate assessment of existing market phenomena and obtaining data necessary to substantiating marketing policy. The semester project "Marketing and marketing research" will provide the possibility of academic progress by applying the knowledge, skills and competences of the previous modules (both theoretically and the methodology applied).

Learning objectives and outcomes

Upon completion of the semester, students will have the following competences:

- To obtain practical skills for the elaboration and validation of a simple, multiple linear econometric model, in the light of the work assumptions;
- To apply econometric methods and to carry out forecasts of the state and development of economic processes;
- To acquire the main concepts, principles and functions of business ethics and corporate social responsibility, the peculiarities of ethical behaviour;
- To develop skills to implement methods of improving ethical behaviour;
- To develop correct behaviour;
- To develop judgement based on knowledge of the social and ethical issues arising in work or study;
- To address ethical issues in the field of management;

- To know and monitor the factors of the marketing environment, to investigate the characteristic of the real and potential market, to be able to identify possible ways of increasing the market;
- To know the peculiarities of business to business market operation;
- To design and use informational marketing systems, marketing research to solve strategic and tactical marketing problems, use current internal and external information to substantiate tactical marketing decisions;
- To apply in practice the methods of the survey, observation, experiment, documentation, techniques for quantitative and qualitative analysis of data, including the use of the computer;
- To be able to elaborate marketing policy in businesses and organizations.

Year II, Semester III

	Module	ECTS	Assessment form
10.	Marketing	5	E
11.	Marketing research	5	E
12.	Quantitative research methods Project: Marketing and marketing research	15	E/P
13.	Business culture and ethics	5	E
	TOTAL	30	

In the third semester continues to increase the workload of the students in teams based on the project. We considered that the knowledge that students managed to accumulate at this stage, along with the courses they attend in parallel, will allow them to draw up a project in the field of marketing.

The project will include a complex problem, based on marketing research. Students must demonstrate the skills of collecting, analyzing and interpreting information using investigative methods and techniques, for the purpose of knowledge of the environment, identifying business opportunities, anticipating market trends. Students must realise that marketing research comprises a broad area of activity, becoming a necessity for every economic agent in terms of increasing the complexity of environmental factors. The areas of marketing research are very numerous and they are determined according to the activity carried out by the economic agent and the intended purpose.

3.2.4 Semester 4

Semester theme: COMPANY'S PROCESUAL ORGANISATION

In the fourth semester, the study programme contains 4 modules: Company's accounting and finances, Business law, Operational management, and elaboration of a project with the generic "Company's procesual organisation".

Company's accounting and finances is aimed at providing students with both theoretical and practical knowledge regarding financial-accounting matters, data processing and obtaining information related to assets, liabilities, own capital, income and expenditure necessary for internal decisions, the choice of financing sources, the way of allocating financial resources, the efficiency of the use of funds, the estimation of financial results, etc.

The course of *Business law* aims to familiarize students with the fundamental legal notions of organizing and conducting the business, the learning of legal language and of the principles of law governing the business environment.

Operations management module will allow students to apply knowledge from the fundamentals of management regarding basic management functions within the economic units, with the aim of ensuring the correct and efficient management of (material, financial, human, informational) resources and adapting economic units to market requirements.

Learning objectives and outcomes

Upon completion of the semester, students will have the following competences:

- To know the peculiarities of the manifestation and use of economic laws in internal production relationships, with the current management system and with the manifestation of basic management functions - planning, organizing, controlling, motivating - in the production activity;
- To understand the legal relations specific to the business environment; the principles, concepts and legal institutions specific to the business environment;
- To carry out the activity in accordance with the laws and regulations established.
- To use the terms specific to the accounting language correctly;
- To propose personal assumptions for explaining accounting situations;
- To issue judgements with accounting content; to apply qualitative methods of analysing and processing financial information;
- To use regulations and normative acts in the financial field, to know the sources of financing, the criteria for allocating resources, the financing policy, the investments and dividends applied within the company;
- To know and apply methods of managing financial resources and to analyse alternatives to mobilising and placing financial resources for the purpose of choosing the optimum variant;
- To predict the financial indicators relating to the activity of the company and to draw up directions for action in order to achieve them;
- To strengthen the theoretical competences held in the field of management in the real economic environment of a firm/institution, finding the appropriate methods to improve the performance of the business performed in the firm;
- To be able to apply the knowledge in the field of conducting the basic function of management, planning, within the economic units, with the aim of the correct management of resources and the adaptation of economic units to market requirements;
- To ensure an increased awareness of existing employment opportunities in the labour market, national and European, in the field of study;
- To distinguish the tangencies and distinctions related to financial accounting and management;
- To promote excellence in the training and research process, in the processing, transmission and use of knowledge in the substantiation of decision-making processes;
- To realise the possibilities of "transfer" and "use" of knowledge acquired at the faculty in the real economy.

Year II, Semester IV

	Module	ECTS	Assessment form
14.	Operations management	5	E
15.	Company's accounting and finances	10	E
16.	Business law	5	E
17.	Project: Company's procesual organisation	10	E/P
	TOTAL	30	

In the fourth semester students will develop a complex project in the field of business management, based on the knowledge and competences they have achieved along the way. The project will allow analysis of all sides of business activity, highlighting certain problems in its activity, searching for solutions. The company can be a real (preferably) or a virtual one.

The „Company's procesual organisation" project will be a more complex one, which will also be based on the internship of students in a company (firms). Students will have to prove good knowledge of all processes in the company, the interdependence of the functions of the company, conducting a meaningful analysis of its activity.

3.2.5 Semester 5

Semester theme: SETTING UP AND DEVELOPING A BUSINESS

The fifth semester contains 1 optional course and 2 compulsory modules: Quality management and the Setting up and developing a business, which includes the elaboration of a group project.

In the *Quality management* course, students form and develop a general understanding of quality management concepts, standards for quality management systems, develop their skills of logical thinking, communication and decision making skills, the use of methods of streamlining the company's management, which can enhance both the quality of management and the quality of the results of the processes – products, services.

The *Setting up and developing a business* module aims to deepen students' knowledge of entrepreneurship, develop the spirit of initiative needed to put ideas into practice through creativity, innovation and risk-taking, such as and the ability to plan and manage projects.

The "Business and Administration" study programme, in semester V, proposes to students the following *optional courses*:

- *Fiscality* aims at forming a system of theoretical, practical and applicative knowledge in the field of taxation, as an object of study serving the necessity of knowledge and respect for tax regulations both by tax bodies and by taxpayers, so that through taxes, the financial, economic and social objectives pursued by the state can be achieved.
- *Risk management in business* – in this course, students form and develop a general vision of entrepreneurial risks, their methods of evaluation and effective management. They will also be able to apply different methods of risk minimization and management
- *Sales techniques* – the course aims to deepen students' knowledge in the field of theory and practice of the sales process and to provide students with knowledge about the sales cycle and the characteristics of each stage, the essential set of useful techniques and tools in the field of sales, develop networking skills with customers.

Obiectivele și rezultatele învățării

Upon completion of the semester, students will have the following competences:

- To identify and understand entrepreneurial actions, identify the skills of the entrepreneur and their own skills;
- To know the process of setting up and developing small and medium-size companies (own and for third parties);
- To identify sources of funding;
- To be aware of the launch and deployment of entrepreneurial activities in accordance with established laws and norms; adopt optimal decisions in the process of launching and developing the business; analysis of the internal and external environment of the business; adjusting activity to customer requirements for the purpose of raising the efficiency and effectiveness of entrepreneurial activities;
- To develop appropriate strategies and policies within a changing environment;
- To develop skills for assessing and minimising entrepreneurial risks;
- To define the concepts of economic activity in terms of risk and uncertainty;
- To establish the functional correlation between the level of risk and the economic result;
- To apply knowledge in determining the level of business risk by using quantitative methods (statistical-mathematical, use of expert method, etc.), including specific indicators and financial instruments for the coverage of risk
- To know and form skills to efficiently accomplish the sales of the company's products;
- To develop risk management strategies and models;
- To apply the legislation in force and the analysis of statistical information flows in order to determine the level of taxation; the calculation of tax liabilities and the reflection on fiscal reports; determining the impact of tax liabilities over the payer's financial situation.
- To acquire the main concepts, principles and functions of quality management, the logic of the evolution of quality management science;
- To develop skills for the implementation of quality management methods and standards for the quality control system;
- To use the documents of the quality management system, to determine the modalities for the dissemination of information; to know the requirements for drafting, modifying, disseminating documents;
- To demonstrate skills in the field of employment of human resources; training and professional development of staff.

Year III, Semester V

	Modulul	ECTS	Assessment form
18.	Quality management	5	E
19.	Optional course	5	E
20.	Project: Setting up and developing a business	20	E/P
	TOTAL	30	

The elaboration of the project in semester V will require students to have a profound knowledge of the legislation of the Republic of Moldova in the field of setting up and developing a business, stages of setting up a company, identification and calculation of risks related to business

development, identification and validation of the business idea, elaboration of the business model and presentation, support of the idea.

3.2.6 Semester 6

Semester theme: INTEGRATED COMPANY MANAGEMENT

In the sixth semester, the study programme includes: Corporate management, an optional course and the Bachelor's degree project (Bachelor's degree thesis).

The *Corporate management* course aims at the training and development of corporate management precepts, corporate governance principles and models, corporate union types, legal bases for the management of a joint-stock company in the Republic of Moldova.

Students, in the last semester, will choose an optional course from the following options:

- *Supply and sales management* - forms and develops a general understanding of the concepts of supply and sales, develops to students the logical thinking skills, the decision-making skills necessary for the successful work of a manager.
- *Comparative management* aims to form in students a vision of cultural differences and their influence on the management models used in the countries of the world, as a result students will obtain the necessary skills to determine the factors that influence the organizational culture of the company.
- *Information systems in management* - forms theoretical knowledge and practical skills in the field of designing and using information systems in management. The accumulated knowledge will serve to the effective use of the computer means to solve the daily economic problems related to data processing, obtaining pertinent information necessary to substantiating and adopting decisions.

The *Bachelor's degree thesis (Bachelor's degree project)* is the original scientific work, developed through the student's independent research activity, and aims at evaluating students' competences of conducting research, applying theoretical knowledge in the process of elaborating practical solutions specific to the economic and managerial field or the carrying out of the case study, to draw up a unitary material comprising their own observations and conclusions, demonstrating critical thinking.

The elaboration and defence of the Bachelor's degree thesis is a prerequisite for the award of a qualification.

The period of elaboration of the Bachelor's degree thesis is preceded by an internship, which aims to consolidate theoretical knowledge, the selection of information needed to develop the thesis and also to obtain skills in the field of specialisation.

Learning objectives and outcomes

At the end of the semester the student must:

- Develop the skills of applying corporate management methods and legislative acts in corporate decision making;
- Ensure the deployment of collaborative activities between corporate management

subjects;

- Determine the main forms of corporate unions to streamline corporate activity; use methods of protection against hostile takeovers;
- Determine the rights and obligations of management bodies in corporate management; develop some fair and efficient working relationships;
- Develop the skills of analysis and synthesis, effective communication; organisational qualities; practice the experimental application of theoretical knowledge acquired during the studies;
- Learn how to work in an organization different from that of the university, integrate into existing work teams and actively participate in the current activities;
- Look for ways of applying in-depth theoretical knowledge to its training courses, for a better correlation of education and the theoretical training that students receive in the faculty with labour market requirements.
- Apply theoretical knowledge in organizing and conducting activities in the functional structures in which the internship is carried out;
- Deepen the knowledge of the legislation and the rules in force aimed at the work of the organisation and on the basis of which specific operations are carried out;
- Develop written and oral scientific communication in the drafting and presentation of the Bachelor's degree thesis;
- Use digital-action tools, create documents and use basic electronic services in research;
- Apply at least one foreign language for the use of specialized texts in a foreign language in the drafting of the Bachelor's degree thesis;
- Assume ethical responsibility for the results of the research entered in the Bachelor's degree thesis.

Year III, Semester VI

	Modulul	ECTS	Assessment form
21.	Corporate management	5	E
22.	Optional course	5	E
23.	Bachelor's degree thesis	20	E/P
	TOTAL	30	

According to the regulation on the organisation of the completion exam of Bachelor's degree studies at AESM ⁴, the Bachelor's degree exam includes a single task: public defence of the Bachelor's degree thesis.

The students who fully completed the educational plan and accumulated the number of credits established for the "Business and administration" study program are admitted to the Bachelor's

⁴ http://ase.md/files/documente/regulamente/interne/3.2_examen_licenta.pdf

degree exam. The lists of students admitted to the Bachelor's degree exam, drawn up by the Dean of the Faculty and approved by order of the rector of the AESM one month before the start of the Bachelor's degree exam, are presented to the Bachelor's degree exam Commission.

The Bachelor's degree thesis can be elaborated in the team, in accordance with the provisions of the Regulation on the team elaboration of the Bachelor/Master's degree thesis ⁵.

In the process of defending the thesis, the graduate is assessed according to the following criteria:

- a) critical understanding of the notions, conceptions, theories and principles specific to the training field;
- b) demonstration of generic and specific competences acquired by the graduate during the studies;
- c) conducting research and demonstrating the ability to apply theoretical and methodological knowledge in the process of developing practical solutions specific to the field of professional training;
- d) use of knowledge relevant to the training area in the formation and support of the arguments, conclusions in the process of developing and defending the Bachelor's degree thesis;
- e) demonstration of communication competences in the process of defending the thesis (well structured message, appropriate language, use of technical means, politencies, prompt answers to the topic).

The Bachelor's degree thesis is assessed with marks, based on the marking scale from 10 to 1, the minimum promotion mark being 5. The marks shall be converted to the ECTS grading scale, respectively:

Mark at the Bachelor's degree exam	ECTS scale
10	A
9	B
8	C
7	D
5/6	E
4	FX
1/2/3	F

The final mark awarded in the result of the defence of the Bachelor's degree thesis shall be determined by voting by the members of the Bachelor's degree Commission.

Thus, the study through 6 semesters, under the present plan, involves the accumulation of 90 credits of studies following the listening of theoretical courses and the accumulation of 90 credits of studies following the realization and defence of projects elaborated in the team. The implementation of the BA-PBL programme will allow us to reach the 50:50 ratio between lectures and teamwork. We are aware that even the achievement of this ratio will not place us, by the level of use and

⁵ http://ase.md/files/documente/regulamente/interne/3.4_teza echipa.pdf

implementation of the PBL, in line with Aalborg University, where this model was initiated in the year 1972, and the experience currently used was accumulated in the course of 45 years.

For each module included in the educational plan there will be elaborated the curriculum, where there will be specified the number of hours, including direct contact and individual work, objectives, learning outcomes, module content, course structure, assessment method, etc.

4 ROADMAP

4.1 INTRODUCTION

In order to ensure the sustainability of the problem-based learning – PBL, a roadmap (Appendix 2) was developed. This includes several activities necessary to be implemented at the institutional and programme level in order to achieve the objective. The activities under the roadmap have already begun, with some activities being accomplished, others are going to start.

The development of the roadmap began during the start of the PBLMD project. The persons responsible for certain components of the PBLMD project were involved in this activity: institutional coordinator - A. Cotelnic, responsible for the programme - A. Solcan, responsible for the pedagogical component - S. Baciuc. Subsequently, other people involved in the PBLMD project were consulted, in particular, teachers from different departments, who are involved in the teaching activity in the BA-PBL pilot programme, the heads of these departments, the students in the pilot groups, as well as representatives of the business environment. One of the criteria for selecting teachers was the high-level knowledge of the English language, as the studies are provided in English.

Following the consultation of the literature on the educational phenomenon, we have delimited two fundamental methods, “problematization” and “learning by discovery”, considered by us as significant for an interactive approach to the teaching-learning process. From the perspective of valorization of the interactive potential of the two methods, other methods, techniques and didactic procedures will be addressed in the study process.

The problematization and learning by discovery are the (inter)active attribute of education which mainly contributes to the transformation of the instructional-educational process from a passive act of knowledge reception, in an act of permanent search, deepening into the already accumulated knowledge, with a view to formulating a solution to a problem perceived by students in the real field of the economy.

In formulating the *basic hypothesis* we started from the personal observations of the project members, particularly in the framework of the mobilities carried out, strengthened with theoretical aspects regarding the dependence between the use of interactive methods and students’ learning performance. Thus, we formulated the *general hypothesis*: the systematic use of interactive methods in teaching-learning academic disciplines contributes significantly to improving learning performance and facilitates the employment of graduates on the labour market.

In order to ensure the quality of teaching, several activities are envisaged: teacher training, consultation of employers and their involvement in teaching, consultation and guidance/coordination of internships, conducting surveys to have the feed-back from the students. We also expect to learn the opinion of employers through a questionnaire on conducting student internship and their level of preparedness for the activity in question.

We could formally divide the activities mentioned into several directions:

- I. Connection of the BA-PBL study programme to the good practice of problem-based learning of European universities;

- II. Continuous training and development of PBL teachers;
- III. Conducting studies under the BA-PBL programme;
- IV. Extending the PBL practice to other study programmes.

4.2 PERIOD 1

Connection of the BA-PBL study programme to the good practice of problem-based learning of European universities.

The *main goal* of this stage is to develop an educational plan for “Business and Administration”, which will be based on the principles of problem-based learning, and its accreditation.

In order to achieve this goal, we have submitted the following *specific objectives*:

- Continuous monitoring and improvement of the BA-PBL pilot study programme;
- Review of the BA-PBL educational plan;
- Accreditation of the BA-PBL study programme by the National Agency for Quality Assurance in Education and Research (ANACEC);
- Development of new curricula and coverage of all disciplines of studies with necessary didactic materials.

Period: March 2019-2022

Expected outcomes:

- Study of literature in the field of problem-based learning, study of educational plans for the “Business and Administration” study programme in the partner universities of the European Union;
- Educational plan for the “Business and Administration” study programme revised/updated and approved at the meeting of the AESM Senate, coordinated with the Ministry of Education, Culture and Research;
- BA-PBL study programme accredited by ANACEC;
- Curricula developed for all academic disciplines for the BA-PBL programme;
- Didactic materials needed to train students elaborated.

4.3 PERIOD 2

Continuous training and development of PBL teachers

The *main goal* of this stage is the formation and development of the PBL-adjusted teaching competences.

In order to achieve this goal, we have submitted some *specific objectives*:

- Creation of the PBL subdivision within AESM, which would provide permanent support to departments and teachers in order to maintain academic excellence and PBL efficiency;
- Creating/maintaining the PBL-AESM page on the www.ase.md website;
- Designation of the semester responsible;

- Elaboration of methodical support for teachers involved in PBL programmes;
- Organizing the continuing training of teachers;
- Initiation of partnerships with universities in the country and abroad for the mobility of teachers.

Period: May 2019 - December 2021

Expected outcomes:

- Creation of the PBL subdivision within the Section of Studies, Curricular Development and Quality Management;
- PBL page of AESM on the site www.ase.md;
- Designation, within the BA-PBL study programme, of the semester responsible to provide assistance/information to students on the courses to be studied and to coordinate the activity of the teaching staff in that semester;
- Methodical support for PBL for teachers elaborated;
- A growing number of teachers trained for PBL teaching;
- Partnerships signed with universities in the country and abroad for the mobility of teachers;
- Teachers beneficiaries of academic mobility programmes.

4.4 PERIOD 3

Conducting studies under the BA-PBL programme

The *main goal* of this stage is to continue to conduct studies under the BA-PBL programme.

The achievement of this goal requires the following *objectives* to be resolved:

- Organization of admission to the BA-PBL programme;
- Enriching existing sources at the library for each discipline, including specialty magazines and subscriptions to the various online databases, which provide students with access to information and knowledge needed to develop projects;
- Preparation of spaces/halls for PBL;
- Building partnerships with representatives of the business environment.

Period: June 2019 - December 2021

Expected outcomes:

- Elaboration of information flyers about the BA-PBL programme and their transmission to potential students;
- Mediatization of information on the website www.ase.md, Facebook page etc.;
- Groups of teachers and students, who go to high schools to disseminate information regarding the PBL-based studies;
- Increasing the number of rooms for PBL-based studies. Organizing the necessary space for teamwork in the lecture halls, as well as in the AESM's scientific library, by dividing into individual working areas for each team;

- Providing students and teachers with access to existing databases in the AESM's scientific library, expanding them, enriching existing sources at the library with literature in the field of PBL and other interactive methods.
- Partnership agreements with representatives of the business environment regarding the organisation of internships.

4.5 PERIOD 4

Extending the PBL practice to other study programmes

The *main goal* of this stage is to extend the number of study programmes within the AESM that would apply PBL.

In order to achieve this goal, we advance the following *specific objectives*:

- Extending PBL in all groups from the BA study programme;
- Promotion of good BA-PBL practices, with a view to knowledge by members of the academic community, as well as other interested persons, of the advantages that problem-based learning is offering and opportunities that these students will have;
- Identification of study programmes for PBL enlargement;
- Elaboration of the educational plan with PBL for the programmes identified;
- Implementation of PBL in the identified programmes.

Expected outcomes:

- A unique study programme of "Business and Administration" and a higher number of students studying on the basis of PBL;
- Events to disseminate good PBL practices organised with the participation of members of the academic community at AESM as well as business partners;
- Elaboration of at least 5 new educational plans with PBL for the programmes identified;
- Launching educational plans based on the use of PBL for at least 5 programmes at ASEM.

5 ACTION PLAN

5.1 INTRODUCTION

The implementation of the roadmap requires that it be detailed in concrete actions, which we have summarised in the action plan presented in Appendix 3. Its elaboration started from the purpose submitted for each period and from the specific objectives, the availability of financial, time, human, informational resources required for each period.

The changes mentioned in the educational plan existing for the “Business and Administration” study programme require the adaptation of theoretical and practical courses to the new requirements. It is necessary to prepare case studies, prepare didactic materials, which would allow for better understanding of the essence of using PBL, the role of the teacher, the role of the student, which involves teamwork, how the division of responsibilities takes place, how the assessment takes place, etc.

All activities mentioned will require certain resources. The necessary financial resources will be covered from the project (mobility of teachers and students, procurement of equipment, etc.), with the support of AESM (organizing trainings with teachers, motivating them, performing repairs, procurement of equipment, etc.). But in order to achieve the said actions we will also need other resources: human, material, informational, time.

5.2 ACTIVITIES AND RESOURCES

5.2.1 Period 1

Connection of the BA-PBL study programme to the good practice of problem-based learning of European universities

In order to achieve the specific goal and objectives for this stage, we envisaged the following actions:

- *Continuous monitoring and improvement of the BA-PBL pilot study programme*
 - Questioning students regarding the quality of the teaching process under the PBL;
 - Consultation with representatives of the business environment in order to determine their expectations regarding the competences to be followed by the programme;
 - Performing corrective/preventive actions.
- *Review of the BA-PBL educational plan*
 - Evaluation/review of the BA-PBL pilot educational plan (Appendix 4);
 - Approval, at the Senatemeeting, on the recommendation of the BAA Faculty Council, of the new BA-PBL educational plan;
 - Coordinating the new educational plan with the Ministry of education, Culture and Research.
- *Accreditation of the BA-PBL programme by ANACEC*

- Elaboration of the BA-PBL self-evaluation Report for accreditation by ANACEC;
- Accreditation, following the external evaluation, of the BA-PBL study programme for a period of 5 years;
- *Coverage of educational disciplines with necessary didactic materials*
 - Elaboration of the curriculum for all BA-PBL academic disciplines;
 - Elaboration of didactic materials needed to train students.

In order to achieve the specific goal and tasks submitted at this stage we will need different resources.

Human Resources.

Management team:

- Institutional coordinator – A. Cotelnic, first vice-rector;
- Responsible for the study programme – A. Solcan, dean of the faculty of Business and Business Administration;
- Responsible for the pedagogical component – S. Baciuc, head of the Service for Studies, Curriculum Development and Quality Management.

The implementation team was formed by the order of the Rector of AESM from among the teachers, who teach at the specialty “Business and Administration”, predominantly from the departments of Management, Marketing and Logistics, Accounting and Economic Analysis. The pedagogical team is also formed.

Material resources: we will need computers, paper, files, spaces for discussion, for various activities. All these will be made available by AESM in the required amount and structure.

Information resources. Can be obtained from the Internet, the AESM being 100% connected to the Internet, from the AESM’s library, which is subscribed to several databases, from the literature available in the library. It is necessary to consult the Regulations on the mobility of teachers, available on www.ase.md^{6,7}.

Time resources. All activities foreseen in the project will be carried out outside basic hours, where teachers have lessons with students. Sometimes it will be necessary to also use Saturdays to complete certain activities in time.

Financial resources. Some of the resources will be allocated from the PBLMD project, another part will be allocated by the AESM by purchasing consumable materials, providing the necessary spaces for activities, Internet connection, computer use, etc.

⁶ Regulamentul privind mobilitatea studenților, a personalului didactic, didactic auxiliar, de cercetare și a personalului nedidactic care participă la programul ERASMUS+/KAI; disponibil la http://ase.md/files/documente/regulamente/interne/3.15_Regulament-Erasmus.pdf

⁷ Regulamentul cu privire la mobilitatea academecă în ASEM, disponibil la http://ase.md/files/documente/regulamente/interne/3.11_mobilitate.pdf

5.2.2 Period 2

Continuing training and development of PBL teachers

In order to achieve the specific goal and objectives for this stage, we envisaged the following concrete actions:

- *Creation of the PBL-ASEM subdivision*
- *Creating/Maintaining the PBL-ASEM page on the site www.ase.md*
- *Designation/establishment of the semester responsible*
- *Elaboration of methodical support for PBL for teachers*
- *Organization of continuous teacher training courses*
- *Initiating partnerships with universities in the country and abroad for the mobility of teachers*

This stage will also require several resources.

Human Resources. We consider the role of human resources as defining in the achievement of all stages of the project.

Several working teams will be formed under this stage in order to accomplish the tasks required:

- Working Team under the PBL – AESM subdivision
- Team responsible for semester - 6 persons (1 teacher/semester)
- Team to develop methodical support for PBL for teachers
- Team responsible for organising the continuing training of teachers
- Team responsible for the initiation of partnerships with universities in the country and abroad for the mobility of teachers.

Material Resources. Consumable materials will also be needed at this stage, for the elaboration and publication of advertising material, for the organization of admission, which will be offered by AESM.

Information resources: they are insured by the information available in the scientific library of ASEM, by Internet sources, to which there is unlimited access at AESM, the PBLMD project website.

Time resources: All activities expected at this stage require time to achieve them. It is expected to be incorporated into the working hours.

Financial resources: Some of the resources will be allocated from the PBLMD project, another part will be covered by AESM.

5.2.3 Period 3

Conducting studies under the BA-PBL programme

In order to achieve the specific goal and objectives for this stage, we envisaged the following concrete actions:

- *Organization of admission to BA-PBL*

- *Increase in the number of groups from 1/year of studies learning according to the BA-PBL programme to at least 3*
- *Expanding databases, enriching existing library sources with PBL literature and other interactive methods*
- *Preparing PBL spaces/classes and adapting them to teamwork*
- *Building partnerships with representatives of the business environment*

In order to achieve the actions foreseen at this stage, certain resources will be needed as follows:

Human resources:

- Work team for the elaboration of advertising material for organizing the advertising campaign.
- The team involved in the campaign to promote the educational offer, which will go to high schools in the country, with the aim of familiarizing potential students with the advantages of learning at this programme;
- A work team will be created to organise the admission and selection of candidates for studies;
- The team that will perform the work of repairing/preparing the premises and installing the machine for organizing teamwork;
- Team responsible for the creation of partnerships with representatives of the business environment.

Material resources. There will also be a need at this stage of consumable materials, for the elaboration and publication of advertising material, for the organization of admission, which will be offered by AESM. There is also a need for transportation, which will ensure the travel of the team to high schools in the Republic. In this respect, AESM provides a car with a driver, or if a minibus with driver is needed, gasoline is required. Each member of the team during the day is provided with water and a food package to dine.

Materials for repair in the study rooms and installation of the equipment procured in the project will be needed.

5.2.4 Period 4

Extending PBL practice to other programmes

In order to achieve the specific goal and objectives for this stage, we envisaged the following concrete actions:

- *Extending the pilot programme for all students studying in the “Business and Administration” Bachelor’s degree study programme;*
- *Promotion of good BA-PBL practices;*
- *Identification of study programmes for PBL enlargement;*
- *Elaboration of the educational plan with PBL for the programmes identified;*
- *Implementation of PBL for identified programmes.*

In order to achieve the actions of this period we will need certain resources:

Human resources: The team that implemented the PBL in the pilot group will be the most experienced resource in AESM and will contribute, along with the pedagogical group, to the formation of large teams of teachers who will implement PBL in other study programmes; heads of departments and teachers will develop new PBL-based educational plans taking into account the existing “Business and Administration” experience;

Material resources. There will be needed consumables, computers that will be provided by AESM. Also, several study rooms will be prepared and equipped with the everything that is needed for PBL implementation.

Information resources. Unlimited access to the Internet, project materials, databases, the AESM’s Scientific Library, which will acquire literature in the field - are available to teachers.

Time resources. The free time will be used during the working day, but, if necessary, work will also be done on Saturdays.

Financial resources. The necessary resources for the preparation of study rooms for expanding the number of students who will learn based on PBL, for teacher trainings, dissemination of experience, admission to several study programs will be allocated by AESM.

6 STRATEGIC RECOMMENDATIONS AT THE UNIVERSITY LEVEL

6.1 INTRODUCTION

The recommended policies take into account all parties involved in ensuring quality education through the implementation of the PBL - university, students, teachers, economic agents.

All *students* must acquire the skills, knowledge and transferable competences they need in order to facilitate their employability.

For this purpose, the study programmes, didactic materials and student assessment systems will be modernised in AESM. To improve quality and relevance and increase the number of students, flexible and innovative methods and approaches are needed. We will exploit the advantages of information and communication technologies (ICT) and other new technologies in order to enrich the teaching process, improve learning experiences and support the learning of PBL, so that each student can benefit from high-quality education.

Teachers must benefit from increased support through effective selection and recruitment procedures and professional training programmes. A relevant and quality higher education recognizes and supports performant teaching methods.

The reform and modernisation of higher education depends on the competence and motivation of teachers and researchers. Better working conditions are needed, including transparent and equitable recruitment procedures, an initial and continuing professional development at a higher level and better recognition and rewarding of excellence in teaching and research for the ASEM to be able to produce, attract and retain the high-quality university staff it needs.

Theoretical training is important, but we believe that it must be complemented by a relevant and sufficient practice. Without this practice, the theory cannot be assimilated correctly, nor can it be useful for students and future graduates. In this respect, we believe that one of the keys to solving these problems listed above can be to improve relations between universities and the *economic environment*.

The recommended policies below come in full compliance with the above mentioned.

6.2 STUDY PROGRAMME LEVELS

At the level of study programme we come up with the following recommendations:

- Elaboration of new educational plans, taking into account the implementation of the PBL for each programme in the AESM.
- Review/Elaboration of the curricula for each discipline, included in the educational plan.
- Inclusion in the educational plan, beginning in the first semester, of the introduction discipline in PBL, which would form the basic skills in organizing and implementing teamwork-based project-problem;

- Providing students with methodical and didactic material: through the Moodle platform, printed works.
- Elaboration of a Guide, which would facilitate students to formulate the problem and develop the project in the group.

6.3 DEPARTMENT AND FACULTY LEVELS

At the department level:

Departments are responsible for hiring and promoting staff based on the performances achieved.

The departments, in line with other institutional structures, are responsible for finding opportunities for communication and collaboration with the outside environment in order to adjust the educational plans to the requirements of the labour market, to resolve problems which Economic agents face with by means of projects, Bachelor's / Master's or Doctoral degree theses, identifying the right students to be recruited, organizing laboratories and training centres to be used jointly by the university and the economic agent, to initiate and organise continuous training courses/programmes.

At the faculty level:

Faculties provide increased flexibility in setting schedules for practical lessons and optimising the use of study rooms, equipped for PBL.

Based on the experience of Aalborg University, it is welcomed the designation among experienced teachers, who teach in that semester, of the semester coordinator-responsible. Their role is to coordinate the work of teachers who have lessons in the semester, communicate with students on learning experiences and consult on the educational path, etc.

Promoting good practices of PBL implementation among faculties.

6.4 TEACHING STAFF LEVEL

Stimulation of staff for the study and use of PBL in the study process.

- Creating conditions for the practical realization of lifelong learning and mobility.
- Imposing, as a criterion, to promote the knowledge of a foreign language at high level.
- Supporting the continuing training of teachers by providing the necessary financial support.
- Promoting a performance-based payroll system.

6.5 STUDENTS LEVEL

- Involving students in promoting PBL good practices;
- Students of the 2nd and 3rd year will share the experience with regard to the application of PBL to students of the 1st year;

- Involving students in peer evaluation;
- Periodic assessment of the quality of PBL-based teaching by students.

6.6 PBL PEDAGOGICAL TRAINING LEVEL

- Creation of PBL-ASEM subdivision responsible for pedagogical training;
- Organization of pedagogical training programs for AESM teachers;
- Developing a series of methodologies / instructions on the principles of group formation that would offer the opportunity to avoid problems that may arise in the given process;
- Developing a guide for students, teachers and supervisors on the principles and rules for assessing the project, the time allocated for presentation and examination, principles, examination criteria, etc.

6.7 SOCIETY LEVEL

An important role in the elaboration/improvement of the study programme and the analytical programmes is assigned to employers and graduates, who are consulted in the process of their elaboration and improvement (the form of expertise), during the organisation of the production and Bachelor's degree internships (form of the appropriate agreements), during the defence of the Bachelor's degree exam (formulation of the problems/themes of the Bachelor's degree theses) (participatory form), etc.

- Working with the business environment to identify topics that could be developed within the framework of PBL-based study programmes;
- Involvement of practitioners in the process of teaching courses and assessment of projects;
- Inviting practitioners to evaluate projects;
- Organizing Word-shops with the participation of representatives of the business environment for the purpose of determining their requests and needs.

6.8 ADMINISTRATION AND MANAGEMENT LEVELS

- Expansion and consolidation of the PBL culture at institutional level.
- Creation of the PBL-ASEM subdivision within the Department of Studies, Curriculum Development and Quality Management responsible for PBL promotion at institutional level, PBL teacher training, etc.
- Creating conditions for teachers to study the PBL method (paying for courses, organizing courses).
- Creating a pedagogical micro-group for the training / improvement of teaching staff in the field of interactive teaching methods, especially PBL.
- Extending the number of PBL rooms.
- Ensuring that the structures at each level have objectives regarding the relation with the economic environment and their activity to be also evaluated against this category of objectives.

7 CONCLUDING REMARKS

Ensuring the sustainability of problem-based learning in AESM implies a revolutionary change in the study process. We started from the fact that learning outcomes should not only provide knowledge but also develop skills and competences both professional and personal. We acknowledge that today our programmes have many drawbacks regarding professional skills and competences, as well as certain personal skills (interpersonal communication, professional orientation and employability and adaptation to the labour market).

Activities that should lead to the creation of skills and competences (case studies, projects, internship) are inadequate or formally carried out (e.g. student internship).

We want, through the implementation of the PBL, to bring the students into the real life economic agents are facing, to facilitate student mobility by deepening the knowledge of English, in particular, in specialty disciplines, but also by providing quality training, closer to the one offered in European universities.

Obviously, all these will take time and effort from both the teachers and the university, but also the economic agents, which we want to fully involve in the training activity through various activities carried out jointly. We want, in partnership with economic agents, to propose a considerable number of problems for Bachelor/Master's degree projects or joint research topics annually. We consider it necessary to develop the involvement of economic agents in such activities as student internship, student research activities, case studies, projects and other activities included in the study programme.

By implementing the PBL we want to ensure the stimulation of innovation and creativity, including entrepreneurship.

We are aware that all these cannot be ensured in an immediate period, which is why we have developed a roadmap and an action plan whereby we engage step by step to go towards the desired goal.

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Appendix 1. Vision on „Business and Administration” Bachelor’s degree study programme - 2022

6.Sem	Corporate Management 5 ECTS	Optional course 5 ECTS	BACHELOR'S DEGREE PROJECT 20 ECTS		
5.Sem	Quality management 5 ECTS	Optional course 5 ECTS	PROJECT: Setting up and developing a business 20 ECTS		
4.Sem	Operational management 5 ECTS	Company's accounting and finances 10 ECTS	Business law 5 ECTS	PROJECT: Company's processual organization 10 ECTS	
3.Sem	Marketing 5 ECTS	Marketing research 5 ECTS	Business culture and ethics 5 ECTS	PROJECT: Quantitative research methods 15 ECTS	
2.Sem	Macroeconomics 5 ECTS	Business information technologies 5 ECTS	World economy and European integration 5 ECTS	PROJECT: Research methods for business 15 ECTS	
1.Sem	Microeconomics 5 ECTS	Economic mathematics 5 ECTS	Economy of economic units 5 ECTS	Introduction in PBL 5 ECTS	PROJECT: Company management 10 ECTS

Appendix 2. Roadmap for sustainability of PBL in AESM

Objectives/actions	2019				2020				2021				2022			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Connection of the BA-PBL study programme to good practices of problem-based learning of European universities																
• Monitoring and improvement of the BA-PBL pilot study programme																
• Review of the BA-PBL educational plan																
• Accreditation of the BA-PBL study programme by ANACEC																
• Covering all disciplines of studies with necessary didactic materials																
Continuous training and development of PBL teaching staff																
• Creation of the PBL subdivision within AESM																
• Creating/maintaining the PBL-AESM page on the www.ase.md website																
• Designation of the semester responsible																
• Elaboration of PBL methodical support for teachers																
• Organizing the continuing training of teachers																
• Initiation of partnerships with universities in the country and abroad for the mobility of teachers																
Conducting studies under the BA-PBL programme																
• Organization of admission																
Expanding databases, enriching existing library and literature resources in the PBL field and other interactive methods																
• Preparation of spaces/halls for PBL																
• Building partnerships with representatives of the business environment																
Extending PBL practice to other programmes																
• Extending PBL in all groups from the BA study programme																
• Promotion of good BA-PBL practices																
• Identification of study programmes for PBL enlargement																
• Elaboration of the educational plan with PBL for the programmes identified																
• Implementation of PBL in the identified programmes																

Appendix 3. Action plan

	Actions	Implementation period	Responsible	Expected outcomes
	1. Connection of the BA-PBL study programme to the good practices of problem-based learning of European universities			
1.1.	Monitoring and improvement of the BA-PBL pilot study programme	After each session	Program responsible/Head of department/Responsible for the semester	Improving the quality of the study process
	- <i>Questioning students</i>	After each session	Responsible for the semester	Students questioned
	- <i>Consultation with representatives of the business environment</i>	During the year	Program responsible/Head of department	Organizing common events
	- <i>Performing corrective/preventive actions</i>	After each session	Program responsible/Head of department	Corrective/preventive measures undertaken
1.2.	Review of the BA-PBL educational plan	2021	Head of department/Dean	New study programme elaborated/approved
	- <i>Evaluation/review of the BA-PBL educational plan</i>		Program responsible/Management Department	
	- <i>Approval, at the Senate meeting, on the recommendation of the BAA Faculty Council</i>		Head of department/Dean	The decision of the AESM Senate
	- <i>Coordination with the MECC</i>		First vice-rector responsible for the didactic activity	Plan coordinated with MECC
1.3.	Accreditation of the BA-PBL programme by ANACEC	2021	Head of department/Dean	New accredited study programme
	- <i>Elaboration of the BA-PBL self-evaluation Report for accreditation by ANACEC</i>	September 2021	Program responsible/Management Department	Internal self-evaluation report elaborated
	- <i>Programme accreditation</i>	2021	Program responsible	
1.4.	Coverage of educational disciplines with necessary didactic materials		Program responsible/Teachers	
	- <i>Elaboration of the curriculum for all BA-PBL academic disciplines</i>	2022	Program responsible/Teachers	Elaborated curricula
	- <i>Elaboration of didactic materials needed to train students</i>	2022	Program responsible/Teachers	Elaborated teaching materials
	2. Continuous training and development of PBL teachers			
2.1.	Creation of the PBL-ASEM subdivision	September 2019	First vice-rector responsible for the didactic activity / Centre of Studies, Curricular Development and Quality Management	PBL subdivision created
2.2.	Creating/maintaining the PBL-ASEM page on the site www.ase.md	May-September 2019	Centre of Studies, Curricular Development and Quality Management	Webpage created
2.3.	Designation/establishment of the semester responsible	At the beginning of each academic year	Head of department/Program responsible	Responsible for the semester designated

2.4.	Elaboration of methodical support for PBL for teachers	March – November 2019	Centre of Studies, Curricular Development and Quality Management	Methodical support elaborated
2.5.	Organization of continuous teacher training courses	Annually	Centre of Studies, Curricular Development and Quality Management	Trained teachers - about 20 persons/year
2.6.	Initiating partnerships with universities in the country and abroad for the mobility of teachers	During the year	First vice-rector responsible for the didactic activity / Vice-rector responsible for research and partnerships / International Relations Service/ Head of department	Mobilities conducted
3. Conducting studies under the BA-PBL programme				
3.1.	Organization of admission	Annually	First vice-rector responsible for the didactic activity	Registered students/at least 3 groups formed
3.2.	Expanding databases, enriching existing library sources with PBL literature and other interactive methods	Annually	Director of the Scientific Library AESM/Head of department/Teachers	Access to databases,....
3.3.	Preparation of PBL spaces/classes	Annually	Vice-rector responsible for administration and management issues	Rooms tailored for teamwork
3.4.	Building partnerships with representatives of the business environment	Annually	Vice-rector responsible for research and partnerships/Head of department	Partnership agreements concluded
4. Extending PBL practice to other programmes				
4.1.	Extending PBL learning for all BA groups	September 2022	First vice-rector responsible for the didactic activity /Head of department	Unique BA study programme
4.2.	Promoting good BA-PBL practices	During the year	First vice-rector responsible for the didactic activity /Head of department/Programme responsible	At least 6 events/publications/year on PBL practices in AESM
4.3.	Identification of study programmes for PBL enlargement	2020 - 2021	First vice-rector responsible for the didactic activity /Heads of departments	Programmes analysed/evaluated
4.4.	Elaboration of the educational plan with PBL learning for the programmes identified	2021 - 2022	First vice-rector responsible for the didactic activity /Heads of departments	At least 5 Bachelor's degree study programmes
4.5.	Implementation of PBL for identified programmes	2022	First vice-rector responsible for the didactic activity /Heads of departments	At least 5 Bachelor's degree study programmes

Appendix 4. Study programme implemented since 1 September 2017

To analyze the experience of the Academy of Economic Studies of Moldova in the development and implementation of the pilot study programme with the application of PBL

6.Sem	Corporate Management 4 ECTS	Elective Course 4 ECTS	GRADUATE INTERNSHIP - 12 ECTS FINAL THESIS - 10 ECTS		
5.Sem	Human resources management 4 ECTS	Elective Course 4 ECTS	Elective Course 4 ECTS	Marketing researches 4 ECTS	ENTERPRISE ADMINISTRATION, PROJECT 14 ECTS
4. Sem	Business law 4 ECTS	Enterprise Accounting 3 ECTS	Corporate Finance 4 ECTS	Elective Course 3 ECTS	INTERNSHIP 6 ECTS OPERATIONAL MANAGEMENT, project 10 ECTS
3.Sem	Marketing (general and business to business) 5 ECTS	Econometrics 5 ECTS	Basics of Accounting 4 ECTS	Commodity science and expertise of consumer goods 4 ECTS	Elective Course 4 ECTS ENTREPRENEURSHIP AND BUSINESS CULTURE, project 8 ECTS
2.Sem	Macroeconomics 5 ECTS	Economy of Economic entities 5 ECTS	World Economy and European Integration 5 ECTS	Statistics 5 ECTS	Foreign Business - English 5 ECTS THE ART OF COMMUNICATION AND PROFESSIONAL ETHICS, project 5 ECTS
1.Sem	Microeconomics 5 ECTS	Economic Mathematics 5 ECTS	Economic Informatics 5 ECTS	Foreign Business - English 5 ECTS	The History of Economic Thinking 5 ECTS THE BASICS OF ORGANIZATION MANAGEMENT, project 5 ECTS

Appendix 5. Study plan – Business and Administration

MINISTERUL EDUCAȚIEI AL REPUBLICII MOLDOVA
ACADEMIA DE STUDII ECONOMICE DIN MOLDOVA

<p>COORDONAT Ministerul Educației al Republicii Moldova</p> <p>Nr. de înregistrare _____</p> 	<p>APROBAT Senatul ASEM 4 mai 2017 Proces verbal nr. 10</p> <p>Rector ASEM, academician,</p> <p>Gr. BELOSTECNIC _____</p> 
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PLANUL DE ÎNVĂȚĂMÎNT

Ciclul I – studii superioare de licență, nivelul de calificare ISCED - 6

Facultatea: **Business și administrarea afacerilor**

Domeniul general de studii: **36. Științe economice**

Domeniul de formare profesională: **363. Business și administrare**

Specialitatea: **363.1. Business și administrare**

Numărul total de credite de studiu: **180**

Titlul obținut: **Licențiat în științe economice**

Baza admiterii: **Diploma de bacalaureat sau un act echivalent de studii, diploma de studii superioare**

Limba de instruire: **Engleză - Română**

Forma de organizare: **Învățământ cu frecvență**

CHIȘINĂU, 2017

N.V. coordonator

EXPLANATORY NOTE

I. Introduction

The needs and rigors of contemporary society in the training of Business and Administration specialists results from the economic and social priorities of the Republic of Moldova in the current period: integration into the world economic circuit, decentralisation of economic activities, increasing decision-making autonomy, forming a reform managerial vision, oriented towards economic performance and sustainable social development, etc. At the same time, it is essential for success at national level that the process of change starts and is realised at the level of the organization: be it private or public, economic or social. In this context, the modern manager must appear and act as initiator, supporter and promoter of change and innovation. The successful achievement of these social and professional requirements in various types of enterprises and public/private organizations involves the knowledge and skills formed by the graduates of Business and Administration. Thus, in order to be competitive in the domestic and external labour market, they must possess and promptly apply a set of professional and social skills and competences and a vast managerial instrumentary.

In full compliance with the mission and strategic objectives of AESM, this professional training programme is geared towards the achievement of the major requirements put forward by the labour market and aims *to form competent managers/entrepreneurs, able to continuously develop, enhance own and organizational performance and form an organizational environment and a team oriented and able to meet customer requirements.*

The elaboration of the programme was carried out by following 5 steps:

- 1) **Substantiation (establishment of input elements).** It was carried out: the analysis of legal framework, normative and regulatory documents referring to educational processes in higher education; prior analysis on the specific needs expressed by the various categories of customers, beneficiaries and partners (scientific-didactic staff, graduates, students and organisations interested in different fields of activity); analysis of the latest development and research directions in the field of training; comparative analysis of educational plans based on models from prestigious universities in the country and abroad; analysis of the study environment and specific current teaching methodologies in the field; analysis and prior evaluation of the proposals from the academic environment, to external experts/students; analysis of observations and non-conformities established during previous academic years; elaboration of the criteria for evaluating the training;
- 2) **Pre-determination of results (output elements)** – the learning outcomes (skills), which students must attain, are established, by choosing from a wide range of objectives of those relevant for students and the labour market, some of them being determined by their feedback;
- 3) **Ensuring an effective and efficient learning process** – the decision was taken on how students should be guided and supported to achieve the objectives and the learning outcomes of the study programme. Established and selected: the appropriate course units for the training of projected competences; the amount of work required (credit points) for the achievement of each course; the sequence and manner of teaching the courses; the

- selection, training and improvement of the scientific-didactic staff in order to ensure the disciplines provided by the educational plans, ensuring adequate bibliographical support;
- 4) **Determination of the assessment method** – the decision on the assessment criteria was taken and how it would be determined whether and when the students achieved the projected learning outcomes; the content of the assessment process that ensures continuity of the study process has been developed;
 - 5) **Elaboration, analysis, verification, validation and approval of the educational plan.**

II. Conception of the training of the specialist

The study programme is designed for training specialists for activities related to management, successful initiation and administration of business, as well as the management of various subdivisions of organizations. At the economic unit level, the Business and Administration specialist is the one who has to ensure the proper conduct of all activities: planning of economic activity; formation and improvement of the organizational structure of the firm, insurance with economic resources, production/provision of services; sales; human resources management, effective functioning of information and decision-making systems; controlling the achievement of organisational objectives, creating a positive organisational climate, setting up a productive team. At the same time, the graduates of Business and Administration study programme are potential entrepreneurs who will create jobs and new perspectives in the socio-economic progress of the country. In this respect they will be trained in identifying and capitalizing on business ideas, spreading and stimulating the entrepreneurial spirit.

The graduates of the programme have the possibility to perform a variety of commercial and managerial activities, in economic entities and organizations from various branches of the national economy, both at the level of economic agents, with different forms of ownership (state, private or mixed) and at national level. Graduates can continue their studies at the Master's degree (cycle II).

In this context, the professional training programme has the major objective of forming *professionally righteous and competent personalities* capable of coping with the current and prospective requirements of the local and international labour market, who will:

- be aware of the importance of practicing effective and efficient activities in professional and daily life;
- form and develop the skills necessary for self-realization and success in professional and business activity;
- accumulate an amount of knowledge and create added academic value in the Business and Administration field, which will serve as the basis for personal and professional development.

At the same time, the program will develop in the students the following **generic key competences**: analysis-diagnosis of the situation; competence to identify and solve problems; spirit of initiative and entrepreneurship; critical and strategic thinking; team work competence; competence to prevent and resolve conflicts, self-training and learning competence; substantiation of decisions; creativity; communication competence using a foreign language; competence of operating with information technologies; understanding for the cultures and customs of other peoples.

In order to successfully achieve this educational offer, *a pleasant, qualitative and productive, student-centered educational environment* is created in AESM, which is based on the following principles of organizing personal, social and professional training:

- The creation of an authentic learning environment, close to the business environment and relevant to the interests of the person, to achieve the projected objectives: knowledge acquisition, skills and competences training; their application during the studies and during the internship period;
- Combining theoretical aspects with the cultivation of skills related to the realities of business management activities;
- Structuring the educational approaches on the conception “learning by acting” and developing practical dexterities;
- Capitalization of modern training techniques, including the development of creativity.

III. Learning outcomes

The outcomes will be achieved by capitalizing the content of the course units, but also through the proper use of teaching – learning – research - self-development - assessment activities.

Upon completion of the study programme, students will be able to:

1. demonstrate functional knowledge in the following areas: Economic theory - genesis, essence, methodology and method, economic legality; Management - evolution of the management science, the content of main processes and managerial functions; Marketing - elaboration and realization of the company’s marketing policy; markets - study, operation and development of the markets of resources, goods and services; Customers - influence factors, purchasing and consumption processes, consumption patterns; Law - knowledge of the legislation on entrepreneurship and businesses, small business, consumer protection, advertising in the Republic of Moldova; Finance - finance management, use of accountancy and other financial systems; Informational systems - development and exploitation of informational systems with an impact on the realization of managerial functions in the organization; To solve complex problems in the field of business administration;
2. Set up and develop a business;
3. Know ways of identifying business ideas and assessing opportunities;
4. Possess methods of assessing and minimising risks in business;
5. Ensure that activities are carried out in accordance with the legislation in force;
6. Adjust the organisation’s activity to the requirements of the environment;
7. Make optimal decisions in terms of risk and uncertainty;
8. Develop the organizational structure of the company;
9. Assess and improve the efficiency and effectiveness of activities in the organization;
10. Motivate themselves and increase the efficiency of their own activities;
11. Form teams and develop collaboration;
12. Motivate and create productive work relationships;
13. Apply quality management systems;
14. Communicate convincingly and efficiently, including in a foreign language;

15. Use and manage efficiently the available resources;
16. Organise the business and administration research process;
17. Solve problems in the field of business administration;
18. Develop and coordinate project implementation;
19. Know the area of competence and involvement of managers at different hierarchical levels;
20. Apply the principles, values and norms of professional ethics.

University calendar (in weeks)

Year of study	Didactic activities		Exam sessions		Intern-ships	Holidays		
	Sem. I	Sem. II	Sem. I	Sem. II		Winter	Spring	Summer
I	15	15	4	4	-	3	1	10
II	15	11	4	4	4	3	1	10
III	15	5	4	1	7	3	1	-

Plan of the study process on semesters/years of study

Year I, Semester I

Code	Name of the course unit	Total hours			Number of hours per activity types			Hours per week in the auditorium				Assessment form	ECTS
								Total	of which				
		Total	Direct contact	Individual study	Lecture	Seminar	Laboratory		Total	Lecture	Seminar		
F.01.O.001.21	Microeconomics	150	60	90	30	30	-	4	2	2	-	E	5
F.01.O.002.62	Economic Mathematics	150	60	90	30	30	-	4	2	2	-	E	5
G.01.O.003.63	Economic Informatics	150	60	90	14	-	46	4	1	-	3	E	5
F.01.O.004.32	History of economic thinking	150	44	106	30	14	-	3	2	1	-	E	5
F.02.O.005.11	Fundamentals of organization Management/ Project	150	60	90	30	30	-	4	2	2	-	E	5
G.01.O.006.33	Foreign Business Language I (Eng.)	150	90	60	-	90	-	6	-	6	-	E	5
G.01.O.007.15	Physical Education I	30	30	-	-	30	-	2	-	2	-	V	-
Total		930	404	526	134	224	46	27	9	15	3	6E, 1V	30

Year I, Semester II

Code	Name of the course unit	Total hours			Number of hours per activity types			Hours per week in the auditorium				Assessment form	ECTS
								Total	of which				
		Total	Direct contact	Individual study	Lecture	Seminar	Laboratory		Total	Lecture	Seminar		
F.02.O.008.21	Macroeconomics	150	60	90	30	30	-	4	2	2	-	E	5
U.01.O.009.24	Art of communication and professional ethics/Project	150	60	90	30	30	-	4	2	2	-	E	5
F.02.O.010.21	Economy of economic units	150	60	90	30	30	-	4	2	2	-	E	5
F.02.O.011.62	Statistics	150	60	90	30	30	-	4	2	2	-	E	5
U.02.O.012.31	World Economy and European integration	150	44	106	30	14	-	3	2	1	-	E	5
G.02.O.013.33	Foreign Business Language II (Eng.)	150	90	60	-	90	-	6	-	6	-	E	5
G.02.O.014.15	Physical Education II	30	30	-	-	30	-	2	-	2	-	V	-
Total		930	404	526	150	254	-	27	10	17	-	6E, 1V	30

Year II, Semester III

Code	Name of the course unit	Total hours			Number of hours per activity types			Hours per week in the auditorium				Assessment form	ECTS
								Total	of which				
		Total	Direct contact	Individual study	Lecture	Seminar	Laboratory		Total	Lecture	Seminar		
F.03.O.015.62	Econometrics	150	60	90	30	30	-	4	2	2	-	E	5
S.03.O.016.11	Entrepreneurship and business culture/Project	240	120	120	60	60		8	4	4		2E	8
F.03.O.017.12	General marketing and business to business	150	90	60	60	30	-	6	4	2	-	E	5
S.03.O.018.52	Bases of the accountancy	120	60	60	30	30	-	4	2	2	-	E	4
S.03.O.019.14	Commodities and expertise of consumer goods	120	60	60	30	14	16	4	2	2	-	E	4
Total		780	390	390	210	164	16	26	14	12	-	6E	26
An optional discipline													
U.03.A.020.32	Social and economic philosophy	120	44	76	30	14	-	3	2	1	-	E	4
U.03.A.020.32	Political science	120	44	76	30	14	-	3	2	1	-	E	4
Total mandatory and optional disciplines		900	434	466	240	178	16	29	16	13	-	7E	30

Year II, Semester IV

Didactic Activity – 11 weeks

Code	Name of the course unit	Total hours			Number of hours per activity types			Hours per week in the auditorium				Assessment form	ECTS
								Total	of which				
		Total	Direct contact	Individual study	Lecture	Seminar	Laboratory		Total	Lecture	Seminar		
S.04.O.021.11/52	Operations Management/Project	300	104	196	55	55		10	7	3		3E	10
F.04.O.022.23	Business Law	120	44	76	30	14	-	4	3	1	-	E	4
S.04.O.023.52	Company Accounting	90	44	46	22	22	-	4	3	1	-	E	3
F.04.O.024.42	Company Finances	120	44	76	30	14	-	4	3	1	-	E	4
S.04.O.025.11	Production internship	180	160	20								E	6
Total		810	396	414	134	102	-	22	16	6	-	7E	27
An optional discipline													
S.04.A.026.13	Economy of Tourism	90	44	46	30	14	-	4	3	1	-	E	3
S.04.A.026.13	International Tourism	90	44	46	30	14	-	4	3	1	-	E	3
Total mandatory and optional disciplines		900	440	560	164	116	-	26	19	7	-	8E	30

Year III, Semester V

Code	Name of the course unit	Total hours			Number of hours per activity types			Hours per week in the auditorium				Assessment form	ECTS
								Total	of which				
		Total	Direct contact	Individual study	Lecture	Seminar	Laboratory		Total	Lecture	Seminar		
S.05.O.027.11	Company Management/Project	420	180	240	90	90	-	12	6	6	-	3E	14
S.05.O.028.22	Human Resources Management	120	60	60	30	30	-	4	2	2	-	E	4
S.05.O.029.12	Marketing Research	120	60	60	30	30	-	4	2	2	-	E	4
Total		660	300	360	150	150	-	20	10	10	-	5E	22
An optional discipline I													
S.05.A.030.11	Service Management	120	44	76	22	22	-	3	2	1	-	E	4
S.05.A.030.11	Supply and Sales Management	120	44	76	22	22	-	3	2	1	-	E	4
S.05.A.030.61	Information Systems in Management	120	44	76	22	-	22	3	2	-	1	E	4
An optional discipline II													
S.05.A.031.12	Logistics	120	44	76	22	22	-	3	2	1	-	E	4
S.05.A.031.12	Sales Techniques	120	44	76	22	22	-	3	2	1	-	E	4
Total mandatory and optional disciplines		900	388	512	194	194/172	0/22	26	14	12/11	0/1	7E	30

Year III, Semester VI
Didactic activity – 5 weeks

Code	Name of the course unit	Total hours			Number of hours per activity types			Hours per week in the auditorium				Assessment form	ECTS
								Total	of which				
		Total	Direct contact	Individual study	Lecture	Seminar	Laboratory		Total	Lecture	Seminar		
S.06.O.032.11	Corporate Management	120	52	68	28	24	-	13	7	6	-	E	4
S.06.O.033.11	Bachelor's degree internship	360	280	80	-	-	-	-	-	-	-	E	12
An optional discipline													
S.06.A.034.11	Comparative Management	120	52	68	28	24	-	13	7	6	-	E	4
S.06.A.034.11	Innovative Management	120	52	68	28	24	-	13	7	6	-	E	4
Total		900	384	516	56	48	-	26	14	12	-	3E	20
Total mandatory and optional disciplines in the educational plan		5160	2454	2806								37E 2V	170
Bachelor's degree exam <i>(elaboration and defence of the Bachelor's degree thesis)</i>												E	10
Total of accumulated study credits (ECTS)													180

Internships

Internships		Sem.	Duration no. weeks	Period	Number of credits
1.	Production internship	IV	4	February	6
2.	Bachelor's degree internship	VI	7	March-May	12

Bachelor's degree exam

No.	Name of activity	Period
1.	Defence of the Bachelor's degree thesis	Sem. VI, May-June

Optional disciplines (on free choice)

Name of discipline	Year	Sem.	Number of hours per activity types			Assessments	No. of credits
			C	S	L/P		
1. Romanian language for non-native speakers	I	I		30	-	E	2
2. Foreign language II (French, German, Spanish)	I-III	II-V		30	-	E	2
3. Sociology	I	II	16	14	-	E	2
4. Ecology and environmental protection	I	II	16	14	-	E	2
5. WEB programming	I	II	16	14	-	E	2
6. Community law	I	II	16	14	-	E	2
7. Social worker's deontology	I	II	16	14	-	E	2
8. Communication culture	I	II	16	14	-	E	2
9. System reliability	I	II	16	14	-	E	2
10. Office application technologies	I	II	16	14	-	E	2
11. Professional ethics	I	II	16	14	-	E	2
12. World economy and European integration	I	II	16	14	-	E	2
13. Design and aesthetics of goods	II	III	16	14	-	E	2
14. Cybernetics of economic systems	II	III	16	14	-	E	2
15. Scientific-economic research methodology	II	III	16	14	-	E	2
16. History of public administration in the Republic of Moldova	II	III	16	14	-	E	2
17. Migration and development	II	III	16	14	-	E	2
18. Study of public communication	II	III	16	14	-	E	2
19. Numerical methods	II	III	16	14	-	E	2
20. PC assemble and troubleshoot	II	III	16	14	-	E	2
21. Psychology of business communication	II	III	16	14	-	E	2
22. Philosophy of law	II	III	16	14	-	E	2
23. Geoeconomy	II	IV	16	14	-	E	2
24. Oenology	II	IV	16	14	-	E	2
25. Basics of nutrition	II	IV	16	14	-	E	2
26. European law	II	IV	16	14	-	E	2
27. Activity of non-bank credit institutions	II	IV	16	14	-	E	2

28. Non-bank financing of small and medium-sized enterprises	II	IV	16	14	-	E	2
29. Social and health insurance	II	IV	16	14	-	E	2
30. Social assistance of the unemployed	II	IV	16	14	-	E	2
31. Office and secretarial communication	II	IV	16	14	-	E	2
32. Employment policies	II	IV	16	14	-	E	2
33. Interactive graphics	II	IV	16	14	-	E	2
34. Operating systems II	II	IV	16	14	-	E	2
35. Additives and ingredients in public nutrition	II	IV	16	14	-	E	2
36. Comparative constitutional law	II	IV	16	14	-	E	2
37. International transactions	III	V	16	14	-	E	2
38. International trade	III	V	16	14	-	E	2
39. Design and aesthetics in marketing	III	V	16	14	-	E	2
40. Hygiene and sanitation	III	V	16	14	-	E	2
41. Communication psychology	III	V	16	14	-	E	2
42. International stock practices	III	V	16	14	-	E	2
43. Economic correspondence in foreign language	III	V	16	14	-	E	2
44. Protection of intellectual property	III	V	16	14	-	E	2
45. Volunteering and social assistance partnership	III	V	16	14	-	E	2
46. Didactical communication	III	V	16	14	-	E	2
47. Accounting information systems	III	V	16	14	-	E	2
48. Shadow information economy	III	V	16	14	-	E	2
49. Financial control and auditing	III	V	16	14	-	E	2
50. Computer graphics	III	V	16	14	-	E	2
51. Commercial urbanism and spatial planning	III	V	16	14	-	E	2
52. Legal and economic correspondence	III	V	16	14	-	E	2

Matrix of correlation of study programme's outcomes with those of course units

Code	Course unit	Learning outcomes																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
F.01.O.001.21	Microeconomics	V					V	V								V					
F.01.O.002.62	Economic Mathematics	V						V													
G.01.O.003.63	Economic Informatics	V						V								V					
F.01.O.004.32	History of economic thinking	V																V			
F.02.O.005.11	Fundamentals of organization management	V	V	V		V		V	V	V	V	V	V	V	V	V	V	V		V	V
G.01.O.006.33	Foreign Language	V										V	V		V						
G.01.O.007.15	Physical Education I																				
F.02.O.008.21	Macroeconomics	V					V	V								V					
U.01.O.009.24	Art of communication and professional ethics	V					V					V	V		V						V
F.02.O.010.21	Economy of economic units	V					V	V		V						V	V				
F.02.O.011.62	Statistics	V		V	V			V							V						
U.02.O.012.31	World Economy and European integration	V				V															
G.02.O.013.33	Foreign Business Language	V										V	V		V						
G.02.O.014.15	Physical Education II																				
F.03.O.015.62	Econometrics	V			V			V													
S.03.O.016.11	Entrepreneurship and business culture	V	V	V	V	V	V	V	V		V	V	V	V						V	V
F.03.O.017.12	General marketing and business to business	V					V	V				V				V					
S.03.O.018.52	Bases of the accountancy	V				V	V								V					V	V

S.03.O.019.14	Commodities and expertise of consumer goods	V														V					
U.03.A.020.32	Social and economic philosophy	V														V				V	V
U.03.A.020.32	Political Science	V														V				V	V
S.04.O.021.11/5 2	Operations Management	V		V	V	V	V			V	V	V	V	V	V	V	V	V	V	V	
S.04.O.022.11	Production internship	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
F.04.O.023.23	Business Law	V			V	V															
F.04.O.024.42	Company Finances	V					V														
S.04.O.025.52	Company Accounting	V				V								V						V	V
S.04.A.026.13	Economy of Tourism	V					V		V												
S.04.A.026.13 <i>S. 04. A. 026.13</i>	International Tourism	V					V														
S.05.O.027.11	Company Management	V	V	V	V	V	V		V		V	V	V	V	V	V	V	V	V	V	V
S.05.O.028.22	Human Resources Management	V					V				V	V		V							
S.05.O.029.12	Marketing Research	V					V				V					V	V	V			
S.05.A.030.11	Service Management	V					V				V					V					
S.05.A.030.11	Supply and Sales Management	V					V									V	V	V			
S.05.A.030.61	Information Systems in Management	V														V					
S.05.A.031.12	Logistics	V					V														
S.05.A.031.12	Sales Techniques	V					V					V	V		V	V					
S.06.O.032.11	Corporate Management	V	V		V	V	V		V			V	V	V						V	V
S.06.O.033.11	Bachelor's degree internship	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
S.06.A.034.11	Comparative Management	V				V						V									V
S.06.A.034.11	Innovative Management	V				V						V	V								V

	Bachelor's degree Exam: Elaboration and defence of the Bachelor's degree thesis	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
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Examined and endorsed

Elaborated and validated

FACULTY COUNCIL

MANAGEMENT DEPARTMENT

**BUSINESS AND BUSINESS
ADMINISTRATION**

Minutes No. 8 of 30 January 2017

Minutes No. 4 of 26.04.2017

Head of the Department,

PhD, assoc.prof.

Gheorghe ȚURCANU

Dean,

PhD, assoc.prof.,

Angela SOLCAN

Appendix 6. Advertising flyer of the BA study programme

PERSPECTIVE PROFESIONALE

Absolvenții au posibilitatea să execute o varietate de activități comerciale și manageriale, activând în calitate de:

- întreprinzător
- manager
- economist
- coordonator de proiect
- consultant/instructor
- agent comercial
- funcționar în instituțiile publice

OPORTUNITĂȚI DE CONTINUARE A STUDIILOR

- ➔ ciclul II, Masterat;
- ➔ programe de colaborare cu universități din alte țări



DESPRE PROGRAM

Programul de studii **Business Administration** are drept scop formarea specialiștilor cu o pregătire universitară (ciclul I, Licență) pentru activități ce se referă la management, inițierea și administrarea cu succes a afacerilor, indiferent de mărime și domeniul de activitate, precum și în asociații necomerciale și în administrația publică.

DURATA STUDIILOR:

3 ani/ 6 semestre

LIMBA DE INSTRUIRE:

Engleză/Română

CREDITE DE STUDIU ECTS:

180

TITLUL OBTINUT:

Licențiat în științe economice

BAZA ADMITERII

Diploma de bacalaureat sau un act echivalent de studii, diploma de studii superioare.



BUSINESS ADMINISTRATION

Program de studii re proiectat în cadrul proiectului PBLMD - "Introducing Problem Based Learning in Moldova: Toward Enhancing Students' Competitiveness and Employability" <http://www.pblmd.aau.dk>



Erasmus+

Acest proiect a fost finanțat cu suportul Uniunii Europene

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Facultatea Business și Administrarea Afacerilor

METODE DE PREDARE-ÎNVĂȚARE

Programul de studii este bazat pe noile metode de predare-învățare centrate pe student, inclusiv: învățarea bazată pe probleme (PBL), proiecte, lucru în echipă, e-Learning, co-predare cu profesori din universități străine.

OPORTUNITĂȚI DE PRACTICĂ

Programul de studii prevede stagiu de practică în anul II, proiect de semestru interdisciplinar în grup (studentii de la 6 universități și un stagiu de elaborare a tezei de licență în anul III).

OPORTUNITĂȚI DE STUDII PESTE HOTARE

30 de studenți, cu rezultate academice bune, vor studia 1 semestru (anul 2) la Universitatea Aalborg din Danemarca sau Universitatea din Gloucestershire, Marea Britanie. Mobilitatea va fi finanțată în cadrul proiectului PBLMD "Introducing Problem Based Learning in Moldova: Toward Enhancing Students' Competitiveness and Employability", programul Erasmus+. <http://www.pblmd.aau.dk>

CONȚINUTUL PROGRAMULUI

- ✓ Micro/Macroeconomie
- ✓ Finanțele întreprinderii
- ✓ Economia Unităților Economice
- ✓ Statistică
- ✓ Contabilitatea întreprinderii
- ✓ Marketing
- ✓ Dreptul Afacerilor
- ✓ Fundamentele managementului Organizației
- ✓ Antreprenoriat
- ✓ Managementul calității
- ✓ Managementul resurselor umane
- ✓ Management inovațional etc.

COMPETENȚE DOBÂNDITE

La finalizarea programului de studii absolventul va fi competent să:

- ✓ să rezolve probleme din domeniul administrării afacerilor;
- ✓ să comunice convingător și eficient, inclusiv într-o limbă de circulație internațională;
- ✓ să inițieze și dezvolte o afacere;
- ✓ să asigure desfășurarea activităților în conformitate cu legislația în vigoare;
- ✓ să utilizeze tehnologiile informaționale;
- ✓ să adopte decizii în condiții de risc și incert;
- ✓ să utilizeze și gestioneze eficient resursele disponibile;
- ✓ să elaboreze și să coordoneze realizarea proiectelor;
- ✓ să aplice principiile, valorile și normele eticii profesionale.

Pentru mai multe informații despre program, vă rugăm să vizitați site-ul nostru: <http://ase.md/files/planuri/zi/Business-si-Administrare.pdf>

ASEM - UNIVERSITATEA ANGAJATĂ ÎN VIITOR !

Appendix 7. Poster of the „Business and Administration” study programme

BUSINESS ADMINISTRATION

New!

ASEM - UNIVERSITY ENGAGED IN THE FUTURE!



ASEM
Academy of Economic Studies of Moldova
Faculty of Business Management and Administration

PROGRAMME DESCRIPTION

The programme of study "Business Administration" aims at training professionals with an academic background (Cycle I, Bachelor) for activities that refer to the set-up and successful management of businesses, regardless of the extent and field of business, including non-government organizations and public administration.

LENGTH OF STUDY: 3years/ 6 semesters

LANGUAGE OF STUDY: English/ Romanian

STUDY CREDITS ECTS: 180

QUALIFICATION:
Bachelor of economics

ADMISSION REQUIREMENTS
Baccalaureate diploma or an equivalent degree of study, higher education diploma.

OPPORTUNITIES FOR ACADEMIC MOBILITY
Thirty 2nd year students with best academic results will have the opportunity to study one semester at Aalborg University, Denmark or at the University of Gloucestershire, Great Britain. The mobility will be financed by ERASMUS+ Project, PBLMD „Introducing Problem Based Learning in Moldova: Toward Enhancing Students' Competitiveness and Employability".
<http://www.pblmd.aau.dk>

INTERNSHIP OPPORTUNITIES
The programme of study includes an internship period in the 2nd year, a semester interdisciplinary group project and a practice period for writing the thesis.



TEACHING-LEARNING METHODS

The new programme of study is based on new student centred teaching-learning methods such as: problem based learning (PBL), projects, team work, e-Learning, co-teaching by foreign academic staff.

ACQUIRED SKILLS

Upon completion of the programme of study the graduates will be able to:

- ✓ Display field-related knowledge;
- ✓ Solve business administration problems;
- ✓ Launch and develop a business;
- ✓ Run legal business activities;
- ✓ Take decisions under risk and uncertainty;
- ✓ Develop and coordinate projects;
- ✓ Apply business ethics principles, values and norms;
- ✓ Communicate persuasively and efficiently, inclusively in a foreign language.

PROFESSIONAL PROSPECTS

The graduates of the new programme of study will have the opportunity to perform commercial and managerial activities and act as:

• Entrepreneurs	• Trade agents
• Managers	• Public officers
• Economists	• Advisors/trainers.
• Project coordinators	

For additional information please visit our site:
<http://ase.md/files/planuri/zi/Business-si-Administrare.pdf>

Redesigned study program within the project
PBLMD - "Introducing Problem Based Learning in Moldova: Toward Enhancing Students' Competitiveness and Employability"
<http://www.pblmd.aau.dk>



Erasmus+

This project has been funded with support from the European Commission



AALBORG UNIVERSITY

Research problem





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Appendix 8. Lessons Learned in Implementing the PBL-Business and Administration Pilot Program

Aspects	LEARNED LESSONS
The educational plan	<ul style="list-style-type: none"> - The need of rethinking/ adjusting the educational plan. - Offering a higher number of credits for project development - The need to introduce a module on the Methodology of economic research.
Interdisciplinary approach	<ul style="list-style-type: none"> - Accomplish complex analyses on the compatibility of the disciplines to be integrated
Methodical support	<ul style="list-style-type: none"> - The need of elaboration of methodical support and case studies, including a methodical guide on the development and defence of PBL projects.
Knowledge assessment	<ul style="list-style-type: none"> - Changing the way of knowledge assessment. - Formulating the assessment criteria for both the project and the overall course. - The importance of presenting personal reflections after the project achievement. - Student's involvement in the evaluation process, through the assessments provided by the student on his/her contribution and colleagues' contribution to the project achievement.
Students	<ul style="list-style-type: none"> - Empowering students and more active involvement of students in the educational process.
Academic staff	<ul style="list-style-type: none"> - Changing the teacher's role in the PBL model, the role of the teacher focuses on supervising the student, but not providing accurate solutions, which they must follow. - Continuous training of PBL academic staff. Teachers must be open to continuous learning, adjust their working methods, activities to the rigors of the time. - A more active promotion of the PBL method is needed among all AESM teachers. - Applying the PBL method in other study programmes at all faculties, including the II cycle – Master's degree studies.
Business environment	<ul style="list-style-type: none"> - The development of a mutually beneficial collaboration with the business environment. - Organizing documentary visits to the companies. - Developing case studies/formulating problems from the real environment.
Institutional level	<ul style="list-style-type: none"> - Delegate/appoint a semester supervisor (responsible) of the programme. - The flexibility of the schedule. - Reorganization of the study spaces for teamwork.

Appendix 9. Marking system at AESM

The students' marking will be made according to the following assessment scale:

- a. Mark 10 or “excellent” (ECTS - A equivalent) is granted for the profound and remarkable demonstration of theoretical and practical competences developed by the course unit/module, creativity and skills in the application of acquired competences, the considerable independent work and the versed knowledge of the literature in the field. The student acquired 91-100% of the material included in the curriculum/syllabus of the course unit/module.
- b. Mark 9 or “very good” (ECTS - B equivalent) is granted for a very good demonstration of the theoretical and practical skills developed by the course unit/module, very good skills in applying the acquired competences with some insignificant/non-essential errors. The student acquired 81-90% of the material included in the curriculum (syllabus) of the course unit/module.
- c. Mark 8 or “well” (ECTS - C equivalent) is granted for the good demonstration of theoretical and practical competences developed by the course unit/module, good skills in applying the learning outcomes with a certain lack of confidence and imprecision related to the depth and the details of the course/module, but which the student can correct by answering additional questions. The student acquired 71-80% of the material included in the curriculum (syllabus) of the course unit/module.
- d. Marks 6 and 7 or “satisfactory” (ECTS - D equivalent) are granted for the demonstration of basic competences developed by the course unit/module and the ability to apply them in typical situations. The student's answer lacks confidence and considerable gaps are found in the knowledge of the course unit/module. The student acquired 61-65% and 66-70% of the material respectively.
- e. Mark 5 or “weak” (ECTS - E equivalent) is granted for the demonstration of minimum competences in the field of the course unit/module, the implementation of which is experiencing many difficulties. The student acquired 51-60% of the material.
- f. Marks 3 and 4 (ECTS - FX equivalent) are granted when the student fails to demonstrate minimum skills and requires additional work to promote the course unit. The student acquired 31-40% and 41 - 50% of the material respectively.
- g. Marks 1 and 2 or “unsatisfactory” (ECTS - F equivalent) are awarded to the student who cheated or demonstrated a minimum 0-30% knowledge of the material. In this case, for the promotion of the course unit, the student still has to work very hard.

SUSTAINABILITY STRATEGY

Teaching and learning based on problems at State University "Alec Russo" of Bălți

Working package 5

Developed by: Ina Odinokaia, Public Administration Program of Studies Leader, USARB

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Chisinau 2019

Summary

The purpose of the working package report no. 5 is the development of a sustainability strategy for the implementation of problem based learning – PBL in the State University "Alecu Russo" in Balti and the application in the process of teaching-learning-assessment of student centered didactic strategies.

With the purpose to achieve the stated goal, the results presented in the reports for: Working Package 2, Working Package 3, Working Package 4 were developed and proposed an ideal program for cycle 1, Bachelor degree studies based on PBL for the specialty 0400.1. Public Administration.

A roadmap and detailed action plan to be undertaken at college and university level to promote PBL philosophy and culture in the USARB's academic environment was also drafted.

Experience gained in the Universities of Aalborg (Denmark); Gloucestershire (United Kingdom); KTH (Sweden); Siegen (Germany) formed the basis for defining a vision for the implementation of problem-based learning in the *Public Administration* program of studies within the limits and in accordance with the normative provisions in the field of high education in the Republic of Moldova, actions undertaken and presented in the reports for the previous working packages.

Also, the accumulated experience allowed us to outline an ideal plan centered on PBL, a plan we recommend in this report, presenting the distribution of course units by semesters, highlighting the theme of the semester and the projects to be developed, ensuring a progress in this respect.

Thus, if in semester I the workload for the project development is 7 ECTS, in the semester VI it is 20 ECTS. The total number of ECTS for designing and supporting projects for 6 semesters is 80 ECTS, accounting for 44.44% of the student's total volume of studies.

We are aware that the approval and implementation of the ideal plan we have outlined will be unrealistic if the Ministry of Education, Culture and Research will not make changes to the Framework Program for high education (Cycle I), for Master's Degree (Cycle II) and Integrated studies in order to exclude the mandatory inclusion in the education plan of training courses for general skills and competences and socio-humanistic orientation, as well as crediting in the curriculum of a course unit/ module with 4-6 credits.

Another challenge is that the implementation of the ideal project would put under conditions the change of staffing and teaching norms, which would generate the need for financial, informational resources and additional time, reflected in the Roadmap and the Action Plan developed, where the efforts are phased out to be made to ensure the sustainability of PBL in the USARB. which would generate the need for financial, informational and additional time.

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1 INTRODUCTION

The purpose of the Working Package - WP 5 is to develop a sustainable strategy for the implementation of problem-based learning - PBL, active teaching and learning student - centered at the State University "Alecu Russo" in Balti.

Specifically, this report will propose an innovative bachelor's degree program based on PBL - Public Administration, a roadmap and a detailed action plan to guide the staff and the university management in their efforts to fully implement the PBL, active teaching and learning, student-centered on the respective study program and in the university.

In this report, we rely on the material accumulated during Working Package 2 (WP2), Working Package 3 (WP3), and Working Package 4 (WP 4) that we developed between 2015-2018. We also rely on the experience gained during study visits and staff mobility at partner universities in the EU, as well as during PBL training sessions offered by EU project partners in Chisinau.

1.1 KEY ASSUMPTIONS

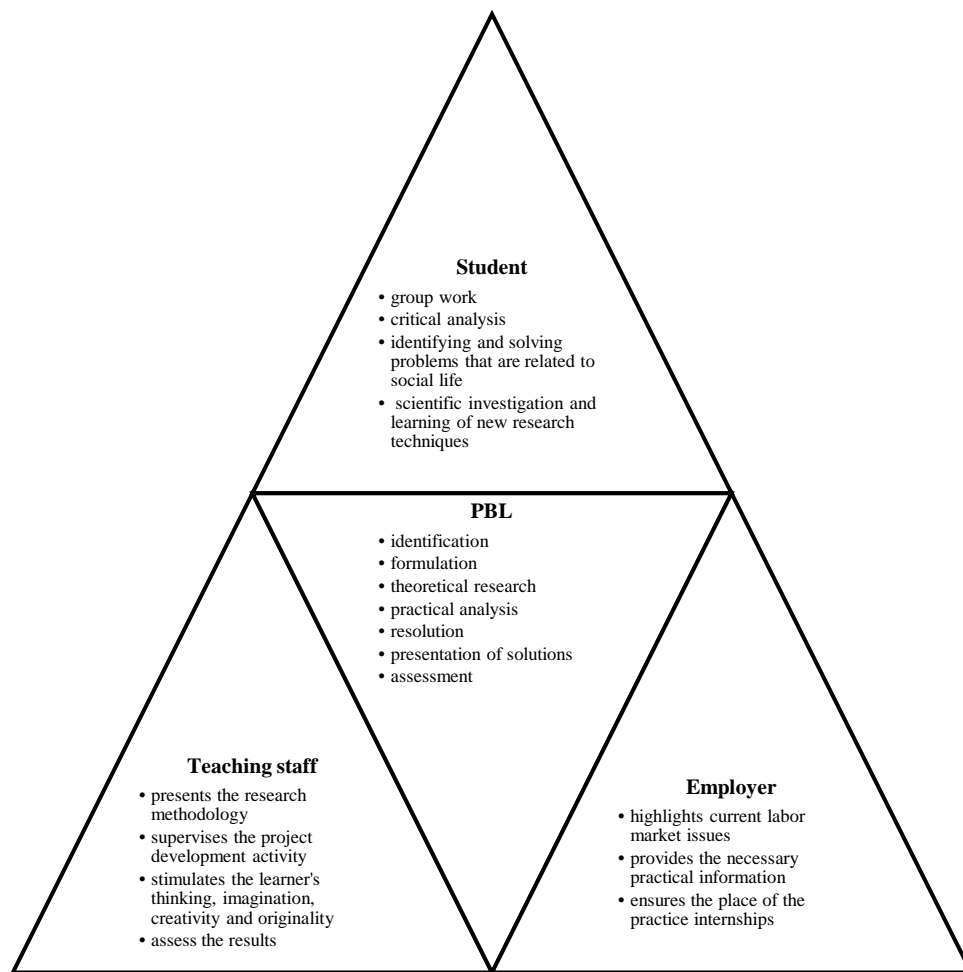
There is no single PBL model that would allow all the goals to be achieved. However, PBL-based models are basically based on two key assumptions.

According to the first hypothesis, work on the project lies at the *core* of the project, consisting in discovering, analyzing and solving problems and drawing up a report on the project (Figure 1).

The second hypothesis assumes that other teaching and learning activities (face-to-face), such as literature exploration, lectures, group studies, and tutorials, are designed *to support* the work on the project.

These two hypotheses will also be at the base of our PBL, a bachelor's degree program based on PBL Public Administration, Active Teaching and Learning and Student-centered Learning.

Figure 1. USARB PBL model



Another hypothesis relates to the relationship between the work on the project and face to face activities (direct contact with the teacher). In the context of this report, wholly based on PBL, it is a study program in which there is about 50:50 sharing between student work on the project and face-to-face activities (such as lectures, seminars, workshops, laboratories and experiments).

Applying this hypothesis within the ideal plan has allowed us to achieve the progression shown in Figure 2 and Figure 3, although there are different ways of distributing the relationship between the work on the project and face to face activities during the semesters; the main purpose is to achieve an approximate 50:50 time sharing for the duration of the study program.

Figure 2. Applying the PBL model proposed by Loise Faber for sharing time by 50:50 for the work on projects and face-to-face activities within the PBL A program

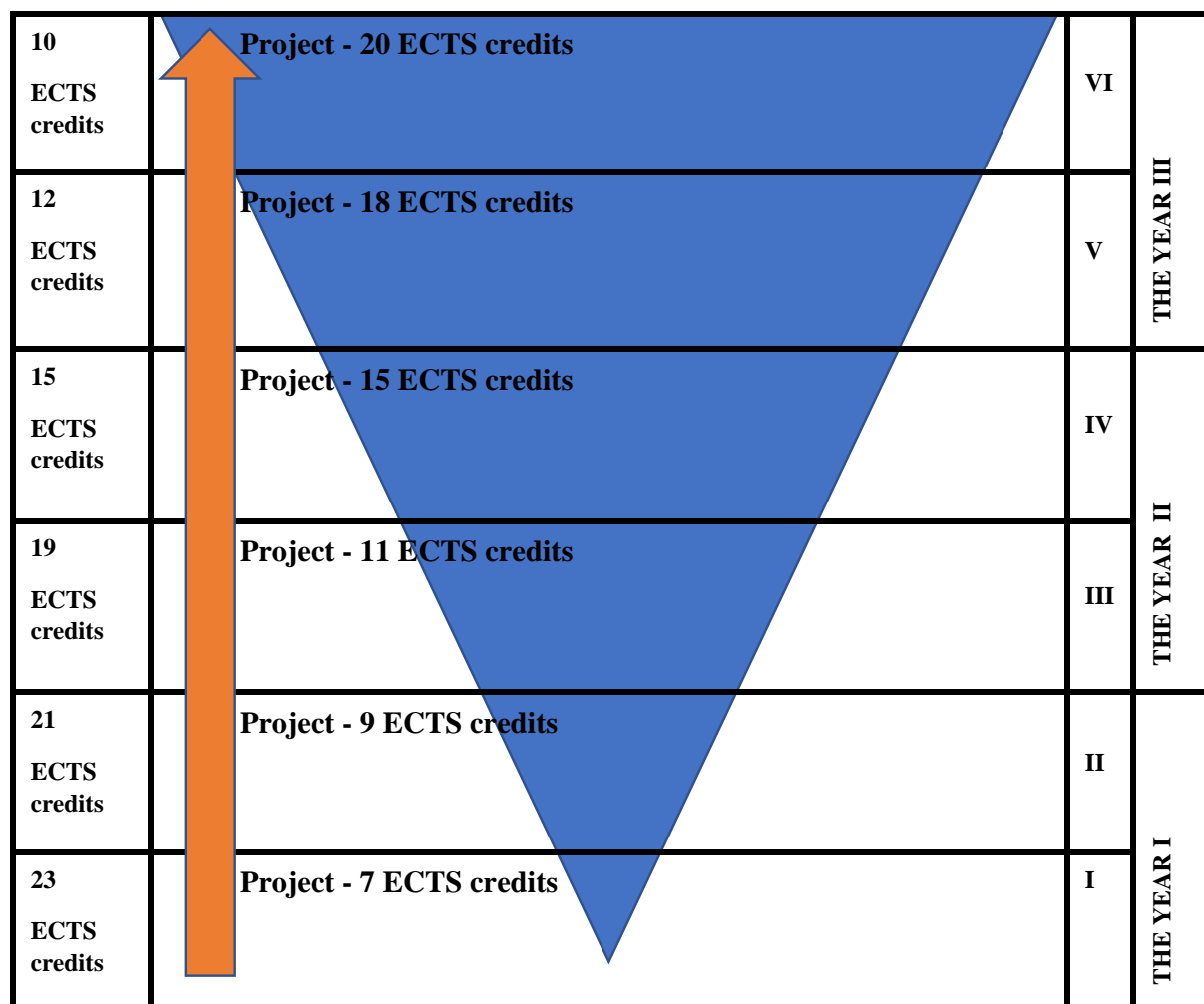
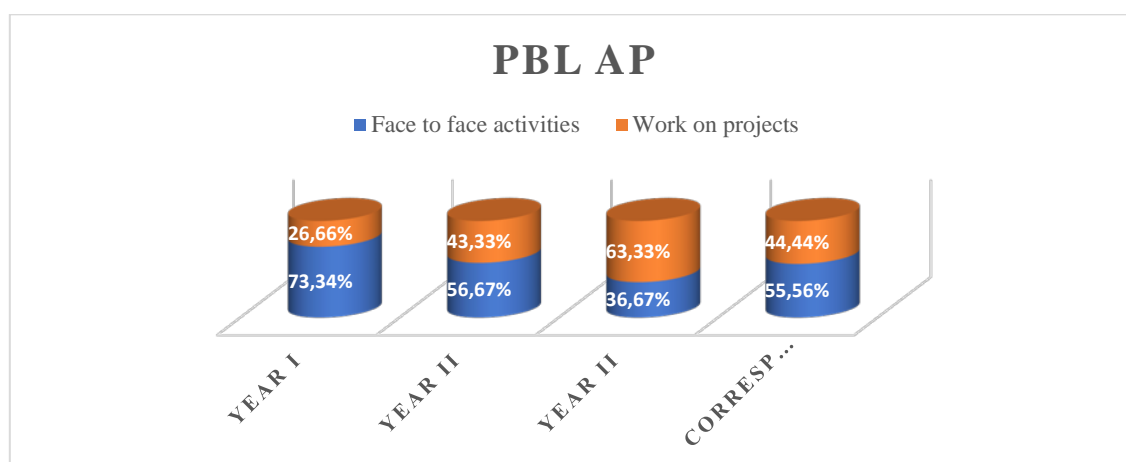


Figura 3. The procentual balance between face-to-face activities and work on projects under the PBL AP program



1.2 EXPECTED RESULTS

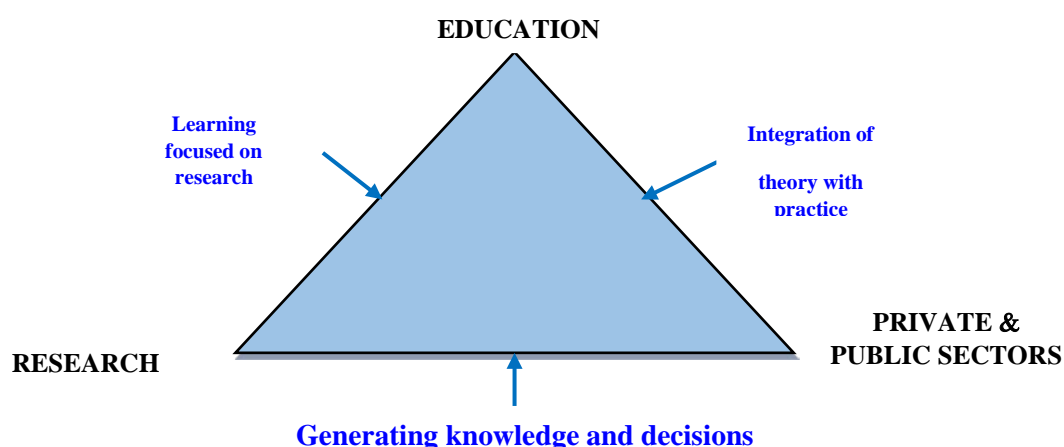
Successful implementation of student-centered, active learning, and PBL methodology in the first cycle education program, undergraduate studies, specialty 0400.1 Public Administration has resulted in a series of outputs, which allow us to aim for the international recognition of this education program by 2020 and to attract European and international students as full-time or exchange students.

Another goal we propose is redesigning the university curriculum with the active involvement of labor market representatives in line with the PBL philosophy, student-centered teaching, learning and assessment strategies for 5 study programs, both in the first cycle, undergraduate studies and the second cycle, master's degree studies at the Faculty of Law and Social Sciences until May 2022, which would allow us to enroll students in these programs as of 1 September 2022.

Another step we are proposing is the involvement of the first cycle students, undergraduate degrees, from various specialties and study programs within the USARB, when developing interdisciplinary projects, which will allow us to extend the application of PBL methodology at the university level, contributing to the development and consolidation of the Education-Research-Labor Market partnership (Figure 3).

The implementation of this educational partnership will provide teachers with the opportunity to excel in research-based teaching, students will learn and be able to apply theories in practice, both in the private and public sectors, and the collaboration of researchers with public and private institutions will ensure the transfer of new knowledge.

Figure 4. Socially committed University Source: Olav J. Sorensen, 2015



1.3 STRUCTURE OF THE REPORT

The report on the vision of the *USARB team* on a visionary curriculum for cycle I, undergraduate studies, specialty 0400.1 *Public Administration*, linked to the objectives of the project, will start with reflections on the experience gained in applying the PBL methodology to the

pilot group, subsequently describing general visionary study program; the skills developed under the program; the final results of the study program.

Then we will go over to the presentation of the semesters, designed in accordance with the principle of interdisciplinarity, describing the work on the semestrial projects, including the learning objectives, the results and their evolution.

At the end of the report, we will present and detail the roadmap that will guide us in the process of implementing the visionary higher education program based on PBL 0400.1 *Public Administration*, outlining and detailing the action plan that needs to be done to maintain sustainability: developing strategies and policies on how to improve teaching and learning according to PBL philosophy at faculty level and university level; incentives for teachers who apply innovative teaching strategies centered on student-centered learning, etc.

2 LESSONS LEARNED FROM THE DEVELOPMENT AND IMPLEMENTATION OF THE PILOT - PBL STUDY PROGRAM

In order to present a picture of the lessons learned from the implementation of the PBL according to the pilot education plan in the specialty 0400.1 *Public Administration* within the USARB, we intend to reflect on what the objectives were and what are the expected results for trainees and trainers.

Following the reflections, the team outlined in the table below, a set of expected results are as follows:

EXPECTED RESULTS	
For trainees - students	For trainers - teachers
<ul style="list-style-type: none">• team spirit development, planning of group activities, distribution of team roles, diversity in problem-solving cooperation;• awareness of the need for continuous personal and professional development;• developing complex competences such as: higher-level cognitive capacities, problem solving, collaboration and communication;• integrating students from different social and cultural backgrounds.	<ul style="list-style-type: none">• application of the PBL method to other study programs, both faculty and university;• structuring issues as learning opportunities;• collaborating with colleagues to develop interdisciplinary projects;• "management" of the learning process;• proper integration of modern technologies into the teaching process;• designing authentic assessment methods and tools;• opportunities for professional development.

Depending on this criterion - expected results, within the faculty there were interviewed the teachers and students who are studying this program in order to highlight the negative and positive points in applying the PBL methodology in the study process.

Referring to the positive points regarding the implementation of the PBL to the pilot program, following discussions with the interviewees, we found that group work on the projects allowed students to promote diversity-oriented cooperation in finding a common denominator to solve the researched problems.

Speaking in evolution, after 3 semesters of implementation, the teachers found that the students' capacities to document and to analyze critically the information, the brief presentation of specialized scientific articles, the analysis and the elaboration of a thematic bibliography, and the topics of the projects proposed for research and the way of realization have acquired a more pronounced interdisciplinary and multi-perspective character.

Another aspect that has been reflected is the way students are assessed, focusing on the following aspects: group work, problem solving, holistic approach (problem-theory-methodology), reflection, communication and skills. In this respect, at the course units where the semesters were scheduled in the draft plan, the assessment was organized in two forms:

- a. In the case of semestrial projects developed at a course unit, the examination was assessed by the commission for the projects, and the grade will combine the written assessment of the project and the individual oral examination.
- b. In the case of interdisciplinary projects, the assessment of the projects took place at least one week before the start of the examination session before the assessment committee, and the project mark constitutes 50% of the mark per semester at the course units where the project was developed.
- c. Both teachers and students have highlighted that although there are issues to be reflected on, the application of the PBL methodology it is useful and timely, allowing both the competence-specific curricula and the cross-curricular skills to be developed. Also, teamwork on the project implies responsibility of the team members, develops the interpersonal communication skills and the exercise of tasks within the established deadline.

By reflecting on the views of the interviewed, the project implementation team of PBL outlined the following lessons learned on the PBL methodology through three aspects:

- A. Lessons learned on developing the curriculum
- B. Lessons learned on the involvement of educational actors in the training-educational process;
- C. Lessons learned on project development and monitoring.

A. Lessons on developing the curriculum

In the process of modifying the curriculum we found that the goal of reaching the 50 to 50 ratio between courses and a project within the specialty 0400.1 Public Administration is not possible due to the existence of a series of legislative requirements imposed by the ministry in developing study plans.

The principle of academic autonomy, stated in Art. 79 of the Education Code of the Republic of Moldova, is a fundamental principle in the exercise of academic freedom, which allows the higher education institutions, under par. 3, letter c, to draw up study plans, but "in accordance with the state educational standards", ie the Framework Plan which requires mandatory inclusion of *training facilities for general skills and competences* - between 9 and 18 credits and *socio-humanistic orientation* - between 9 and 18 credits.

In this context, we establish that the compulsory inclusion of course units that do not develop specific professional skills, even on the 18th ECTS minimum limit, constitutes 10% of the total number of credits for the study program, which leads to the natural exclusion of the course units inherent in training the future specialist.

Another restriction imposed by item 9 of the Framework Plan is "to allocate a maximum of 4 - 6 study credits for a module", which does not allow the project to be credited with a higher number of credits, and in this respect, neither it allows the reduction of the number of course units per semester.

B. Lessons Learned on the Involvement of Educational Players in the Training - Educational Process

Another aspect to which the project team drew attention is that another stated objective was to transfer the emphasis from teacher-centered education to student-centered education, a process in which the student becomes an active subject of the educational act perceived as a partner of the framework teaching. Completing this education and training process, involving a new subject, labor market representatives, allowed the program's goals to be continually reported to labor market requirements, and study program graduates become competitive on the labor market.

However, we have encountered a number of challenges in the implementation process, including:

- a. Resistance to change*, both for teachers and students.

The PBL philosophy focuses on changing the way teachers are involved in the education process, where the teaching staff providing the pre-fabricated cognitive products, as a balance sheet of knowledge-based truths, passes to supervising the student, where the teachers do not provide exact solutions, but do the expertise the product presented by the student.

The resistance to the change of the teaching staff is due to the fact that the supervision process requires the teacher to be continuously educated to maintain his/ her position as an expert, it requires the re-conceptualization of the taught courses, it requires adjusting the teaching strategies and time management to achieve the objectives of the taught units.

- b. Supervising work on projects* predominantly face-to-face and less on-line;
- c. Collaboration with stakeholders*, which allows us to propose a diversification of the opportunities for the dialogue between the University (teachers, students, supervisors, etc.) and businesses, LPAs, public institutions, NGOs, etc.

In the project implementation period, we identified the low interest of public institution employees in collaborating with the academic environment in order to provide the necessary information for the development of the semestrial projects, being commendable the interest manifested by the civil society representatives in the implementation of the project by providing the students with the necessary information in the development of the projects.

C. Lessons Learned on Project Development and Monitoring

Reflecting on this process, we group the challenges we faced in the process of implementing PBL in four categories:

1. *Challenges regarding the development of the projects*, which highlight difficulties in problem formulation, the application of research methodology, the accumulation of practical materials, the realization of interdisciplinary studies.

Although the students are studying in the first semester of the first year the Methodology of Scientific Research in PBL, where recommendations are made on the structure and content of the project, it remains necessary to develop the *Methodical Indications for the development and support of the PBL projects*.

2. *Challenges regarding group work*, including: the desire to work in a group with only some colleagues; interpersonal conflicts related to the involvement of everyone in the project development, as well as the distribution of roles in the group; interpersonal communication skills and responsibility for taking small decisions; failure to observe deadlines imposed by team members for accomplishment of the tasks.

The stated challenges have prompted us to reflect and take action on student empowerment, including: anonymous reciprocal assessment of each team member's input, supervisor meetings -working groups, in which the supervisors explained to the teams that the final product and team performance is directly proportional to the sum of the individual performances, therefore the organization and independent management of the project development process.

3. *Challenges related to the project supervision process*, highlight the supervisor-student relationship. Supervisors in the student guidance process apply techniques to stimulate students' thinking, imagination, creativity and originality to help students discover problems, research them, and come up with their own visions of solving them without offering them solutions ready, fact encountered by resistance in some working teams. Also, a negative aspect in supervisor-student relationship is the management of conflict situations between group members as a result of the different contribution of group members to the design of the project.
4. *The challenges encountered in the project assessment process* are the difficulties faced by the commissions in the assessment of the half-year projects, among which the difficulties in determining the individual contribution of the group members to the projects, the appreciation of the final product, as well as the tedious participation of employers in the project assessment committees.

In this context, in order to determine the contribution of each member of the team to the design and realization of the project, as well as the theoretical and practical competences acquired by the student, we consider that personal reflections and interpersonal assessments regarding the individual and colleagues contribution are welcome to the project.

3 VISION ON PBL - PUBLIC ADMINISTRATION BASED STUDY PROGRAM

3.1 OVERVIEW

The inefficiency of the interaction mechanism of the higher education institutions with the research and development sphere, with the business environment and the labor market, is one of the weak points of the national university education system. This requires a low level of motivation and accountability for students' learning outcomes, causing inconsistency between university professional training and labor market needs.

The listed inequalities are the result of an educational practice accepted in the national university education where the teacher sets the emphasis on the process of teaching knowledge followed by their assessment, giving minor importance to the learning process of the student. The situation would be different if the correlation between these three teaching-learning-assessment processes would be equivalent, and the teaching would not be limited to simply passing on knowledge.

Teaching, by giving up the delivery of knowledge as a product, focusing on the "knowledge as a process" model, paying attention to the learning needs, motivation, counseling and orientation of the student, would change the existing learning paradigm and facilitate critical thinking for the student.

Studying the experience of European universities and the teaching methods applied in university education, in particular, problem-based education (PBL), as well as our own experience gained in the project, allowed us to reconfigure the teaching style, teaching methods and procedures used and to shape an ideal program for the specialty 0400.1 Public Administration.

The purpose of the visionary program is to replace classical education, where the teacher is an information provider and the student is the receiver of information, to problem-based education, which would form the foundation in the training of skilled labor force qualified in the field of professional training.

The specialty education plan 0400.1 *Public Administration*, being developed according to the provisions of the National Qualifications Framework, is meant to train specialists in the field of Public Administration.

The degree conferred to the graduates is *licensed in administrative sciences* and the duration of the program is 3 years, ie 180 ECTS credits, the year of study being divided into two semesters of 15 weeks each.

The logsheet of the planned curriculum will involve the combination of the theoretical and practical courses, as well as the preparation of semestrial projects every semester.

The success of the implementation of the educational offer will depend on the emphasis on the learner (student), which becomes an active subject of the qualitative and productive educational process and the effective application by the trainers (teachers) of the teaching methods and procedures, in particular, of education focused on the problem, will facilitate:

- creating an educational environment focused on training of professional and transversal competences specific to the field of professional training;
- developing the analysis and synthesis capacities of the social-economic processes and phenomena specific to the field of professional training, by combining the theoretical and practical aspects;
- developing creativity and team spirit in the context of decision-making and problem solving;
- ensuring conditions to facilitate access, progress in university careers and the mobility of students and graduates in the European space.

Student's educational path to the planned study program involves a reduction in the number of course units studied during the semester, respectively the number of forms of assessment; modularization of course units and progression in professional training, combining:

- initial study of the course units / fundamental modules, then the specialized ones;
- application of knowledge acquired at the course units/ modules previously studied for further course units/modules, thus facilitating analytical progression from micro to macro level;
- solving real problems in Public Administration, from simple to complex problems, both in group and individually, will ensure the holistic progression of the training-educational process.

The effectiveness of the study program depends not only on the teaching-learning strategies used, but also on the assessment strategies applied, which is why the department responsible for the program facilitates and encourages the diversification of innovative forms of assessment, eg group exam, combined written and verbal exam, computer exam, video-exam, peer assessment through Moodle platform, etc.

Achieving the final results of the study program are competitive labor market graduates who are eligible and meet the requirements of labor market offers, therefore the effective implementation of the structured program based on PBL means:

- graduates who learn through research have formed the skills to explore and involve actively in problem solving, in spirit of collegiality and initiative, critical thinking, creativity, cooperation and availability to find original solutions;
- graduates who in the process of learning have combined theory and practice, thus forming a vision of the particularities of the activity in the public institutions, which will facilitate their insertion in the professional field;
- graduates who have formed grouping skills by exercising the roles specific to teamwork by developing interpersonal communication skills and taking responsibility for decision-making;
- graduates who are able to self-assess and identify the need for continuing professional training as well as resources and ways of personal and professional development in order to adapt to the requirements of the labor market.

The concern that the excessive theoretization of higher education does not reflect and does not correspond to the needs of the labor market and the classical methods applied and the amount of

theoretical information studied does not correspond to the wishes of the consumers of the educational services determined us to shape the project of an ideal plan for the specialty of Public Administration. Within the draft plan we equate the co-ordination between the course units in which students acquire theoretical knowledge and in which they form their practical skills.

This shift of focus does not, however, mean ignoring the knowledge and role they have, because even the formation and development of skills and abilities is achieved through their learning processes.

3.2 SEMESTERS

3.2.1 Semester 1

According to the draft vision plan for the specialty 0400.1 Public Administration, we have included for the first semester 5 forms of assessment, ie 2 forms of assessment less than those which exist in the present, due to the application of the modularization principle, establishing 2 units of course and 3 modules presented in the table below:

Theme of the Semester: <i>Organization and Functioning of Contemporary Administrative Systems</i>			
YEAR I			
Name of course unit / module	Assessment form	Number of credits	
		Course 23 ECTS	Project 7 ECTS
General theory of law	E	5	1
Module: 1. Constitutional law and political institutions 2. Political science	E	5	1
Module: 1. Theory of Public Administration 2. History of Public Administration	E	5	1
Module: 1. Methodology of research in PBL 2. Interdisciplinary project	EP	4	4
Foreign Language I - Specialty	E	4	-

In the first semester, the correlation for the credits are: fundamental credits - 63.33%, general culture credits- 13.33% and the project - 23.33%. Basic course units are mandatory pre-requisites for the study of specialized courses and initiate students in the field of professional training.

The total hourly assignment for the first semester is 900 hours (direct contact - 450 hours and individual study - 450 hours), and the direct contact hours are divided into types of activities: course, seminar, laboratory - where supervision of work is carried out in group on projects.

Including Module 1. *Research Methodology in PBL*. 2. *An interdisciplinary project* will provide students with the necessary knowledge to apply the problem-based learning method, enable them to learn how to work with bibliographic sources to avoid plagiarism, how to identify research

methods and theories, accumulate practical materials, practice in formulating problems, contemplate the structure of the project, etc. Under this course, students will get the first group work experience on a project, taking the group exam based on which the project assessment is made.

Planned learning objectives for the first semester I:

- perceiving the notions, concepts, theories and basic methods of the science of administration;
- - knowledge of the fundamental principles of organization and functioning of the administrative structures;
- identifying, analyzing and formulating personalized opinions in relation to problems in the field of administrative sciences;
- studying the specialized vocabulary and developing communication skills in English;
- - the development of individual or team work capacities in order to solve the situations shaped by the professional training field;
- rigorous, efficient, responsible and timely execution of tasks, in a spirit of initiative and in accordance with ethical principles and professional ethics;
- development and support of the first half-year project in the group

The learning outcomes will depend on the achievement of the objectives planned for this semester, being quantified following the assessment of the academic results in accordance with the provisions of the USARB Student Academic Outcomes Regulation, and in accordance with the criteria and methods for evaluating students' knowledge included in the curriculum course units where the quantifiable elements are listed by notes (knowledge, analytical skills, synthesis, assessment, skills, etc.) and the way of performing the final assessment activities and those carried out during the semester. Teachers present the curriculum at the course unit to the first class, specifying the expected learning outcomes, the current and final assessment modalities and forms.

There are not admitted to the exam the students who:

- did not achieve curricular objectives;
- did not get an average mark for being promoted in the current assessment;
- have been absent unmotivated to more than 30% of auditing activities;
- did not support the semester project at the course units, where the grade for the project is part of the mark per semester;
- did not accomplish the tasks that involve the individual learning activity.

At the end of each semester, based on a predetermined timetable, the examination session takes place and for retired students re-examination sessions.

In order to monitor the quality of the training of specialists in the university, faculty and assessment activities, the department of studies and the deanship organize semi-annually dynamic assessments. The results of these tests are taken into account when calculating the average per semester at the seminar, along with the current assessments made by the teacher.

Starting with the 2012-2013 academic year, the current and final assessment of the curriculum for some course units is done on-line through Moodle tools.

The current and final notes are established according to the students' rating scale, as shown in Annex 8.

Student satisfaction with the study program is assessed by the questionnaire method, according to the SMC System Procedure: "*Customer Satisfaction Assessment*" of the Quality Management System Manual Semestrial, The Quality Management Department organizes the electronic questioning of the students regarding the quality of the training, the forms of organizing the teaching activities, and the information is automatically collected and processed by the computer, which ensures the anonymity of the respondents. The results of the questionnaires are used to improve the teaching-learning process: the teaching methods, the taught content, the ratio of the number of hours of direct / indirect contact, the number of course hours / seminar / laboratory, the teacher-student relationship are reviewed.

3.2.2 Semester 2

In this semester, the allocation of credits for the course units will be: fundamental - 40%, specialty - 16,67%, general culture - 13,33%, project - 30%.

Semester II, according to the vision plan, includes 2 course units, 2 modules and an interdisciplinary project, which we have credited except by providing the framework plan for the allocation of a maximum of 6 credits for the module, which allowed us to reduce the number of forms rating from 7 to 5 for the given semester.

Theme of the semester: Public function and status of civil servant			
Year I			
Name of the course uni/module	Assessment form	Number of credits	
		Course 21 ECTS	Project 9 ECTS
Administrative law I	E	6	-
Module.1. Ethics and deontology of public servants. 2. Liability of the civil servant	E	5	-
Interdisciplinary project	EP	-	9
Module. 1. Elements of civil law and civil procedure. 2. Elements of criminal law and criminal procedure	E	6	-
Foreign Language I - Specialty	E	4	-

The expected results will depend on the achievement of the planned objectives for the semester II:

- using the knowledge acquired in the core disciplines to explain and interpret concepts and processes in Public Administration;
- appropriate application of the fundamental principles for the quantitative and qualitative assessment of Public Administration processes;

- interpreting the various administrative models in order to solve typical problems in the field of Public Administration;
- analyzing draft administrative decisions to assess their legality;
- the analysis and legal framing of situation solving and modeling of processes in the sphere of Public Administration;
- perceiving the necessity of applying modern technologies in the activity of Public Administration;
- achievement of the interdisciplinary project of medium complexity, focused on current and relevant issues in the field of training, allowing the planning of the group activity, the distribution of the roles in the team, the diversity in cooperation, the high level of study

The promotion of students from one year of study to another is based on the order of the Rector, according to items 1.1.-1.20, **Chapter III. Academic Assessment and Promotion of the Regulation on the Assessment of Student Academic Outcomes** in the USARB.

Students who have accumulated the total number of compulsory credits (60) provided in the curriculum for the respective year are promoted during the following year of study. In cycle I education, education based on attendance of the lessons, the promotion in the next year of study is conditioned by the accumulation of at least 40 credits at the course units/compulsory modules provided in the annual study contract.

3.2.3 Semester 3

Course units studied in the first year of study are pre-requisites necessary for the study of the course units in the semester III.

The credits for the course units for semester III were as follows: fundamental - 13,33%, specialty - 50%, project - 36,67%, and the number of forms of assessment is 5.

<i>The theme of the semester: Decentralization and administrative deconcentration - principles of organization of local Public Administration</i>			
YEAR II			
Name of the course unit / module	Form of assessment	Number of credits	
		Course 19 ECTS	Project 11 ECTS
Administrative law II	E	4	-
Financial and fiscal law	E	4	-
Contraventional law	E	4	-
Interdisciplinary project	EP	-	11
Family law and civil status	E	4	-
Psychology of leadership	E	3	-

Student academic progress and expected results depend on achieving the expected **learning objectives** for semester III :

- application of notions, interpretation of concepts and theories in typical situations in the field of Public Administration;
- reporting the methodological principles of decision making in the administrative field to concrete situations;
- the use of the criteria and requirements for drawing up draft administrative decisions for various factual situations;
- appropriate application of modern technologies in Public Administration, with a view to assessing the efficiency of governance
- identifying, studying and proposing solutions for complex problems in the field of professional training, as well as anticipating the effects expected from applying the solutions proposed in the interdisciplinary project
- improving grouping techniques by developing interpersonal communication skills and taking responsibility for decision-making in project work.

The interdisciplinary project will include a complex problem, and students will have to demonstrate skills to collect, analyze and interpret information in accordance with the PBL methodology.

3.2.4 Semester 4

The knowledge gained in previous semesters is pre-requisite for studying course units in the semester IV.

Credits for course units, for semester IV, are as follows: specialty - 50%, project - 50%, and the number of assessment forms was reduced to 4.

Theme of the semester: <i>Strategies for recruiting and stimulating staff in the public service</i>			
YEAR II			
Name of the course unit / module	Form of assessment	Number of credits	
		Course 15 ECTS	Project 15 ECTS
Control of the administrative act	E	5	-
Labor Law and Social Protection	E	5	-
- Management of public service	E	5	-
Specialty practice I + Project	EP	-	15

Student academic progress and expected results depend on achieving the expected **learning objectives** for this semester:

- identifying, analyzing and solving problems in the field of Public Administration in accordance with the legal provisions, in a cooperative, flexible and efficient manner;
- understanding and efficient use of Public Administration methods for the purpose of legally enforcing the project research issues;
- application of the legal norms in order to identify the solutions for the problems investigated within the projects;
- use of standard assessment criteria and methods to assess the effectiveness of solutions for the problems investigated in the projects;
- drafting proposals for changing and amending the legislation in the field of Public Administration.

In the semester IV the students will develop a complex project according to the semester theme, acquiring empirical material within the specialty practice, trying to apply the theories identified in the research of the problem to the realities of the training field, analyze the results and formulate own solutions regarding the researched problem.

3.2.5 Semester 5

Knowledge gained in previous semesters is pre-requisites required for study units in semester IV.

Credits for course units, for the semester III, will be as follows: 40% of the specialty, 60% of the project, and the number of assessment forms will be 4.

The theme of the semester: <i>E-government - a strategic direction of the development of public services</i>			
YEAR III			
Name of the course unit / module	Form of assessment	Number of credits	
		Course 12 ECTS	Project 18 ECTS
E- governance	E	4	-
Urban planning and landscaping	E	4	-
Techniques for drafting administrative documents	E	4	-
Specialty practice II+Project	EP	-	18

Student academic progress and expected results depend on achieving the expected **learning objectives** for this semester:

- the use of modern technologies, the different forms and methods of control of the assessment of the administrative activity and the formulation of proposals for its efficiency;
- perceiving the necessity of applying modern technologies in the activity of Public Administration;

- identification of the forms and methods of control of the administrative activity assessment;
- application of different mechanisms and forms of administrative control related to the professional field;
- the proper use of modern technologies in Public Administration, in order to assess the efficiency of the governance act;
- development of the e-transformation projects of the Public Administration;
- knowing the standard requirements for modern communication technologies in Public Administration.

The project development in semester V will require from students a deep knowledge of the national strategies for the development of e-governance, the identification of the advantages and disadvantages of this process, and the shaping of their own visions on the issues studied within the project.

3.2.6 Semester 6

In semester six, the study program includes three forms of assessment, and credit for course units for semester VI will be as follows: specialty - 33.33%, project - 66.67%.

The theme of the semester: <i>The reform of the Public Administration of the Republic of Moldova: problems and solutions</i>			
YEAR III			
Name of the course unit / module	Form of assessment	Number of credits	
		Course 10 ECTS	Project 20 ECTS
Public Procurement Management	E	4	-
Central and local Public Administration	E	6	-
Research practice. Project / License Thesis	EP	-	20

The learning objectives and results for this semester correspond to the outcomes of the study plan and the graduate student must be able to:

- apply the knowledge gained in the fundamental and specialized courses studied, in a determined professional environment;
- to solve specific Public Administration situations, by applying the case study method;
- demonstrate creativity in the instrumentation of administrative acts and procedures in the learning, research and work process
- to show team spirit in the context of administrative decisions;
- to use the specific language of the Public Administration, as well as the specific methodology, in the implementation of the half-year projects;
- analyze and synthesize socio-economic processes and phenomena by developing and implementing managerial strategies;

- strengthen decision-making capacities and manage changes in Public Administration, by risk assessment and assuming professional responsibilities;
- to cultivate their collaboration skills with specialists from other fields in the context of change management;
- to develop the written and oral scientific communication in the development and presentation of the bachelor thesis;
- use digital action tools, create documents and use basic electronic services in research area;
- apply at least one foreign language for the use of specialized texts in the elaboration of the thesis;
- to assume the ethical responsibility for the results of the research included in the bachelor thesis;
- demonstrate the capacity to develop, at cycleII, master's degree studies skills, acquired in cycle I, undergraduate studies.

The bachelor thesis, as a form of final assessment of the academic activity of the student. The period of the bachelor thesis is preceded by a practice (research practice), which aims to consolidate the theoretical knowledge obtained during the years of study, to select the information necessary for the elaboration of the bachelor thesis and to get some skills in the field of professional training.

The bachelor thesis is an original, scientifically based work aimed at assessing students' competencies to conduct research, apply theoretical knowledge in the process of developing practical solutions specific to the field of professional training.¹

Unlike other scientific papers (reports, articles, etc.), in which the author expresses his / her views and theoretical ideas in a way that he considers appropriate, the thesis is elaborated in accordance with the methodology of the scientific research.

The bachelor thesis involves the designing and elaboration - under the guidance of the teaching staff who has the status of scientific leader - of a text that contains, in a logical and orderly sequence, information, ideas and opinions of the author, detached or formulated following the study of the specialized literature and the practice of competent bodies in the field. The elaborated bachelor's thesis is presented and submitted to a licensing committee.

Students who have completed the curriculum in full and have accumulated the number of credits established for the Public Administration program are admitted to the bachelor exam. Admission to the exam for supporting the thesis is done by order of the USARB Rector one month before the start of the license exam.

The assessment of the license thesis is carried out according to the following assessment criteria:

1. Complexity and level of scientific content of the work;
2. The ability to synthesize and the degree of competence proven by the student;
3. Structure of the analyzed paper

¹Item 3 of the Framework for Higher Education (1st cycle - Bachelor, 2nd cycle - Master, Integrated Studies, 3rd cycle - Doctorate)

4. The value and relevance of the bibliographic references studied;
5. Using research methodology and providing arguments for research motivation
6. The value of the results obtained as a result of the research carried out;
7. Ability to present the papers before the committee members;
8. Degree and ability to answer questions posed by members of the Commission;
9. Compliance with the provisions of the Guide on the elaboration and support of the bachelor thesis and the requirements of the chair and the coordinating teachers.

The bachelor thesis is assessed separately with grades based on the "10" to "1" scoring scale, the minimum promotion mark being "5".

Obtaining a lower mark than "5" in the bachelor thesis is qualified as a non-promotion of the license exam. If the license thesis was rated under "5", the license exam committee decides whether the same work, after the necessary corrections, can be submitted to repeated defend, or whether the subject of the thesis is necessary to be changed.

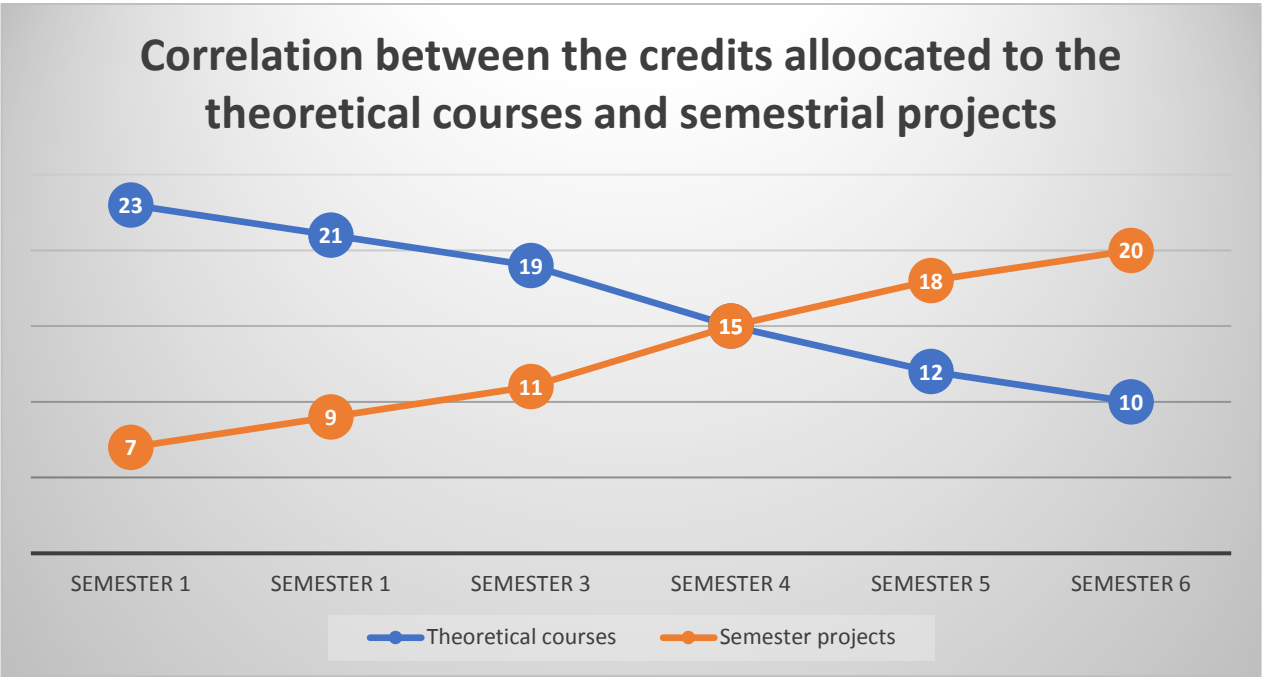
Students have the right to challenge the decision of the License Committee. Applications for appeals shall be submitted in writing to the Secretary of the Bachelor Examination Board within 24 hours of the communication of the results and shall be recorded by the Secretary in the Minutes Keeping Record.

Complaints will be reviewed by the Licensing Commission within 48 hours of its submission, under the supervision of the Supervisory Board. The license exam committee, after re-examining the license, decides whether or not to change the mark by increasing or decreasing it. The Commission's decision remains final.

If the graduate did not defend the bachelor thesis at the established session, he/ she has the right to repeatedly support it, no more than twice in the next 5 years, with the student bearing the examination fees set by the USARB. At the second submission, the student will ask for reconfirmation or modification of the thesis theme at least 6 months before the start of the bachelor's examination, by submitting the application on behalf of the rector, endorsed by the head of the department and the dean of the faculty

The educational path passed by graduate students during the 6 semesters will allow for the accumulation of 100 study credits following the theoretical courses and the accumulation of 80 study credits following the development and support of the team projects. The implementation of the AP - PBL program will allow us to reach the ratio of lectures and teamwork at 55.56% to 44.44%, the progression shown in the diagram below:

Figura 5. Progress of the planned hours for projects under the AP visionary Plan



4 ROADMAP

4.1 INTRODUCTION

Ensuring the sustainability of PBL methodology implementation within the USARB requires a series of actions presented in the Roadmap (Annex 2), which are under implementation or to be carried out in the period 2019-2022.

The development of the Roadmap started at the start of the PBLMD project, with the following activities: Valentina Prițcan, PhD, Institutional Coordinator; Natalia Gaitsoi, first pro-rector; PhD, Mariana Spatari, PhD, lect. sup. Univ., Head of the Department of Public Law; Ina Odinokaia, PhD, Associate Professor, Head of the Department of Private Law; Eduard Boisteanu, PhD, Assistant Professor; Veaceaslav Pînzari, PhD, Univ. Ion Dănoi, PhD, lect. sup. univ.; Sergiu Boca, PhD, lect. sup. univ.; Valentin Cazacu, PhD, lect. univ.; Daniela Pojar, Assist. univ.; Mihaela Kruglitchi, Assist. univ. (the status of the persons is indicated according to the project start-up period)

The Roadmap was built on the experience gained in mobility and study visits in partner universities, based on the views of foreign experts on the changes to be made both at program level and at management level, ensures the application of the PBL philosophy within the institution, not only to the pilot program, but also to other curricula.

The experience gained between September 2017 and April 2019 in implementing problem-based education and group project development has made us aware that the use of interactive methods in teaching-learning contributes significantly to improving learning performance and facilitates employability of graduates in the field work.

In this regard, in order to ensure the quality of teaching-learning-assessment according to the PBL methodology, we aim to carry out the following activities: continuous teacher training, consultation and involvement of employers in the training-educational process, effective dialogue between the USARB internship manager and internship practice tutorial, evaluating the satisfaction of teachers, students and employers about the application of PBL.

We could divide these activities into several directions, which we are going to implement in parallel, according to the roadmap.

4.2 PERIOD 1

A. Expansion and consolidation of the PBL culture at the institutional level.

The basic aim of this direction is to undertake institutional and extra-institutional measures to promote the PBL methodology

The achievement of the outlined goal is to achieve it by gradually achieving the following objectives:

- inclusion of the PBL philosophy in the Strategic Plan at institution level, faculty, chair.

- promoting good PBL practices in the USARB academia, with a view to getting knowledge from academics and other interested people about the benefits of learning based on problems and employment opportunities for graduates of these programs;
- diversification of PBL-specific educational resources (databases, media resources, bibliography, etc.);
- creating workspaces for small groups (faculty, library, dorm, etc.) where students could work on project development;
- modifying study plans at college level and including projects in other specialties;
- identifying specialties for PBL extension at USARB level;
- developing the PBL Learning Plan for the programs identified at the USARB level;
- implementing PBL for programs identified at USARB level;
- strengthening and initiating partnerships with universities in the country and abroad to ensure the mobility of teachers and students.

B. Continuing teacher training according to the PBL philosophy.

The basic aim of this direction is to train and develop the teaching skills adjusted to the PBL of the USARB teachers, which we propose to achieve through the following actions:

- organizing continuous training courses for teachers;
- developing the methodological guide on teaching in PBL;
- adjusting normative regulations and awarding performance bonuses for teachers who apply the PBL methodology;
- ensuring the mobility of teachers.

C. Working with the actors of the educational act on the application of PBL.

The main purpose of this action line is to strengthen the dialogue between the actors of the teaching staff-student-employers act, to modify the university curricula according to the requirements of the labor market and, thus to facilitate the insertion of the graduates into the labor market.

In this context, we aim to achieve, in the period 2019-2022, the following actions:

- counseling and career guidance;
- working together with PBL employers and graduates;
- creating a database on the satisfaction of students and teachers in the application of PBL in the teaching-learning-assessment process;
- more active involvement of employers in the study process and assessment of employers 'satisfaction with the quality of PBL graduates' training.

4.3 PERIOD 2

To carry out studies under the Public Administration pilot program developed in 2017.

The main purpose of this direction is to organize and develop the training-educational process for the period June 2019 - December 2021 within the AP-PBL pilot program, which we aim to realise by achieving the following *objectives*:

- writing and disseminating information leaflets about the program of high school graduates;
- media coverage of information through the media, the USARB website www.usarb.md, [usarb_facebook](#), etc
- dissemination of information with reference to PBL-based trials in the USARB caravan of admission;
- organizing the admission for the 2019-2021 program
- organizing the process of finalizing the studies of the promotions registered for this program;
- enriching information resources by subscribing to internationally recognized speciality journals and registering the institution in on-line databases that provide students with access to the information and knowledge necessary for project preparation;
- expanding the number of PBL team workrooms within the faculty, as well as the USARB Scientific Library;
- diversifying practice agreements by engaging employers to accept students trained according to PBL methodology.

4.4 PERIOD 3

Development, approval and application of the new program for the Public Administration specialty according to the PBL methodology.

The main purpose of this direction is to initiate, develop and approve a visionary Public Administration Plan, designed based on the principles of problem-based learning, as well as its accreditation.

We propose to achieve the stated goal by June 2022 so that we can organize our admission to the new program by undertaking the following actions:

- continuous monitoring to improve the pilot study program
- reconceptualization of the study plan related to Public Administration to achieve the goal 50% (theory) and 50% (projects);
- re-conceptualizing the curriculum structure of course units/modules according to the PBL methodology;
- elaboration of the methodical indications regarding the development and support of the projects;
- preparing the accreditation report of the study program designed according to the PBL methodology.

5 THE ACTION PLAN

5.1 INTRODUCTION

The implementation of the Roadmap is intended to be put into practice by the measures outlined in the Action Plan (Annex 3), for the implementation of which the USARB will identify human, material, time, financial, and informational resources.

We find that the measures taken in the PBLMD project on the procurement of equipment necessary for the application of the PBL methodology, the experience accumulated by the teachers in the mobility, allowed us to disseminate and organize workshops with faculty teachers and students within the USARB.

However, in order to consolidate the PBL culture in the USARB, as well as to operate the changes and carry out the studies in the projected vision program, actions are to be undertaken to reconfigure university curricula, teaching strategies applied in the study, selection and preparation of teaching materials based on PBL, analysis of the satisfaction of students and staff about group work on projects etc.

5.2 ACTIVITIES AND RESOURCES

5.2.1. Period I

A. Carrying out studies under the Public Administration pilot program developed in 2017.

We aim to achieve the goals and objectives outlined for this stage through the following actions:

- a. Surveillance of the pilot program and its improvement as a result of the questioning of the students regarding the satisfaction of the program studies, as well as of the employers regarding the competences of the graduates of this study program;
- b. regularly reviewing the study program in accordance with students 'and employers' wishes;
- c. diversifying the information resources needed to ensure that students have access to the information and knowledge necessary for project development;
- d. identifying the practice bases and sowing agreements on practicing internships.

B. Develop, approve and implement the new Public Administration program in accordance with the PBL methodology.

To achieve the stated purpose, we propose to carry out the following:

- a. continuous monitoring to improve the pilot study program;
- b. reconceptualisation of the Public Administration study plan to achieve the goal 50% (theory) and 50% (projects);
- c. Re-conceptualizing the curriculum structure of course units/modules according to the PBL methodology

The implementation of the above measures requires the following resource categories:

- a. human - project implementation team PBLMD, Department of Quality Management; Department of Information Technologies, Department for teaching and methodical activity.
- b. materials - halls/spaces arranged for group work, computers, office products and stationery.
- c. Information - Internet access through USARB wi-fi network, databases and books of the USARB Scientific Library.
- d. time - the involvement of the Dean and the Division for teaching and methodological activity in order to develop an efficient timetable that would ensure the time management of both students and teachers.
- e. financial - the coverage of the expenses and procurement of the equipment for the realization of the study program was made on the account of the PBLMD project and the co-financing of the USARB involves the arrangement of the PBL courses, the purchase of consumables, the provision of the necessary premises for the group activities, computer use, etc.

5.2.2 Period II

Expansion and consolidation of the PBL culture at the institutional level.

We aim to achieve the goals and objectives outlined for this stage through the measures taken in the following directions:

a. Promotion of PBL culture and in-service continuous teacher education at institutional level

- inclusion in the Strategic Plan at institution level, faculty, department of the development of the PBL culture;
- promoting good PBL practices in the USARB academia, with a view to getting knowledge from academics and other interested people about the benefits of learning based on problems and employment opportunities for graduates of these programs;
- organizing continuous training courses for teachers;
- development of the methodological guide on teaching in PBL;
- adjusting normative regulations and awarding performance bonuses for teachers who apply the PBL methodology;
- diversification of PBL-specific educational resources (databases, media resources, bibliography, etc.);
- creating workspaces for small groups (faculty, library, dorm, etc.) where students could work on project development;
- Identification of at least 5 specialties for PBL extension at USARB level.

b. Strengthening the partnership between the university and the labor market representatives

- counseling and career guidance;
- working together with PBL employers and graduates;
- creating a database on the satisfaction of students and teachers in the application of PBL in the teaching-learning-assessment process;

- more active involvement of employers in the study process and assessment of employers 'satisfaction with the quality of PBL graduates' training.

Implementing the actions outlined above requires the following resource categories:

- a. *human* - project implementation team PBLMD, Deans and heads of USARB departments, Center for Continuous Teacher Education; Department for International Relations; Department of Information Technologies; Quality Management Department, Career Guidance Center.
- b. *materials* - spaces for organizing continuous training courses, computers, office products and stationery, will be prepared and endowed with the necessary number of study rooms for the implementation of PBL.
- c. *Informational* - Internet access via USARB wi-fi network, USARB scientific library databases and books, <http://pblmd.aau.dk> site, DMC questionnaire database.
- d. *time* - organization of continuous teacher training courses during the second half of the day, on working days; realizing career guidance from leisure time.
- e. *financial resources* - the resources needed to prepare study rooms to expand the number of students who will learn based on PBL, teacher trials, dissemination of experience, admission to several study programs will be allocated by the USARB, etc.

6 STRATEGIC RECOMMENDATIONS AT THE UNIVERSITY LEVEL

6.1 INTRODUCTION

The stated policies are aspirations focused on exhaustive approach: taking into account all the parties involved in ensuring quality education through the implementation of PBL - university, students, teachers, Public Administration, economic agents.

All students must acquire the skills, knowledge and transferable skills they need in order to facilitate employment.

To this end, within USARB there will be upgraded the study programs, teaching materials and student assessment systems. To improve the quality and relevance and to increase the number of students, flexible and innovative approaches and methods are needed. We will exploit the benefits of Information and Communication Technologies (ICT) and other new technologies to enrich the teaching process, improve learning experiences and support PBL learning so that each student has high quality education.

Teachers should receive increased support through effective selection and recruitment procedures and training programs. Relevant and high quality higher education recognizes and supports performing teaching methods.

Theoretical training is important, but we believe that this must be complemented by relevant and sufficient practice. Without this practice, theory can not be properly assimilated nor can it be useful to students and future graduates. In this sense, we consider that one of the keys to solving these problems can be the improvement of the relations between universities and the economic environment.

The recommended policies below come in full accordance with the ones outlined.

6.2 LEVELS OF STUDY PROGRAM

At the program level we come with the following recommendations:

- Development of new study plans in the USARB or updating of study plans, focusing on the PBL methodology.
- Revision / development of the curricula for each discipline included in the study plan of the Public Administration specialty.
- Inclusion in the curriculum, beginning with the first semester, of the Introduction to PBL, which would form the core competencies in organizing and implementing teamwork on a project-problem basis;
- Ensuring students with methodical and teaching material: through Moodle platform, printed papers.
- Developing a Guide that would facilitate problem formulation and development of group project by students.

6.3 LEVELS OF DEPARTMENTS AND FACULTIES

At Department level:

- Departments / departments should be responsible for hiring and promoting staff according to their achievements.
- The departments, in collaboration with other institutional structures, will be responsible for finding opportunities for communication and collaboration with the external environment in order to adjust the study plans to the requirements of the labor market, to solve problems faced by the Public Administration in the projects, master or doctoral theses, identifying the right students to be recruited, organizing laboratories and training centers to be used jointly by the university and the external partners to initiate and organize continuous training courses / programs.

At the Faculty level:

- Faculties provide increased flexibility in setting the timetable for practical lessons and optimize the use of PBL-equipped study rooms.
- Building on the experience of the University of Aalborg, it is welcomed to appoint among the experienced teachers who teach in the respective semester the coordinator responsible for the semester. Its role is to coordinate the activity of teachers who have lessons in the respective semester, to communicate with students about learning experiences and to consult on the educational path, etc.
- Promoting good practices of PBL implementation between faculties.

6.4 LEVEL OF DEPARTMENTS

Stimulate staff to study and use PBL in the study process.

- Creating the conditions for the realization of lifelong learning and mobility in practice.
- Including as a criterion for promoting the knowledge of a foreign language of high level international circulation.
- Supporting the continuous training of teachers by providing the necessary financial support.
- Promoting a performance-based payroll system.

6.5 STUDENTS' LEVEL

- Involving students in promoting PBL good practices;
- Students of the 2nd and 3rd year will share the experience with the application of PBL to students of the first year;
- Involving students in peer assessment;
- Periodic assessment of the quality of PBL-based teaching by students.

6.6 LEVEL OF PEDAGOGICAL PREPARATION OF PBL

- Organizing PBL pedagogical training programs for USARB teachers;
- Develop a series of methodologies / instructions on the principles of group formation that would offer the opportunity to avoid problems that may arise in the given process;
- Developing a guide for students, teachers and supervisors on the principles and rules for examining the project, the time allocated for presentation and examination, principles, examination criteria, etc.

6.7 SOCIETY LEVEL

An important role in the development / improvement of the study program and the analytical programs is given to employers and graduates, who are consulted in the process of their development and improvement (the form of expertise), in the organization of the specialized and licensing practice (the form of the corresponding agreements) during the bachelor's examination (formulation of problems/theses of thesis) (participatory form), etc.

- Collaborating with the Public Administration, NGOs, in order to identify the topics that could be developed within the PBL-based study programs;
- Involvement of practitioners in the process of teaching the courses and evaluating the projects;
- Inviting practitioners to project assessment;
- Organization of Workshops with the participation of representatives of the Public Administration in order to determine their requests and needs

6.8 LEVELS OF ADMINISTRATION AND MANAGEMENT

- Expansion and consolidation of the PBL culture at institutional level.
- Creating conditions for teachers to study the PBL method (paying for courses, organizing courses).
- Creating a pedagogical micro-group for the training / improvement of teaching staff in the field of interactive teaching methods, especially PBL.
- Extending the number of PBL rooms.
- Ensure that structures at each level have public relations objectives and their work to be assessed against this category of objectives.

7 FINAL CONCLUSIONS

Ensuring the sustainability of problem-based learning in the USARB involves a radical change in the study process. We started from the fact that learning outcomes not only have to provide knowledge, but also to develop professional and personal skills. We recognize that today our programs have many reservations in the field of professional skills and competences, as well as certain personal skills (interpersonal communication, professional orientation and employability and adaptation to the labor market).

Activities that should lead to skills (case studies, projects, practice) are not always adjusted to the needs of the program or are often formally conducted (eg student practice).

We want to implement the PBL methodology to bring real-life students closer to the Public Administration, to facilitate student mobility by deepening English language knowledge, especially in specialized disciplines, but also by offering more quality training than that offered in European universities.

Obviously, these aspirations require time and effort both from the academic and administrative staff, as well as from the administration of the university, but also from the economic agents, whom we want to involve in plenary in the training activity through various joint activities. We want, in partnership with Public Administration representatives, to propose a considerable number of bachelor/master project topics or joint research themes annually. We consider it necessary to develop the involvement of Public Administration representatives in such activities as student practice, student research activities, case studies, projects and other activities included in the study program.

By implementing the PBL methodology, we want to ensure the stimulation of innovation and creativity in the Public Administration system.

We are aware that all of this can not be ensured in an immediate time, so we have developed a Roadmap and Action Plan that we are committed to go step by step towards the desired goal.

REFERENCES

1. The Education Code of the Republic of Moldova, no. 152 of July 17, 2014.
2. The framework plan for higher education (cycle I - Bachelor, cycle II - Master, integrated studies, cycle III - Doctorate), approved by Order of the Ministry of Education no. 1045 of October 29, 2015;
3. Government Decision No. 482 of 28 June 2017 on the approval of the Registry of Professional Training and Higher Education Specialties.
4. Regulation for the organization of studies in higher education based on the National Credit Studies System, approved by Order of the Ministry of Education no. 1046 of October 29, 2015.
5. The National Qualifications Framework of the Republic of Moldova and the National Qualifications Framework for Higher Education on Professional Training, approved by Order of the Ministry of Education no. 934 of 29 December 2010.
6. Regulation on the Assessment of Academic Outcomes of Students, approved by the USARB Senate Decision, Minutes No.9 of 16.03.2011.
7. Regulation on Academic Mobility in the USARB, approved by USARB Senate Decision, Minutes No. 6 of 07.12.2016.
8. Țarălungă V., Odinoakaia I. Methodological guide on the development and support of the bachelor thesis (edition II). Bălți: S.n., 2018.

Annex 1. Vision on the study program 0400.1 Public Administration – 2022

Year of studies	Semester	COURSE UNITS					Forme of assessment
I	1	General theory of law (5 ECTS)	Constitutional law and political institutions (5 ECTS)	Module 1.Theory and History of Public Administration 2. Political science (5 ECTS)	Methodology of PBL research (4 ECTS) + PROJECT (7 ECTS)	Foreign Language I - Specialty (4 ECTS)	5
	2	Aadministrative Law I (6 ECTS)		Module 1. Ethics and deontology of public servant 2. Liability of the civil servant. (5 ECTS)	Module 1. Elements of civil law and civil procedure. 2. Elements of criminal law and criminal procedure (6 ECTS)	Foreign Language II-Specialty (4 ECTS)	5
II	3	Administra- tive Law II 4 ECTS)	Financial and fiscal law (4 ECTS)	Contraventional Law (4 ECTS)	Family law and civil status (4 ECTS)	Psychology of leadership (3 ECTS)	5
	4	Control of the administrative act (5 ECTS)	Labor Law and Social Protection (5 ECTS)	Public Service Management (5 ECTS)	Specialty practice I + PROJECT (15 ECTS)		4

III	5	E-governing (4 ECTS)	Urban planning and landscaping (4 ECTS)	Techniques for drafting and maintaining administrative documents (4 ECTS)	Specialty practice II + PROJECT (18 ECTS)	4
	6	The management of public procurement (4 ECTS)	Central and local Public Administra- tion (6 ECTS)	Research practice + PROJECT / BACHELOR THESIS (20 ECTS)		3

Annex 2. Roadmap for sustainability of PBL in USARB

No. d./o.	Expected actions	YEAR 2019				YEAR 2020				YEAR 2021				YEAR 2022			
		1 - 3	4 - 6	7 - 9	10 - 12	1 - 3	4 - 6	7 - 9	10 - 12	1 - 3	4 - 6	7 - 9	10 - 12	1 - 3	4 - 6	7 - 9	10 - 12
1.	Expansion and consolidation of the PBL culture at the institutional level					+	+	+	+	+	+	+	+	+	+	+	+
2.	Including the PBL philosophy in the Strategic Plan at the level of institution / faculty / chair				+	+	+										
3.	Continuous teacher training according to the PBL philosophy				+	+	+	+	+								
4.	Changes in regulations related to norms and performance bonuses				+												
5.	Diversification of educational resources (databases, media resources, bibliography, etc.)				+	+	+	+	+	+	+	+	+	+	+	+	+
6.	Creating workspaces for small groups (faculty, library, dorm, etc.)						+	+	+	+	+	+	+	+	+		
7.	Institution co-operation with PBL employers and graduates				+	+	+	+	+	+	+	+	+	+	+	+	+
8.	More active involvement of employers in the process of studying and assessing employers 'satisfaction with the quality of PBL graduates' training				+	+	+		+	+	+		+	+	+		+
9.	Creating a database on the satisfaction of students and teachers on the application of PBL in the teaching-learning-assessment process				+	+	+										

10.	Career guidance and guidance activities	+	+			+	+			+	+			+	+		
11.	Reconceptualisation of the Public Administration Study Plan by implementing the 50% (theory) / 50% (projects)	+	+	+													
12.	Elaboration of the methodical guidelines for the development and support of the projects				+												
13.	Modify study plans at college level and include projects in other specialties									+	+						
14.	Re-conceptualize the curriculum structure of course units / modules according to the PBL methodology							+				+					
15.	Prepare for accreditation/re-accreditation of study programs designed according to the PBL methodology													+	+	+	+
16.	Strengthening and initiating partnerships with universities in the country and abroad to ensure the mobility of teachers and students	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Annex 3. USARB Action Plan

Nr. d./o.	Expected actions	Implementation deadline	Responsible	Expected results
1.	Expansion and consolidation of the PBL culture at the institutional level	during the years 2020-2022	First Vice-Rector for Teaching; Vice-Rector for Scientific Activity and International Relations	Applying the PBL methodology across all USARB faculties
2.	Including the PBL philosophy in the Strategic Plan at the level of institution / faculty / chair	October 2019 to June 2020	First Vice-Rector for Teaching; FDŞS Dean; Head of the chair	Recognizing PBL as a strategic direction of institutional development
3.	Continuous teacher training according to the PBL philosophy	October 2019 to December 2020	First Vice-Rector for Teaching; Continuing training center	Application of PBL methodology by teachers from different study programs in the teaching-learning-assessment process
4.	Changes in regulations related to norms and performance bonuses	June-September 2019	First Vice-Rector for Teaching; Senate Commissions	Regulating Norms and Paying SupervisingHours
5.	Diversification of educational resources (databases, media resources, bibliography, etc.)	September 2019-December 2022	Department of Information Technologies; Scientific library	Access to new information resources
6.	Creating workspaces for small groups (faculty, library, dorm, etc.)	June 2020-September 2022	Pro-rector for administrative-household activity; Economic planning section	Customized rooms for teamwork
7.	Institution co-operation with PBL employers and graduates	during the years 2019-2022	Career counseling and guidance center	Partnership agreements concluded, providing practical basics for students
8.	More active involvement of employers in the process of studying and assessment of employers 'satisfaction with the quality of PBL graduates' training	during the years 2019-2022	Department of Quality Management; Career counseling and guidance center	Highlighting the Positive and Negative Potential of PBL Graduates' Skills and Outlining Remedies for Weak points
9.	Creating a database on the satisfaction of students and teachers related to the application of PBL in the teaching-learning-assessment process	October 2019 - June 2020	Quality Management Department; Information Technologies Department; FDŞS	Satisfaction analysis and outline of the directions of application of PBL with the elimination of

			Dean; Head of the Department	the discovered deficiencies
10.	Career counseling and guidance activities	annual, April - August	Career counseling and guidance center; Student Self-Governance	School graduates interested in being admitted to PBL study programs
11.	Reconceptualisation of the Public Administration Study Plan by implementing the 50% (theory) / 50% (projects)	January - June 2019	FDŞS Council; Senate; Council for Institutional Strategic Development Profile Chair;	New study program developed / approved
12.	Modify study plans at college level and include projects in other specialties	January-June 2021	Profile Department; FDŞS Council; Senate	5 study programs (Cycle I and II) developed using PBL methodology
13.	Re-conceptualize the curriculum structure of course units / modules according to the PBL methodology	July-September 2021-2022	FDŞS Departments	Curricula elaborated with the implementation of PBL
14.	Prepare for accreditation / re-accreditation of study programs designed according to the PBL methodology	January-December 2022	First Vice-Rector for Teaching Activities; Study Section; Quality Management Department; Head of Department	Study Self-Assessment Report
15.	Elaboration of methodical indications for the development and support of the projects	December 2019	Head of Department; PBL USARB team members	Methodological guidance on designing and supporting projects
16.	Strengthening and initiating partnerships with universities in the country and abroad to ensure the mobility of teachers and students	during the years 2019-2022	The Vice-Rector for the scientific activity and international relations; deans and heads of departments	Mobility achieved

Annex 4. Study program at the specialty 0400.1 Public Administration, implemented from 1 September 2017

Year of study	Semester	COURSE UNITS							Forms of assessment
I	1	General theory of law (6 ECTS)	Constitutional law and political institutions (6 ECTS)	Module 1.Theory of Public Administration 2.History of Public Administration (6 ECTS)		Public international law (4ECTS)	Political science +project (4 ECTS)	English / French / German languages I (4 ECTS)	6
	2	Administrative Law I + project (6 ECTS)	Civil law (5 ECTS)	Criminal law (4 ECTS)	EU Institutional law (3 ECTS)	European construction (4 ECTS)	Information and communication technologies (4ECTS)	English / French / German languages II (4 ECTS)	7
II	3	Administrative law II (4 ECTS)	Financial and fiscal law (3 ECTS)	Contraven-tional law (3 ECTS)	Family law and civil status (4 ECTS)	Information law (4 ECTS)	Labor Law (4 ECTS)	Philosophy. Philosophical issues of the field (4 ECTS)	7
		Interdisciplinary Project - (4 ECTS)							
	4	Control of the administrative act (5 ECTS)	Civil procedural law (6 ECTS)	The right to social protection (4 ECTS)	Psychology of leadership (3 ECTS)	Market Economy Principles (4 ECTS)	Ethics and professional ethics (2 ECTS)	Specialty practice I + project (6 ECTS)	7
III	5	Liability of the civil servant (3 ECTS)	Public Service Management (4 ECTS)	E-governance (4 ECTS)	Urban planning and landscaping (4 ECTS)	Law on Environment (3 ECTS)	Specialty practice II + project (6 ECTS)		6
	6	Public Procurement Management (4 ECTS)	Central Public Administration (3 ECTS)	Local Public Administration (3 ECTS)	Administrative contracts (3 ECTS)	Office supply, correspondence and secretarial techniques (3 ECTS)	Research Practice + Bachelor Thesis (14 ECTS)		6

Annex 5. Curricula in the specialty 0400.1 Public Administration, applicable from 01 September 2017

Ministerul Educației al Republicii Moldova
Universitatea de Stat „Alec Russo” din Bălți

APROBAT
la ședința Consiliului Facultății de Drept și
Științe Sociale
Decan _____
Proces verbal nr. 10 din 18.05.2017



APROBAT
la ședința Senatului
Universității de Stat „Alec Russo”
din Bălți
Rector _____
Proces verbal nr. 11 din 18.05.2017

PLAN DE ÎNVĂȚĂMÂNT ciclul I (studii superioare de licență)

Nivelul calificării	Nivelul 6 ISCED
Domeniul general de studiu	040 Științe administrative
Domeniul de formare profesională	0400 Științe administrative
Specialitatea	0400.1 Administrație publică
Numărul total de credite de studiu	180
Titlul obținut la finele studiilor	Licențiat în științe politice
Baza admiterii	Diploma de bacalaureat sau un act echivalent de studii; diploma de studii superioare
Limba de instruire	Limba română
Forma de organizare a învățământului	Învățământ cu frecvență
Modificări	Modificat la 30.05.2017, aplicat de la 01.09.2017

CALENDARUL UNIVERSITAR

Anul de studii	Activități didactice		Sesiune de examinare		Stagii de practică	Vacanțe		
	sem. I	sem. II	iarnă	vară		iarnă	primăvară	vară
I	01.09.2017-16.12.2017	05.02.2018-26.05.2018	18.12.2017-23.12.2017; 09.01.2018-27.01.2018	28.05.2018-23.06.2018		25.12.2017-08.01.2018; 29.01.2018-04.02.2018	17.04.2018-24.04.2018	25.06.18-31.08.18
II	03.09.2018-15.12.2018	04.02.2019-25.05.2019	17.12.2018-24.12.2018; 09.01.2019-26.01.2019	27.05.2019-22.06.2019	29.04.2019-25.05.2019	25.12.2018-08.01.2019; 28.01.2019-02.02.2019	29.04.2019-06.05.2019	24.06.2019-31.08.2019
III	02.09.2019-14.12.2019	10.02.2020-16.05.2020	16.12.2019-24.12.2019; 09.01.2020-31.01.2020	18.05.2020-30.05.2020; 01.06.2020-19.06.2020 (Teza de licență)	04.11.2019-14.12.2019; 10.02.2020-16.05.2020	25.12.2019-08.01.2020; 01.02.2020-08.02.2020	20.04.2020-27.04.2020	

Repartizarea unităților de curs / modulelor în planurile de învățământ pe ani de studii
Anul I, semestrul 1 (15 săptămâni de studii)

Cod	Denumirea unității de curs / modulului	Total ore			Numărul de ore pe tipuri de activități			Forma de evaluare	Număr de credite
		Total	Contact direct	Studiu individual	Curs	Seminar	Laborator		
F.01.O.001	Teoria generală a dreptului	180	90	90	44	46	-	E	6
F.01.O.002	Drept constituțional și instituții politice	180	90	90	44	46	-	E	6
F.01.O.003	Modul: 1. Teoria administrației publice 2. Istoria administrației publice	180	60	60	30	30	-	E	6
F.01.O.004	Drept internațional public	120	60	60	30	30	-	E	4
F.01.O.005	Politologie+proiect	120	60	60	30	14	16	E	4
G.01.O.006	Limba engleză / franceză / germană I	120	60	60	-	-	60	E	4
Total ore:		900	450	450	194	180	76	6	30
G.01.O.007	Educația fizică I	60	30	30	-	30	-	C	

Anul I, semestrul 2 (15 săptămâni de studii)

Cod	Denumirea unității de curs / modulului	Total ore			Numărul de ore pe tipuri de activități			Forma de evaluare	Număr de credite
		Total	Contact direct	Studiu individual	Curs	Seminar	Laborator		
F.02.O.008	Drept administrativ I + proiect	180	90	90	44	22	24	E	6
F.02.O.009	Drept civil	150	75	75	45	30	-	E	5
F.02.O.010	Drept penal	120	60	60	30	30	-	E	4
F.02.O.011	Drept instituțional al Uniunii Europene	90	45	45	30	15	-	E	3
U.02.A.012 / U.02.A.013	Construcție europeană / Civilizație europeană	120	60	60	30	30	-	E	4
G.02.O.014	Tehnologii informaționale și comunicaționale	120	60	60	14	-	46	E	4
G.02.O.015	Limba engleză / franceză / germană II	120	60	60	-	-	60	E	4
Total ore:		900	450	450	193	127	130	7	30
G.02.O.016	Educația fizică II	60	30	30	-	30	-	C	

Anul II, semestrul 3 (15 săptămâni de studii)

Cod	Denumirea unității de curs / modulului	Total ore			Numărul de ore pe tipuri de activități			Forma de evaluare	Număr de credite
		Total	Contact direct	Studiu individual	Curs	Seminar	Laborator		
F.03.O.017	Drept administrativ II *	180	90	90	44	22	24	E	6
F.03.O.018	Drept financiar și fiscal*	120	60	60	30	14	16	E	4
F.03.O.019	Dreptul familiei și stare civilă	120	60	60	30	30	-	E	4
S.03.O.120	Drept informațional	120	60	60	30	30	-	E	4
S.03.O.121	Drept contravențional*	120	60	60	30	14	16	E	4
S.03.A.122 /	Dreptul muncii /	120	60	60	30	30	-	E	4
S.03.A.123	Dreptul muncii al Uniunii Europene								
U.03.A.024 / U.03.A.025	Filosofia. Probleme filosofice ale domeniului / Filosofia și istoria științei	120	60	60	30	30	-	E	4
Total ore:		900	450	450	224	170	56	7	30
					450				

* Proiect interdisciplinar elaborat la unități de curs indicate.

Anul II, semestrul 4 (15 săptămâni de studii)

Cod	Denumirea unității de curs / modulului	Total ore			Numărul de ore pe tipuri de activități			Forma de evaluare	Număr de credite
		Total	Contact direct	Studiu individual	Curs	Seminar	Laborator		
S.04.O.126	Controlul actului administrativ	150	75	75	45	30	-	E	5
S.04.O.127	Drept procesual civil	180	90	90	44	46	-	E	6
S.04.A.128 / S.04.A.129	Dreptul protecției sociale / Dreptul protecției sociale al Uniunii Europene	120	60	60	30	30	-	E	4
S.04.O.130	Psihologia conducerii	90	45	45	30	15	-	E	3
U.04.A.031 / U.04.A.032	Principiile economiei de piață / Managementul proiectelor	120	60	60	30	30	-	E	4
G.04.O.033	Etica și deontologia profesională	60	30	30	16	14	-	E	2
	Practica de specialitate I + proiect	180	90	90	-	-	-	E	6
Total ore:		900	450	450	195	165	-	7	30
					360				

Anul III, semestrul 5 (15 săptămâni de studii)

Cod	Denumirea unității de curs / modulului	Total ore			Numărul de ore pe tipuri de activități			Forma de evaluare	Număr de credite
		Total	Contact direct	Studiu individual	Curs	Seminar	Laborator		
S.05.O.134	Răspunderea juridică a funcționarului public	90	45	45	30	15	-	E	3
S.05.A.135 / S.05.A.136	Managementul serviciilor publice / Managementul resurselor umane în administrația publică	120	60	60	30	30	-	E	4
S.05.A.137 / S.05.A.138	E-guvernare / E-service în Administrația Publică	120	60	60	30	30	-	E	4
S.05.A.139 / S.05.A.140	Drept funciar și publicitate imobiliară/ Urbanism și amenajarea teritoriului	120	60	60	30	30	-	E	4
S.05.A.141 / S.05.A.142	Dreptul mediului / Drept vamal	90	45	45	30	15	-	E	3
	Practica de specialitate II + proiect	360	180	180	-	-	-	E	12
	Total ore:	900	450	450	150	120	-	6	30
					270				

Anul III, semestrul 6 (15 săptămâni de studii)

Cod	Denumirea unității de curs / modulului	Total ore			Numărul de ore pe tipuri de activități			Forma de evaluare	Număr de credite
		Total	Contact direct	Studiu individual	Curs	Seminar	Laborator		
S.06.O.143	Managementul achizițiilor publice	120	60	60	30	30	-	E	4
S.06.O.144	Administrația publică centrală	90	45	45	30	15	-	E	3
S.06.O.145	Administrația publică locală	90	45	45	30	15	-	E	3
S.06.A.146 / S.06.A.147	Reglementarea juridică a activității de întreprinzător/ Contracte administrative	90	45	45	30	15	-	E	3
S.06.A.148 / S.06.A.149	Birotica, corespondență și tehnici de secretariat / Tehnici de elaborare a documentelor administrative	90	45	45	30	15	-	E	3
	Practica de cercetare	240	120	120	-	-	-	E	14
	Teza de licență	180	90	90	-	-	-	E	
	Total ore:	900	450	450	150	90	-	7	30
					240				

Stagiile de practică

Nr. crt.	Stagiile de practică	Sem.	Durata nr. săpt./ore	Perioada	Număr de credite
1.	Practica de specialitate I	4	3/180	29.04.2019-25.05.2019	6
2.	Practica de specialitate II	5	6/360	04.11.2019-14.12.2019	12
	Total				18

Teza de licență

Nr. crt.	Denumirea activității		Sem.	Durata nr. săpt./ore	Perioada	Număr de credite
1.	Elaborarea și susținerea tezei de licență: documentare, investigare, cercetare, experimentare, redactare, elaborarea prezentării, susținere publică	Practica de cercetare	VI	13/240	10.02.2020-16.05.2020 (8 ore/săpt.)	14
		Susținerea tezei de licență	VI	3/180	01.06.2020-19.06.2020	

Minimul curricular inițial pentru un alt domeniu la ciclul II – studii superioare de master (la libera alegere)

Nr. crt.	Denumirea unității de curs / modulului	Anul	Semestrul	Total ore			Numărul de ore pe tipuri de activități			Forma de evaluare	Număr de credite
				Total	Contact direct	Studiu individual	Curs	Seminar	Laborator		
1.	Teoria generală a dreptului	I	I	180	90	90	44	46	-	E	6
2.	Drept constituțional și instituții politice	I	I	180	90	90	44	46	-	E	6
3.	Modul: 1. Teoria administrației publice 2. Istoria administrației publice	I	I	180	60	60	30	30	-	E	6
4.	Drept administrativ I	I	II	180	90	90	44	46	-	E	6
5.	Drept administrativ II	II	III	180	90	90	44	46	-	E	6
Total				900	450	450	222	228	-	5	30
							450				

Unități de curs la liberă alegere

Nr. crt.	Denumirea unității de curs / modulului	Total ore			Numărul de ore pe tipuri de activități			Forma de evaluare	Număr de credite
		Total	Contact direct	Studiu individual	Curs	Seminar	Laborator		
1.	Bazele culturii informației	30	10	20	-	10	-	C	-
2.	Cultura comunicării	60	30	30	-	-	30	C	2
3.	Securitatea muncii. Protecția civilă	30	15	15	15	-	-	C	-
4.	Guvernare modernă și integrare europeană	90	45	45	30	15	-	E	3
5.	Regionalizarea administrativă	90	45	45	30	15	-	E	3
6.	Protecția juridică a drepturilor omului	90	45	45	30	15	-	E	3
7.	Teoria sondajelor în administrația publică	90	45	45	30	15	-	E	3
8.	Sociologia conducerii	90	45	45	30	15	-	E	3
9.	Metodologia cercetărilor științifice	60	30	30	14	-	16	C	2

Modulul psihopedagogic (la libera alegere)									
Nr. crt.	Denumirea unității de curs / modulului	Total ore			Numărul de ore pe tipuri de activități			Forma de evaluare	Număr de credite
		Total	Contact direct	Studiu individual	Curs	Seminar	Laborator		
1.	Pedagogie	120	60	60	30	30	-	E	4
2.	Psihologie	120	60	60	30	30	-	E	4
3.	Psihologia vârștelor. Stresul în mediul educațional	150	75	75	45	30	--	E	5
4.	Dirigenție. Educație incluzivă	150	75	75	45	30	--	E	5
5.	Didactica științelor administrative	180	90	90	46	44	-	E	6
6.	Management educațional	120	60	60	30	30	-	E	4
7.	Etica pedagogică	60	30	30	16	14	-	E	2
8.	Practica de inițiere în pedagogie*	30	15	15	-	-	15	-	1
9.	Practica de inițiere în psihologie**	30	15	15	-	-	15	-	1
10.	Practica pedagogică	480	240	240	-	-	-	E	16
11.	Practica de specialitate I	120	60	60	-	-	-	E	4
12.	Practica de specialitate II	240	120	120	-	-	-	E	8
Total		1800	900	900	242	208	30	10	60

*se evaluează în cadrul unității de curs Pedagogie

**se evaluează în cadrul unității de curs Psihologie

Descrierea finalităților de studii și a competențelor

Competențe profesionale:

CP1. Operarea cu noțiunile, conceptele, teoriile și metodele de bază ale științei administrației în activitatea profesională.

CP2. Interpretarea principiilor fundamentale de organizare și funcționare a structurilor administrative în scopul transpunerii ulterioare a acestora în activitatea profesională în instituții publice și/sau private.

CP3. Identificarea, analizarea și rezolvarea problemelor din domeniul administrației publice în conformitate cu prevederile legale, în mod cooperant, flexibil și eficient.

CP4. Elaborarea, examinarea și adoptarea deciziilor privind activitatea administrativă.

CP5. Planificarea strategică a activității profesionale curente și de personal, în scopul dezvoltării instituționale pe termeni medii și de perspectivă.

CP6. Utilizarea tehnologiilor moderne, diverselor forme și metode de control a evaluării activității administrative și formularea propunerilor de eficientizare a acesteia.

Competențe transversale:

CT1. Executarea riguroasă, eficientă, responsabilă și în termen, a sarcinilor profesionale, în spirit de inițiativă și în concordanță cu principiile etice și deontologia profesională.

CT2. Aplicarea tehnicilor de relaționare în grup, deprinderea și exercitarea rolurilor specifice în munca de echipă, prin dezvoltarea abilităților de comunicare interpersonală și prin asumarea responsabilității pentru luarea deciziilor.

CT3. Autoevaluarea nevoii de formare profesională și identificarea resurselor și modalităților de dezvoltare personală și profesională, în scopul inserției și adaptării la cerințele pieței muncii.

Matricea corelațiilor dintre competențele profesionale și transversale și unitățile de curs incluse în planul de învățământ

Codul	Unitatea de curs	Sem.	Nr. credite	Competențe profesionale						Competențe transversale		
				CP1	CP2	CP3	CP4	CP5	CP6	CT1	CT2	CT3
F.01.O.001	Teoria generală a dreptului	I	6	+	+	+				+		
F.01.O.002	Drept constituțional și instituții politice	I	6	+	+	+	+			+	+	
F.01.O.003	Modul: 1.Teoria administrației publice 2. Istoria administrației publice	I	6	+	+	+	+	+	+		+	
				+	+	+			+			+
F.01.O.004	Drept internațional public	I	4	+	+	+		+		+	+	+
F.01.O.005	Politologia + proiect	I	4	+	+	+	+				+	
G.01.O.006	Limba engleză / franceză / germană I	I	4						+	+	+	+
F.02.O.008	Drept administrativ I + proiect	II	6	+	+	+	+	+		+	+	+
F.02.O.009	Drept civil	II	5	+	+	+					+	+
F.02.O.010	Drept penal	II	4	+	+	+			+	+	+	
F.02.O.011	Drept instituțional al Uniunii Europene	II	3	+	+	+		+		+	+	
U.02.A.012 / U.02.A.013	Construcție europeană / Civilizație europeană	II	4	+	+					+	+	
G.02.O.014	Tehnologii informaționale și comunicaționale	II	4						+	+	+	+
G.02.O.015	Limba engleză / franceză / germană II	II	4						+	+	+	+
F.03.O.017	Drept administrativ II*	III	6	+	+	+	+	+	+	+	+	+
F.03.O.018	Drept financiar și fiscal*	III	4	+	+	+		+	+	+	+	+
F.03.O.019	Dreptul familiei și stare civilă	III	4	+	+	+					+	+
S.03.O.120	Drept informațional*	III	4			+	+	+	+	+	+	+
S.03.O.121	Drept contravențional	III	4	+	+	+	+			+		
S.03.A.122 / S.03.A.123	Dreptul muncii / Dreptul muncii al Uniunii Europene	III	4	+	+	+	+	+		+		+
				+	+	+	+	+		+		+
U.03.A.024 / U.03.A.025	Filosofia. Probleme filosofice ale domeniului / Filosofia și istoria științei	III	4	+					+	+	+	+
+							+	+	+	+		
S.04.O.126	Controlul actului administrativ	IV	5			+	+	+	+	+	+	
S.04.O.127	Drept procesual civil	IV	6	+	+	+	+			+		
S.04.A.128 / S.04.A.129	Dreptul protecției sociale / Dreptul protecției sociale al Uniunii Europene	IV	4	+	+	+	+	+		+		+
				+	+	+	+	+		+		+
S.04.A.130	Psihologia conducerii	IV	3		+				+		+	+
U.04.A.031 / U.04.A.032	Principiile economiei de piață / Managementul proiectelor	IV	4	+					+	+	+	+
+							+	+	+	+		
G.04.O.033	Etica și deontologia profesională	IV	2					+		+		+
S.05.O.134	Răspunderea juridică a funcționarului public	V	4			+	+	+	+	+		+
S.05.A.135 / S.05.A.136	Managementul serviciilor publice / Managementul resurselor umane în administrația publică	V	4			+		+	+	+	+	+
						+		+	+	+	+	+
S.04.A.137 / S.04.A.138	E-guvernare / E-service în Administrația Publică	V	4				+	+	+	+	+	
S.05.A.139 / S.05.A.140	Drept funciar și publicitate imobiliară / Urbanism și amenajarea teritoriului	V	4	+	+	+	+			+		
				+	+	+	+			+		
S.05.A.141 / S.05.A.142	Dreptul mediului / Drept vamal	V	3	+	+	+				+		
				+	+	+				+		

S.06.A.143	Managementul achizițiilor publice	VI	4			+	+	+	+		+	+
S.06.A. 144	Administrația publică centrală	VI	3			+	+	+	+	+		+
S.06.O. 145	Administrația publică locală	VI	3			+	+	+	+	+		+
S.06.A.146 / S.06.A.147	Reglementarea juridică a activității de întreprinzător / Contracte administrative	VI	3	+	+	+	+		+	+	+	+
S.06.A.148 / S.06.A.149	Birocrația, corespondență și tehnici de secretariat / Tehnici de elaborare a documentelor administrative	VI	3				+	+	+		+	+
							+	+	+		+	+

NOTĂ EXPLICATIVĂ

1. Generalități

Planul de învățământ, la specialitatea *Administrație publică*, este documentul care cuprinde un sistem de activități de formare profesională și de cercetare științifică al specialiștilor în domeniul administrației publice. Titlul obținut la finele ciclului I, studii superioare de licență este de *licențiat în științe politice*.

Planul de învățământ cuprinde:

- I. planul de învățământ propriu-zis;
- II. nota explicativă la planul de învățământ.

Planul de învățământ a fost racordat la obiectivele proiectului ERASMUS+ „Introducerea învățării bazate pe probleme în Moldova: Spre consolidarea competitivității și șanselor de angajare ale studenților / Introducing Problem Based Learning in Moldova: Toward Enhancing Students' Competitiveness and Employability”, fiind elaborat în conformitate cu prevederile:

1. Codului educației al Republicii Moldova, nr. 152 din 17 iulie 2014;
2. Legii pentru aprobarea Clasificatorului unic al funcțiilor publice, nr.155 din 21.07.2011;
3. Planului-cadru pentru studii superioare (ciclul I - Licență, ciclul II - Master, studii integrate, ciclul III - Doctorat), aprobat prin ordinul Ministerului Educației nr. 1045 din 29 octombrie 2015;
4. Hotărârii Guvernului cu privire la aprobarea Nomenclatorului domeniilor de formare profesională și al specialităților în învățământul superior, nr.482 din 28.06.2017;
5. Regulamentului de organizare a studiilor în învățământul superior în baza Sistemului Național de Credite de Studiu, aprobat prin ordinul Ministerului Educației nr. 1046 din 29 octombrie 2015;
6. Cadrului Național al Calificărilor al Republicii Moldova și Cadrului Național al Calificărilor pentru învățământul superior pe domenii de formare profesională, aprobate prin Ordinul Ministerului Educației nr. 934 din 29 decembrie 2010.

2. Concepția formării specialistului

a. Scop și caracteristici

Scopul programului-pilot este trecerea de la învățământul clasic (teoretizat), unde profesorul este furnizor de informații, iar studentul receptorul informației, la PBL (învățământ axat pe problemă), ceea ce ar permite formarea specialiștilor competitivi pe piața muncii, calificați în domeniul de formare profesională 0400 *Științe administrative, specialitatea 0400.1 Administrație publică*.

Caracteristicile distinctive ale programului constau în asigurarea unei pregătiri profesionale de calitate tuturor celor care doresc să-și construiască o carieră în structurile administrației centrale și locale, precum și în departamentele de specialitate din cadrul companiilor publice. Formarea profesională este axată pe însușirea: fundamentelor științifice și normative ale teoriei constituției; principiilor generale ale

sistemului politic și diverselor mecanisme de administrare; dezvoltarea abilităților și formarea deprinderilor practice în domeniul administrației publice.

b. Angajabilitate

Absolvenții ciclului I, studii de licență, specialitatea Administrație publică, pot ulterior activa în calitate de funcționar public în funcții de execuție; specialist în domeniul organizării activității administrative; specialist în domeniul resurselor umane; specialist în domeniul relațiilor publice; specialist în domeniul organizării și prestării serviciilor publice; specialist în domeniul documentării administrative; manager de proiecte în administrația publică; consilier în administrația publică; referent în probleme administrative; expert în domeniul administrației publice.

c. Formare ulterioară

Formarea inițială la ciclul I, studii superioare de licență, constituie o premisă necesară pentru continuarea studiilor la ciclul II, studii superioare de masterat, în domeniul *31 Științe politice* sau *38 Drept*.

3. Finalități de studiu preconizate

a. Finalitățile formării:

- a forma funcționari în administrația publică capabili să stăpânească problemele de specialitate la nivel național și european, oferindu-le cunoștințe și abilități necesare începerii unei cariere în profesia dată;
- a forma specialiști în domeniul administrației publice în vederea asigurării managementului public autohton;
- a forma funcționari publici în spiritul eficacității manageriale;
- a dezvolta spiritul de echipă în contextul luării deciziilor administrative;
- a pregăti manageri publici, cu aptitudini și cunoștințe în domeniul leadership-ului;
- a dezvolta capacități de instrumentare a actelor și procedurilor administrative;
- a dezvolta capacități de valorificare a limbajului specific administrației publice;
- a forma abilități de înțelegere a realităților mediului administrativ;
- a forma capacități de analiză și sinteză a proceselor și fenomenelor social-economice prin elaborarea și implementarea strategiilor manageriale;
- a dezvolta abilități de comunicare, motivare și antrenare a viitorilor specialiști în administrația publică;
- a cultiva capacități decizionale și de gestionare a schimbărilor în administrația publică;
- a consolida capacitățile de asumare a riscurilor și responsabilităților profesionale;
- a dezvolta capacități de inițiere a strategiilor privind dezvoltarea și diversificarea activității din administrația publică centrală și locală;
- a asigura un corp de funcționari publici instruiți în domeniul managementului resurselor umane;
- a cultiva abilități de colaborare cu specialiști din alte domenii și de acțiune în contextul managementului schimbării.

b. Finalitățile programului de studii exprimate prin competențele profesionale și competențele transversale:

Competențe profesionale	CP1	CP2	CP3	CP4	CP5	CP6
Descriptori de nivel ai elementelor structurale ale competențelor profesionale	Operarea cu noțiunile, conceptele, teoriile și metodele de bază ale științei administrației în activitatea profesională.	Interpretarea principiilor fundamentale de organizare și funcționare a structurilor administrative în scopul transpunerii ulterioare a acestora în activitatea profesională în	Identificarea, analizarea și rezolvarea problemelor din domeniul administrației publice în conformitate cu prevederile legale, în mod cooperant,	Elaborarea, examinarea și adoptarea deciziilor privind activitatea administrativă.	Planificarea strategică a activității profesionale curente și de personal, în scopul dezvoltării instituționale pe termeni medii și de perspectivă.	Utilizarea tehnologiilor moderne, diverselor forme și metode de control a evaluării activității administrative și formularea propunerilor de

		instituții publice și/sau private	flexibil și eficient			eficientizare a acesteia.
CUNOȘTINȚE						
1. Cunoașterea, înțelegerea conceptelor, teoriilor și metodelor de bază ale domeniului și ale ariei de specializare; utilizarea lor adecvată în comunicarea profesională	CP1.1 Cunoașterea, înțelegerea și utilizarea noțiunilor, conceptelor, teoriilor din domeniul administrației publice	CP2.1 Explicarea și perceperea principiilor fundamentale de organizare și funcționare a structurilor administrative	CP3.1 Identificarea, înțelegerea și utilizarea eficientă a metodelor din domeniul administrației publice, în scopul încadrării legale a stărilor de fapt	CP4.1 Cunoașterea exigențelor de elaborare a proiectelor de decizii administrative pentru diverse situații de fapt	CP5.1 Distingerea strategiilor fundamentale de planificare a activităților profesionale și de personal curente în domeniul administrației publice	CP6.1 Perceperea necesității aplicării tehnologiilor moderne în activitatea administrației publice
2. Utilizarea cunoștințelor de bază pentru explicarea și interpretarea unor variate tipuri de concepte, situații, procese, proiecte etc. asociate domeniului	CP1.2 Utilizarea cunoștințelor achiziționate în cadrul disciplinelor fundamentale pentru explicarea și interpretarea conceptelor și proceselor din domeniul administrației publice	CP2.2 Interpretarea diverselor modele administrative în vederea soluționării unor probleme tipice din domeniul administrației publice	CP3.2 Analiza și încadrarea legală a rezolvării situațiilor și modelării proceselor din sfera administrației publice	CP4.2 Utilizarea criteriilor și exigențelor de elaborare a proiectelor de decizii administrative pentru diverse situații de fapt	CP5.2 Cunoașterea strategiilor fundamentale de planificare a activităților profesionale și de personal pe termen mediu în administrația publică	CP6.2 Identificarea formelor și metodelor de control a evaluării activității administrative
ABILITĂȚI						
3. Aplicarea unor principii și metode de bază pentru rezolvarea de probleme / situații bine definite, tipice domeniului în condiții de asistență calificată	CP1.3 Aplicarea metodelor de bază pentru soluționarea situațiilor de fapt în procesul formării profesionale	CP2.3 Raportarea principiilor fundamentale pentru soluționarea situațiilor concrete relevante administrației publice	CP3.3 Aplicarea normelor legale în scopul identificării soluțiilor pentru situațiile de fapt modelate din domeniul administrației publice	CP4.3 Implementarea principiilor metodologice de luare a deciziilor în domeniul administrativ în condiții de asistență calificată	CP5.3 Aplicarea principiilor și metodelor de identificare a strategiilor de planificare a activităților profesionale și de personal în administrația publică	CP6.3 Aplicarea diferitor mecanisme și forme de control administrativ aferente domeniului profesional
4. Utilizarea adecvată de criterii și metode standard de evaluare, pentru a aprecia calitatea unor procese, programe, proiecte, concepte, metode și teorii	CP1.4 Utilizarea adecvată de criterii și metode standard de evaluare, aplicate în cadrul disciplinelor fundamentale, pentru recunoașterea și estimarea problemelor din domeniul administrației publice	CP2.4 Aplicarea corespunzătoare a principiilor fundamentale pentru evaluarea cantitativă și calitativă a proceselor din domeniul administrației publice	CP3.4 Utilizarea criteriilor și metodelor standard de evaluare, în scopul aprecierii eficienței soluțiilor pentru situațiile de fapt modelate din domeniul administrației publice	CP4.4 Analiza proiectelor de decizii administrative în vederea evaluării legalității acestora	CP5.4 Utilizarea diverselor criterii și metode standard de evaluare, pentru estimarea necesității activităților profesionale și de personal	CP6.4 Utilizarea adecvată a tehnologiilor moderne în administrația publică, în vederea evaluării eficienței actului de guvernare
5. Elaborarea de proiecte profesionale cu utilizarea unor principii și metode consacrate în domeniu	CP1.5 Elaborarea de proiecte în domeniul administrației publice cu întrebuintarea principiilor și metodelor consacrate de disciplinele fundamentale	CP2.5 Redactarea proiectelor lor specifice administrației publice cu utilizarea principiilor și metodelor consacrate de disciplinele de specialitate	CP3.5 Elaborarea propunerilor de modificare și amendare a legislației în domeniul administrației publice	CP4.5 Elaborarea proiectelor de decizii administrative pentru situații concrete și previziunea efectelor scontate	CP5.5 Elaborarea unui plan managerial instituțional	CP6.5 Elaborarea proiectelor de re-transformare a administrației publice
Standarde minimale de performanță pentru evaluarea competenței:	Definirea noțiunilor, interpretarea conceptelor și teoriilor, precum și aplicarea acestora în situații tipice din domeniul administrației publice	Soluționarea unor situații de caz de complexitate medie, care necesită modelarea și simularea unor procese și fenomene specifice administrației publice	Încadrarea legală a situațiilor modelate specifice administrației publice	Redactarea unor proiecte decizionale în domeniul administrației publice	Proiectarea unui plan strategic managerial în domeniul administrației publice	Cunoașterea cerințelor standard pentru tehnologiile moderne de comunicare în administrația publică

	publice.				
Descriptorii de nivel ai competențelor transversale	Competențe transversale			Standarde minimale de performanță pentru evaluarea competenței	
6. Executarea responsabilă a sarcinilor profesionale, în condiții de autonomie restrânsă și asistență calificată	CT1 Executarea riguroasă, eficientă, responsabilă și în termen, a sarcinilor profesionale, în spirit de inițiativă și în concordanță cu principiile etice și deontologia profesională.			Elaborarea și susținerea în cadrul unităților de curs a proiectelor planificate, tezelor de an, tezelor de licență în conformitate cu rigorile metodice	
7. Familiarizarea cu rolurile și activitățile specifice muncii în echipă și distribuirea de sarcini pentru nivelurile subordonate	CT2 Aplicarea tehnicilor de relaționare în grup, deprinderea și exercitarea rolurilor specifice în munca de echipă, prin dezvoltarea abilităților de comunicare interpersonală și prin asumarea responsabilității pentru luarea deciziilor.			Realizarea proiectelor / sarcinilor de grup de complexitate medie, axate pe probleme actuale și relevante domeniului de formare, care necesită abordare interdisciplinară și care permit de a dezvolta spiritul de echipă, planificarea activității în grup, repartizarea rolurilor în echipă, diversitatea în cooperare, nivelul înalt de studiu.	
8. Conștientizarea nevoii de formare continuă; utilizarea eficientă a resurselor și tehnicilor de învățare, pentru dezvoltarea personală și profesională	CT3 Autoevaluarea nevoii de formare profesională și identificarea resurselor și modalităților de dezvoltare personală și profesională, în scopul inserției și adaptării la cerințele pieței muncii.			Identificarea necesității de dezvoltare personală și profesională continuă în concordanță cu necesitățile pieței muncii și utilizarea în acest sens a diverselor resurse și tehnici de învățare.	

4. Termenul de studii și structura anilor de studii

În corespundere cu cerințele Planului-cadru pentru studii superioare (ciclul I - Licență, ciclul II Master, studii integrate, ciclul III - Doctorat), aprobat prin ordinul Ministerului Educației nr. 1045 din 29 octombrie 2015, durata studiilor superioare de licență (ciclul I), învățământ cu frecvență la zi este de 3 ani, respectiv 180 credite ECTS.

Anul de studii este divizat în două semestre a câte 15 săptămâni fiecare. Numărul total de ore de studiu prevăzute în plan - 5400, dintre care: ore de contact direct - 2700; numărul orelor de lucru independent – 2700, ceea ce este echivalent cu 180 de credite.

Ponderea creditelor a unităților de curs în Planul de învățământ este următoarea:

1. Componenta de discipline *fundamentale (F)* în plan îi revin *58 de credite ECTS*.
2. Pentru componenta de formare a abilităților și competențelor *generale (G)* planul prevede *14 credite ECTS*.
3. Pentru componenta de orientare *socio-umanistică (U)* planul prevede *12 credite ECTS*.
4. Pentru componenta de *orientare spre specialitatea de bază (S)* planul prevede *64 de credite ECTS*.
5. Practica de specialitate I, Practica de specialitate II, Practica de cercetare *26 credite ECTS*.
6. Susținerea tezei de licență *6 credite ECTS*.

5. Proiectele semestriale

Proiectul din sem. I va fi elaborat în cadrul unității de curs fundamentale *Politologie*. În cadrul orelor de curs planificate pentru proiectul din sem. I vor fi predate elemente de metodologia cercetărilor științifice, în scopul familiarizării studenților cu condițiile de fond și formă care trebuie respectate în procesul elaborării unui proiect de cercetare.

În sem. II proiectul se va elabora în cadrul unității de curs fundamentale - *Drept administrativ I*, iar în sem. III va fi elaborat un proiect interdisciplinar la unitățile de curs: *Drept administrativ II*, *Drept financiar și fiscal*, *Drept contravențional*.

În sem. IV-V proiectele vor fi elaborate în cadrul practicii de specialitate, iar studenții vor elabora proiectul în corespundere cu tema de cercetare, îmbinând aspectul teoretic cu cel practic. Proiectul din sem. VI va fi teza de licență.

Proiectele din sem. I-III vor fi elaborate în grup, iar în sem. IV-VI vor fi proiecte de cercetare individuale.

Scopul proiectelor de grup constă în cooperarea axată pe diversitate și găsirea unui numitor comun pentru soluționarea problemelor cercetate, axată pe studierea problemei la un înalt nivel logistic, creativ și

multiaspectual. De asemenea, prin intermediul proiectelor vor fi formate la studenți capacitățile de documentare și analiză critică a informației, expunerii succinte (adnotării) articolelor științifice de specialitate, analizei și perfectării unei bibliografii tematice. Tematica proiectelor semestriale oferă posibilitatea studentului de a-și continua cercetarea prin elaborarea tezei de licență.

Tematica proiectelor propuse spre cercetare va fi actuală, importantă și relevantă, iar pentru elaborarea acestora studenții, vor fi grupați câte 3-5, fiind ghidați spre o analiză profundă și consistentă a problemei cercetate.

Temele pentru proiectele semestriale vor fi stabilite, de comun acord, de către cadrele didactice titulare și studenți, la începutul fiecărui semestru, iar susținerea publică a acestora va avea loc cu cel puțin o săptămână până la începerea sesiunii de examene în fața unei comisii constituite din două sau mai multe cadre didactice, numite de către șeful catedrei de resort.

6. Organizarea practicii studenților

Obiectivele practicii de specialitate rezidă în familiarizarea studenților cu particularitățile specialității, achiziționarea deprinderilor profesionale inițiale. *Practica de specialitate I + proiectul semestrial* se promovează în sem. IV, cu durata de 4 săptămâni și se creditează cu 240 de ore, 8 credite. *Practica de specialitate II + proiectul semestrial* se promovează în sem V, cu durată de 6 săptămâni și se creditează cu 420 de ore, 14 credite.

Practica de cercetare are drept scop dezvoltarea abilităților practice necesare și aplicarea cunoștințelor teoretice la activitatea profesională independentă și efectuarea cercetărilor, documentarea și colectarea informației pentru realizarea proiectului tezei de licență. Studentul, de comun acord cu cadrul didactic conducător al tezei de licență și mentorul responsabil de practică va operaționaliza conținutul stagiului de practică în funcție de tema de cercetare.

Practica de cercetare se promovează în sem VI, cu durată de 8 ore săptămânal și se creditează cu 240 de ore, 8 credite.

La evaluarea finală, stagiile de practică se apreciază cu note de către o comisie creată de Catedra responsabilă, ținând cont de referința mentorului din cadrul unității-bază de practică despre activitatea stagiului, calitatea susținerii publice a raportului, rezultatele realizării sarcinii individuale, aprecierea conducătorului de practică. Notele obținute pentru stagiul de practică se includ în rezultatele sesiunii respective de examinare, se iau în considerare la calculul mediei reușitei academice a studentului.

Evaluarea practicii de licență se face de către o comisie cu privire la susținerea practicii de licență, desemnată de către șeful Catedrei responsabile, în două etape, în dependență de activitatea studentului în procesul de elaborare a proiectului tezei de licență și de referința conducătorului tezei de licență.

7. Evaluarea studenților

Planul de învățământ prevede următoarele tipuri și modalități de evaluare a finalităților de studii:

- evaluarea curentă (test, eseu, referat, studiu de caz, proiect, raport, prezentări etc.) La evaluarea curentă se utilizează tehnologiile informaționale (platformele de învățare MOODLE etc.)
- evaluarea finală a unităților de curs / modul (examen oral/ scris, examen combinat, evaluare asistată de calculator (on-line pe platforme de învățare) etc.

8. Teza de licență

Studiile se finalizează cu examenul de licență care se rezumă la susținerea publică a tezei de licență. La susținerea tezei de licență sunt admiși absolvenții care au realizat integral prevederile planului de învățământ și care au susținut cu succes prezentarea preventivă a tezei de licență în fața comisiei desemnate de către șeful Catedrei responsabile.

Teza de licență reprezintă o componentă esențială a evaluării activității studentului. Aceasta testează abilitățile de a concepe și a realiza o cercetare independentă, sub tutela conducătorului, precum și a de a redacta cercetarea conform regulilor comunității științifice. Scopul tezei de licență constă în sistematizarea și aprofundarea cunoștințelor teoretice și deprinderilor practice ale studenților, precum și formarea competențelor de rezolvare a problemelor metodice și de cercetare, în conformitate cu tema tezei de licență și cu sarcinile puse în fața studentului de către conducătorul științific.

Tematica tezelor de licență este elaborată de catedra responsabilă și este difuzată studenților pe parcursul semestrului IV de studii. Tematica tezelor de licență și conducătorii științifici sunt aprobați la ședința Consiliului Facultății de Drept și Științe Sociale.

Teza de licență este însoțită de avizul conducătorului științific.

Susținerea publică a tezei de licență are loc în fața Comisiei de Licență.

9. Creditele

Creditele se alocă pe unități de curs, stagii de practică și teza de licență care sunt evaluate independent. Un credit se alocă pentru 30 ore de studiu. Creditele reflectă cantitatea de muncă investită de student pentru însușirea unei unități de curs / modul, sub toate aspectele (prelegeri (curs), seminare, ore practice, lucrări de laborator, studii individuale, stagii de practică, elaborarea proiectelor, susținerea probelor de evaluare). Creditele acordate unei discipline au valori întregi cuprinse între 2 și 6 credite de studiu. Prin acordarea de credite se certifică faptul că pentru rezultatul obținut la evaluare a fost realizat volumul preconizat de muncă.

10. Specialitatea

Planul prevede formarea la o mono-specialitate 0400.1 Administrație publică.

11. Actualizarea planului de învățământ

Planul de învățământ pentru specialitatea 0400.1 Administrație publică este analizat și, după necesitate, actualizat. În fiecare an, în luna mai, se organizează chestionarea studenților și absolvenților programului în vederea determinării punctelor tari și slabe ale programului. Responsabilul de program monitorizează administrarea chestionarelor.

În acest scop sunt elaborate chestionare pentru studenții de la ciclul I, licență, care pot să-și exprime opinia după audierea cursurilor. Chestionarea se face în condiție de anonimat.

În vederea îmbunătățirii planului de învățământ se încheie acorduri de colaborare cu facultăți/universități din țară și peste hotare, cu autoritățile administrației publice și organizații obștești de specialitate. În cadrul acestor parteneriate se pune accent pe eficientizarea, uniformizarea și acomodarea planului de învățământ la necesitățile actuale de reformare a sistemului autorităților publice din Republica Moldova.

În urma analizei chestionarelor și în rezultatul propunerilor înaintate de mediul academic din alte universități și funcționari din sistemul administrativ, precum și a celor înaintate de cadrele didactice implicate în acest program de studii, se actualizează planul de învățământ, introducându-se cursuri opționale / module de studii noi, se revede numărul de credite ECTS la discipline și repartizarea lor pe semestre.

Modificarea planului de învățământ se realizează de catedra responsabilă și se aprobă de consiliul facultății. Revizuirea / actualizarea planurilor de învățământ este validată de Senatul USARB și prezentată, o dată la 5 ani, spre coordonare, Ministerului Educației.

Planul de învățământ a fost aprobat la ședințele Catedrei de drept public, proces-verbal nr.11 din 17.05.2016; Consiliului Facultății de Drept și Științe Sociale, proces-verbal nr.10 din 26.05.2016;

Senatului Universității de Stat „Alec Russo” din Bălți, proces-verbal nr.16 din 01.06.2016 și coordonat cu Ministerul Educației al Republicii Moldova, nr. de înregistrare ISL-18011 din 12.09.2016.

Actualizarea planului de învățământ în anul 2017 a fost condiționată de necesitatea racordării la obiectivele proiectului ERASMUS+ „Introducerea învățării bazate pe probleme în Moldova: Spre consolidarea competitivității și șanselor de angajare ale studenților / Introducing Problem Based Learning in Moldova: Toward Enhancing Students’ Competitiveness and Employability”.

Modificările care le-a suportat planul sunt legate de introducerea proiectelor semestriale, prin care vor fi valorificate mai eficient orele de studiu individual. În scopul familiarizării studenților cu metodologia cercetării în domeniul științelor administrative, unitățile de curs la libera alegere, au fost completate cu un curs de *Metodologia cercetărilor științifice*, creditat cu 2 credite, unde studenții vor studia care sunt condițiile de fond și formă ce trebuie respectate în procesul elaborării unui proiect de cercetare.

În sem. 1 la unitatea de curs fundamentală *Politologie* - 30 ore de seminar au fost divizate în 14 ore seminar și 16 ore laborator.

În sem. 2 la unitatea de curs fundamentală *Drept administrativ I* - 46 ore de seminar au fost divizate în 22 ore seminar și 24 ore laborator.

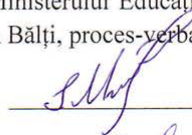
În sem. 3 orele de seminar la unitățile de curs nominalizate au fost divizate, după cum urmează: *Drept administrativ II* (seminar - 22 ore și laborator - 24 ore); *Drept financiar și fiscal* (seminar - 14 ore și laborator - 16 ore); *Drept contravențional* (seminar - 14 ore și laborator - 16 ore).

Unitatea de curs S.04.O.130 *Contracte administrative* a fost înlocuită cu *Psihologia conducerii*, iar unitatea de curs *Contracte administrative* a fost introdusă ca unitate de curs opțională cu codul S.06.A.147 în semestrul 6.

Modificările la planul de învățământ au fost discutate și aprobate la ședințele Catedrei de drept privat, proces-verbal nr.10 din 12.05.2017; Catedrei de drept public, proces-verbal nr.11 din 17.05.2017; Consiliului Facultății de Drept și Științe Sociale, proces-verbal nr.10 din 26.05.2017; Senatului Universității de Stat „Alec Russo” din Bălți, proces-verbal nr.21 din 30.05.2017.

Corelarea specialităților ciclului I, studii superioare de licență conform Nomenclatorului domeniilor de formare profesională și al specialităților în învățământul superior, aprobat prin Hotărârea Guvernului nr.482 din 28.06.2017 s-a realizat în temeiul Ordinului Ministerului Educației nr.670 din 01.08.2017 și Hotărârii Senatului Universității de Stat „Alec Russo” din Bălți, proces-verbal nr.1 din 30.08.2017.

Șeful Catedrei de drept public



dr., lect. sup. univ.,
Mariana SPATARI

Șeful Catedrei de drept privat



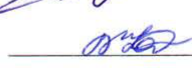
dr., conf. univ.,
Ina ODINOKAIA

Decanul Facultății de Drept și Științe Sociale



dr., conf. univ.,
Vitalie RUSU

Prim-prorector pentru activitate didactică



dr., conf. univ.,
Natalia GAȘIȚOI

Annex 6. Advertising Flier of the Study Program Public Administration - 2017

<p>PERSPECTIVE PROFESIONALE</p> <p>Absolvenții programului vor putea activa în calitate de:</p> <ul style="list-style-type: none"> • funcționari publici; • specialiști în domeniul organizării activității administrative; • specialiști în domeniul resurselor umane; • specialiști în domeniul relațiilor publice; • specialiști în domeniul organizării și prestării serviciilor publice; • specialiști în domeniul documentării administrative; • manageri de proiecte în administrația publică; • consilieri în administrația publică; • referenți în probleme administrative; • experți în domeniul administrației publice. <p>OPORTUNITĂȚI DE FORMARE ULTERIOARĂ</p> <p>➔ ciclul II, studii superioare de master, în domeniul Științe politice</p> <p>➔ programe de colaborare cu alte universități</p> 	<p>PROIECTUL:</p> <p>561884-EPP1-2015-</p> <p>1-DK-EPPKA2-CBHE-JP</p> <p>PUBLIC ADMINISTRATION</p> <p>Program de studii re-proiectat în cadrul proiectului PBLMD - „Introducing Problem Based Learning in Moldova: Toward Enhancing Students' Competitiveness and Employability”</p> <p>http://www.pblmd.aau.dk</p>  <p>Erasmus+</p> <p>Acest proiect a fost finanțat cu suportul Uniunii Europene</p> <p>UNIVERSITATEA DE STAT „ALECU RUSSO” DIN BĂLȚI REPUBLICA MOLDOVA</p> <p>MD-3100 Bălți Str. Pușkin, nr. 38 tel.: +373 231 52340 +373 231 52430 e-mail: anticamera@usarb.md http://www.usarb.md/ www.facebook.com/universitatea.alecu.russo/</p>	  <p>ANGAJARE PENTRU VIITOR!</p> <p>FACULTATEA DE DREPT ȘI ȘTIINȚE SOCIALE</p> <p>ADMINISTRAȚIE PUBLICĂ</p> <p>NEW!!!</p> <p>PUBLIC ADMINISTRATION</p>
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<p>DESPRE PROGRAM</p> <p>Caracteristicile distincte ale planului de învățământ la specialitatea 313.1 Administrație publică constau în asigurarea unei pregătiri profesionale de calitate tuturor celor care doresc să-și construiască o carieră în structurile administrației centrale și locale, precum și în departamentele de specialitate din cadrul companiilor publice</p> <p>LIMBA DE INSTRUIRE: română / engleză</p> <p>DURATA STUDIILOR: 3 ani / 6 semestre</p> <p>CREDITE DE STUDIU 180 ECTS</p> <p>TITLUL OBȚINUT Licențiat în științe politice</p> <p>BAZA ADMITERII Diploma de bacalaureat sau un act echivalent de studii; diploma de studii superioare</p> 	<p>METODE DE PREDARE-ÎNVĂȚARE</p> <p>Programul de studii este bazat pe noile metode de predare-învățare centrate pe student, inclusiv, învățarea bazată pe probleme (PBL), proiecte, lucru în echipă, e-Learning, co-predare cu profesori din universități străine.</p> <p>OPORTUNITĂȚI DE PRACTICĂ</p> <p>Programul de studii prevede stagii de practică în anul II, proiect de semestru interdisciplinar în grup (studenți de la 6 universități) și un stagiu de elaborare a tezei de licență în anul III.</p> <p>OPORTUNITĂȚI DE STUDII ÎN STRĂINĂTATE</p> <p>30 de studenți, cu rezultate academice bune, vor beneficia în anul II de posibilitatea de a studia pe parcursul unui semestru în cadrul unei universități europene. Mobilitatea va fi finanțată din cadrul proiectului ERASMUS- „Introducerea învățării bazate pe probleme în Moldova: Spre consolidarea competitivității și șanselor de angajare ale studenților / Introducing Problem Based Learning in Moldova: Toward Enhancing Students' Competitiveness and Employability”.</p> <p>CONȚINUTUL PROGRAMULUI</p> <ul style="list-style-type: none"> ➔ Drept constituțional și instituții politice ➔ Teoria administrației publice ➔ Istoria administrației publice ➔ Politologie ➔ Drept administrativ ➔ Structuri politice în statele europene ➔ Drept financiar și fiscal ➔ Drept contravențional ➔ Controlul actului administrativ ➔ Psihologia conducerii ➔ Principiile economiei de piață ➔ Managementul proiectelor publice ➔ Etica și deontologia funcționarului public ➔ Răspunderea juridică a funcționarului public ➔ E-guvernare ➔ Urbanism și amenajarea teritoriului ➔ Managementul serviciilor publice ➔ Managementul resurselor umane în administrația publică ➔ Managementul achizițiilor publice ➔ Tehnici de elaborare a documentelor administrative etc. 	 <p>FINALITĂȚILE PROGRAMULUI DE STUDII</p> <p>La finele ciclului I absolventul va fi capabil:</p> <ul style="list-style-type: none"> ➔ să aplice cunoștințele obținute într-un mediu profesional determinat; ➔ să soluționeze situații specifice administrației publice, prin aplicarea metodei studiului de caz; ➔ să demonstreze creativitate în instrumentarea actelor și procedurilor administrative în procesul de învățare, cercetare și de muncă; ➔ să manifeste spirit de echipă în contextul luării deciziilor administrative; ➔ să valorifice limbajul specific administrației publice, precum și a metodologiei specifice, în realizarea proiectelor semestriale; ➔ să analizeze și sintetizeze procesele și fenomenele social-economice prin elaborarea și implementarea strategiilor manageriale; ➔ să consolideze capacități decizionale și de gestionare a schimbărilor în administrația publică, prin estimarea riscurilor și asumarea responsabilităților profesionale; ➔ să-și cultive abilitățile de colaborare cu specialiști din alte domenii în contextul managementului schimbării. <p>➔ Pentru mai multe informații vizitați sit-ul nostru: http://www.usarb.md/relatiiinternationale/ programe-europene/</p>
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Annex 7. Lessons learned during the Implementation of the Pilot Program for the Specialty of Public Administration

Lessons on developing the curriculum	Lessons Learned on the Involvement of Educational Players in the Training -Educational process	Lessons Learned on Project Development and Monitoring
Failure to reach the ratio of 50% courses and 50% projects due to legislative requirements imposed by the related ministry.	Resistance to change, both for teachers and students.	<i>Challenges for project development</i> , including difficulties in problem formulation, application of research methodology, accumulation of practical materials, interdisciplinary studies.
Fundamental principle of university autonomy (art.79 of the Education Code of the Republic of Moldova) - Academic Freedom - Restricted to the provisions of the Framework Plan: by compulsory introduction of training courses for general skills and competences between 9 and 18 credits; of socio-humanistic orientation between 9 and 18 credits.	Supervise work on projects predominantly face-to-face and less on-line;	Challenges regarding group work, including: the desire to work in groups with only some colleagues; interpersonal conflicts related to the involvement of everyone in the project development, as well as the distribution of roles in the group; interpersonal communication skills and responsibility for taking small decisions; failure to observe deadlines imposed by team members for the accomplishment of tasks.
The compulsory inclusion of the listed courses, even on the minimum limit - 18 ECTS, represents 10% of the total credits for the study program, which leads to the natural exclusion of the specialized courses.	Working with stakeholders, which allows us to propose a diversification of the opportunities for the dialogue between the university (teachers, students, supervisors, etc.) and businesses, LPAs, public institutions, NGOs, etc.	<i>Challenges related to project supervision</i> , time management, conflict management, etc.
<i>The restriction imposed by item 9 of the Framework Plan consists of "allocating a maximum of 4-6 study credits for a module", which does not allow the project to be credited with a higher number of credits, and in this sense, the decrease in the number of credits course units for one semester.</i>		<i>Challenges encountered in the project assessment process</i> : establishing the individual contribution of group members on project work, in appreciating the final product.

Annex 8. Scoring system in USARB

The USARB student rating is made on the basis of the USARB Appraisal Regulation on Academic Outcomes, approved by the USARB Senate, Minutes No.9 of 16.03.201, which is the following assessment scale:

Rating	Equivalent	Assessed Competencies and skills	
Mark 10 or "Excellent"	equivalent ECTS - A	A profound and remarkable demonstration of the theoretical and practical skills developed by the course unit / module, creativity and skills in the application of acquired competencies, considerable individual study and versatile knowledge of the literature in the field	Acquiring 91-100% of the material included in the curriculum of the course unit / module.
Mark 9 or "very good"	ECTS - B equivalent	demonstration of the theoretical and practical skills developed by the course / module, very good skills in applying the acquired skills with a few insignificant / nonessential errors	acquiring 81-90% of the material included in the curriculum of the course unit / module.
Mark 8 for "good"	equivalent ECTS - C	good demonstration of the theoretical and practical skills developed by the course / module, good abilities in applying the study objectives with a certain lack of confidence and inaccuracy related to the depth and details of the course / module, but which the student can correct by answering additional questions.	acquiring 71-80% of the material included in the curriculum of the course unit / module.
Marks 6 and 7 or "satisfactory"	equivalent ECTS - D	demonstration of basic skills developed by the course unit / module and the ability to apply them in typical situations. The student's response is unreliable and there are considerable loopholes in knowing the course unit / module.	acquiring 61-65% and 66-70% of the material, respectively.
Mark 5 or "Poor"	equivalent ECTS - E	demonstrarea It is the demonstration of the minimum competencies in the field of the course unit / module, the implementation of which faces many difficulties	acquiring 51-60% of the material.
Marks 3 and 4	equivalent ECTS - FX	FX Demonstration of Minimum Competencies and for the	Learning of 31 - 40% and 41 - 50% respectively.

		Promotion of the Course Unit it is required additional work.	
Marks 1 and 2 or "unsatisfactory"	(equivalent to ECTE - F)	the student has copied or demonstrated a minimal knowledge of the subject, and in this case, the student is still required a lot to promote the course unit.	Assimilation of the material from 0 to 30%

“Sustainability Strategy”
Problem-based learning
at State University “Bogdan Petriceicu Hasdeu” of Cahul
Working Package 5

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Chisinau, 2019

Executive summary

The purpose of the report for Work Package 5 is to develop a sustainability strategy for the implementation of problem-based learning (PBL) in the State University “Bogdan Petriceicu Hasdeu” of Cahul and its application in the teaching-learning-assessment process of student-centered teaching strategies.

In order to achieve the proposed goal, the results presented in the reports for: Work Package 2, Work Package 3, Work Package 4 were capitalized, and there was developed and proposed an ideal programme for the first cycle, Bachelor’s degree studies, for specialty *363.1. Business and administration*. At the same time, there are presented the limits and advantages of the project implementation in the pilot specialties. A roadmap and a detailed action plan to be undertaken at faculty and university level to promote PBL philosophy and culture in the SUC academic environment was also outlined.

Experience gained in the universities of Aalborg (Denmark); Gloucestershire (United Kingdom); KTH (Sweden); Siegen (Germany) formed the basis for shaping our own visions for the implementation of problem-based learning in the *Business and Administration* study programme, within the limits and in accordance with the normative provisions in the field of higher education in the Republic of Moldova, actions undertaken and presented in the reports of the previous work packages.

Also, the accumulated experience allowed us to outline an ideal plan model centered on PBL, a plan that we recommend in this report, presenting the distribution of course units over semesters, highlighting the theme of the semester and the projects to be developed, ensuring a progression in this sense. Thus, for the elaboration of the project the number of ECTS increases from one semester to another, so that in the last semester (VI) it reaches 24 credits.

Facilitating the implementation of the ideally sketched plan would be by approving modifications by the Ministry of Education, Culture and Research in the Framework-plan for Bachelor’s Degree Studies (Cycle I), in order to exclude the obligation to include in the educational plan the course units related to *the training of general and socio-humanistic skills and competences*.

List of definitions

PBL - student activity model with group task assignment to solve a problem, which is the cumulative result of activities from several courses, constituting an interdisciplinary product, guided by the teacher responsible and evaluated by practitioners in the field.

Student-centered learning - teaching and learning process in which the student becomes a partner in the educational process, and the teacher-student relationship is based on cooperation and collaboration.

Self-guided learning – teaching and learning process that emphasizes the student's responsibility to create learning and experimentation environments, in which they discover knowledge, make discoveries and solve problems on their own.

Learning objectives – general competences by training fields required for graduates of study programmes.

Learning outcomes - clear results, describing the student's knowledge or skills, expected from the teaching-learning process.

Progression – succession of expectations from the teaching-learning process in several stages.

Assessment - multicriterial examination of students' knowledge accumulated in the learning and teaching process.

Projects – are tasks given to students which consist of research and analysis of a problem (both theoretical and practical) and the generation of new approaches or solutions. Projects can be individual and in group.

Semester projects – are the projects carried out by students (usually in the group) during a semester. These projects may have inter-disciplinary character (may refer to two or more disciplines studied during the same semester).

Group/team work – is the joint work of a group of 4-5 students to perform a single task, which is based on communication, collaboration and self-discipline, each member of the group contributing to the achievement of the final result.

Research-based teaching and learning - the process of transmission and accumulation of knowledge, as well as the creation or development of skills that are based on some research tasks and aims to facilitate the learning (including individual) process of students.

Research-based teaching - is the process by which the student is involved in research exercises and is encouraged to reach his/her own conclusions and solutions using the results of the research carried out.

Sustainability strategy – is a long-term vision of an institution aimed at introducing key modifications in order to streamline the teaching-learning process. The strategy includes objectives and concrete actions, the deadline for achievement, as well as the potential outcomes that can be achieved.

(a) the path from a pilot programme to a comprehensive study programme based on problem-based learning (PBL) - the concrete steps to introduce PBL in a study programme

(b) support and promotion of PBL for teaching and learning - performing information and training measures about the advantages and efficiency of PBL.

Credit (ECTS) – the credit is a conventional unit used to calculate the workload performed by the student within a determined time period to achieve certain outcomes and competences. The credit is a tool to ensure the quality of the training.

ECTS (European Credit Transfer and Accumulation System) - European system of accumulation and transfer of credits. The Bachelor's degree studies correspond to 180-240 of transferable study credits, with 30 credits per semester.

Profile degree – the educational framework to be known by graduates in order to obtain the title of Bachelor, Master.

Professional development – opportunities offered to the teacher to strengthen their pedagogical skills, competences and approaches; continuous improvement of staff through trainings, internships, etc.

Facilitator – the person who helps a group of students understand their common goals and helps them plan how to achieve the objectives set out in the joint project.

Internship placement (training/practice) – institution/organization where students will conduct internship/training.

Quality assurance – a systematic monitoring and evaluation programme of the different aspects of a project in order to ensure compliance with quality standards.

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1 INTRODUCTION

The purpose of this Working Package - WP5 - is to develop a student-centered sustainability strategy for problem-based learning and teaching at the State University “Bogdan Petriceicu Hasdeu” of Cahul. The report will propose an innovative approach, a Business and Administration based PBL study programme, a Roadmap and a detailed action plan that will guide university staff and management in implementing PBL, student-centered learning and teaching in the study programme and throughout the university.

In this report we rely on WP 2-4 developed between 2015-2017 and implemented since September 2017 by launching the pilot BSc based on PBL in *Business and Administration*. We also rely on the experience we have gained during study visits and staff mobility at EU partner universities and PBL training in Chisinau by EU project partners.

1.1 KEY ASSUMPTIONS

Although there is no fit-all-purpose PBL model, all PBL methodologies are based on two assumptions. The first states that the process must be student centered and designed to equip students with the knowledge, understanding and ability to apply their knowledge and understanding. To achieve this level, PBL uses project work as the core of discovery and problem analysis, solving and reporting (Figure 1). The second one shows that other face-to-face learning activities, such as literature study, lectures, group studies and tutorials, are designed to support the project's work. These two assumptions are the foundation of PBC, PBL, BSc student centered active teaching and learning in *Business and Administration*.

The benchmark of education based on the PBL method is to establish and explain the concept, the objectives of the requirements and the outcomes, established for each semester of study. Also, the endings of the courses in that semester and the logic of their synergy are explained. It explains the research methodology, whose complexity advances from semester to semester.

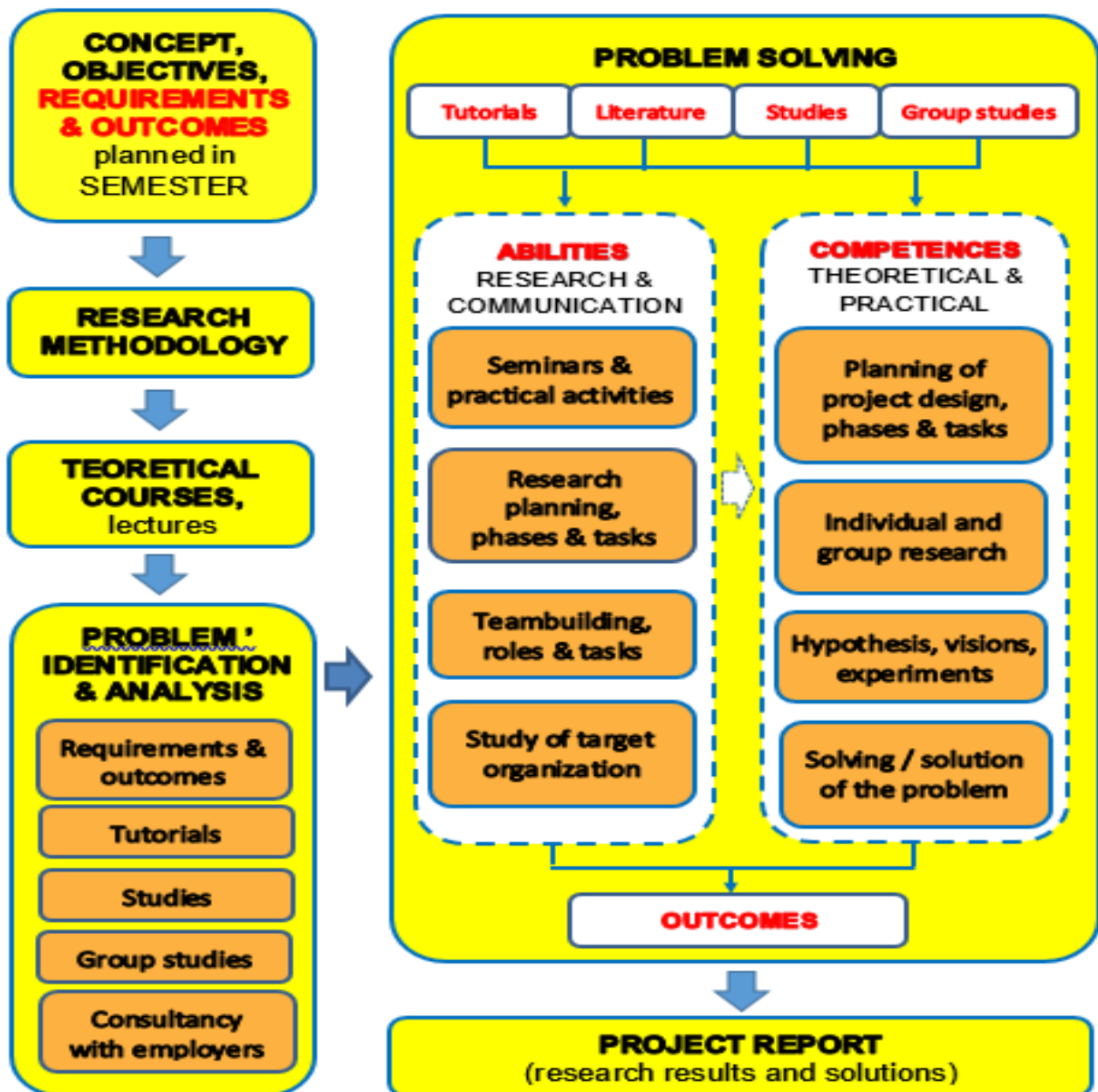
At the stage of the accumulation of the initial information, the theoretical courses are taught, coupled with identifying and researching the problem. To this end, the tutor explains the requirements and goals set for the research, the study and research groups of the problem are formed. For a clear vision of the tasks to be carried out, it is important to establish relationships with the target organization.

For this purpose, the University establishes collaborative relationships with the organizations / companies (firms) to be researched, organizes meetings with employers, excursions to the enterprise / organization concerned. Student initiatives are also encouraged to find target organizations by themselves. Information gathered during employer consultations and documentary visits to target organizations allow work groups to identify the issue to be investigated.

The problem solving phase combines the deepening of the theoretical studies and their application to the concrete situation, reflected in the researched problem. During these periods, research skills and theoretical-practical skills are developed. During the conception of the research project, the problem solving and the elaboration of the presentation report of the research results,

attention is drawn to the combination of the individual study with the group work, which imposes communication, planning and organization of the research activities in order to achieve the goals set for this semester.

Figure 1. The PBL concept at SUC



Source: written by authors

The assessment of the achievement of the established objectives is done both during the semester and when presenting the results of the research project. The marks are assigned individually to each member of the group and to the entire team / project group.

The degree of integration of PBL learning and teaching into a study programme is manifested through the relationship between project activity and face-to-face activities. In the context of the "knowledge-based" or PBL-based learning process, it means a study programme in which there is a

relationship between project activities of students and face-to-face activities (such as lectures, seminars, workshops, laboratories, case studies).

Figure 2: Structure of direct contact and project activities at SUC

Semestrul 1 (30 credite)	Discipline de creare a abilităților și competențelor generale 6 ECTS	Discipline de orientare spre specializare 3 ECTS	Discipline Fundamentale 21 ECTS	Mini proiect 12 ECTS
Semestrul 2 (30 credite)	Discipline de creare a abilităților și competențelor generale 6 ECTS	Discipline Fundamentale 24 ECTS	Mini proiect 12 ECTS	Mini proiect 12 ECTS
Semestrul 3 (30 credite)	Discipline de creare a abilităților și competențelor generale 2 ECTS	Discipline de orientare socio-umanistică 6 ECTS	Discipline de orientare spre specializare 18 ECTS	Discipline Fundamentale 6 ECTS
Proiect semestrial 24 ECTS				
Semestrul 4 (30 credite)	Discipline de creare a abilităților și competențelor generale 2 ECTS	Discipline de orientare socio-umanistică 7 ECTS	Discipline de orientare spre specializare 6 ECTS	Discipline Fundamentale 12 ECTS
Practica de inițiere 3 ECTS				
Proiect semestrial 21 ECTS				
Semestrul 5 (30 credite)	Discipline de orientare socio-umanistică 6 ECTS	Discipline de orientare spre specializare 24 ECTS	Mini proiect 12 ECTS	Mini proiect 9 ECTS
Mini proiect 3 ECTS				
Semestrul 6 (30 credite)	Discipline de orientare spre specializare 6 ECTS	Practica de specialitate și practica de cercetare 15 ECTS		
Proiect semestrial 21 ECTS				

Source: developed by the authors

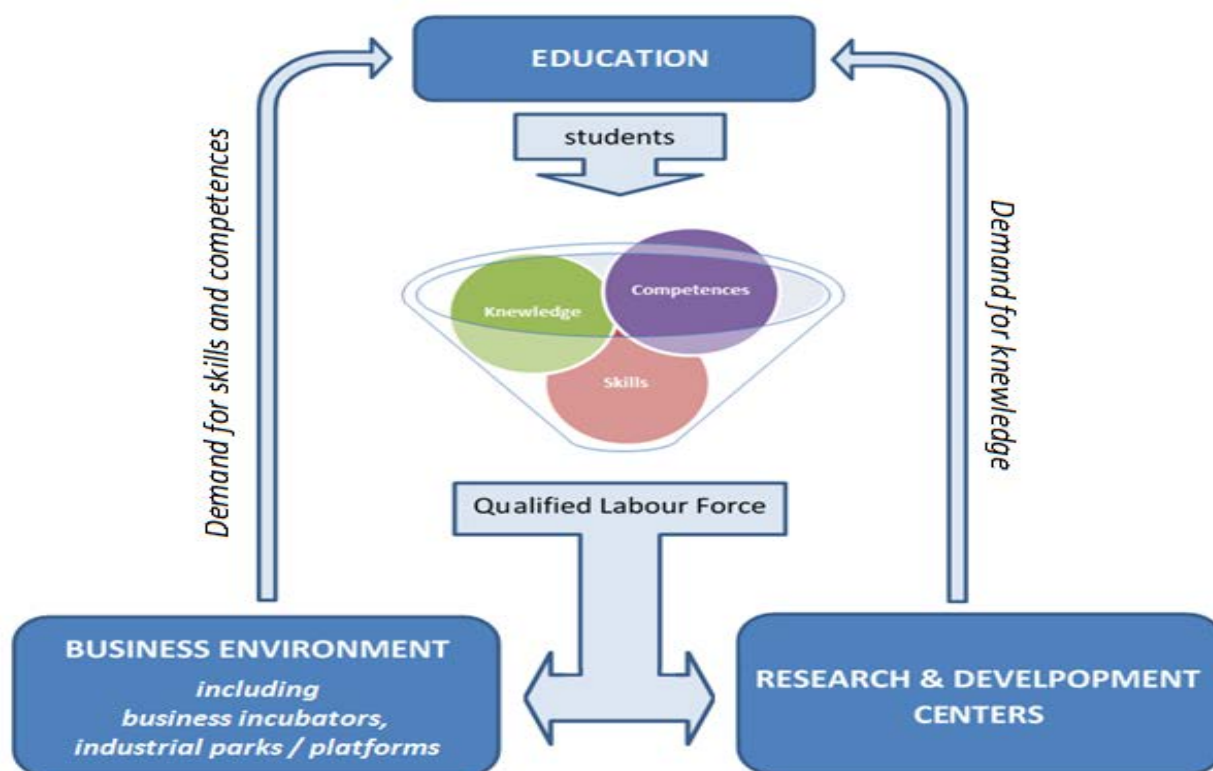
In the educational plan presented in Figure 2, a strict and very clear dynamics of the project work can not be observed, because educational plans are elaborated according to the provisions of the normative framework of the Republic of Moldova and have a fixed relation between the hours of direct and indirect contact, and an exact percentage correlation between the disciplines of socio-humanistic orientation, the disciplines of generating skills and general competences, the disciplines of orientation towards specialization, the fundamental disciplines and the practical classes. At the same time, in most semesters, many of the hours (out of a total of 30, about 21-24 hours) are provided for project work. This allows students to form skills and competencies to work in group on a project.

1.2 EXPECTED RESULTS

A number of outcomes are being considered as a result of successful implementation of the PBL-based study programme in Business and Administration. It is expected that by 2022 this programme will become internationally recognized and attract European and international students to courses and exchange courses. It is also expected that by 2022 more Bachelor's degree programmes from the Faculty of Economics, Engineering and Applied Sciences at SUC will be redesigned to implement learning based on PBL, using (proactive and interactive) methodologies and active teaching and learning methods centered on the student, thus following a better alignment of students' knowledge, skills and abilities to the labor market's and employers' needs.

Successful implementation of PBL in Bachelor's degree (ISCED 6) and Master's degree (ISCED 7) programmes will strengthen the collaboration of universities with the business environment (including business incubators, industrial parks / platforms) and research and development centers, in order to increase the relevance of the process of training the skills, competences and knowledge of specialists required by the labor market (Figure 3).

Figure 3: Interdependence between elements of social environment and training of specialists



Source: developed by the authors

1.3 DRAFT REPORT

We start the report by presenting in general the BSc based on PBL in *Business and Administration*. We will start with a needs analysis; the objectives of the programme; the general description of the study programme, its learning objectives and outcomes, the future employment potential and the in-depth study of graduates, then a presentation of each semester, including its learning objectives and learning outcomes. Assistance and evaluation criteria, progress from one semester to another, description of work projects and semester projects, including their learning objectives, assessment of results and their progress. Later on, we will present the Roadmap that will guide university managers at all levels in the process of implementing the PBL-based programme in *Business and Administration*. We will continue to present and discuss the action plan that will detail the activities, resources and internal policies needed to implement our study programme. We

will end by providing policy recommendations to the university management and university council on how to improve teaching and learning by introducing student-centered teaching and learning methods.

2 LESSONS LEARNED FROM THE DEVELOPMENT AND IMPLEMENTATION OF PILOT-PBL STUDY PROGRAMME

Starting with 1 September 2017 at the Faculty of Economics, Engineering and Applied Sciences, modernized educational plans have been implemented according to PBL methodological provisions. The educational plans were upgraded according to the legal provisions of the Republic of Moldova, as recommended by the project partners in the EU. These plans have been consulted by business representatives in order to identify the disciplines included in the plans, the number of hours of direct contact and individual study, so that the requirements of the labour market are met.

Due to the fact that several subjects of the study programmes within the Faculty are taught in the group series, PBL methodology has been implemented in two programmes: Business and Administration and Accounting. Respectively, in order to develop the teaching abilities of teachers through the PBL method, several teaching and research staff who teach both programmes have benefited from academic mobility. 12 persons have benefited from academic mobility in the EU. In addition to academic mobility, study visits to the EU were organized, as well as training courses and workshops, both in the country (by the EU partners) and in the EU countries (Table 1).

Table 1. Mobility in which the teachers involved in the pilot programme were trained, but also other related programmes

Period	Name, surname	Place of training	Type of visit
Feb 7-13, 2016	Popa Andrei Rosca - Sadurschi Liudmila	AAU	Study / training visit
Feb 25-Mar5, 2016	Rosca - Sadurschi Liudmila Gîrneț Slavic	UoG	Study / training visit
Apr 10-16, 2016	Todos Irina Noni Liudmila	Siegen	Study / training visit
Sep 25- Oct 1, 2016	Popa Andrei Vulpe Olesea	KTH	Study / training visit
Oct 2-8, 2016	Popa Andrei Todos Irina	AAU	Study / training visit
Nov 6-19, 2016	Șchiopu Irina Rosca - Sadurschi Liudmila Gîrneț Slavic Noni Liudmila Nedelcu Ana Bîrlea Svetlana Vulpe Olesea	AAU	Academic mobility, training
Feb 13-24, 2017	Rosca - Sadurschi Liudmila Popa Andrei Todos Irina	UoG	Academic mobility, training

	Miron Oxana Donea Sofia Podbeglii Anatol		
Oct 8-21, 2017	Rosca - Sadurschi Liudmila Popa Andrei	KTH	Pedagogical training
Jan 12-19, 2019	Popa Andrei Rosca - Sadurschi Liudmila	AAU	Study / training visit Study / training visit

In order to achieve the project's provisions, to extend this methodology to other study programmes, as well as institutional provisions (to increase the number of disciplines, from various programmes taught in the torrent), the scientific and didactic staff from all the programmes at the Faculty of Economics, Engineering and Applied Sciences benefited from trainings (Table 2).

Table 2. Trainings in the Republic of Moldova

Period	Name, surname	Place of training	Type of training
January 2016	Rosca-Sadurschi Liudmila, Girnet Slavic, Todos Irina, Noni Liudmila, Mihailuc Olesea, Popa Andrei	TUM	Pedagogical training (KTH)
25.05.2017	24 persons	SUC	SMART Notebook
6.06.2017	20 persons	SUC	Adobe Connect
13-14 iunie 2017	4 persons	TUM	Pedagogical training (KTH)
26.02. - 1.03. 2018	Rosca-Sadurschi Liudmila, Girnet Slavic, Schiopu Irina Todos Irina, Podbeglii Anatol	TUM	Workshop
3-5 May 2018	Rosca-Sadurschi Liudmila, Noni Ludmila	SUC	Pedagogical training, Curricula/Ghide
14-17 May 2018	20 persons	SUC	Pedagogical training (KTH; Siegen)

According to the modernized educational plans, students in the first semester have mini-interdisciplinary projects. In each semester the number of credits for mini-projects and semester projects increases (Table 3).

Table 3. Modernizations made, starting with September 2017, in the pilot study programme, but also other programmes in the faculty

Semester I	Introduced components		
	Mini interdisciplinary project (6 + 6 credits)	Principles of study by the PBL – Problem Based Learning method	
Semester II	Mini interdisciplinary project (6 + 6 credits)	Mini interdisciplinary project (6 + 6 credits)	
Semester III	interdisciplinary project (24 credits)		
Semester IV	interdisciplinary project (18 credits) + speciality internship (3 credits)		
Semester V	Mini interdisciplinary project (6 + 6 credits)	Mini interdisciplinary project (4 + 6 credits)	Economic project (3 credits)
Semester VI	Semester project (21 credits)		

Among the modernization at the programme level and at the institutional level we can enumerate: the introduction in the first semester of the first year of studies in all programmes approved in 2017 (4 programmes) of the discipline "Principles of study through the method of problem-based learning"; for each study programme at the beginning of the year, the *programme director* is approved at the Department meeting; for each semester the subject of the semester is established, based on which the themes for the interdisciplinary mini projects (Appendix 1) are established.

These upgrades were carried out under the coordination of the EU partners during the University visits. Again, consultations with entrepreneurs and students from the "Business and Administration" study programme were conducted.

STUDY VISITS TO MOLDOVA

October 30-31, 2017	State University “BPP.Hasdeu” of Cahul Olav Jull Sorensen
November 22, 2017	State University “B.P.Hasdeu” of Cahul (formation of groups and formulation of themes) Romeo Turcan
November 30, 2017	Student Assessment through ADOBE Connect Romeo Turcan, (student group results assessment)
February 27, 2018	University of Medicine and Pharmacy “N. Testimiteanu” interdisciplinary and inter-university activities
May 3, 2018	Press conference with the participation of 2 students
May 10, 2018	BSc in Entrepreneurship and Business Administration (shadowing, on-job pedagogical training, reflections) Romeo V. Turcan

The lessons learned during the first two years of implementation of the modernized programmes, with the implementation of the PBL methodology, were analyzed according to six criteria (Appendix 7). Teachers who taught in the Business and Administration and Accounting programmes were exposed to the issues identified in the co-ordination of student groups and gave some recommendations. Defence of the projects at the end of each semester is done in the presence of the teachers who coordinated the projects, but also 1-2 teachers who were not involved in the guidance. After the presentation of the projects, at the Department meeting, both the positive and the negative moments encountered in coordinating the students' activity in the development of the interdisciplinary mini projects are discussed. The recommendations received by faculty teachers, as well as students are taken into account when working with students for the next semester. At the end of each semester, the USC's Quality Management, Guidance and Career Counseling Service conducts a student survey, ie students' objections and recommendations are taken into account in improving the teaching and assessment methods of students.

3 OUR VISIONARY PBL-BASED BSc IN BUSINESS AND ADMINISTRATION

3.1 AN OVERVIEW

The **Business and Administration** programme is designed to prepare specialists for business management activities, as well as the management of various subdivisions of organizations. At the enterprise level, the Business and Administration graduate is the one who must ensure the smooth running of all activities: purchase of economic resources, production / provision of services; sales; training and improving the organizational structure of the company, planning the economic activity; developing the information system; management of human resources. At the same time, the graduates of Business and Administration programme are potential entrepreneurs who will create jobs and new perspectives for socio-economic progress.

During the first cycle of higher education (Bachelor's degree – BSc – ISCED 6), specialists trained in the Business and Administration study programme obtain skills and competencies to organize and manage the activity at the level of economic agents, with different forms of ownership, (state, private or mixed) as well as at branch or national level. Graduates of the programme are able to think strategically and creatively, adopt quality decisions, leaders oriented to improve organization performance, quality and continuous improvement.

The study programme has been linked to the objectives of the ERASMUS + project "Introduction of Problem Based Learning in Moldova: Toward Enhancing Students' Competitiveness and Employability", elaborated in accordance with the provisions of:

1. The Education Code of the Republic of Moldova, no. 152 of July 17, 2014;
2. The Law on the approval of the Registry of Professional Training Areas and Specializations for the Training of Staff in Higher Education Institutions;
3. The framework plan for higher education (cycle I - Bachelor, cycle II - Master, integrated studies, cycle III - Doctorate), approved by Order of the Ministry of Education;
4. Regulation for the organization of studies in higher education based on the National System of Study Credit, approved by Order of the Ministry of Education no. 1046 of October 29, 2015;
5. The National Qualifications Framework of the Republic of Moldova and the National Qualifications Framework for Higher Education on Professional Training, approved by the Order of the Ministry of Education.

The purpose of the pilot programme is to move from traditional education (where the teacher is an information provider and the student - the information receiver) to PBL-based education (problem-based learning), which would allow the training of competitive and skilled labour market specialists in the field of training 363. Business and administration, Specialty: 363.1. Business and administration.

All disciplines are distributed by modules (cycles) as follows (Appendix 2):

- Module of fundamental disciplines (code F) - 63 credits;

- Module of disciplines for development of general skills and competences (code G) - 16 credits;
- Module of the disciplines of socio-humanistic orientation (U code) - 14 credits;
- Module of orientation to specialization (code S) - 60 credits.

The graduate obtains the Bachelor's degree in Economic Sciences upon full completion of the educational plan, the promotion of the assessment tests, including the bachelor's examination, according to the marking system in the Republic of Moldova, ranging from “1” to “10” points, the promotion marks being “5” to “10”, and the accumulation of 180 transferable credits under the European System of Transferable Credits (ESTC).

The set of methods and teaching procedures used in the training process will be both the traditional methods (lectures and seminars), modified and completed according to the proposed objectives, as well as the modern, interactive methods aimed at cultivating the interest, motivation, activism, social collaboration, organization spirit, initiative, inventiveness and creativity.

The study process will focus on active-participative (interactive) methods, which increase the intellectual potential of beneficiaries by engaging in a personal effort in the process of learning and preparing students for an active and creative professional life. Flexible and diversified forms of organization will be used, specific to the nature of the content and the planned activities.

They will specifically combine methods and procedures such as: case study, role play, heuristic conversation, debates, brainstorming, problem related questioning, investigation, disciplinary project, semester project or interdisciplinary mini-projects, etc. Also, interactive teaching and assessment methods such as: Moodle, Kahoot, Mooc and other platforms and interactive tools will be also used.

The personal support of each student will be provided by the tutoring system, made by introducing the function of - *programme director*.

The assessment will focus on the effectiveness of educational activities in terms of the relationship between the projected objectives and the learning outcomes of the students. It will be done by the teachers and will focus not only on knowledge, but also on competences, capacities and attitudes. The evaluation can be done through written/computer-aided tests on the distance learning platform, by supporting group projects and individual assessment through classical exams.

The assessment will have a complex pedagogical function:

- a) from the perspective of the assessed one - to stimulate, to strengthen the results, to develop some skills, to raise awareness of their own possibilities, to get positive professional orientation;
- b) from the perspective of the assessor - of assessing the efficiency of the actions carried out by them and of the changes necessary for the full implementation of the objectives.

3.2 SEMESTERS

3.2.1 Semester 1

Taking into consideration the experience of two years of implementation of the PBL methodology in the “Business and Administration” study programme, we proposed to exclude the mini project from the first semester. Instead, we propose to increase the number of hours and credits for the "*Problem Based Learning*" (PBL) discipline.

As a discipline of study, "Principles of study through the problem-based learning" course aims at the appropriation by those who will work in different fields of the principles within a group, of being more flexible to changes, to change the perception of decision-making (starting from cause / problem). This discipline aims to develop students' abilities of free communication and flexibility, of formulating and argumentating ideas and concepts, of elaborating a proper research plan, of elaborating well-structured and reasoned communications and paper-works. Within the discipline, the students will form public communication skills - presenting the results of the research, conducting a correct scientific research: formulating the problems, formulating the hypothesis, scientific argumentation of the proposals, analyzing the official data, analyzing the sources of information; developing joint projects in a group, etc. During the course many practical papers, case studies, exercises are developed to help the student develop good planning, organization and communication skills.

Also, during this semester, the students will have study visits to industrial enterprises, to organizations which provide information for research: city halls, councils, State Chamber of Registration, Fiscal Inspectorate, Chamber of Commerce and Industry, Bureau of Statistics, Labour Office.

In this semester there will be taught the disciplines for creating the general skills and competences, the disciplines of orientation towards specialization and the fundamental disciplines, which will lay the foundations for the next semester in which the students will work on the projects.

Bachelor's degree studies correspond to 180 (for programmes with a duration of 3 years, full-time education) and 240 (for programmes with a duration of 4 years, part-time education) of compulsory transferable credits, 30 credits for each semester. In the first cycle of higher education (bachelor), the academic year consists of two relatively equal semesters, including two sessions of exams, practical internships and two holidays. The duration of a semester is 15 weeks of direct contact with the students.

The student's learning activity, including individual activity, as well as the learning outcomes and competences acquired by the student are verified and appreciated during the semesters through current assessments, as well as during examination sessions through final / summative assessments in accordance with the educational plans.

In the semester, there are organised one or two current assessment sessions, allocated proportionally during the semester, which totalizes the intermediate status of the student's success. The results of the success of the current assessment sessions are recorded in the academic group register and taken into account in the final semester assessments.

3.2.2 Semester 2

The theme of the semester: Development of the X sector in the Republic of Moldova: Macro - Mezo - Micro analysis

Based on this theme, during the semester, a mini project will be developed at the Economic Theory II (Macroeconomics) discipline. Due to the fact that, in the first semester students studied Economic Theory I (Microeconomics), the knowledge gained will allow them to carry out a broad analysis of a macro-level sector and real-level examples.

For the project, the specific working method will be chosen, depending on the fields of research and course content.

	YEAR I		SEMESTER II
	Module	ECTS	Assessment form
1.	Economic Theory II (macroeconomics)	6	P
2.	The Basics of Entrepreneurship	6	E
3.	Economic statistics	6	E
4.	Basis of Accounting	6	E
5.	Foreign Language II	2	V
6.	Ethics and professional culture	4	E
	TOTAL	30	

Research objectives and outcomes:

- To know and to distinguish the micro and macroeconomic concepts and phenomena;
- to know the particularities of the functioning of the markets of the national economy;
- to know the legislation on entrepreneurship and business, small business, consumer protection, advertising in the Republic of Moldova
- to analyze and address an entrepreneurial business at the enterprise level and in terms of market positioning (macroeconomic).
- To analyze and propose ways to improve the economic performance of the economic sector, based on the example of an economic unit;
- To be able to carry out the primary processing of statistical information;
- To analyze the primary accounting documents and extract the necessary data;
- To address entrepreneurial concepts and carry out a broad analysis of the enterprise based on the indicators that characterize its activity.

In this semester, a mini project will be developed at the Economic Theory discipline. Students are proposed a general research theme and several areas where research can be done. Students choose the field of research and, with the help of teachers, formulate themes for mini-projects, based on the general theme.

These projects are delivered orally in the presence of a committee composed of teachers and assessed by the teacher - the subject of the discipline in which the project is being drafted. These projects are designed as the individual student programme study is guided by the teacher.

Semester final assessments can be oral, written, assisted by computer or combined. Admission to the exam is only for students who have an average mark of admission, consisting of the average of the marks accumulated in seminars, current assessment and individual work.

The form of examination is determined by the faculty council, at the proposal of the profile chair and announced to the students at the beginning of the semester, it may be in writing or orally.

Assessment of learning outcomes is done with marks from "10" to "1". The marks from "5" to "10", obtained as a result of the course / module assessment, allow obtaining the credits allocated to them according to the educational plan. The mark of the student's current assessment on the semester, as well as the mark on the exam, is expressed in integer figures. The final mark for the course unit / module is calculated based on the semester mark and exam mark and is expressed in two decimal figures. The student who gets a mark lower than "5" in the current assessment is not allowed to the final assessment.

MARK - ECTS equivalent:

9,01-10,0 A	6,01-7,00 D
8,01-9,00 B	5,00-6,00 E
7,01-8,00 C	3,01-4,99 FX
1,00-3,00 F	

Promotion of the study year and enrollment in the following year is done in accordance with the USC Regulation on the Promotion of the Year of Study. The student who has accumulated during the academic year the full number of credits required in the educational plan for the respective year is promoted in the following year of study. Student enrollment in the next year of study is conditional upon the accumulation of minimum 40 (30 for a reduced frequency) of study credits at the course units / compulsory modules provided in the Annual Study Contract for the current academic year and the accumulation of the total number of credits, provided by the educational plan for the previous years of study, as well as for the year of graduation of the university studies.

3.2.3 Semester 3

The theme of the semester: Enterprise development X: environmental analysis, factors of influence, conditions

Based on this theme during the semester an interdisciplinary project will be developed based on the following subjects: Production Management; Methods and Management Techniques.

Project - Group work of 3-5 students of the research problem related to all units (Fundamental and / or Specialty) coursework in the semester. Passing the exam and awarding study credits is conditional upon the MANDATORY defence of the Project.

	Year II		SEMESTER III
	Module	ECTS	Assessment form
1.	<i>Production Management</i>	6	<i>E+P</i>
2.	<i>Methods and management techniques</i>	6	<i>E+P</i>
3.	<i>Enterprise Finance</i>	6	<i>E</i>
4.	<i>Business law</i>	6	<i>E</i>
5.	Foreign language	2	V
6.	Economic doctrines	4	E
	TOTAL	30	

Objectives and learning outcomes:

At the end of the semester students should:

- Know the content of the main processes and managerial functions
- Be familiar with financial management, accounting and other financial systems
- Know ways to identify business ideas and evaluate opportunities
- Have management methods and techniques;
- Evaluate and improve the efficiency and effectiveness of the organization's activities
- Develop an application work/paper that addresses the solution of a business administration issue
- To know and apply methods of financial resources management and to analyze the alternatives regarding the mobilization and placement of the financial resources in order to choose the optimal variant;
- To know the legislation on entrepreneurship and business, small business, consumer protection, advertising in the Republic of Moldova
- Know the main processes within industrial enterprises

This semester continues to increase the workload of students in project-based teams. We believe that based on the experience gained in the previous projects and the disciplines studied in this semester, students will be able to carry out a larger amount of work. Within this project, students will demonstrate their spirit of observation and analysis on several aspects of the operation of the enterprise.

3.2.4 Semester 4

The theme of the semester: Enterprise Development Strategies X: market analysis, trade and development policies (life cycle)

An interdisciplinary semester project will be developed within the disciplines: Entrepreneurship Management, Human Resource Management and Marketing.

By conducting a market study and analyzing the potential of human resources, students will propose business ideas and develop projects for these businesses.

Objectives and learning outcomes.

At the end of the semester the student must:

- Develop and implement enterprise marketing policies
- Know the content of the main processes and managerial functions
- Know ways to identify business ideas and evaluate opportunities
- Adjust the organization's work to the requirements of the environment
- To know and monitor the factors of the marketing environment, to examine the real and potential market characteristics, to be able to identify the possible ways of market growth;
- Know the particularities of the marketing policies functioning
- Strengthen management theoretical competences in the real economic environment of a company / institution, finding the appropriate methods for improving the performance of the company activity;
- To know the particularities of the human resources management;
- Identify personnel needs, analyze human resource demand and supply;
- Identify and understand entrepreneurial actions, identify sources of funding.
- Forming teams and developing collaboration
- To motivate and create productive labor relations
- Develop and coordinate project implementation

	YEAR II of STUDIES		SEMESTER IV
	Module	ECTS	Assessment form
1.	<i>Entrepreneurial project management</i>	7	P
2.	<i>Marketing</i>	7	P
3.	<i>Human resources management</i>	7	P
4.	Foreign language	2	E
5.	Leadership	4	E
6.	Specialty internship	3	E
	TOTAL	30	

In the fourth semester, the project will be a more complex one, which will also be based on student internships within a company. Students will have to demonstrate good knowledge of all processes in the enterprise, the interdependence of the enterprise's functions, and a broad analysis of its work.

3.2.5 Semester 5

The theme of the semester: Entrepreneurship and competitive development of business in the X sector

In this semester it will be elaborated an interdisciplinary semester project: at the disciplines Economic and Financial Analysis; Risk management; Supply management; Quality Management and Discipline Business Development Project, where students will be able to choose a research enterprise in a group, will analyze all the functions of the enterprise, identify existing problems, and for one of these problems will develop solutions to overcome it, and even increasing the performance of the enterprise.

The project must go through all these disciplines, include the analysis of these compartments within the enterprise and will be based on the performance of the enterprise, either by identifying and minimizing risks or by increasing the quality (raw material, processes, production).

Here, the group of students will identify the company's pressing problems only after they have a broad analysis of its business. So practice and teaching of given courses is done through examples and case studies from the selected enterprises for analysis.

	Year III		SEMESTER V
	Module	ECTS	Assessment form
1.	Economic and Financial Analysis *	6	P
2.	Risk Management *	6	P
3.	Supply Management *	6	P
4.	Quality management *	3	P
5.	Entrepreneurial development project*	3	P
6.	Intellectual property law	6	E
	TOTAL	30	

Learning Objectives and Outcomes:

- Have methods to assess and minimize business risks
- Ensure that activities are carried out in accordance with established laws and regulations
- Adjust the organization's work to the requirements of the environment
- To make optimal decisions in conditions of certainty, uncertainty, risk
- Evaluate and improve the efficiency and effectiveness of the organization's activities
- Organize the business and administration research process
- Know the competence and involvement of managers at different hierarchical levels
- Develop appropriate strategies and policies in a changing environment;
- Develop skills to assess and minimize entrepreneurial risks
- Define the concepts of economic activity under conditions of risk and uncertainty;

- Establish the functional correlation between risk level and economic outcome
- To acquire the main concepts, principles and functions of quality management;
- Develop skills for applying quality management methods and standards for the quality management system.
- Use the quality management system documents

3.2.6 Semester 6

Semester Theme: X / X Developer Forecasts /// Bachelor's degree thesis

Learning Objectives and Outcomes:

- Ensure that activities are carried out in accordance with established laws and regulations
- Adjust the organization's work to the requirements of the environment
- Be able to identify comparative advantages of the national management system and other states;
- Identify business innovation activities, the need for innovation and the company's innovation policy.
- Ensure and manage the efficient use of material, financial and informational resources
- Apply quality management systems
- Ensure and manage the efficient use of material, financial and informational resources
- Organize the business and administration research process

	YEAR III		SEMESTER VI
	Module	ECTS	Assessment form
1.	<i>Comparative management</i>	3	E
2.	<i>Innovative management</i>	3	E
3.	<i>Specialty (production) internship</i>	6	E
4.	Research internship (Bachelor)	9	E
5.	Bachelor's degree exam	9	E
	TOTAL	30	

The semester VI project will be drafted as a bachelor's degree thesis. According to the REGULATION on the organization of the examination for the completion of the Bachelor's degree studies, and of ORDER no. _07-008_ of _December 23, 2015_, the bachelor's exam of the Business and Administration programme consists of: integrated examination: Economics and Business Management and defence of the bachelor's degree thesis (project).

The Bachelor's degree is awarded to the graduate who:

- demonstrates advanced knowledge and skills in a field of study;
- can professionally apply the knowledge gained in a field of study;

- has the ability to collect, analyze and interpret relevant data (typically from the own studies) as well as to formulate reasoning on relevant issues of order social, scientific or ethical;
- demonstrates the ability to argue and solve the problems in the field
- can communicate information, ideas, problems and solutions to both the audience of specialists and non-specialists and
- has developed the skills they need to continue their studies with an Increased self-training.

The bachelor's degree project assesses the competencies of the graduates to carry out research, to apply the theoretical knowledge in the process of developing practical solutions specific to the field of professional training or the realization of the case studies.

Defending the bachelor's degree projects/thesis is public and is done in the presence of the commission, consisting of teachers who have taught the core courses / project coordinators, at least one person - representing the research environment outside the institution, at least one person who will represent business environment. In total the commission is made of up to 6 persons.

The tests in the bachelor's degree exam and the bachelor's degree project / thesis are assessed separately with marks based on the marking scale of 10 to 1, the minimum promotion mark being 5. Converting marks into the ECTS marking scale will be done according to the recommendations of the Guideline on the implementation of the National Study Credits System.

4 ROADMAP

4.1 INTRODUCTION

The Roadmap is a consolidated list of measures, commitments and timelines for implementing actions to overcome the challenges identified in the Pilot Programme for the Implementation of Problem Based Learning.

The Roadmap is presented in Appendix 3. It identifies the key activities foreseen for the next years, project implementation activities, development of project continuity activities within the institution. These activities are grouped into 3 important periods:

- Period 1: The preparation period for the modernization;
- Period 2: The implementation period of the modernizations
- Period 3: The period of evaluation and improvement of activities

4.2 PERIOD 1. THE PREPARATION PERIOD FOR THE MODERNIZATION

The preparation period is expected by September 2019 (inclusive). This is the time when the main preparations will be made to ensure good conditions for broad implementation of the project. During this period, it is expected to authorize the teacher training programme from the institution and of the young specialists on the application of the PBL methodology. **Continuous training programme: "Problem Based Learning"** will be approved by the University Senate in April 2019, after which it will be authorized by ANACEC (National Agency for Quality Assurance in Education and Research) and coordinated with the Ministry of Education, Culture and Research of the Republic of Moldova.

By the end of the 2018-2019 study year, the Senate approves the PBL Implementation Strategy at university level (faculty) for the period 2019-2021.

At the first meeting of the Department of Economic Sciences, the Methodological Guidelines on Project Development are expected to be approved.

All of these are the bases of a unique concept regarding the application of the PBL methodology at the Department / Faculty / University level.

4.3 PERIOD 2. THE IMPLEMENTATION PERIOD OF THE MODERNIZATIONS

The second stage is characterized by actions directly related to the implementation of the approved modernizations.

As soon as the continuous training programme "**Problem-based learning**" is authorized, the teacher training courses of SUC can start. Responsible for conduct and deployment of the "**Problem-based learning**" course is the Continuous Training Center (hereinafter referred to as CFC), which is an organizational and administrative structure without legal personality and functionally is assimilated by the faculty. The CFC executive management is conducted by the Director of the Continuous Training Center. The mission of the Continuous Training Center is aimed at integrating

the institution into the European education area, setting the major objective of being a regional center for the provision of educational and academic services that meet the demand for specialists and innovative products. It also has the mission to co-ordinate, in cooperation with SUC departments, all continuous education activities.

At the same time, CFC specializes in adult education services. In particular, the CFC is focused on the training / improvement of pre-university education teachers (schools, lyceums, colleges). These people are required by the Education Code to go through professional training courses every five years. Thus, according to the programmes offered by the CFC for the improvement of pre-university teachers, a unique concept will be elaborated on the content and the way of elaboration of the curricula for the subjects included in the school programme that will be taught according to the PBL methodology.

Likewise, because within SUC there are also Master's degree programmes for pedagogical specialties, the training programme "***Problem-based learning***" will be organized for both university teachers and master's degree students.

At the same time, the following additional responsibilities, related to the PBL, will be added to the competence of the programme director (Bachelor, Master):

- establishing the term of the semester,
- monitoring project work (e)
- follow up the process of carrying out and conclusion of assessment of project activities for students and teachers (assessment of students, teachers).

Periodical assessments on how to implement the PBL methodology will be made through questionnaires, attendance at the teaching hours, student assessment, and mutual assessment of teachers. Those responsible for assessing the quality of teaching will be the programme Directors (a function which appeared in the University in September 2017) and the persons responsible for Semester, who will provide semestrial information to the Management of the Education Quality Management Service (Division), Career Guidance and Career Consultation of SUC.

The Education Quality Management Service (Division), Career Guidance and Career Consultation is a coordination and execution structure that supports the Commission for the Quality of Education Process and Professional Training Partnerships in Quality Management in SUC by planning actions, organizing working teams for document preparation, staff training on quality assurance and management of Quality Assurance System's documents.

The main directions of action of the Education Quality Management Service (Division), Career Guidance and Career Consultation are:

- Designing and implementing a quality management system that will lead to the continuous improvement of the university teaching process;
- Provides expert advice and career guidance;
- Organizes training programmes and other dissemination actions for quality management in order to develop a quality culture in the university;
- Development of assessment procedures for teachers;

- Development of assessment procedures by students of the activities (in particular teaching activities) of the university.

4.4 PERIOD 3. THE PERIOD OF EVALUATION AND IMPROVEMENT OF ACTIVITIES

In the third stage we propose to modify the educational plans for all Bachelor's degree programmes at the Faculty of Economics, Engineering and Applied Sciences, by implementing the PBL methodology:

- Accounting
- Finance and Banks
- Informatics
- Engineering and Management in Food Industry
- Engineering and Management in Machine Building

New curricula will be developed for these plans, with several elements of interactive teaching, distance learning.

Also, several methods of involving students and business representatives in assessing the functioning of programmes, teaching methods, research topics, practical application of student research results will be established.

5 ACTION PLAN

5.1 INTRODUCTION

The Action Plan presented in Appendix 4 details the activities to be carried out over the next four years.

Its immediate purpose is to establish an institutional foundation in order to overcome certain barriers or certain threats to the implementation of this very project.

As far as the implementation period is concerned, it will be taken into account that some new elements that will be implemented can fit into the existing regulatory framework, while others require some changes in the existing regulatory acts.

5.2 ACTIVITIES AND RESOURCES

The activities provided in this plan are in line with the provisions of the previous chapter (Chapter 4). Also, the planned activities can be grouped in 3 phases:

- Training
- Implementation / achievement
- Periodic evaluation.

The activities outlined in the table will contribute to the preparation of the "ground" for the implementation of the modernizations, namely: approval of the institutional strategy, approval of the staff training programme, approval of the methodical materials (curricula, guides, collections).

In the implementation phase, teacher training / consolidation courses will be carried out, the implementation of the teaching knowledge and materials.

To evaluate how to implement the PBL methodology at SUC, several methods will be established. A set of methods will be developed for student project work: group assessment, individual assessment, mutual evaluation of students, identification of each student's contribution to the project. Methods for assessing the degree of satisfaction of students will be established, which will contribute to the improvement of the courses by the teachers. There will also be evaluations at departmental and institutional level to identify the training needs of teachers and the materials needed for teachers to work with.

6 UNIVERSITY LEVEL STRATEGIC RECOMMENDATIONS

6.1 INTRODUCTION

Changes must start with ourselves if we want to achieve some performance. In this chapter we propose some modernizations in order to increase the labour productivity, to increase the degree of satisfaction of the students and last but not least of the scientific and teaching staff. Due to the fact that PBL methodology requires increasing student performance, the conditions must be met.

6.2 RECOMMENDATIONS: STUDY PROGRAMME LEVEL

Establish the responsible position for the semester, which will deal with the establishment of the semester, the monitoring of project work(s), the follow-up of the process of carrying out and assessment of project activities for students and teachers (assessment of students, teachers). Once again, it will also deal with the organization of separate schedules for work in student teams.

6.3 RECOMMENDATIONS: DEPARTMENT AND FACULTY LEVELS

Due to the fact that within the Faculty there are 4 research centers:

1. Center of Economic Research and Entrepreneurship Development
2. Center of Information Technology Development
3. Center of Research and technological development, analysis and quality management in the food industry
4. Center of Technology Development in Advanced Materials

it is proposed to establish two committees of specialists at the faculty level: the ***Research Development Committee*** and the ***Committee for Student Activities and the Relationship with the Business Environment***. Within these committees, the project themes should be discussed with the semester responsible and the partner companies.

6.4 RECOMMENDATIONS: STAFF LEVEL

Developing a schedule (for each year of study) on the training courses for the teaching - research staff (in accordance with the individual needs). Regular organization of coaching with different themes for the teaching – research staff from different faculties. Organizing, at least once a year, *team building* activities by *departments / faculties* outside the institution as they have proven to be the most effective forms of training.

6.5 RECOMMENDATIONS: STUDENT LEVEL

Creating a Student Support Center that helps first year students integrate more easily, which will organize different mutual learning activities of students, which would facilitate the formation of the groups. Here students will be helped to plan their careers, to choose optional subjects (at their

choice). The main purpose of these centers will be to provide students with information and facilities to fit in and adapt to student life easier.

6.6 RECOMMENDATIONS: PEDAGOGICAL PBL TRAINING LEVEL

Establishment of a collaboration between the universities in the consortium, on the organization of regular exchanges of experience. Thus, experience in implementing the PBL methodology will be shared, shortcomings will be identified and solutions will be found. It is reasonable to invite EU partners for training courses, or public lessons.

6.7 RECOMMENDATIONS: SOCIETY LEVEL

Concluding collaboration agreements with institutions / businesses open to provide information to students. Creating bi / tripartite partnerships with reciprocal effects. Students will have real case studies, real problem solving, veritable data. Businesses will get new ideas from students, calculations and solutions to existing problems. And if LPA is involved, they will eventually have job cuts, young labour force, developed locality.

6.8 RECOMMENDATIONS: ADMINISTRATION AND MANAGEMENT LEVELS

Within our University there are management systems and administrative structures necessary to implement the PBL methodology.

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Appendix 1. Experience of PBL implementation in Business and Administration and Accounting

The disciplines involved in the project	The theme of the semester, the themes of the project	Suggestions from disciplines, changes in curricula	Methods of group evaluation, methods of mutual evaluation of group students	Problems encountered during work with students at the project	Suggestions for solving identified problems
Academic year 2017-2018, semester I					
"Business and administration", "Accounting", groups BA 1701, C1701					
Economic Theory I (microeconomics Suggestions for solving identified problems The basics of management	The theme of the semester: Competitiveness of the national product: problems and solutions	Fields of research: - vegetables and fruits; - Dairy products and homogeneous products; <i>-winemaking and grape products.</i> The topics proposed and chosen by the students: Branch analysis: history, current situation, problems, trends The activity environment and its impact on the business activity The economic and social utility of the activity and the product Supply market analysis (offer) Analysis of the sales market (demand) Cost of production and ways of management, optimization Product price and economic efficiency	Interim and final project presentations	✓ Group formation ✓ Identification of research themes	

The disciplines involved in the project	The theme of the semester, the themes of the project	Suggestions from disciplines, changes in curricula	Methods of group evaluation, methods of mutual evaluation of group students	Problems encountered during work with students at the project	Suggestions for solving identified problems
Academic year 2017-2018, semester II					
"Business and Administration", "Accounting", groups BA 1701, C1701					
Economic statistic Basis of Accounting	<p>Assess the evolution and determine the enterprise's potential to strengthen its position in the branch.</p> <p>As a research object, two representative companies in the area were selected, but significantly diverted their positions on the regional market. Students were assigned to 7 teams after an initial evaluation (enterprises were presented, students were asked about the biggest problem of one of the two enterprises and what solution they propose, after the sticker answers the coordinators formed the groups with the students which have common visions;).</p>	<p>The PBL evaluation methodology has been added to the seminars;</p> <p>The structure of the statistical course has been revised in order to facilitate the application of statistical research tools to solve the problems of real enterprises;</p>	<p>Monitoring of group and individual tasks, mid-term evaluation (presentation of the project concept - PPT supported by the team) and final (before the PPT exam, supported by all team members).</p>	<ul style="list-style-type: none"> ✓ Conflicts within the group; ✓ Lack of information; ✓ Underdeveloped team skills (leaders could not delegate tasks, others too much parasite); ✓ Problems with time management in teams (studying at two faculties reduces the time available for group meetings); 	<ul style="list-style-type: none"> ✓ Increased collaboration between University and Enterprise; ✓ Facilitating teamwork by applying more teambuilding techniques; ✓ Segmenting the tasks of the group into individual tasks in order to increase the responsibility of each member of the team; ✓ Guiding students through digital means (video conferencing, chat on Viber and Facebook, e-mail), so students communicated not only the online coordinator, but also their team members in the common chart.

The disciplines involved in the project	The theme of the semester, the themes of the project	Suggestions from disciplines, changes in curricula	Methods of group evaluation, methods of mutual evaluation of group students	Problems encountered during work with students at the project	Suggestions for solving identified problems
Academic year 2017-2018, semester II					
"Business and Administration", group BA 1701					
The Basics of Entrepreneurship	The theme of the semester: Economic Fluctuations and Risks in Contemporary Agriculture:	Themes proposed to the students: - Production capacity of SMEs - Financial management of the enterprise	Interim and final project presentations	<ul style="list-style-type: none"> ✓ Lack of interest in research ✓ Lack of data ✓ Non-cooperation with the real sector 	Enhance partnership relations with businesses; Identify ways to enhance students' intuitive motivation.
Academic year 2017-2018, semester II					
„Contabilitate”, grupa C 1701					
Economic Theory II (macroeconomics) Public finances	Economic and social impact of the budget process: <ul style="list-style-type: none"> ✓ Analysis of the local public administration budget. Satisfaction and the socio-economic impact of the budget process <ul style="list-style-type: none"> ✓ Analyzing the public budget and the socio-economic impact of budgetary policies on Crihana Veche locality 	The projects focused on some of the themes of the taught subjects, namely those related to budgetary-fiscal policy, the budgetary process.	Interim and final project presentations	<ul style="list-style-type: none"> ✓ Group formation ✓ Group disinterest ✓ Little access to data ✓ Non-cooperation with Local Public Administration 	Enhancing partnerships with LPA; Identifying ways to remove psychological barriers in teamwork on the interdisciplinary project (students were not able to get out of the comfort zone, did not accept the changes to their learning style, ie individual work for several disciplines and achieved jointly).
Academic year 2018-2019, semester I					
Business and Administration ", " Accounting ", groups BA 1801, C1801					
Economic Theory I (microeconomics) The basics of management	Competitiveness of the product of the national industry: problems and solutions	Areas: 1. Food industry-dairy branch 2. Branch of food industry-bakery products	Interim and final project presentations		

The disciplines involved in the project	The theme of the semester, the themes of the project	Suggestions from disciplines, changes in curricula	Methods of group evaluation, methods of mutual evaluation of group students	Problems encountered during work with students at the project	Suggestions for solving identified problems
		3. Branch of food industry - winemaking 4. Light industry - textile industry Branch of food-beer industry			
Business and Administration ", group BA 1701 (semester III)					
Production Management Methods and management techniques Enterprise Finance Business Law	Theme of the Semester: INDUSTRIAL DEVELOPMENT AS NATIONAL BOTTOM FACTOR	Group themes: Rebranding of Cahul Cheese Factory Rebranding of SA "CahulPan" 1. Elaboration of the new product: sweet cheese, for SA "Cahul Cheese Factory" 2. Elaboration of the new product: dry bread, for "CahulPan"	Separate meetings with student groups	Student's limited access to business information. Misunderstandings between students in sharing tasks. Ambiguous setting of objectives in front of students	Establishing business relationships with business. Frequent teacher meetings with student groups. Reducing the rigidity of teachers. .
"Accounting", group C 1701 (semester III)					
Financial Accounting Managerial Accounting Enterprise Finance Fiscality	Implications of Finance and Taxation in Business Accounting ✓ Cost and cost optimization at S.A. "Cheese Factory" ✓ Financial flows management at S.A. "Cahul Pan" ✓ Effects of staff salaries on the enterprise's financial result	The PBL evaluation methodology has been added to the seminars;	Monitoring and evaluation of group and individual tasks, mid-term evaluation (presentation of the project concept - PPT supported by the team) and final (before the PPT exam, supported by all team members).	✓ Reticence of the business environment in presenting students' information. ✓ Students encountered difficulties in the interdisciplinary aspect of the project; ✓ The rigidity of the students made it difficult for the team to work (the problems of the past year continue: parasitism, excessive leadership,	✓ Strengthening the partnership relations with the business environment and the involvement of the entrepreneurs in the process of elaborating and supporting projects ✓ There was a need for more consultations with teachers from different disciplines; ✓ Intensive mediation of communication and conflicts among group

The disciplines involved in the project	The theme of the semester, the themes of the project	Suggestions from disciplines, changes in curricula	Methods of group evaluation, methods of mutual evaluation of group students	Problems encountered during work with students at the project	Suggestions for solving identified problems
				<p>inability to delegate tasks to weaker colleagues, which led to their exclusion from the working process).</p> <p>✓ Problems with time management in teams (studying at two faculties reduces the time available for group meetings);</p>	<p>members by project coordinators, setting individual tasks and checking them during the semester;</p> <p>✓ Guiding students through digital means (video conferencing, chat on Viber and Facebook, e-mail), so students communicated not only the online coordinator, but also their team members in the common case.</p>

Appendix 2: Our vision regarding the “Business and Administration” study programme

Semester 1 (30 credits)	Disciplines to create general skills and competences 6 ECTS	Specialization orientation disciplines 3 ECTS	Fundamental disciplines 21 ECTS
Semester 2 (30 credits)	Disciplines to create general skills and competences 6 ECTS	Fundamental Disciplines 24 ECTS	Mini project 6 ECTS
Semester 3 (30 credits)	Disciplines to create general skills and competences 2 ECTS	Socio-humanistic orientation 4 ECTS	Specialization orientation disciplines 18 ECTS
			Fundamental Disciplines 6 ECTS
			Semestrial Project 12 ECTS
Semester 4 (30 credits)	Disciplines to create general skills and competences 2 ECTS	Socio-humanistic orientation disciplines 4 ECTS	Specialization orientation disciplines 9 ECTS
			Fundamental Disciplines 12 ECTS
			Practice of initiation
			Semestrial Project 21 ECTS
Semester 5 (30 credits)	Socio-humanistic orientation disciplines 6 ECTS	Specialization orientation disciplines 24 ECTS	Semestrial Project 24 ECTS
Semester 6 (30 credits)	Specialization disciplines 6 ECTS	orientation	Specialty practice and research practice 15 ECTS
			Semestrial Project (graduating thesis) 30 ECTS

Appendix 3: Roadmap

Actions		Period of realization															
		Year 2019				Year 2020				Year 2021				Year 2022			
		1-3	4-6	7-9	10-12	1-3	4-6	7-9	10-12	1-3	4-6	7-9	10-12	1-3	4-6	7-9	10-12
I	Reconceptualizing programmes																
1	Developing a unique concept of curriculum with PBL elements																
2	Elaboration of new educational plans: <ul style="list-style-type: none"> with the increase of the number of hours for the fundamental disciplines and orientation towards specialization, fundamental and orientation to specialization, Including these disciplines in mini-projects or half-year projects, Increase the number of hours for drafting projects 																
3	Elaboration of the methodological guide on the elaboration of the projects																
4	Develop curricula for new plans																
5	Elaboration of project monitoring and evaluation models (tests, questionnaires)																
II	Teacher training																
6	Authorization of the Continuous Learning Programme: "Problem Solving Learning"																
7	Conducting teacher training courses																
8	Periodic evaluation of teachers' assessment of working arrangements in PBL, lessons learned																
III	Expanding the PBL concept																
9	Approval of PBL implementation strategy																

Actions		Period of realization															
		Year 2019				Year 2020				Year 2021				Year 2022			
		1-3	4-6	7-9	10-12	1-3	4-6	7-9	10-12	1-3	4-6	7-9	10-12	1-3	4-6	7-9	10-12
	at university / faculty level for the period 2019-2021																
10	Developing a unique concept of curriculum with PBL elements (at faculty level)																
11	Establishment of the semester responsible for specialties																
12	Extension of the PBL methodology for all educational plans at the Faculty of Economics, Engineering and Applied Sciences																

Appendix 4: Action Plan

	Implementation actions	Implementation deadline	Resources
1	Approval of PBL implementation strategy at university / faculty level for the period 2019-2021	April - June 2019	Senate of the university
2	Authorization of the Continuous Learning Programme: "Problem Solving Learning"	July - October 2019	Prorector of didactic activity, quality and training partnerships, PBL team members
3	Training the team of trainers / teachers who will attend the training courses	July - September 2019	PBL team members
4	Conducting teacher training courses	The formation of the academic group	Group of at least 20 people, Financial resources, Papers required for the course
5	Developing a unique concept of curriculum with PBL elements	July - December 2019	Academic staff, programme directors, quality department
		July-December 2021	Academic staff, programme directors, quality department
6	Setting up the Working Group to work on the elaboration of methodological papers	May 2019	Academic staffs
7	Elaboration of the methodological guide on the elaboration of the projects.	July-September 2019	Academic staffs PBL team members
		July - September 2022	Academic staffs PBL team members
8	Develop a case study collection	Year of Studies 2019-2020	Academic staffs PBL team members
9	Setting up the Working Group and designating the person responsible for drafting / modifying the study programme	April 2021	Academic staffs
10	Analysis of similar national and international programmes (including visiting universities / EU partners in the project)	May - June 2021	PBL team members
11	Elaboration of new PBL educational plans	April-June 2021	Programme Director, Head of Department Real sector partners
12	Consultation of the new plans with the business environment on the correlation of the objectives with the skills required on the labor market	July - September 2021	Real sector partners
13	Adaptation and approval of modified plans for all faculty programmes in the Departments, the faculty council and the SUC Senate Elaboration of project monitoring and evaluation models	September-December 2021	Members of the department, faculty council, senate members

	Implementation actions	Implementation deadline	Resources
14	Regularly assessing the implementation of the PBL methodology	September 2020	Programme Director, responsible for the semester, Quality Section
		September 2021	Programme Director, responsible for the semester, Quality Section
15	Regularly assessing the implementation of the PBL methodology	During implementation	Programme Director, responsible for the semester, Quality Section

Appendix 5: The study programme implemented since September 1, 2017

Semestrul 1 (30 credite)	Disciplines to create general skills and competences 6 ECTS	Specialization orientation disciplines 3 ECTS	Fundamental Disciplines 21 ECTS	Mini project 12 ECTS
Semestrul 2 (30 credite)	Disciplines to create general skills and competences 6 ECTS	Fundamental Disciplines 24 ECTS	Mini project 12 ECTS	Mini project 12 ECTS
Semestrul 3 (30 credite)	Disciplines to create general skills and competences 2 ECTS	Socio-humanistic orientation disciplines 6 ECTS	Specialty orientation disciplines 18 ECTS	Fundamental Disciplines 6 ECTS
		Semestrial Project 24 ECTS		
Semestrul 4 (30 credite)	Disciplines to create general skills and competences 2 ECTS	Socio-humanistic orientation disciplines 7 ECTS	Specialization orientation disciplines	Fundamental Disciplines 12 ECTS
			Practice of initiation 3 ECTS	
			Semestrial Project 21 ECTS	
Semestrul 5 (30 credite)	Socio-humanistic orientation disciplines 6 ECTS	Specialization orientation disciplines 24 ECTS	Mini project 12 ECTS	Mini project 9 ECTS
			Mini project 3 ECTS	
Semestrul 6 (30 credite)	Specialization orientation disciplines 6 ECTS	Specialty practice and research practice 15 ECTS		
		Semestrial Project 21 ECTS		

MINISTERUL EDUCAȚIEI AL REPUBLICII MOLDOVA
INSTITUȚIA PUBLICĂ UNIVERSITATEA DE STAT „BOGDAN PETRICEICU HASDEU” DIN CAHUL

PLANUL DE ÎNVĂȚĂMÂNT

APROBAT

Ciclul I, Licență

**Senatul Universității de Stat
„Bogdan Petriceicu Hasdeu”
din Cahul,**

Contextul: ISCED - 6
Domeniul general de studiu: **041. Științe Economice**
Domeniul de formare profesională: **0413. Business și administrare**
Denumirea programului de studii: **0413.1 Business și administrare**
Numărul total de credite de studiu: **180**
Titlul obținut: **Licențiat în științe economice**
Baza admiterii: **BAC, Colegiu, Studii superioare**
Limba de instruire: **română**
Forma de organizare a învățământului: **Cu frecvență**

**Proces-verbal nr. 08
din 27 aprilie 2017**

**Președintele Senatului
Dr.hab., Prof.univ.**

Popa Andrei



CALENDARUL UNIVERSITAR / GRAFICUL PROCESULUI DE STUDIU

Anul de studii	Activități didactice		Sesiuni de examene		Stagii de practică	Vacanțe		
	Sem. I	Sem. II	Sem. I	Sem. II		Iarnă	Primăvară	Vară
I	01.09-15.12 (15 săptămâni)	01.02-20.05 (15 săptămâni)	16.12 -29.01 (4 săptămâni)	23.05-23.06 (4 săptămâni)	-	31.12-10.01 21.01 -31.01 (2 săptămâni)	Paște (1 săptămână)	25.06-31.08 (9 săptămâni)
II	01.09-15.12 (15 săptămâni)	01.02-11.05 (13,5 săptămâni)	16.12 -29.01 (4 săptămâni)	23.05-23.06 (4 săptămâni)	12.05-22.05 Practica de specialitate (inițiere) (1,5 săptămâni)	31.12-10.01 21.01 -31.01 (2 săptămâni)	Paște (1 săptămână)	25.06-31.08 (9 săptămâni)
III	01.09-15.12 (15 săptămâni)	01.02-21.02 (3 săptămâni)	16.12 -29.01 (4 săptămâni)	14.03-20.03 (2 săptămâni)	22.02 -13.03 Practica de specialitate (de producție) (3 săptămâni) 21.03-20.04 Practica de cercetare de licență (4,5 săptămâni)	31.12-10.01 21.01 -31.01 (2 săptămâni)	Paște (1 săptămână)	-

ANUL I de STUDIU

SEMESTRUL I

Cod	Denumirea unității de curs/modulului	Total ore			Număr de ore pe tipuri de activități			Forma de evaluare	Nr. credite
		Total	Contact direct	Studiu individual	C	S	L/P		
G.01.O.001	Limba străină I	60	30	30	-	10	20	E	2
G.01.O.002	Tehnologii de comunicare informațională	60	30	30	10	-	20	E	2
G.01.O.049	Principii de studiu prin metoda „Învățarea prin Cercetarea Problemei” (PBL – Problem Based Learning)	60	30	30	10	-	20	E	2
F.01.O.003	Teoria economică I (microeconomia)*	180	90	90	45	45	-	E	6
F.01.O.004	Matematică economică	180	60	120	30	30	-	E	6
F.01.O.050	Modul: Informatică economică și comunicare în afaceri: Informatică economică	180	60	120	30	15	15	E	6
S.01.O.005	Correspondența și comunicarea în afaceri	90	30	60	15	15	-	E	3
F.01.O.006	Bazele managementului *	180	60	120	30	30	-	E	6
	Total ore cu acordare creditelor de studii	900	360	540	155	130	75	6E	30
G.01.O.007	Educația fizică	30	30	-	-	-	30	adm	-
	TOTAL ORE PE SEMESTRUL I	930	390	540	155	130	105	6 E	30

ANUL I de STUDIU

SEMESTRUL II

Cod	Denumirea unității de curs/modulului	Total ore			Număr de ore pe tipuri de activități			Forma de evaluare	Nr. credite
		Total	Contact direct	Studiu individual	C	S	L/P		
				Total					
G.02.O.008	Limba străină II	60	30	30	-	10	20	E	2
G.02.O.009	Etica și cultura profesională	120	60	60	30	30	-	E	4
F.02.O.010	Teoria economică II (macroeconomia)*	180	90	90	45	45	-	E	6
F.02.O.011	Bazele antreprenoriatului*	180	90	90	45	45	-	E	6
F.02.O.012	Statistica economică**	180	60	120	30	30	-	E	6
F.02.O.013	Bazele contabilității**	180	60	120	30	30	-	E	6
	TOTAL ORE PE SEMESTRUL II	900	390	510	180	190	20	6E	30

* Se va elabora un mini - proiect comun pentru ambele discipline (pentru fiecare semestru în parte). Mini - proiect – lucrare în grup (3-5 studenți) a problemei de cercetare referitoare la un grup de unități conexe de curs. Susținerea examenului și atribuirea creditelor de studii este condiționată de susținerea OBLIGATORIE a Mini - Proiectului de cercetare.

** Se va elabora un mini - proiect comun pentru ambele discipline. Mini - proiect – lucrare în grup (3-5 studenți) a problemei de cercetare referitoare la un grup de unități conexe de curs. Susținerea examenului și atribuirea creditelor de studii este condiționată de susținerea OBLIGATORIE a Mini - Proiectului de cercetare.

ANUL II de STUDIU

SEMESTRUL III

Cod	Denumirea unității de curs/modulului	Total ore			Număr de ore pe tipuri de activități			Forma de evaluare	Nr. credite
		Total	Contact direct	Studiu individual	C	S	L/P		
G.03.O.014	Limba străină III	60	30	30	-	10	20	E	2
U.03.A.015	Doctrină economică	120	60	60	30	30	-	E	4
U.03.A.016	Filosofia și logica activității economico-ingenerești								
S.03.A.017	Managementul producției *	180	90	90	45	45	-	E	6
S.03.A.018	Tehnologia și merceologia								
F.03.O.019	Metode și Tehnici de Management*	180	90	90	45	45	-	E	6
S.03.A.020	Finanțele întreprinderii *	180	60	120	30	30	-	E	6
S.03.A.021	Finanțe								
S.03.A.022	Dreptul afacerilor *	180	60	120	30	30	-	E	6
S.03.A.023	Drept comercial internațional								
TOTAL ORE PE SEMESTRUL III		900	390	510	180	190	20	6E	30

ANUL II de STUDIU

SEMESTRUL IV

Cod	Denumirea unității de curs/modulului	Total ore			Număr de ore pe tipuri de activități			Forma de evaluare	Nr. credite
		Total	Contact direct	Studiu individual	C	S	L/P		
G.04.O.024	Limba străină IV	60	30	30	-	10	20	E	2
U.04.A.025	Leadership	120	60	60	30	30	-	E	4
U.04.A.026	Inițiere în economia capitalului uman								
*G.04.O.027	Tehnici de comunicare (pentru grupele alolingve)	90	45	45	15	-	30	E	3
*U.04.A.028	Arta oratorică (cu excepția grupelor alolingve)								
*U.04.A.029	Tehnici de comunicare (cu excepția grupelor alolingve)								
S.04.A.051	Managementul proiectelor antreprenoriale*	180	90	90	45	45	-	E	6
S.04.A.030	Sisteme de planificare								
S.04.A.031	Planificarea afacerii								
F.04.O.032	Marketing*	180	60	120	30	30	-	E	6
F.04.O.033	Managementul resurselor umane *	180	60	120	30	30	-	E	6
	Practica de specialitate (inițiere)*	90		45	1,5 săptămâni			E	3
TOTAL ORE PE SEMESTRUL IV		900	345	510	150	145	50	7E	30

* Se va elabora un proiect semestrial interdisciplinar (pentru fiecare semestru aparte). Proiect - Lucrare în grup de 3-5 studenți a problemei de cercetare referitoare la toate unitățile (Fundamentale și/sau de Specialitate) de curs din semestru. Susținerea examenului și atribuirea creditelor de studii este condiționată de susținerea OBLIGATORIE a Proiectului.

Modulul de formare psihopedagogică

Codul	Denumirea activității didactice	Total ore			Număr de ore pe tipuri de activități			Forma de evaluare	Nr. credite
		Total	Contact direct	Studiu individual	Curs	Seminar	Laborator/ practice		
Modulul pedagogic									
F.01.O.001	Pedagogie generală și etică pedagogică	180	90	90	45	45	-	Examen	6
F.02.O.002	Teoria și metodologia instruirii	120	60	60	30	30	-	Examen	4
F.03.O.003	Educație incluzivă	60	30	30	15	15		Examen	2
Modulul psihologic									
F.04.O.004	Fundamentele psihologiei: generală și vârstelor	180	90	90	45	45	-	Examen	6
F.05.O.005	Psihologie educațională și conflictologie	180	90	90	45	45	-	Examen	6
Didactica disciplinei									
S.06.O.006	Didactica disciplinei (monospecialitate)	180	90	90	45	45	-	Examen	6
S.06.O.007	Didactica disciplinei A								
S.07.O.008	Didactica disciplinei B								
Total:		900	450	450	225	225	-	5 E	30
Stagiul de practică									
	Practica de inițiere (psihopedagogică)	60	-	60	-	-	-	Examen	2
	Practica de specialitate 1	420	-	420	-	-	-	Examen	14
	Practica de specialitate 2	420	-	420	-	-	-	Examen	14
Total:		900		900	-	-	-	3E	30

ANUL III de STUDIU

SEMESTRUL V

Cod	Denumirea unității de curs/modulului	Total ore			Număr de ore pe tipuri de activități			Forma de evaluare	Nr. credite
		Total	Contact direct	Studiu individual	C	S	L/P		
U.05.A.034	Integrare economică europeană	90	45	45	20	25	-	E	3
U.05.A.035	Politici comunitare de dezvoltare regională	90	45	45	20	25	-	E	3
U.05.A.036	Dreptul proprietății intelectuale	90	45	45	20	25	-	E	3
U.05.A.037	Inițiere juridică în dreptul de autor și drepturile conexe	90	45	45	20	25	-	E	3
S.05.O.038	Analiza economico-financiară *	180	90	90	45	45	-	E	6
S.05.O.039	Managementul riscurilor *	180	90	90	45	45	-	E	6
S.05.A.040	Managementul aprovizionării**	180	60	120	30	30	-	E	6
S.05.A.041	Tehnici de vânzări	90	30	60	15	15	-	E	3
S.05.A.042	Managementul calității **	90	30	60	15	15	-	E	3
S.05.A.043	Sisteme de management al calității	90	30	60	15	15	-	E	3
S.05.O.044	Proiect antreprenorial de dezvoltare***	90	30	60			30	E	3
TOTAL ORE PE SEMESTRUL V		900	390	510	175	185	30	7, E	30

* Se va elabora un mini - proiect comun pentru ambele discipline.

** Se va elabora un mini - proiect comun pentru ambele discipline.

*** Se va elabora un mini - proiect. Mini - proiect – lucrare în grup (3-5 studenți) a problemei de cercetare referitoare la un grup de unități conexe de curs. Susținerea examenului și atribuirea creditelor de studii este condiționată de susținerea OBLIGATORIE a Mini - Proiectului de cercetare.

ANUL III de STUDIU

SEMESTRUL VI

Cod	Denumirea unității de curs/modulului	Total ore			Număr de ore pe tipuri de activități			Forma de evaluare	Nr. credite
		Total	Contact direct	Studiu individual	C	S	L/P		
S.06.A.045	Managementul comparat *	90	45	45	22,5	22,5	-	E	3
S.06.A.046	Managementul comerțului internațional	90	45	45	22,5	22,5	-	E	3
S.06.A.047	Managementul inovațional*	90	45	45	22,5	22,5	-	E	3
S.06.A.048	Mercendaising	90	45	45	22,5	22,5	-	E	3
	Practica de specialitate (producție) *	180	-	180	3 săptămâni			E	6
	Practica de cercetare (licență)	270	-	270	4,5 săptămâni			E	9
	Examenul de licență	270	-	270	-	-	-	E	9
TOTAL ORE PE SEMESTRUL VI		900	90	810	45	45	0	5 E	30

* Se va elabora un proiect. Proiect - lucrare în grup de 3-5 studenți a problemei de cercetare referitoare la toate unitățile (Fundamentale și/sau de Specialitate) de curs din semestru. Susținerea examenului și atribuirea creditelor de studii este condiționată de susținerea OBLIGATORIE a Proiectului de cercetare.

Notă: Orele prevăzute (în toate semestrele) pentru Seminarul, Lucrări de laborator și Studiu individual se vor realiza cu utilizarea Metodei bazate pe Cercetarea Problemelor ("Problem Based Learning - PBL"). Studenții vor realiza Proiecte de cercetare elaborate de grup (3-5 persoane) sub ghidarea cadrelor științifico-didactice ce țin cursurile din modulul Proiectului.

Minimum curricular inițial pentru admiterea la ciclul II, studii superioare de Master

Nr.	Denumirea disciplinei	Total ore			Numărul de ore pe săptămână			Forma de evaluare	Nr. credite
		Total	Contact direct	Studiu individual	Curs	Seminar	Laborator		
1	Teorie economică I (Microeconomie)	180	30	150	8	7	-	E	6
2	Teoria economică II (Macroeconomie)	180	30	150	8	7	-	E	6
3	Bazele managementului	180	30	150	8	7	-	E	6
4	Bazele contabilității	120	20	100	4	4	2	E	4
5	Finanțele întreprinderii	120	20	100	5	5	-	E	4
6	Matematica superioară	120	20	100	8	7	-	E	4
TOTAL:		900	150	750	41	37	2	6E	30

Stagiile de practică

Stagiile de practică		Sem.	Nr. săpt./ ore	perioada	Nr. de credite
1.	Practica de specialitate: • - inițiere • - producție	4 6	1,5/90 3/180	Mai Martie	3 6
2.	Practica de cercetare de licență (de cercetare, documentare, redactare finală a tezei de licență)	6	4,5/270	Mai	9

Discipline facultative (la libera alegere)

Nr. d/o	Denumirea disciplinei	Anul	Semestrul	Număr de ore pe tipuri de activități			Evaluări	Nr. de credite
				C	S	L/P		
1.	Protecția civilă	I	II	15	15	-	E	2
2.	Principiile generale de orientare în carieră	I	II	15	15	-	E	2
3.	Limba străină pentru începători	I	II	-	45	-	E	3
4.	Limba străină pentru începători	II	III	-	45	-	E	3
5.	Securitatea muncii	II	III	15	15	-	E	2
6.	Bazele voluntariatului	II	III	15	15	-	E	2
7.	Protecția și planificarea familiei	III	V	15	15	-	E	2
8.	Dezvoltarea inovativă a carierei	III	V	15	15	-	E	2

Examenul de licență

Nr. d/o	Denumirea activității	Perioada	Credite
1.	Examen integrator: Economia și Managementul afacerilor	23.05 -31.05	4
3.	Susținerea tezei de licență	23.05 -31.05	5

Total

Cr. crt.	Componentele	Număr de credite
1.	1. Disciplinele fundamentale	63
	II. Discipline de creare a abilităților și competențelor generale	16
	III. Discipline de orientare socio-umanistică	17
	IV. Discipline de orientare spre specializare	57
2.	Stagii de practică	18
3.	Examenul de licență	9
	TOTAL	180
4.	Modulul de formare psihopedagogică	60

Matricea corelării finalităților de studiu a programului cu cele ale unităților de curs

Competențe generice	Unitățile de curs	Numărul de credite ECTS	Codul unității de curs	Competențe specifice																			
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Cunoștințe de bază în domeniu	Teoria economică (micro –și macroeconomia)	12	F.01.O.004 F.02.O.010	+						+	+							+					
	Limba străină (I, II, III, IV)	8	G.01.O.001 G.02.O.008 G.03.O.014 G.04.O.024	+								+						+				+	
2. Capacitatea de analiză și sinteză	Tehnologii de comunicare informațională	4	G.01.O.002	+							+								+				
	Principii de studiu prin metoda „Învățarea prin Cercetarea Problemei” (PBL – Problem Based Learning)	4	G.01.O.049	+					+	+	+			+	+	+		+		+	+	+	+
3. Capacitatea de a învăța	Matematică economică	6	F.02.O.004	+							+												
4. Capacitatea de comunicare (inclusiv utilizând o limbă străină)	Modul: Informatică economică și comunicare în afaceri:	6																					
	Informatică economică Correspondența și comunicarea în afaceri		F.01.O.050 S.01.O.005	+											+				+				
5. Spirit de inițiativă și antreprenoriat	Bazele managementului	6	F.01.O.006	+						+	+			+	+			+					+
	Etica și cultura profesională	4	G.02.O.009												+			+					+
	Bazele antreprenoriatului	6	F.02.O.011	+	+	+	+	+	+	+	+	+	+	+	+	+						+	+
6. Capacitatea de lucru în echipă	Statistica economică	6	F.02.O.012	+		+	+			+								+					
	Bazele contabilității	6	F.02.O.013	+														+				+	+
	Doctrine economice	4	U.03.A.015	+					+														+
7. Creativitate	Filosofia și logica activității economico-îngineresti	4	U.03.A.016	+														+				+	+
	Managementul producției	6	S.03.A.017	+								+	+					+					
8. Capacitatea de operare cu tehnologii informaționale	Tehnologia și merceologia	6	S.03.A.018							+									+				
	Metode și Tehnici de Management	6	F.03.O.019	+		+	+			+			+					+			+		
	Finanțele întreprinderii	6	S.03.A.020	+																			
9. Capacitatea de adaptare la culturile și obiceiurile	Finanțe	6	S.03.A.021	+					+		+								+				
	Dreptul afacerilor	6	S.03.A.022	+						+	+								+				
	Drept comercial internațional	6	S.03.A.023	+						+	+								+				
	Managementul proiectelor	6	S.04.A.051	+		+				+									+		+	+	+

[illegible]

1. Să demonstreze cunoștințe funcționale în următoarele domenii:
 - 1.1. Teorie economică – geneză, esență, metodologia și metoda, legități economice
 - 1.2. Management – evoluția științei management, conținutul principalelor, procese și funcții manageriale
 - 1.3. Marketing – elaborarea și realizarea, politici de marketing a întreprinderii
 - 1.4. Piețe – studierea, funcționarea și dezvoltarea piețelor de resurse, bunuri și servicii
 - 1.5. Clienți – factori de influență, procese de cumpărare și consum, modele de consum
 - 1.6. Drept – cunoașterea legislației privind antreprenoriatul și întreprinderile, micul business, protecția consumatorului, publicitatea din Republica Moldova
 - 1.7. Finanțe – managementul finanțelor, utilizarea contabilității și altor sisteme financiare
 - 1.8. Sisteme informaționale – dezvoltarea și exploatarea sistemelor informaționale cu impact asupra realizării funcțiilor manageriale în organizație.
2. Să inițieze o afacere
3. Să cunoască metode de identificare a ideilor de afaceri și evaluare a oportunităților
4. Să posede metode de evaluare și minimizare a riscurilor în afaceri
5. Să asigure desfășurarea activităților în conformitate cu legile și normele stabilite
6. Să ajusteze activitatea organizației la cerințele mediului ambiant
7. Să adopte decizii optime în condiții de certitudine, incertitudine, risc
8. Să elaboreze structura organizatorică a organizației
9. Să evalueze și să îmbunătățească eficiența și eficacitatea activităților din organizație
10. Să se auto-motiveze și să sporească eficiența propriei activități
11. Să formeze echipe și să dezvolte colaborarea
12. Să motiveze și să creeze relații de muncă productive
13. Să aplice sisteme de management al calității
14. Să comunice convingător și eficient
15. Să asigure și să gestioneze utilizarea eficientă a resurselor materiale, financiare și informaționale
16. Să organizeze procesul de cercetare în domeniul business și administrare
17. Să elaboreze o lucrare aplicativă ce se referă la soluționarea unei probleme din domeniul administrării afacerilor
18. Să elaboreze și să coordoneze realizarea proiectelor
19. Să cunoască aria de competență și implicare a managerilor de la diferite niveluri ierarhice
20. Să elaboreze judecăți bazate pe cunoașterea problematicei sociale și etice care apar în muncă sau studiu.

Nota explicativă

Domeniul general de studiu: **041. Științe Economice**

Domeniul de formare profesională: **0413. Business și administrare**

Denumirea programului de studii: **0413.1 Business și administrare**

Numărul total de credite de studiu: **180**

Titlul obținut: **Licențiat în științe economice**

Domeniul *Business și Administrare* are ca scop de a pregăti specialiști pentru activități de administrare a afacerilor, precum și conducerea diferitor subdiviziuni ale organizațiilor. La nivel de întreprindere specialistul din domeniul *Business și Administrare* este cel care trebuie să asigure buna desfășurare a tuturor activităților: achiziționarea resurselor economice, producerea / prestarea serviciilor, vânzările; formarea și perfecționarea structurii organizatorice a firmei, planificarea activității economice; dezvoltarea sistemului informațional; gestionarea resurselor umane. Totodată, absolvenții domeniului de formare Business și Administrare sînt potențialii antreprenori care vor crea locuri de muncă și noi perspective pentru progresul socio-economic.

La ciclul I (Licență) se vor instrui specialiști în domeniul *Business și administrare* fiind pregătiți pentru organizarea și gestionarea activității atât la nivel de agenți economici, cu diferite forme de proprietate (de stat, privată sau mixtă), cit și la nivel național: specialiști capabili să gîndească strategic și creativ, să adopte decizii calitative, lideri orientați spre îmbunătățirea performanțelor organizației, spre calitate și perfecționare continuă.

Pregătirea la această specialitate îi asigură titlul de Licențiat în științe economice. Ocupațiile tipice pentru absolvenții în domeniul Business și Administrare sunt:

- antreprenor
- manager/administrator
- economist
- agent de achiziții
- funcționar ocupat cu dispecerizarea producției
- agent comercial
- specialist în activități comerciale
- funcționar ocupat cu evidența,
- recepția și livrarea mărfurilor.

Planul de învățământ a fost racordat la obiectivele proiectului ERASMUS+ „Introducerea învățării bazate pe probleme în Moldova: Spre consolidarea competitivității și șanselor de angajare ale studenților / Introducing Problem Based Learning in Moldova: Toward Enhancing Students' Competitiveness and Employability”, fiind elaborat în conformitate cu prevederile:

1. Codului educației al Republicii Moldova, nr. 152 din 17 iulie 2014;
2. Legii privind aprobarea Nomenclatorului domeniilor de formare profesională și al specialităților pentru pregătirea cadrelor în instituțiile de învățământ superior, ciclul I, nr. 142-XVI din 07 iulie 2005;
3. Hotărârea Guvernului Nr. 482 din 28.06.2017 cu privire la aprobarea Nomenclatorului domeniilor de formare profesională și al specialităților în învățământul superior.
4. Planului-cadru pentru studii superioare (ciclul I - Licență, ciclul II - Master, studii integrate, ciclul III - Doctorat), aprobat prin ordinul Ministerului Educației nr. 1045 din 29 octombrie 2015;
5. Regulamentului de organizare a studiilor în învățământul superior în baza Sistemului Național de Credite de Studiu, aprobat prin ordinul Ministerului Educației nr. 1046 din 29 octombrie 2015;
6. Cadrlui Național al Calificărilor al Republicii Moldova și Cadrlui Național al Calificărilor pentru învățământul superior pe domenii de formare profesională.

Scopul programului-pilot este trecerea de la învățământul clasic (unde profesorul este furnizor de informații, iar studentul receptorul informației) la învățământ bazat pe PBL (studierea axată pe probleme), ceea ce ar permite formarea specialiștilor competitivi pe piața muncii și calificări în domeniul de formare profesională 363. Business și administrare, Specialitatea: 363.1. Business și administrare.

Toate disciplinele sunt repartizate pe module (cicluri), după cum urmează:

- Modulul disciplinelor fundamentale (cod F) – 63 credite;
- Modulul disciplinelor de creare a abilităților și competențelor generale (cod G) - 16 credite;
- Modulul disciplinelor de orientare socio-umanistică (cod U) – 17 credite;
- Modulul de orientare spre specializare (cod S) – 57 credite.

Absolventul obține titlul de Licențiat în științe economice la îndeplinirea integrală a planului de învățământ, promovării probelor de evaluare, inclusiv examenului de licență, conform sistemului de notare în Republica Moldova cuprins între 1 și 10 puncte, notele de promovare fiind 5 – 10, și acumulării a 180 credite transferabile conform Sistemului European de Credite Transferabile (ESTC).

Programul de studii s-a bazat pe obiectivele și cerințele Cadrlui Național al Calificărilor conform Domeniului general de studii: 36. Științe Economice, Domeniului de formare profesională: 363. Business și administrare, Specialitatea: 363.1. Business și administrare.

Cadrlui Național al Calificărilor presupune următoarele finalități:

1. Să demonstreze cunoștințe funcționale în următoarele domenii:
 - 1.1. Teorie economică – geneză, esență, metodologia și metoda, legități economice
 - 1.2. Management – evoluția științei management, conținutul principalelor procese și funcții manageriale
 - 1.3. Marketing – elaborarea și realizarea, politici de marketing a întreprinderii
 - 1.4. Piețe – studierea, funcționarea și dezvoltarea piețelor de resurse, bunuri și servicii
 - 1.5. Clienți – factori de influență, procese de cumpărare și consum, modele de consum
 - 1.6. Drept – cunoașterea legislației privind antreprenoriatul și întreprinderile, micul business, protecția consumatorului, publicitatea din Republica Moldova
 - 1.7. Finanțe – managementul finanțelor, utilizarea contabilității și altor sisteme financiare
 - 1.8. Sisteme informaționale – dezvoltarea și exploatarea sistemelor informaționale cu impact asupra realizării funcțiilor manageriale în organizație.
2. Să inițieze o afacere
3. Să cunoască metode de identificare a ideilor de afaceri și evaluare a oportunităților
4. Să posede metode de evaluare și minimizare a riscurilor în afaceri
5. Să asigure desfășurarea activităților în conformitate cu legile și normele stabilite
6. Să ajusteze activitatea organizației la cerințele mediului ambiant
7. Să adopte decizii optime în condiții de certitudine, incertitudine, risc
8. Să elaboreze structura organizatorică a organizației

9. Să evalueze și să îmbunătățească eficiența și eficacitatea activităților din organizație
10. Să se automotiveze și să sporească eficiența propriei activități
11. Să formeze echipe și să dezvolte colaborarea
12. Să motiveze și să creeze relații de muncă productive
13. Să aplice sisteme de management al calității
14. Să comunice convingător și eficient
15. Să asigure și să gestioneze utilizarea eficientă a resurselor materiale, financiare și informaționale
16. Să organizeze procesul de cercetare în domeniul business și administrare
17. Să elaboreze o lucrare aplicativă ce se referă la soluționarea unei probleme din domeniul administrării afacerilor
18. Să elaboreze și să coordoneze realizarea proiectelor
19. Să cunoască aria de competență și implicare a managerilor de la diferite niveluri ierarhice
20. Să elaboreze judecăți bazate pe cunoașterea problematicii sociale și etice care apar în muncă sau studiu.

Ansamblul metodelor și procedeele didactice utilizate în procesul formării vor fi atât metodele tradiționale (prelegeri și seminare), modificate și completate în funcție de obiectivele propuse, cât și metodele moderne, interactive orientate spre cultivarea interesului, motivației, activismului, colaborării sociale, spiritului de organizare, inițiativei, inventivității și creativității.

În procesul de studii se va pune accent pe metodele activ-participative (interactive), care sporesc potențialul intelectual al beneficiarilor prin angajarea unui efort personal în actul învățării și pregătirii studenților pentru o viață profesională activă și creativă. Se vor utiliza forme de organizare flexibile și diversificate, specifice naturii conținuturilor și desfășurării activității cu adulții, care asigură o învățare formativă, operațională, de dezvoltare, axate pe formarea de capacități operaționale, procese psihice, deprinderi, atitudini, convingeri, valori, idealuri și aspirații, schimbări de mentalități (prelegerii, seminare, instruirea asistată de calculator, laboratoare și ateliere etc.). Se vor îmbina în mod specific, pentru diferitele situații, metode și procedee precum: studiul de caz, jocul de rol, conversația euristică, dezbateri, brainstorming, problematizarea, investigația, proiectul, explorarea din unghiuri de vedere multiple, discuția panel, argumentarea și contra argumentarea, învățare academică independentă etc.

Susținerea personală a fiecărui student va fi asigurată de sistemul de tutorat.

Evaluarea va viza eficacitatea activităților educaționale prin prisma raportului dintre obiectivele proiectate și rezultatele obținute de către studenți în activitatea de învățare. Ea se va realiza de către profesori și va viza nu numai cunoștințele, ci și competențele, capacitățile și atitudinile.

Evaluarea va avea o funcție pedagogică complexă:

- a) din perspectiva celui evaluat – de stimulare, de întărire a rezultatelor, de formare a unor abilități, de conștientizare a propriilor posibilități, de orientare profesională pozitivă;
- b) din perspectiva celui care evaluează – de apreciere a eficienței celor întreprinse de el și a modificărilor necesare pentru realizarea plenară a obiectivelor.

Planul de învățământ a fost aprobat la ședința Catedrei de Economie și Management în Afaceri și Servicii.

Appendix 6: 2017 Programme Flyer

PERSPECTIVE PROFESIONALE

Absolvenții au posibilitatea să execute o varietate de activități comerciale și manageriale, activând în calitate de:

- Întreprinzător
- Manager
- Economist
- Coordinator de proiect
- Consultant/instructor
- Agent comercial
- Funcționar în instituțiile publice

OPORTUNITĂȚI de continuare a studiilor

⇒ Ciclu II, Masterat
⇒ Programe de colaborare cu universități din alte țări





BUSINESS ȘI ADMINISTRARE

Program de studii re-proiectat în cadrul proiectului Erasmus plus „Introducing Problem Based Learning in Moldova: Toward Enhancing Students Competitiveness and Employability -PBLMD”

<http://www.pblmd.aau.dk>





Universitatea de Stat „Bogdan Petriceicu Hasdeu” din Cahul

NOI ÎȚI OFERIM O ȘANSA!

or. Cahul
Piața Independenței, nr.1
+373 299 22481
www.usch.md



Universitatea de Stat „Bogdan Petriceicu Hasdeu” din Cahul



BUSINESS și ADMINISTRARE

BUSINESS ADMINISTRATION



Facultatea de Economie, Inginerie și Științe Aplicate



DESPRE PROGRAM

Programul de studii Business și Administrare are drept scop formarea specialiștilor cu o pregătire universitară (ciclul I, Licență) pentru activități ce se referă la management, inițierea și administrarea cu succes a afacerilor, indiferent de mărime și domeniu de activitate, precum și asociații necomerciale și în administrația publică

DURATA STUDIILOR:

3ani / 6 semestre

LIMBA DE INSTRUIRE:

Română/ Engleză

CREDITE DE STUDIU ECTS:

180

TITLUL OBȚINUT:

Licențiat în științe economice

BAZA ADMITERII:

Diploma de bacalaureat sau un act echivalent de studii, diploma de studii superioare



METODE DE PREDARE- ÎNVĂȚARE

Programul de studii este bazat pe noile metode de predare-învățare centrate pe student, inclusiv: învățarea bazată pe probleme (PBL), proiecte, lucru în echipă, e-Learning, co-predare cu profesori din universități străne

OPORTUNITĂȚI DE PRACTICĂ

Programul de studii prevede stagiul de practică în anul II (practica de specialitate), proiectul economic (proiect interdisciplinar și inter-universitar, elaborat în grup de către studenți de la 6 universități) și stagiul de practică de specialitate și de cercetare (elaborarea tezei de licență) prevăzut în anul III de studii.

OPORTUNITĂȚI DE STUDII PESTE HOTARE

30 de studenți, cu rezultate academice bune, vor studia 1 semestru (anul 2) la Universitatea Aalborg din Danemarca sau Universitatea din Gloucestershire, Marea Britanie. Mobilitatea va fi finanțată în cadrul proiectului PBLMD - „Introducing Problem Based Learning in Moldova: Toward Enhancing Students Competitiveness and Employability”, Programul ERASMUS+ al Uniunii Europene

CONȚINUTUL PROGRAMULUI

Teoria economică I - II (microeconomia; macroeconomia) / Bazele managementului / Metode și Tehnici de Management / Bazele antreprenoriatului / Bazele contabilității / Finanțele întreprinderii / Dreptul afacerilor / Marketing / Managementul producției / Managementul resurselor umane / Managementul riscurilor / Managementul aprovizionării / Managementul calității / Managementul inovațional

COMPETENȚE DOBÂNDITE

La finalizarea de studii absolventul va fi competent:

- Să demonstreze cunoștințe funcționale în domeniu;
- Să rezolve problem din domeniul administrării afacerilor;
- Să comunice convingător și eficient, inclusive într-o limbă de circulație internațională
- Să inițieze și dezvolte o afacere;
- Să asigure desfășurarea activităților în conformitate cu legislația în vigoare;
- Să utilizeze tehnologiile informaționale;
- Să adopte decizii în condiții de risc și incertitudine;
- Să utilizeze și gestioneze eficient resursele disponibile;
- Să elaboreze și să coordoneze realizarea proiectelor;
- Să aplice principiile, valorile și normele eticii profesionale.



Pentru mai multe informații despre program, rugăm să vizitați site-ul nostru:
<http://feisa.usch.md/wp-content/uploads/2016/11/plan-BA-zi.pdf>

Appendix 7: Lessons learned from implementing pilot PBL-based study programme (BA și C)

Lessons learned from the PBL implementation and development of pilot programmes (BA and C)

		Problems identified	Recommendations
1	Group formation	<p>1. Students do not know enough, they do not know the concerns and areas of interest of their colleagues.</p> <p>2. Lack of communication prevents them from grouping in accordance with informal values and visions.</p> <p>3. It is noticeable for the first year, afterwards it behaves more collegially</p> <p>3. It is difficult to form uniform groups according to personal capacities and level of knowledge. Always predominant friendship and personal preferences to team up with certain people.</p> <p>4. It is difficult to form uniform groups according to personal capacities and level of knowledge. Always predominant friendship and personal preferences to team up with certain people.</p>	<p>1. It is necessary to devote more time to team building. These activities should be carried out even during the first hours of the course.</p> <p>2. Establish more tasks in teams to develop skills for students</p> <p>3. It is recommended to train the teams by a group of teachers guiding the disciplines involved in the elaboration of joint projects to facilitate the creation of homogeneous and effective groups, as well as the possibility to change the composition of the groups created in case of strict necessity (conflicts, quarrels, in a group of students)</p>
2	Choice and formulation of problems for study	<p>1. Researching interdisciplinary issues risks excluding the accumulation of specialist skills.</p> <p>2. Problems are picked from known practices-you must</p> <p>The formulation of problems for studies greatly depends on the willingness of economic agents to provide the necessary information.</p>	<p>1. Choice of problems by students must, however, have certain limits. These limits are conditioned by the subject of the courses to which the research project is conducted.</p> <p>2. Challenge from the very first hour through important issues, practices related to the discipline taught to the students.</p> <p>3. It is recommended to advise a group of student teachers to identify issues to be studied in PBL mini-projects</p>
3	Elaborating the timetable (allocation of time for lectures,	1. The traditional start of the course teaching the theoretical part does not facilitate the	1. Start the 2-4 introductory hours on the course (with the presentation of the

		Problems identified	Recommendations
	seminars, laboratories, project work)	<p>creation of the research teams of the problem.</p> <p>2. Students are placed on "waiting" until seminars without working on team training or identifying the problem.</p>	<p>goals, tasks and finalities), after which the establishment of teams starts.</p> <p>2. It is advisable the student to make visits to model organizations / enterprises in the first 2-3 weeks of the course, reflecting the areas / objectives of the semester course.</p> <p>3. The Project work is welcome to be individual</p>
4	Monitoring the project development activity	<p>1. It is missing the communication of teachers included in mini projects or the interdisciplinary project.</p> <p>2. It is hard to monitor the activity of each member of the team</p>	<p>1. It is reasonable to organize 2-3 mid-term evaluations of the projects with the participation of all the teachers who hold the courses in the semester module.</p> <p>2. Dismantling the integral project on stages seen by the team, so that the team will share each member a task according to the vocation of each.</p>
5	Student assessment module	<p>1. In evaluating the project as a whole it is difficult to appreciate the individual knowledge and contribution of each student.</p> <p>2. The evaluation is done based on the team participation and not on the degree of participation of each person.</p> <p>3. Evaluating mini-projects developed by students is done only by a group of teachers who guided the activity.</p>	<p>1. Organize mid-term evaluations of the project with student analysis and individual assessment.</p> <p>2. Theoretical knowledge should be evaluated not only in relation to the project but also the theoretical aspects of the semester courses.</p> <p>3. The practical competences of the courses must be evaluated by assessing the student's individual activity within the project.</p> <p>4. In order to evaluate the project and the student, it is necessary to determine the tasks / topics or mandatory aspects and the mandatory conditions that must be fulfilled and found in the project.</p> <p>5. Periodic evaluation of the teams to see the degree of fulfillment of the task, thus observing the degree of involvement of each.</p> <p>6. It is recommended the participation of economic agents who provided the necessary information to the students and on the basis of which the projects were developed to support them in order to find solutions to the problems identified by the students and to</p>

		Problems identified	Recommendations
			express the opinion on the activities of the group and the results obtained.
6	The link between the subjects included in the project / educational plan	These links are warranted in USC's educational plan.	

Sustainability strategy

Problem-based learning and teaching at the State University of Moldova

Work Package 5

Elaborated by: NICULIȚA Angela, PhD, assoc.prof., vice-rector of SUM

ZAMFIR Natalia, team leader „Study programme”

VIDAICU Mihaela, member of the team

CARA Aliona, member of the team

Evaluated by: John Reilly (external expert), University of Kent, United Kingdom

Olle ten Cate (external expert), University of Utrecht, The Netherlands

Ralph Dreher, University of Siegen, Germany

Olga Kordas, Royal Institute of Technology, Sweden

Colin Simpson, University of Gloucestershire, United Kingdom

Olav Jull Sørensen, Aalborg University, Denmark

Louise Faber, Aalborg University, Denmark

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Chisinau, 2019

Summary

The current graduates of law faculties face a world where law and its practical application are under an ongoing transformation, which is due to European integration and globalisation. These developments inevitably generate new challenges for the legal education. Globalization and Europeanisation of law and legal practice calls for the education of a new generation of graduate lawyers, which requires the reconsideration of the educational plan and the curriculum of legal disciplines, focusing on a study programme with interdisciplinary approaches. In this context, the educational offer of the Law Faculty must be adapted permanently to the legislative novations, achievements in the field of law science, labour market demands and socio-economic realities of the Republic of Moldova, but also due to its specific character, to existing tendencies in international and European life.

The training of specialists responding to the needs of the labour market is one of the basic tasks of higher education institutions. The PBL strategy is considered one of the learning strategies that reorient the educational process towards solving real and practical problems, thus preparing students for a productive professional activity. Students are seen not only as studying young people, but also as agents of change and promoters of the various effective mechanisms needed by employers.

Today we have various opinions on the implementation of the PBL model in the higher education institutions of the Republic of Moldova, including in the Faculty of Law of the SUM. Obviously there are both supporters of this model and those who oppose it. One thing is certain: the key to success in the teaching-learning process is to find the right balance: where to draw that line/margin limiting the freedom of students, taking into account the institutional framework, the legal framework, the traditions, but in the same time to have the courage to allow students to tailor their own way, take responsibility and learn from their own mistakes.

The need for a new Law programme, which contains as a basic requirement the elaboration of a minimum one semester project in the group, by which they resolve a practical problem in the group, comes to strengthen the practical skills of future graduates, contributing to the increase of their employability. In this respect, the Law study programme should be designed on the basis of a long-term strategy, which will ensure the modernisation of legal education through projects, favouring the training of competences, by systematically analysing professional needs and employment opportunities of the graduates.

List of definitions

PBL - student activity model with group task assignment to solve a problem, which is the cumulative result of activities from several courses, constituting an interdisciplinary product, guided by the teacher responsible and evaluated by practitioners in the field.

Student-centered learning - teaching and learning process in which the student becomes a partner in the educational process, and the teacher-student relationship is based on cooperation and collaboration.

Self-guided learning – teaching and learning process that emphasizes the student's responsibility to create learning and experimentation environments, in which they discover knowledge, make discoveries and solve problems on their own.

Learning objectives – general competences by training fields required for graduates of study programmes.

Learning outcomes - clear results, describing the student's knowledge or skills, expected from the teaching-learning process.

Progression – succession of expectations from the teaching-learning process in several stages.

Assessment - multicriterial examination of students' knowledge accumulated in the learning and teaching process.

Projects – are tasks given to students which consist of research and analysis of a problem (both theoretical and practical) and the generation of new approaches or solutions. Projects can be individual and in group.

Semester projects – are the projects carried out by students (usually in the group) during a semester. These projects may have inter-disciplinary character (may refer to two or more disciplines studied during the same semester).

Group/team work – is the joint work of a group of 4-5 students to perform a single task, which is based on communication, collaboration and self-discipline, each member of the group contributing to the achievement of the final result.

Research-based teaching and learning - the process of transmission and accumulation of knowledge, as well as the creation or development of skills that are based on some research tasks and aims to facilitate the learning (including individual) process of students.

Research-based teaching - is the process by which the student is involved in research exercises and is encouraged to reach his/her own conclusions and solutions using the results of the research carried out.

Sustainability strategy – is a long-term vision of an institution aimed at introducing key modifications in order to streamline the teaching-learning process. The strategy includes objectives and concrete actions, the deadline for achievement, as well as the potential outcomes that can be achieved.

(a) the path from a pilot programme to a comprehensive study programme based on problem-based learning (PBL) - the concrete steps to introduce PBL in a study programme

(b) support and promotion of PBL for teaching and learning - performing information and training measures about the advantages and efficiency of PBL.

Credit (ECTS) – the credit is a conventional unit used to calculate the workload performed by the student within a determined time period to achieve certain outcomes and competences. The credit is a tool to ensure the quality of the training.

ECTS (European Credit Transfer and Accumulation System) - European system of accumulation and transfer of credits. The Bachelor's degree studies correspond to 180-240 of transferable study credits, with 30 credits per semester.

Profile degree – the educational framework to be known by graduates in order to obtain the title of Bachelor, Master.

Professional development – opportunities offered to the teacher to strengthen their pedagogical skills, competences and approaches; continuous improvement of staff through trainings, internships, etc.

Facilitator – the person who helps a group of students understand their common goals and helps them plan how to achieve the objectives set out in the joint project.

Internship placement (training/practice) – institution/organization where students will conduct internship/training.

Quality assurance – a systematic monitoring and evaluation programme of the different aspects of a project in order to ensure compliance with quality standards.

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1 INTRODUCTION

The purpose of this work package - WP4 - is to develop a sustainable strategy for ensuring the learning and teaching process centered on the student at the Faculty of Law, the State University of Moldova. Specifically, this report will propose an innovative Bachelor's degree study programme based on PBL at the Faculty of Law. Also, it contains the action plan and the roadmap 2019-2022 comprising the stages of implementation of the PBL-based study programme in the Faculty of Law, the SUM.

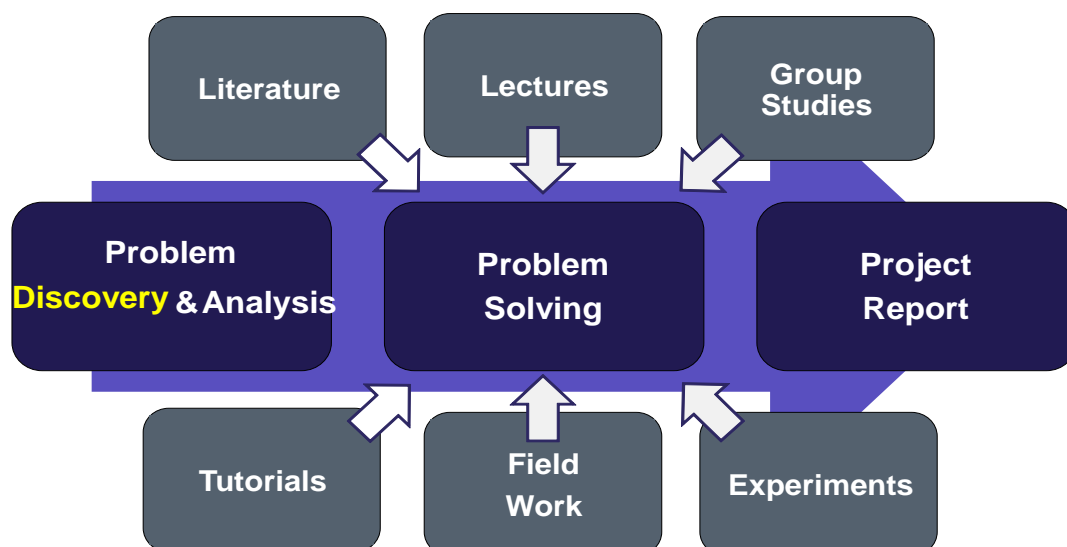
In this report we rely on the experience of applying the PBL method following the implementation of the pilot Bachelor's degree study programme, implemented since 1 September 2017, and on the analysis carried out in the WP2-WP4 that we developed in the period 2015-2017. We also rely on the experience we have accumulated during our study visits and staff mobility at EU partner universities, as well as during the PBL training sessions offered by EU project partners in Chisinau.

1.1 Key assumptions

There is no suitable PBL model for all purposes. However, PBL-based models are mainly based on three key assumptions:

1. The first assumption is that work on the project is at the *centre*, at the base, consisting in the discovery and analysis of problems, problem solving and the report on the project (Figure 1).
2. The second assumption assumes that the other teaching and learning activities (face-to-face), such as literature, lectures, group studies and tutorials, are designed to *support* work on the project.
3. The third assumption refers to the relationship between the work on the project and the face-to-face activities.

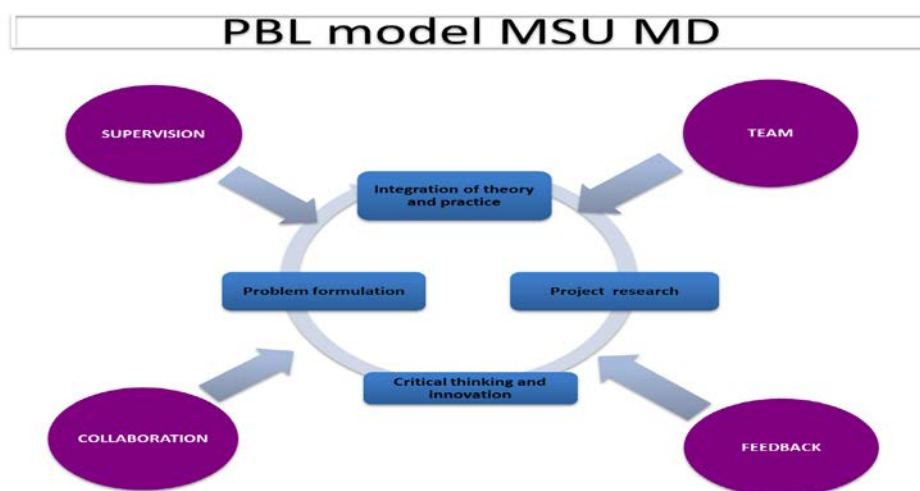
Figure 1: The PBL model at AAU: an example



Source: AAU, 2017 (word 'Discovery' is introduced by Romeo V. Turcan)

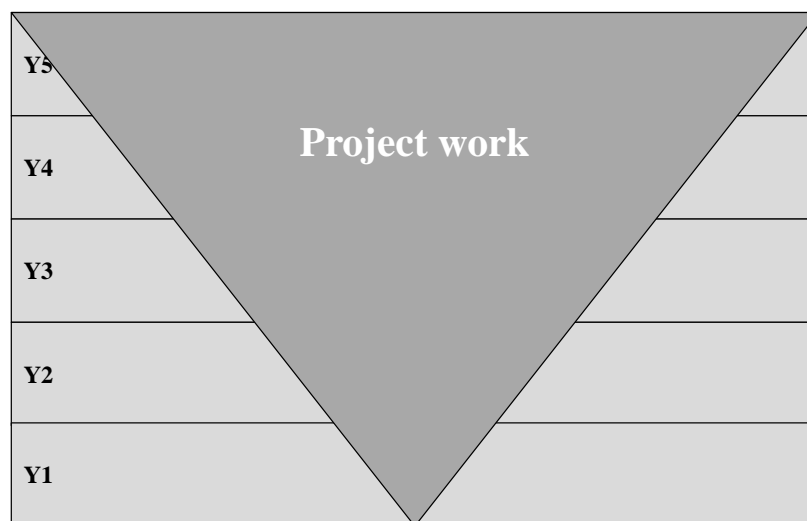
The concept of implementation of the PBL in the proposed educational plan for Law is unique compared to the specializations of other faculties, from two points of view: the introduction in the educational plan of a working model with the projects in the group of students, which will represent the cumulative result of activities from several courses, constituting an interdisciplinary product; on the other hand, this study programme wants to correlate the theory with practice, implements a new co-teaching system, ensures the guidance of the student group to solve the problem by the responsible professor and a practitioner in the field (who will assist in assessing the group work as an external assessor) for the purpose of modernising law education based on Western academic experiences.

Figure 2: PBL application, the SUM MD model



In the context of this report, in full, based on PBL means a study programme in which there is a share of approximately 50:50 between the work of students on the project and the face-to-face activities (such as lectures, seminars, workshops, laboratories and experiments). An example of progression is shown in Figure 3.

Figure 3: An example of 50:50 time sharing between project work and face-to-face activities



Source: Louise Faber, PBLMD 2016

Figure 4: Study programme based on PBL in law, SUM

VIII	Internship + Thesis + Bachelor's degree exam (20)		
PBL 30	National, regional and international mechanisms for the protection of human rights		
VII	Intellectual property (5)		CEDO law (5)
VI	Private international law (6)		
PBL 26	Labour law (6)	The impact of legislative changes on exercising the right to work	Finance law
	Social protection law		Tax law (6)
V	Commercial law(5)	Impact of the harmonization of national environmental legislation with international and EU standards	Environ. law (6)
	Int.Public law(5)		
IV	Criminal law (5)	Evidence and judicial civil / criminal probation (on various offenses)	Civil Process (5)
PBL 20	Forensic (5)		Criminal Process (5)
	Civil law (5)	Particularities of EU law	EU institutions law (5)
III	Criminal law (5)	in relation to domestic and international law	Contravention law(5)
II	Civil law (6)	Administrația publică și reformele administrative	Administrative law(6)
PBL 18	Criminal law (6)		Family law (5)
I	Constitutional law (6)	Constitution - the fundamental law of the country	Intr. into speciality (5)
	GTL+History of law (8)		

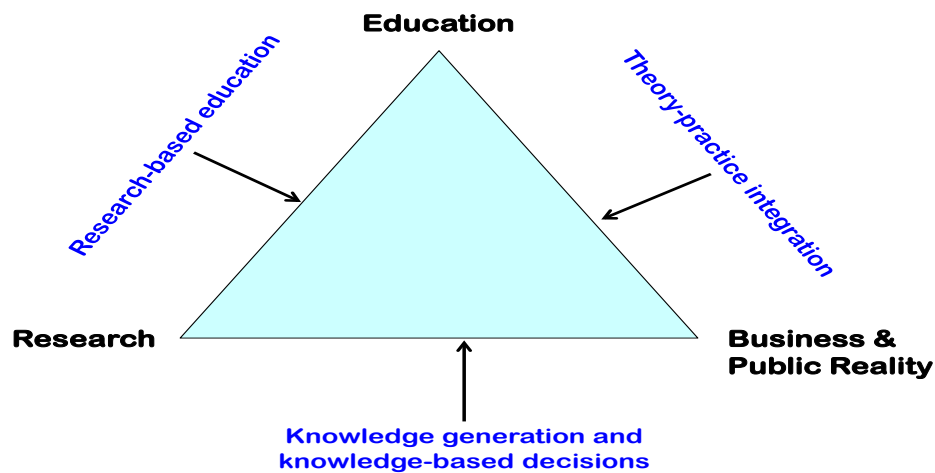
1.2 Expected outcomes

The new concept of the educational plan at the Faculty of Law involves integration into transferable skills identified with the help of employers, as well as developing problems based on experiences in the practice of potential employers, which will help to facilitate the employment process of students, by attracting practitioners to the realisation and evaluation of semester projects. Moreover, this programme will give students the opportunity to apply to mobility projects, being already much better prepared to attend courses in the field of law at other universities. This programme was developed for the Faculty of Law, but this concept is expected to be expanded to other the SUM faculties.

It is expected that by 2022 the innovative Bachelor's degree study programme based on PBL at the Faculty of Law will become internationally recognised and attract European and international students. For this reason, it is anticipated that by 2022 the educational plan at the Faculty of Law will be redesigned on the basis of the PBL, the methodologies and methods of teaching and learning centered on the student and admission to this programme will begin on 1 September 2022.

The successful implementation of the PBL-based Bachelor's degree study programme in the Faculty of Law, as well as its dissemination effects throughout the university, will contribute to the development and consolidation of the integration of education, research and cooperation with representatives of potential employers (Figure 5). The teaching staff will excel in research-based teaching, students will learn and apply theories in practice, in the private or public sector, and our researchers will collaborate with private and public organisations to create and transfer new knowledge.

Figure 5: University with active social involvement



Source: Olav J. Sorensen, 2015

1.3 Key ideas of the report

The deepening of practical knowledge, as well as the development of professional competences, will be ensured in a training programme based on problems in the legal field. Based on the lessons learnt on the application of the PBL method in the implementation of the Bachelor's degree pilot study programme in Law, implemented since 1 September 2017, a new Bachelor's degree programme based on PBL is proposed in the Faculty of Law.

The report will present the vision of the Bachelor's degree programme in Law, in particular, with a general description of the study programme, the objectives and learning outcomes, and then a presentation of each semester, including its learning objectives and learning outcomes, the transition from one semester to another, the description of work on the project and the semester projects, including learning objectives, results and their assessment. Thereafter, the roadmap will be presented which will guide the implementation process of the Bachelor's degree programme based on PBL in Law. It will continue with the action plan that will detail, for example, specific activities, resources and internal policies needed to successfully implement the visionary study programme. It will conclude by providing university management and the University Council with a set of policy recommendations on how to improve teaching and learning by introducing PBL, methodologies and methods of education and active learning centered on student at our university.

2 LESSONS LEARNED FROM THE DEVELOPMENT AND IMPLEMENTATION OF THE PBL PILOT STUDY PROGRAMME

The aim of ensuring effective application of the PBL model is to reorient the educational process at the Faculty of Law to stimulate the solving of real and practical problems, thus preparing students for a productive professional activity.

Therefore, on the basis of the observations and discussions within the working group on the application of the PBL, we highlight the following issues (lessons learned).

I. Formulation of the problem

Problems identified

The formulation of the problem is done at the first practical lessons, given that the work on the project lasts either a semester (usually) or a year. In this respect, for most students it is difficult to choose the subject of the project or the problem subject simply because they do not have any theoretical knowledge in the field of that discipline.

Example: In practical lessons at the discipline "Administrative law" students were asked to formulate the themes for research projects on their own. Most of them chose very current topics: "Consultation of citizens in local problems of particular interest", "The mayor's grounds for revocation", etc. Some students, however, found it difficult to formulate a research theme or to identify a current problem.

Example: In the discipline of *Civil law (special part)*, initially, students were very reluctant to choose the work group, especially being accustomed to a preset kind of activities (report writing, analysis of the decisions).

Este necesar de menționat că în prezent majoritatea profesorilor sunt cei care formulează probleme sau subiecte de cercetare, uneori chiar prezentând și careva soluții din cadrul cărora studenții trebuie să aleagă varianta corectă, în acest sens studenților nu este oferit dreptul de a formula unele probleme autentice, actuale din punctul lor de vedere.

It is necessary to note that at present most teachers are the ones who formulate problems or research topics, sometimes even presenting some solutions from which students must choose the right option, in this respect the students are not offered the right to formulate some genuine, current problems from their point of view.

Lessons learned

An important role in identifying the research theme is the teacher/provider of the course, who, in the first theoretical and practical lessons, must make an overview of the subjects included in the curriculum of the discipline.

We believe that in order for students to be able to identify current problems, it is necessary to work as closely as possible with future employers, through the organisation of round tables, joint conferences, visits by students of the state and non-state institutions, conduct of internship in the

prosecutor's office, courts, ministries, etc. Employers are the ones who can explain to students what are the most important and current problems etc.

The problem can be both theoretical and practical, but it is necessary to be formulated in such a way that it can be analyzed and resolved, sometimes even from an interdisciplinary point of view. We believe that in this respect students need to be offered greater freedom, giving them the right to formulate some complex and real problems, but also interesting for the learning process.

II. Group formation

Problems identified:

- The problem, in the formation of groups, is that there are students who want to elaborate the project only individually;
- Shortcomings in the allocation of students into groups and involvement of the teacher in solving psychological conflicts (in some cases the unwillingness to work with colleagues, or the lack of experience of working in the group).

Lessons learned

The formation of groups is determined by the problem or subject proposed for research. Every student writes on a note the problem that he/she wants to research. The notes are collected by the teacher, who subsequently unites them in groups. Obviously, students can formulate absolutely different problems, but the teacher's task is to choose topics that have some common points and help students to formulate a more complex problem.

The roles within the group – students can be asked to share their roles within the group (the leader, the person organizing the work of the group, the person to present the work of the group, the person collecting the information). These roles can be changed during work on a rotating basis.

The way the facilitator could effectively distribute his time would be inviting students who have already taken this course as co-facilitators. The facilitator can propose to students to draw up the working rules within the group or provide them with a set of rules already prepared.

The formation of groups must begin in the first few class hours to have sufficient time to consolidate as much as possible the teams formed. The consolidation of groups can be done by involving groups in different team-building exercises or by which members of the group would be able to get to know each other better from the perspective of learning and interaction within the group.

III. Monitoring the project development activity

Problems identified:

- The low work yield of some students within the group and the willingness of colleagues to justify the lack of their willingness to actively get involved;
- Ignoring the teacher's requirements to present the results of the project;
- Other problems, such as disorganization of the group, monopolisation of the group and others to be solved by the facilitator in a way that stimulates the interaction of group members and emphasize the contribution of each member of the group to achieve the common result;

- The teacher has devoted long extracurricular time to work with each group;
- Difficulties at the monitoring stage on finding a room equipped with enough computers and Wi-Fi connection.

Lessons learned

The introduction of the clear and detailed methodological aspects of the application of the PBL, specific to the discipline in the curricula, raises the students' responsibility for working in the group. *The implementation of the PBL model requires the need to explain in the first seminars clear rules for students at each stage (formulation of the problem, distribution of team roles, monitoring and evaluation requirements of the project).*

The process of facilitating student learning must encourage thorough learning. This is to be done by the tutor/facilitator through different ways. Motivating students and their interest may be provoked by the teacher's creativity, which can render this process the internationalised and interdisciplinary character.

It would be appropriate for the students of the year I to be taught an initiation module in PBL in the context of the *Introduction to specialty* discipline.

At each stage of monitoring the project, the teacher must supervise not only the degree of project realization but also methodological aspects (roles distributed in the group, identification of communication problems, etc.)

Taking into account the workload and motivation of teachers, we consider it necessary to revise the remuneration of their work by increasing the number of hours devoted to the guiding of the group work and evaluation of the students.

The wide use of the Moodle platform, social networks and Skype, especially in organizing group work, providing group study rooms at student's choice, free WiFi connection within the institution, access to the University library.

IV. Student assessment

Problems identified

1. Deficiency in the assessment of each student in the group due to the fact that those with a low work yield based on the group's arguments;
2. Another very important problem is how the teacher appreciates the learning outcomes;
3. The involvement of practitioners (external assessors) at the stage of the assessment of the work performed in the group, bears a non-systematic, individual character and is based on the teacher's personal relationships, and attracting them on permanent principle requires motivation.

Lessons learned

It is recommended that at the assessment stage the students members of the project teams to be offered the possibility to assess their team mates with marks, depending on the involvement and work done in the project.

Both the success of this experience and the motivation of students to engage in different learning activities depends on the assessment method chosen. It is recommended to diversify the forms of assessment, comprising the evaluation of the process and the product of the learning process. The involvement of the group members may constitute a percentage part of the final mark.

The implementation of the PBL involves the integration into the curriculum of the transferable skills identified with the help of employers, as well as the evaluation of some problems based on the practical experience of potential employers.

3. VISION ON THE BACHELOR'S DEGREE STUDY PROGRAMME IN LAW BASED ON PBL

3.1 Overview

The fundamental mission of the Law programme consists in the formation of highly qualified specialists in the field of public law and private law. Thus, one of the main objectives consists in the training of highly skilled specialists who will be able, both through scientific and practical activity, to contribute to the edification in the Republic of Moldova of a State based on democratic principles recognised by the international community in general and the European one, in particular.

The purpose of the Law programme consists in the formation of competences in the field of law, as well as the formation of a research nucleus, in which students, in collaboration with the specialists in the field will study the disciplines in the educational plan.

The educational plan is adjusted to national legislation and the provisions adopted at EU level, based on the European Credits Transfer System (ECTS) (**Regulation on the Organisation of Higher Education Studies based on the National System of Study credits**, <http://usm.md/wp-content/uploads/2012/08/3.-Regulamentul-de-organizare-a-studiilor-în-învățământul-superior-în-baza-Sistemului-Național-de-Credite-de-Studiu.pdf>) and connected to the educational plans of other Universities in the country (www.uspee.md; www.ulim.md) and abroad.

The educational is elaborated in accordance with the standards set out in the framework plan for higher education (<http://usm.md/wp-content/uploads/2013/02/Plan%20cadru%202011.pdf>) and the Regulation on the organisation of the educational process at the State University of Moldova approved by the SUM Senate through the Minutes No. 9 of 25.04.2006 and reupdated in 2012, minutes No. 2 (www.usm.md). The duration of full-time studies is 4 years, and for part-time studies – 5 years.

The study disciplines in the educational plan are distributed based on the following logic: studying the disciplines forming general competences; acquisition of key concepts in the field of law and presentation of the evolution of law systems in retrospective and comparative aspect; acquiring key knowledge in various branches of law; acquisition of knowledge and training of skills of judicial procedure in various branches of law.

The specialty of Law aims to achieve the objectives by:

1. Forming graduate's professional competences based on theoretical and practical training in the field of law.

2. Training of research skills in the field of jurisprudence on the basis of the scientific composition. In this respect, the preparation of the specialist for the purpose of investigating the conflicting problems of the case-law is sought.

3. Ensuring the conditions for multilateral development of the future specialist, the formation of civic position and the ethical dimension of personality.

4. The training of competences is achieved through direct teacher-student contact and individual work.

Pedagogical strategies are distinguished by: centring on the student – not only in terms of methods, but also the their knowledge interests; the use of dialogue – the dialogue involves a continuous process of critical and creative exploration of the world; promoting knowledge linking; development of critical thinking; the promotion of values and the formation of attitudes; personal contribution to addressing the theme subject to discussion, so that all participants in the activities assess the needs/causes of phenomena, develop proposals, create action plans and share the results of their actions.

Verification of knowledge in the dialogues initiated in courses, solving group problems, presenting reports, testing, presenting individual work. Students will be subject to periodic summative assessments. The final assessment is in the form of a written exam. The final mark will take into account the share of 60% of the student's current success in the course and 40% of the exam mark.

The most effective way of training professional skills is the PBL strategy (problem-based learning), which is carried out through projects. The application of group projects contributes to the creation of favourable conditions for the formation of general competences, which are of a transversal nature. Teamwork shapes the system of attitudes, values and behaviour of the person, prepares him for professional activity in the work team.

Specialists trained in Law speciality, holders of the Bachelor's degree in Law can work in the courts, prosecution, lawyer offices, Ministry of Justice, Ministry of Internal Affairs, legal directions and departments of central and local public administration authorities, institutions, organisations, public and private enterprises, the Constitutional Court, the apparatus of parliamentary lawyers, institutions of judicial expertise; non-governmental organisations for triation and mediation of disputes; non-governmental organisations specialised in defending human rights; Moldovan bodies abroad; international and regional governmental organisations, as well as in any other areas requiring the protection, supervision, observance of the rights, freedoms and interests of persons or values protected by law.

The outcomes of the study programme in the field of professional training of Law are achieved by forming the following general competences:

- Application of group networking and effective teamwork techniques, by assuming various roles;
- Achieving in time, within the conditions of efficiency and effectiveness of professional tasks, by respecting the principles of ethics of scientific activity; rigorous application of citation rules and rejection of plagiarism;
- Identification and use of effective learning methods and techniques; wwareness of the extrinsic and intrinsic motivations of continuous learning;
- efficient use of communication resources and sources of information, assisted professional training sources, both in the Romanian language and in an international language.

In order to ensure effective application of the PBL model, the following specific competences must be developed:

- Awareness of the key problem in the area of interference between legal areas,
- conducting a diagnosis of research problems and formulation of judgments from incomplete or limited information,
- The manifestation of leadership and innovation skills in the context of studies that are unknown, complex and unpredictable, and which require solving problems involving many factors that interconnect,
- Critical assessment of the strategic performance of teams,
- Communication of research results, methods to an audience of specialists, using appropriate techniques,
- The manifestation of an active behaviour towards a number of social, scientific and ethical aspects that arise in collaboration.

3.2 Semesters

3.2.1 Semester 1

The disciplines included in the first semester are aimed at forming general visions of the law system in the Republic of Moldova, constituting a foundation for the formation of thorough knowledge in the field of law.

In the first semester, students are expected to carry out the project in the Constitutional Law discipline.

This discipline has as a task the familiarity and training of skills of the students of the Law faculty as regards the foundations of the State organisation, the constitutional principles of the person's legal status, the electoral system, the way of organisation and functioning of the system of public authorities in the country for the protection and safeguarding of human and citizen rights and freedoms.

Semester theme: Constitution - the fundamental law of the country.

Learning objectives and outcomes for the semester project:

1. Learning objectives:

- Knowledge of concepts, theories, paradigms and methodology in the field of public law, and in particular of the constitutional law;
- Comparing the constitutions by form, modalities of adoption, revision and repeal;
- Estimation of the various forms of constitutionality control.
- Expressing own views on regulations or collisions of law;
- The use of techniques, methods and processes in order to formulate interpretative solutions of the legal norms.

2. Learning outcomes:

- Submitting recommendations and substantiating them to address certain concrete problems affecting the mechanism for implementing constitutional legislation in terms of establishing, maintaining and exercising state power;
- The correct interpretation of the forms of control of constitutionality;
- Application of the rules of law in resolving practical problems in the field of constitutional law;
- Elaboration of action plans that can be reported to concrete situations in the work of the institutions, authorities in the realization of the power of the people;
- Argumentation of the degree of interaction between the public interest and the private interest in achieving and guaranteeing constitutional rights and freedoms.

Project progress:

During the semester – students will be guided on the project by a teacher during a semester. This project will also ensure that during the semester students understand the correlations between certain criteria, principles, notions and categories of constitutional law by expressing their critical or interpretative opinion of certain relevant issues. The project will refer to both the analysis of doctrinal opinions and the trends of judicial practice in this area.

From one semester to another – this project aims to develop students' knowledge and skills on legal writing and argumentation. In this respect, constitutional law is a fundamental course, which, according to the educational plan, is studied in course I, as it contains rules laying down general binding principles on all branches of the national legal system. Knowledge and skills obtained within the disciplines of General Theory of the State and Law and Constitutional Law will help students work on the project, as well as analyse the practice of the Constitutional Court.

Workload and teaching/learning methods in working on the project:

This project will be carried out during a semester.

The lectures allow to present and explain the fundamental and operational concepts of administrative law, included in the curriculum of discipline.

The seminars harness the active-participatory methods in order to increase the intellectual potential of students by engaging in a personal effort during their training and preparation for an active and responsible professional activity.

The main methods used in the Constitutional Law discipline are: problem-based learning, debate, case study.

Assessment methods:

The *final mark* to the discipline summarizes the outcome of the *semester assessment* (activity in theoretical lessons, practical lessons, the result of individual work) and the *mark obtained on the exam*. The result of the semester assessment constitutes 60% of the final mark and the exam mark - 40%.

The *semester assessment* includes 4 marks: mark 1. Testing 1; mark 2. Testing 2.; mark 3. The current assessment (written and oral form); mark 4. Individual work. Each mark will constitute 25%

of the semester mark. To be admitted to the exam, it is necessary that each of the 4 marks referred to be positive.

The assessment of individual work (project) will be carried out by the internal assessor (teacher-holder of the course) and, where appropriate, the external assessor (potential employer).

If the project is to be carried out in the group, each member of the student team will be assessed individually, depending on the effort made when developing the project.

The final mark to the discipline sums up the result of the current assessment and the mark obtained in the exam.

Monitoring and review:

At the discipline of Constitutional Law monitoring will take place during practical lessons. Thus, 1 month after the start of the semester, each group will present the project plan, bibliography, normative acts, the main ideas of the project. The presentation will be made by each group in front of colleagues from other groups. 2 months after the start of the semester each group will already present 80% of the final project, with some concrete conclusions or proposals to solve the problem.

At the end of the semester, in the last seminars, the final presentation of the projects of each group/team will take place in front of their peers. The presentation is done in Power Point by all team members. The team also submit the study done on paper to the teacher.

Semester coordination:

The review of the curriculum in the Constitutional Law discipline takes place periodically according to changes in legislation and compulsorily with consultation of practitioners. For example, one of the authors of the current curriculum at the given discipline is the former ex-president of the Constitutional Court of the Republic of Moldova.

3.2.2 Semester 2

Interdisciplinary semester project model:

Although the project is to be developed in the discipline of administrative law, it has an **interdisciplinary character**, containing elements from the disciplines studied in the first and second semester for the following reasons:

Administrative law is a discipline which is in close liaison with constitutional law, both of which are part of public law. Already having knowledge and practical skills accumulated within the Constitutional Law discipline, students can develop synthesis skills, solve practical problems in the field of public law;

Recently, many practical problems faced by public administration authorities are emerging, so students can come up with concrete solutions on how to apply existing administrative rules;

The administrative rules are permanently modified, students are expected to come up with their own ideas to improve the legislation according to the changes that occur in society.

Semester theme: Public administration and administrative reforms.

Learning objectives and outcomes for the semester project:

1. Learning objectives:

- Identify law problems, specific to administrative law;
- Classify legal problems according to the institutions of administrative law;
- Distinguish national, European/international normative acts applicable to the administrative area;
- Identify the rules of administrative law applicable to the solving of a specific problem of administrative law

2. Learning outcomes:

- Interpret the applicable administrative law rule correctly;
- Justify the application of an administrative legal rule to the specific situation;
- Establish the correlation between the national and European/international administrative Law rule;
- Decide on various practical situations based on knowledge gained and taking into account the provisions of administrative legislation;
- Develop action plans that can be reported to concrete situations in the work of public administration authorities.

Project progress:

During the semester – this project will be carried out during a semester.

This discipline has as a task the familiarity and training of skills of the students of the Law faculty with the legal mechanisms of organisation and functioning of the public administration system and the executive power in the state.

From one semester to another – obtaining theoretical knowledge, students at the same time are trained on their practical application through the analysis of legislation in the field and the synthesis of national and international judicial practice. At the same time, the university course "Administrative law" aims to integrate theoretical and practical knowledge into solving problem situations, case studies, in formulating proposals on the improvement of administrative law rules.

Workload and teaching/learning methods in working on the project:

Individual work involves an investigation (in the sense of research) to get students to think and act independently. The project will be appreciated based on the consistency of the plan, the content of the work, the definition of the actuality of research problem, critical and constructive reflections on the structure and degree of comprehension, the logical presentation and the ability to answer the questions of group colleagues and the teacher.

Assessment methods:

As regards the types of assessment, the marking system, these are identical to the information presented for the first semester.

Monitoring and review:

Group dynamics and interaction within the group is observed and monitored by the facilitator throughout the learning process. Monitoring of studies is regulated and supports the achievement of learning outcomes. During the development of the monitoring of studies, the results of feedback surveys and the analysis of learning activities are taken into account. Periodically, questionnaires on students' expectations are distributed.

Semester coordination:

The results of the semester projects will be discussed within the department involved in the project. The department's academic staff participates in the identification of projects, the results of investigations from these projects being extensively integrated into the content of the study programme. The theme of these projects is diverse and is connected to the problems of interest at the current stage, some of which are pioneering and impacting the development of teaching-learning methods in the subject.

3.2.3 Semester 3

Interdisciplinary semester project model:

The third semester project is to be conducted in the discipline of EU Institutional Law and relates to other disciplines studied in the previous semester, namely Public International Law.

The project is to be elaborated for the following reasons:

- In recent years, Moldova has made progress in the process of cooperation with the European Union. The Treaties have been signed with the European Union, such as the Association Agreement, the Common Aviation Area Agreement, the Energy Community Treaty, the Association Agreement with the European Union and its Member States, which has been provisionally implemented on 1 September 2014.
- Successful implementation of current contractual obligations and future activities require deep knowledge in the field of EU law. Moldova continues to undertake obligations, which require harmonisation of the legislation of the Republic of Moldova with the requirements of EU law and its implementation in practice by public institutions, law enforcement bodies and the judiciary system.

Semester theme: Particularities of EU law in relation to domestic and international law

Learning objectives and outcomes for the semester project:

1. Learning objectives:
 - Demonstrate the relationship between EU Institutional Law and Public International Law
 - Identify the particularities of EU Institutional Law in comparison with Public International Law across the institutions involved;
 - Choose the most effective method for accumulating data and information on the interpretation of the clauses of the constituent treaties in accordance with the jurisprudence of the EU Court of Justice;

- Interpret national legislation in terms of compatibility with the commitments made by RM in the context of the implementation of the Association Agreement with the EU.
2. Learning outcomes:
- Establish the new legal framework of the RM and EU relations (Implementation of the Association Agreement);
 - Develop projects with the relevance of the EU in the context of harmonising national legislation with EU law;
 - Identify the rights and obligations of the Republic of Moldova, resulting from the state's associated status with the EU, as well as consultation and negotiation processes with the EU institutions and the modalities of maximising the benefits of association with the EU.

Project progress:

During the semester – this project will be carried out during a semester.

This discipline has the task of familiarizing and training the skills of students of the Law Faculty to interpret national law in the light of compatibility with the provisions of the Association Agreement.

From one semester to another – the Europeanisation of Law, the Science of law, legal practice and legal culture must inevitably be reflected by a significant impact on legal education.

Workload and teaching/learning methods in working on the project:

The project will take place within one semester, which lasts 15 weeks.

The lectures allow to present and explain the fundamental and operational concepts of administrative law, included in the curriculum of discipline. The seminars harness the active-participatory methods in order to increase the intellectual potential of students by engaging in a personal effort during their training and training for an active and responsible professional activity.

The main methods used in the EU Institutional Law discipline are: problem-based learning, causal-comparative research projects, debate, case study.

Assessment methods:

At the end of the semester, which lasts 15 weeks, the examination session takes place. To be admitted to each exam in part the student must show that he/she is ready for this exam. This is done by:

- Two tests, which take place during the semester. The student is admitted to the exam if he/she got the promotion mark (greater than or equal to 5) in both tests;
- By obtaining the promotion mark in the current assessment, that is, the activism that the student demonstrated in the discipline in question during the semester and the degree of preparation for each seminar is appreciated;
- By obtaining the promotion mark in the individual work. The assessment of individual work (project) will be carried out by the internal assessor (teacher-holder of the course)

and, where appropriate, the external assessor (potential employer). If the project is to be carried out in the group, each member of the student team will be assessed individually, depending on the effort made when developing the project.

The student, to be admitted to the exam, must have promotion marks for each component listed above.

The *final mark* to the discipline summarizes the outcome of the *semester assessment* (activity in theoretical lessons, practical lessons, the result of individual work) and the *mark obtained on the exam*. The result of the semester assessment constitutes 60% of the final mark and the exam mark - 40%.

Monitoring and review:

The potential employers have an important role in **monitoring** work on the project. In particular, the Department of International and European Law has close relations with the Ministry of Justice and the Ministry of Foreign Affairs and European Integration. Thus, during the last years, the students of the year II attended national and international conferences, in which they presented the results of the research carried out in the implementation of the projects in the group.

Semester coordination:

The **review** of the curriculum in the discipline of EU Institutional Law takes place periodically on the basis of changes in legislation and compulsorily with consultation of practitioners. For example, one of the authors of the current curriculum in the given discipline is the Department of Harmonisation of National Legislation with EU Standards within the Ministry of Justice.

3.2.4 Semester 4

Interdisciplinary semester project model:

The project in semester 4 is to be elaborated in the disciplines of Civil Law / Civil Procedural Law or Criminal Law / Criminal Procedural Law (part of the specialized component) for the following reasons:

- Litigants form their vision of the work of the courts and the quality of the act of justice in the light of direct contact with the judiciary system, the way justice is carried out and the efficiency of enforcement of the judicial provisions. Civil/criminal process functions coincide with those of justice: defending rights, freedoms and legitimate interests, restoring the violated legal order and guaranteeing democratic processes.
- The topic of evidence and civil/criminal judicial probation is of practical importance. The application implies the ability to interpret properly and systemically the procedural legislation in force, the ability to detect shortcomings and legislative contradictions and the ability to propose solutions to improve the legislation in force.

Semester theme: Evidence and civil/criminal judicial probation (by categories of offenses)

Learning objectives and outcomes for the semester project:

1. Learning objectives:
 - Determine the essence and identify the stages of the judicial probation;

- Classify the probatory facts;
- Determine the object of the probation in concrete civil matters;
- Compare the essence of the notorious facts and the harmful acts established.
- Assess the role of the court in claiming the evidence necessary to prove the essential facts of the matter;

2. Learning outcomes:

- Classify the evidence by various criteria;
- Specify the admissibility and relevance of the evidence;
- Apply in concrete cases the common rules for assessing the evidence;
- Formulate the grounds for ensuring evidence;
- Determine the procedure for the assurance of evidence until the process is started and after it has been initiated;
- Address the relevant case situations to the content units.

Project progress:

During the semester – These disciplines familiarize and form the skills of the students of the Faculty of Law to report information according to the content units, but in view of these, students are mobilised to apply theoretical knowledge to resolve certain tasks: at first strictly theoretical, subsequently increasingly practical.

From one semester to another – the experience of using this teaching method denotes that in the beginning students do not correctly estimate the difficulty of carrying out a task in the field of civil/criminal procedural law by means of sources, and then the need for the development of professional legal adviser skills becomes the main motivation in perpetuating professional perfection. The main skill that students from as a result of these training strategies is to motivate, argue the identified solution.

Workload and teaching/learning methods in working on the project:

This project will be carried out during a semester, and bears an interdisciplinary character, containing elements of the disciplines studied in the first, second and third semester.

Assessment methods:

Assessment of learning outcomes is done with marks from 10 to 1. Two current assessment sessions, divided proportionately during the semester, are held in the semester, which totals the intermediate situation of each student's success. The individual work and the performance of each student in the auditorium, as well as the results of the current assessments, shall be entered in the academic group register and shall be taken into consideration in the semester final assessments, having a share of 60 percent of the final mark. The Civil/Criminal Procedural Law exam, the general part is oral examination, and is based on 3-level tests: knowledge, application, integration.

Monitoring and review: Semester coordination:

The elaboration of the project will require from students a profound knowledge of the legislation of the Republic of Moldova in the field of civil/criminal law and civil/criminal process, stages of the judicial probation process and the notion of judicial evidence, relevance of evidence and admissibility of evidence means, proof of evidence, the grounds for ensuring evidence, ensuring

the evidence until the process starts and after the process is filed. The project can be developed in cooperation with a judge from the court, prosecutor or lawyer that allows the implementation of theoretical knowledge in practice.

3.2.5 Semester 5

Interdisciplinary semester project model:

International environmental law is today more present than ever, given the challenges facing mankind or, under the conditions of globalisation which are carried out with fast steps, the permanent growth of the need for production and the use of natural resources, damage to the environment is not left long awaited.

Although the project is to be elaborated in the context of International Environmental Law, it has an **interdisciplinary character**, containing elements of the disciplines studied in previous semesters. The objectives of conservation, protection and improvement of the state of the environment are pursued by different layers of regulations (national, community, international), more or less correlated and compatible, in an attempt to achieve an integrated approach from all angles, including legal.

Semester theme: The impact of harmonising national environmental legislation with international and EU standards on environmental issues.

Learning objectives and outcomes for the semester project:

Learning objectives:

- Generally characterize environmental policies in international law and European environmental law.
- Delimit legal relations in various areas of international and European environmental law such as in the field of water protection, forestry fund, soil protection, etc;
- Apply the legal norms governing the relations between persons concerning the protection of nature and the rational use of natural resources;
- Interpret the legal norms of international and European environmental law: logical, expansive, restrictive, etc.;

Learning outcomes:

- Identify the current problems in the application of ecological legal norms,
- Determine the situations in which ecological legislation is imperfect;
- Make proposals on the compatibility of national legislation with the provisions of international rules and the legislation of the European Union;
- Develop scientific research projects in the field of international and European environmental law;
- Draw up *Ferenda Bills*.

Project progress:

During the semester – knowledge and skills obtained under Public law, Environmental Law and Public International Law, EU Institutional Law will help students to get practical skills in the strategic approach at the national level in the field of environment, European and international

sectors, four priority areas of action: climate change prevention; protection of nature and biodiversity; addressing environmental and health problems; management of natural resources and waste.

Students will be guided by two teachers during work on the project (a professor from the Department of Public Law and a professor from the Department of International and European Law).

From one semester to another – this project aims to develop students' knowledge and skills in discussing and debating from a legal perspective different points of view and articulation in order to propose reasonable solutions. In this respect, it is a continuation of the projects of previous semesters. In this project students will learn the skills of communication and teamwork that are so necessary for the profession of legal adviser, constantly communicating and working with other professions/colleagues.

Workload and teaching/learning methods in working on the project:

This project will be carried out during a semester. The forms of organizing the training are: *face-to-face activities* (course, seminar), *group activities* (consultations, independent exercises, visit in small groups, circle of interests, meetings with specialists, competitions and debates, sessions of communications and reports), *individual activity* (individual study, doing homework, study in libraries, further reading and addition, drafting of projects, references, schemes, other written works, scientific communications, other practical projects).

The main teaching-learning methods applied are: didactic presentation; didactic conversation (heuristic, catechetic, topical); demonstration (combined, with technical means); problem formulation and solving, case study; simulation methods; learning by discovery.

Assessment methods:

The current assessment contributes to the determination of the final mark per semester by cumulation of marks in seminars, tests and individual works. Two attestation sessions, divided proportionately, are organized during the semester. The student's semester mark in a discipline is the weighted arithmetic mean of the mark from the current assessment, the mark from the individual work and the mark in the attestations, and takes into account the semester final evaluations, accounting for 60% of the final mark to the course unit. The final assessment shall be carried out at the end of each semester through the written examination.

Monitoring and review:

The monitoring process is ensured by the head of department, the representatives of the Dean's Office, the Faculty Quality Assurance Commission. The results of the monitoring are analyzed periodically at department and faculty level in order to improve the teaching-learning-assessment process. As a result of qualitative and quantitative analysis of the final results, improvement measures are proposed.

Semester coordination:

The project concept will be consulted, as well as the evaluation of the project will be coordinated with the Secretary of State of the Ministry of Environment and the contributor of the Department of International and European Law, director of the Centre for Harmonisation of Legislation in the Ministry of Justice.

3.2.6 Semester 6

Interdisciplinary semester project model:

In order to implement the project, the knowledge gained by students in the course of the courses is used: General Theory of Law, Constitutional Law of the Republic of Moldova, Labour Law, Financial and Tax Law, Administrative Law, Contravention Law, Family Law and Civil Law.

Students will do interdisciplinary analysis of the subject in the light of the provisions of the legislation in force, judicial practice, doctrinal opinions, international practices and provisions. The interdisciplinary project has as its main objective the preparation of the future legal adviser in obtaining the practical skills of critical analysis, writing of motions, notes, calls for judgment, the drafting of contractual clauses, legal opinions etc.

Semester theme: The impact of legislative changes on exercising the right to work

Learning objectives and outcomes for the semester project:

Learning objectives:

- Application of the techniques and tools specific to the public administration area;
- Correct qualification of situations under national law;
- Knowledge of the organisation and functioning of social security bodies;
- Interpretation, correlation and comparison of institutions under national social protection law, European social law and the right of social protection (security) of other states.

Learning outcomes:

- Analysing policies in the field of social protection and drafting proposals to improve them;
- addressing various cases in the field of social protection, by applying the case study method and the argumentation of the response;
- Conducting comparative analysis of national policies in the field of social protection with other countries' social policies.

Project progress:

During the semester – the knowledge and skills obtained in the course of the project will help students to get practical skills in the procedures for defending rights in legal social protection relationships. The project will refer to both the analysis of doctrinal opinions and the trends of judicial practice in this area. Students will be guided by two teachers during work on the project (a professor of the Private Law Department and a professor of the Public Law Department).

From one semester to another – this project aims to develop students' knowledge and skills on legal writing and argumentation. In this respect, it is a continuation of the projects of previous semesters. In this project students will learn the skills of communication and teamwork that are so necessary for the profession of legal adviser, constantly communicating and working with other professions/colleagues.

Workload and teaching/learning methods in working on the project:

The project will be conducted during a semester. Taking into account the fact that students and teachers have been trained in the PBL field, will apply the methods of achieving individual work in previous semesters, we will focus on guiding and consulting groups (consisting of 3-4 students) and permanent cooperation during the semester (including by e-mail) on the implementation of the project and the needs of the group. Teachers will supervise the integrdisciplinary working groups to achieve the project and facilitate the achievement of the objectives proposed to students. Student groups will work on a well-determined action plan supervised by facilitators. The students will present the work done in the final presentation that can be accomplished through a simulated process, or the presentation of power-point, or negotiation.

Assessment methods:

The assessment of the project will take place by: (1) assessing the presentation of the groups in a simulated process and (2) assessing the presentation of the report by each group. Each student will be individually appreciated on the basis of these two forms of assessment.

Monitoring and review:

At the end of the semester, teachers and students will discuss the results of research projects, the advantages and disadvantages of developing a group project, as well as how to promote and show the results of each project research in student legal events. These discussions will be facilitated by the teachers of the Private Law and Public Law departments.

Semester coordination:

The results of the semester projects will be discussed within each department involved in the project. Following these discussions will be decided whether the project theme for the next year of study is retained or changed, if group projects are effective in developing legal writing skills and whether the project model can be transposed to the writing of the Bachelor/Master's degree thesis.

3.2.7 Semester 7

Interdisciplinary semester project model:

The project proposes to students a large study not only of the doctrinal provisions, but the emphasis largely will be on the analysis of the practice of States, international bodies and international judicial courts in the field of human rights.

The following courses are included: the material and procedural law of the ECHR; The European Union and Human rights; International law and human rights; International humanitarian law; Alternative dispute resolution methods; Protection of consumers' interests.

The project will provide students with the opportunity to gain experience in the promotion and protection of human rights, within the national, as well as international institutions interested in providing internships.

Semester theme: National, regional and international mechanisms for the protection of human rights

Learning objectives and outcomes for the semester project:

Learning objectives:

- The ability to apply scientific research criteria in the course of drafting and assessing the legislation compatible with the European Convention on Human Rights;
- The ability to effectively apply human rights knowledge and decisions of the European Court of Human Rights in the internal legal order;
- The ability to discuss and debate from the perspective of human rights different points of view and their articulation in order to propose reasonable solutions.

Learning outcomes:

- The ability to face new situations and contribute to the creation of legal solutions in problem cases;
- The ability to develop professional activity projects in the field of human rights and the rights of the child;
- The ability to make decisions aimed at perfecting the system of national law capable of facilitating the maintenance of international public order by drafting regulations to prevent violations of human rights.

Project progress:

During the semester – the project will comprise a wide spectrum of topics, including theoretical aspects regarding the evolution of human rights as a concept and their role in a democratic society, practical aspects related to the implementation of a string of specific rights, as well as current topics related to the promotion and protection of human rights.

From one semester to another – the project will provide students with the opportunity to gain experience in the promotion and protection of human rights, within the national, as well as international institutions providing internships.

Workload and teaching/learning methods in working on the project:

The forms of organizing the training are: *face-to-face activities* (course, seminar), *group activities* (consultations, independent exercises, visit in small groups, circle of interests, meetings with specialists, competitions and debates, communications sessions and reports), *individual activities* (individual study, homework, study in libraries, supplementary and additional reading, elaboration of practical projects).

The main teaching-learning methods applied are: didactic presentation; didactic conversation (heuristic, catechetic, topical); demonstration (combined, with technical means); problem formulation and solving, case study; simulation methods; learning by discovery.

Assessment methods:

During the assessment, the results of feedback surveys and the analysis of learning activities are taken into account. Periodically, questionnaires on students' expectations are distributed. Depending on the answers, there will be identified expectations, the share of individual work, the amount of tasks, etc.

The educational plan provides the *types and methods of assessment of the learning outcomes*, including: *current assessment*: testing, project (in group); *final assessment*: combined oral and written examination, essay, presentation of the research project.

Students' *learning outcomes* are assessed: during the semester; at the end of the semester.

The *final assessment* will be done through exams with marks. Obtaining the promotion mark in the course implies allocating the credits envisaged for it.

Projects are the cumulative result of activities from several courses, it is an interdisciplinary product and cannot be attributed to a course unit, assessed with a marks and estimated with a determined number of credits, depending on the achievement effort necessary, by the decision of the Department.

Monitoring and review:

Group dynamics and interaction within the group is observed and monitored by the facilitator throughout the learning process. At each stage of monitoring the project, the teacher supervises not only the degree of project realization but also methodological aspects (roles distributed in the group, identification of communication problems, etc.)

The results of the consultation of partners are used for the purpose of: improving the training process; the improvement of the academic curriculum; teacher selection; improvement of teaching methods; updating of the curricular support.

Semester coordination:

In the context of the study and analysis of the rights and obligations of the Republic of Moldova carried out within the project, resulting from the state's associated status with the EU, as well as collaboration and negotiation processes with international institutions and ways of maximising the benefits of association with the EU, students will formulate the name and concept of the project. Taking into account the knowledge accumulated during the study of the disciplines, the students will analyse the problem entirely, not only through the obligations under the Association Agreement, but also of the obligations resulting from International conventions to which the RM is a party.

4 ROADMAP 2019-2022

4.1 Introduction

In order to ensure the sustainability of the implementation of the PBL model, there is a need to undertake certain measures for the future with regard to the effective implementation of the PBL.

This roadmap is developed based on how the pilot project is conducted at the Faculty of Law. At the same time, we also need to take into account the fact that the PBL method at law faculties cannot be reduced to the elaboration of a group project due to the specificity of the specificity. The most common PBL methods used in different faculties are the simulation of trial processes, solving problems (cases) illustrating specific instances (situations) or analyzing a practical case. For this reason, the group project can be framed in the university curriculum as a form of individual work. In this respect, it is expected to assess the individual workload that a student has per semester in order to be able to balance the work on the project with the individual work in other disciplines.

4.2 Period 1

In order to ensure and maintain the quality of the study process, a well-set system with the appropriate methodology is required. The principles of the PBL are part of the quality assurance system in the university in this respect. In order to refine the methodology, it is appropriate to create a mechanism for assessing the quality and efficiency of study programmes (including through the collection of feedback from students).

We consider it appropriate to continuously improve the learning and teaching strategy of the PBL model following the evaluation of the results of the pilot project implemented at the Faculty of Law to develop a new educational plan taking into account the reduction in the number of disciplines and how to integrate individual work (including projects) into each discipline.

It is also strictly necessary to develop a continuous inter-professional dialogue between the Faculty of Law and potential employers, including by engaging them in the elaboration and evaluation of study programmes. The implementation of the PBL involves the integration into the curriculum of transferable skills identified with the help of employers, as well as the development of problems based on experiences in the practice of potential employers.

4.3 Period 2

In drafting the study programmes it is important to emphasize the skills, the practical skills that the student will need in his /her subsequent work. Thus, the courses are not oriented to familiarize students with only the existing theory, but contain elements that are focused on learning skills needed for professional activity. Thus, we consider it necessary to enter into the new educational plan a special course in the field of *legal writing and research*, which is currently missing from the university curriculum. This course would help students develop their writing and argumentation skills, research and critical analysis, and facilitate work on group projects. Training a group of teachers on the elaboration and teaching of the discipline of *Legal writing and research*.

Changing the attitude of teachers to the educational process with the application of the PBL will encourage teacher training on how to achieve and assess the individual's work (including through PBL), and its importance for the study process.

In order to refine the learning and teaching strategy of the PBL, we consider it necessary to create a working group in the faculty to analyse how to integrate the PBL model into the disciplines taught at the Faculty of Law.

4.4 Period 3

Informing and training teachers on how to conduct research on teaching and learning (within the Faculty of Law). In the long term, these researches can help improve the quality of the study process.

An important role is to raise the share of ECTS credits awarded for the conduct of projects per year at the specialty (from 10-15 credits per semester). We believe that in the new educational plan the structure of the study semester is oriented towards the theme of the project. The number of theoretical disciplines to be reduced, to be planned in the form of modules and largely oriented towards the theme of the project. Theoretical hours should not overlap with the hours planned for the implementation of the project, which will be interdisciplinary.

5 ACTION PLAN

5.1 Introduction

The action plan was developed based on the experience gained in the pilot project at the Faculty of Law. The project was partially implemented at the faculty in order to identify gaps as well as to establish strategies for the coming years. The activities, subactivities, responsible persons, implementation terms and target group have been developed in the framework of the action plan that was drawn up on the basis of the roadmap. Proposals and recommendations have been given to be taken into account in the subsequent implementation of the project. Barriers that will restrict successful implementation have not been left in the shadows. Resources per activity have been analyzed.

5.2 Activities and resources

The actions needed to implement the 2019-2022 long-term strategy were listed in the action plan. During the last period, a transition from the teacher-centered to the student-based education is needed. We must develop the professional spirit in the student who is independent, competent to solve the problem on his/her own. Implementation of new courses that will contribute to the development of analytical skills for critical analysis and development of critical skills to facilitate work on group projects.

At the same time, emphasis has been placed on the resources needed to implement activities such as those with reference to the technical-material basis, the elaboration of the materials needed to organise the trainings, the financial resources for each stage.

5.2.1 Period 1

Introducing the PBL model at the Faculty of Law by incorporating the PBL method in the new educational plan taking into account the objectives of professional training, reducing the number of disciplines and eliminating those of general education, for students at the Faculty of Law to study exactly what they need in their practical work, based on the specifics of national jurisprudence will be carried out in stages. To streamline this process as follows:

In the short-term:

- Elaboration of a very detailed methodical guide on the implementation of the PBL,
- In the curricula of the disciplines with the application of the PBL it is necessary to include the methodology with a clear and detailed description of the stages of solving the problem in the group (2-5): planning, which is carried out in the following phases: selection of group members and distribution of tasks: monitoring the activity in the group, carried out in the following phases: coordinating individual contributions; discussions, debates and negotiations; preparation of the report: assessment, carried out in two phases: peer assessment and performance of tasks,

- Elaboration of the curriculum and course support in the discipline of *Legal writing and research*,
- Ensuring the widespread use of information technologies for the effectiveness of the traditional learning combined with a high degree of application of the PBL method,
- The wide use of the Moodle platform, social networks and Skype, especially in organizing group work, providing group study rooms at student choice, free WiFi connection within the institution, 24/24 access to the University library.

5.2.2 Period 2

In the medium term:

- Introducing the PBL strategy at other faculties in the university, as well as in Master's degree programmes.
- All departments are expected to develop and promote the policies of collecting feedback from students in the evaluation process. The Department's policies for the evaluation feedback must be based on the pedagogical reasoning relevant to the given discipline and must be approved by the Quality Committee,
- The signing of the cooperation agreements between the Faculty of Law and professional associations with clear provisions on the approval of the study programme and participation in the external evaluation of group work and the formulation of the problems referred to research projects,
- Elaboration of evaluation standards and performance indicators in the application of the PBL, evaluation criteria.

5.2.3 Period 3

In the long-term:

- Elaboration and accreditation of the study programme in Law with the application of the PBL method.
- Development of informative materials (informational flyers, periodical publications, audio, video spots) of the new educational plan,
- Facilitating collaboration with foreign universities in order to share the experience of developing the course and its implementation,
- Creating a national and institutional scholarship competition for teachers applying PBL,
- Initiating the modification of some normative acts (e.g. framework plan for study programmes),
- Implementing a computer solution to evaluate student feedback based on a score ranking.

6 STRATEGY RECOMMENDATIONS AT UNIVERSITY LEVEL

6.1 Introduction

The PBL model contributes to enhancing the interactivity of the subjects' content, as well as to raising students' accountability towards professional training. Also, the inclusion of the PBL model in the curriculum of disciplines contributes to students' training of critical analysis and information synthesis skills, abstract thinking, assessment of competing arguments and reasoned decision-making in solving the problems. All these skills are essential to the field of law.

6.2 Recommendations: at the study programme level

When developing the study programme it is important to focus on skills, the practical skills that the student will need in their subsequent work. In order to implement the abovementioned proposals, it is necessary to amend some normative acts (e.g. framework plan for study programmes).

The important points for the implementation of the program in the "Law" speciality are:

- orientation towards interdisciplinary deepening;
- reflecting the current needs of professionalisation;
- putting emphasis on training skills to solve practical problems;
- introduction of the discipline of *Legal writing and research*.

6.3 Recommendations: at the department and faculty level

We propose that a subdivision with responsibilities for research, development and promotion of the PBL model be established within the Faculty of Law.

We propose that within each department of the Faculty of Law the research group for development and improvement of PBL-based teaching be created to investigate the specifics of the PBL application process, taking into account the particularities of the disciplines.

The assurance at the department level of the annual monitoring process and periodic analysis of the PBL application in the education process.

All departments are expected to develop and promote the policies of collecting feedback from students in the evaluation process. The Department's policies on the evaluation feedback must be based on the pedagogical reasoning relevant to the given discipline and must be approved by the Quality Committee.

6.4 Recommendations: at the teaching staff level

We propose at the faculty level to be organized meetings where examples of good practice and performance obtained in the teaching and learning focused on PBL will be disseminated. This information will be distributed through Moodle for internal users and made public on the university's website at faculty level.

Ensuring the regular training of teachers on the application of the PBL method.

6.5 Recommendations: at the student level

We propose to ensure the active involvement of students in the process of accumulation of knowledge and the development of new communication skills, group work, etc. as a response to new knowledge and modern techniques seeking to resolve problems;

Gathering feedback from students and graduates on the quality of the study programme;

Creating a methodological support center for students.

6.6 Recommendations: at the level of pedagogical training in PBL:

In the curriculum of disciplines with the application of the PBL it is necessary to include the methodology with a clear and detailed description of the stages of solving the problem in the group.

Reviewing the policy of teachers and their remuneration.

Creating a national and institutional scholarship competition for teachers applying PBL.

6.7 Recommendations: at the society level

The implementation of the PBL involves the integration into the curriculum of transferable skills identified with the help of employers, as well as the development of problems based on experiences in the practice of potential employers. We propose the creation of professional university associations with the aim to involve practitioners, prospective employers and even students or graduates in consultations on the formulation of complex and real problems, but also interesting for the student learning process.

We propose for the Faculty of Law, the involvement of practitioners in assessing group work as an external assessor.

6.8 Recommendations: at the administration and management level

Amendment of internal normative acts to ensure effective implementation of the PBL strategy (e.g. the institutional regulation on academic yield assessment, 2014)

Training of staff in the field of IT and equipping of study spaces with equipment.

We propose to ensure the monitoring of graduates' employment. Former graduates should be invited to collaborate with the university and accept projects in the company they are employed in. They can be invited as external examiners, as part-time teachers or as a guest teacher to provide consultancy. This experience will ensure the incorporation of innovations in the learning process and internationalisation.

The application of the PBL implies the increase of the share of teaching tasks, it is necessary to pay the work by increasing the number of hours devoted to working in the group and assessing the students, so that the teacher pays sufficient attention to the guidance of the group work, the meetings with the respective group and the appropriate assessment.

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II. Normative acts of the Republic of Moldova

11. Codul educației al Republicii Moldova nr. 152 din 17 iulie 2014;
<http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=355156>
12. Hotărîrea Guvernului Nr. 616 din 18.05.2016 pentru aprobarea Metodologiei de evaluare externă a calității în vederea autorizării de funcționare provizorie și acreditării programelor de studii și a instituțiilor de învățământ profesional tehnic, superior și de formare continuă și a Regulamentului de calcul al taxelor la serviciile prestate în cadrul evaluării externe a calității programelor de studii și a instituțiilor de învățământ profesional tehnic, superior și de formare continuă. <http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=364908>
13. Regulamentul de organizare a studiilor în învățământul superior in baza Sistemului Național de Credite de Studiu, aprobat prin ordinul ME nr.1046 din 29 Octombrie 2015
http://usm.md/wpcontent/uploads/ordinul_nr._1046_din_29.10.2015_regulamentul_de_organizare_a_studiilor_in_invatamintul_superior_in_baza_sistemului_national_de_credite_de_studiu_0.pdf
14. Planul - cadru pentru studii superioare (ciclul I - licenld, ciclul II - master, studii integrate, ciclul III - doctorat), aprobat prin ordinul ME nr.1045 din 29 Octombrie 2015

http://usm.md/wp-content/uploads/ordinul_nr._1045_din_29.10.2015_plan-cadru_pentru_studii_superioare_ciclul_i_-_licenta_ciclul_ii_-_master_studii_integrate_ciclul_iii_-_doctorat.pdf

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Appendix 1: Study programme based on PBL in Law

1 year		PBL - 18		
I		General Theory of Law + History(8)	Legal writing and research (5)	Contravention Law (6)
II	Civil Law(6)	Criminal Law (6)	Administrative Law (6)	Family Law (5)
2 year		PBL - 20		
III	Civil Law (5)	EU institutions Law (5)	Criminal Law (5)	Contravention Law (5)
IV	Criminal Law (5)	Forensic (5)	Civil Process Law (5)	Criminal Process Law (5)
3 year		PBL - 26		
V		Commercial Law (5)	Private Int Law (5)	Environ.Law (5)
VI		Labor Law (5) Social Law	International Public Law(5)	Financial Law Tax Law (5)
4 year		PBL - 30		
VII		Intellectual property Law(4)	Public Finance (6)	
VIII		Internship +Thesis (40)	State exam(10)	

Appendix 2: Roadmap (2019-2022)

Nr.	Activity	Responsible
1.	Evaluation of the results of the pilot project implemented at the Faculty of Law	The project team together with the administration of the Faculty of Law
2.	Creation of a working group in the faculty to analyse how to integrate the PBL model into the disciplines taught at the Faculty of Law	Departments of the Faculty of Law
3.	Assessing the quality, efficiency and impact of individual work for each discipline	The Quality Assessment Commission of the Faculty of Law
4.	Training a group of teachers on the elaboration and teaching of the discipline of <i>Legal writing and research</i>	Administration of the Faculty of Law together with the SUM administration
5.	Introducing the discipline of <i>Legal writing and research</i> at the Bachelor's and Master's degree levels	Administration of the Faculty of Law
6.	Teacher training on how to achieve and evaluate individual work (including through PBL), and its importance for the study process	Department of Continuous Training (SUM) Administration of the Faculty of Law The Quality Assessment Commission of the Faculty of Law Project team
7.	Elaboration of a new educational plan taking into account the reduction in the number of disciplines and how to integrate individual work (including projects) in each discipline	Administration of the Faculty of Law
8.	Creating a mechanism for assessing the quality and efficiency of study programmes (including through the collection of feedback from students)	Administration of the Faculty of Law
9.	Developing an inter-professional dialogue between the Faculty of Law and potential employers, including by engaging them in the elaboration and evaluation of study programmes	Administration of the Faculty of Law
10.	Informing and training teachers on how to conduct research on teaching and learning (within the Faculty of Law). In the long term, these researches can help improve the quality of the study process.	Department of Continuous Training (SUM) Administration of the Faculty of Law
11.	Introducing the PBL strategy at other faculties in the university, as well as in Master's degree study programmes.	SUM administration

Appendix 3: Action plan

#	Activity	Responsible	Deadline/ Timeline	Resources	Target groups
1.	Evaluation of the results of the pilot project implemented at the Faculty of Law	The project team together with the administration of the Faculty of Law	June 2019		Members of the PBL working team, representatives of the Faculty of Law
2.	Creation of a working group in the faculty to analyse how to integrate the PBL model into the disciplines taught at the Faculty of Law	Departments of the Faculty of Law	September 2019	Material-technical base	Teachers involved in the process of implementation of the PBL project, in particular those involved in the teaching process in English (no. 20)
3.	Assessing the quality, efficiency and impact of individual work for each discipline	The Quality Assessment Commission of the Faculty of Law	December 2019	Elaboration of evaluation standards and performance indicators, evaluation criteria.	Members of the Quality Assessment Commission of the Faculty of Law (No. 20)
4.	Training a group of teachers on the elaboration and teaching of the discipline of <i>Legal writing and research</i>	Administration of the Faculty of Law together with the SUM administration	January – June 2020	<p>Collaboration with foreign universities in order to share the experience of developing the course and its implementation.</p> <p>E.g. Arkansas University, Faculty of Law, Professor Christopher Kelley can provide the course remotely / online.</p> <p>Resources: technical-material endowment of staff. Wi-Fi in the building of the Faculty of Law</p>	Responsible persons for the disciplines taught in English (no. 20)

				(block of studies II).	
5.	Introducing the discipline of <i>Legal writing and research</i> at the Bachelor's and Master's degree levels	Administration of the Faculty of Law	September – December 2019 Elaboration January – June 2020 Approval September 2020 – Implementation	Production of informative materials (informational flyers, periodicals, audio spots, video). Dissemination of informational materials through social media, placement of announcements.	Responsible persons for the disciplines taught in English (no. 20)
6.	Teacher training on how to achieve and evaluate individual work (including through PBL), and its importance for the study process	Department of Continuous Training (SUM) Administration of the Faculty of Law The Quality Assessment Commission of the Faculty of Law Project team	2019 -2020	Technical-material base (hall, computers, Wi-Fi, flyers). Creating course support, revised and adjusted curricula. Attracting potential employers to these trainings and in developing the course support and the curricula.	Teachers involved in the training process at the Faculty of Law (no. 50)
7.	Elaboration of a new educational plan taking into account the reduction in the number of disciplines and how to integrate individual work (including projects) in each discipline	Administration of the Faculty of Law	2019 – Elaboration 2020 – 2022 Implementation	Creating course support, revised and adjusted curricula	Representatives of the administration of the Faculty of Law
8.	Creating a mechanism for assessing the quality and efficiency of study programmes (including through the collection of feedback from students)	Administration of the Faculty of Law	2019-2022	Implementing a computer solution to evaluate student feedback based on a score ranking.	Students of the Faculty of Law, cycle I and II

				Distribution of the quality assessment of the effectiveness of the curricula.	
9.	Developing an inter-professional dialogue between the Faculty of Law and potential employers, including by engaging them in the elaboration and evaluation of study programmes	Administration of the Faculty of Law	<p>2019 – Search for prospective employers</p> <p>2020 – Approval at administrative level</p> <p>2021-2022 Implementation</p>	<p>Identification of potential employers, writing letters of intent to conclude partnerships contracts.</p> <p>Concluding contracts, inviting employers' representatives to develop and evaluate study programmes.</p> <p>Resources: The existence of internal policies of the employer including the privacy regime specifically for individual labour contracts, other cases are not foreseen. Respectively, there is a reluctance of employers in attracting trainees.</p>	Potential employers
10.	Informing and training teachers on how to conduct research on teaching and learning (within the Faculty of Law). In the long term, these researches can help improve the quality of the study process.	Department of Continuous Training (SUM) Administration of the Faculty of Law	2019-2022	<p>Training of teachers in a training of 2-3 days, and then monitoring the implementation.</p> <p>Resources: financial resources for the organization of the trainings outside</p>	Teachers involved in the training process at the Faculty of Law (no. 50)

				<p>the city. Production of informative materials (informational flyers, periodical publications). Dissemination of informational materials through social media, placement of announcements.</p> <p>Barriers (Challenges) due to lack of funding from the university, we will need to involve/look for sponsors</p>	
11.	Introducing the PBL strategy at other faculties in the university, as well as at Master's degree programmes.	SUM Administration	2020-2021	The SUM administration will identify the budget resources for this action	SUM Faculties

Appendix 4: The study programme in Law implemented since 1 September 2017

**MINISTRY OF EDUCATION , CULTURE AND
RESEARCH
OF THE REPUBLIC OF MOLDOVA**

STATE UNIVERSITY OF MOLDOVA

Coordinated: _____
„____” _____ **2017**
registration number _____

Approved: _____

**SENATE OF THE STATE UNIVERSITY OF
MOLDOVA**

„____” _____ **2017**

Protocol nr. ____

FACULTY OF LAW

STUDY PROGRAMME

Level of qualification according to ISCED-6

General field of study – 042 Law

Professional field– 0421 Law

Speciality – 0421.1 Law

Total number of credits – 240

Obtained title - Bachelor in Law

*Base of admission: baccalaureate or equivalent degree
university degree*

Study language: Romanian, English, French, Russian

Study form – full-time studies

CHISINAU 2017

Head of Private Law Department, PhD, associate prof.

Nicolae Roșca

Head of Public Law Department, Dr. Sc., PhD., associate prof.

Andrei Negru

Head of Criminal Law Department, Dr. Sc., PhD., univ. prof.

Sergiu Brînză

Head of Procedural Law Department, PhD., associate prof.

Elena Belei

*Head of European and International Law Department,
Dr.Sc., PhD., univ. prof.*

Violeta Cojocaru

Approved by Faculty Council

_____2017

Protocol nr. _____

Dean, Faculty of Law, State University of Moldova

PhD, univ. prof.

Sergiu Băieș

ACADEMIC CALENDAR

Nr.	Year of study	Didactic activities		Examination sessions		Internship	Vacation		
		Sem. I	Sem. II	Winter	Spring/ summer		Winter	Spring	Summer
1	First year 2017-2018	01.09-16.12 (15 weeks)	29.01-19.05 (15 weeks)	18.12-23.12 15.01-28.01 (4 weeks)	21.05-15.06 (3 weeks)	-	24.12-08.01 (2 weeks)	Easter 08.04-16.04 (1 week)	28.06-31.08 (10 weeks)
2	Second year 2018-2019	01.09-9.12 (15 weeks)	01.02-06.05 (15 weeks)	13.12-21.12 09.01-28.01 (4 weeks)	22.05-10.06 (3 weeks)	Specialty Starting internship 07.05-21.05 (2 weeks)	24.12-08.01 (2 weeks)	Easter 30.04-07.05 (1 week)	28.06-31.08 (10 weeks)
3	Third Year 2019-2020	01.09-13.12 (15 weeks)	29.01-19.05 (15 weeks)	16.12-24.12 09.01-28.01 (4 weeks)	22.05-10.06 (3 weeks)	Specialty Starting internship 07.05-21.05 (2 weeks)	25.12-08.01 (2 weeks)	Easter 20.04-27.04 (1 week)	28.06-31.08 (10 weeks)
4	Fourth Year 2020-2021	01.09-16.12 (15 weeks)	10.01-02.06 (15 weeks)	15.12-30.12 (2 weeks)	08.06-30.06 (3 weeks)	Specialty internship 03.02-05.04 (10 weeks) Research internship 06.04-04.05 (4 weeks)	31.12-14.01 (2 weeks)	Easter 02.05-09.04 (1 week)	

In case of PBL strategy application

	Didactic activities carried out through the PBL strategy, including internship			Vacation		
Semesters I-VII 15 week	5 weeks	8 weeks	2 weeks	Winter	spring	summer
	<ul style="list-style-type: none">• Theoretical basis (course and seminar) 4 hours per week• Monitoring work group activity• Current evaluation	<ul style="list-style-type: none">• Monitoring work group activity• Current evaluation	<ul style="list-style-type: none">• Presentation of projects• Final evaluation	24.12-08.01 (2 weeks)	Easter 08.04-16.04 (1 week)	28.06-31.08 (10 weeks)
				24.12-08.01 (2 weeks)	Easter 30.04-07.05 (1 week)	28.06-31.08 (10 weeks)
				24.12-08.01 (2 weeks)	Easter 20.04-27.04 (1 week)	28.06-31.08 (10 weeks)
	14 weeks		1 week			
Semester VIII 15 week	<ul style="list-style-type: none">• Monitoring of individual projects• Current evaluation		<ul style="list-style-type: none">• Preliminary evaluation of individual projects	31.12-14.01 (2 weeks)	Easter 02.05-09.05 (1 week)	

Program Content

Code	Module Discipline	Total hours	Including		week		laboratory	Type of final assessment	Nr. of credits
			Direct contact	Individual work	lecture	Seminar			
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Year I									
Semester I									
F.01.O.01	General Theory of Law	180	90	90	3	3		E	6
F.01.O.02	Constitutional Law (project)	180	According to the academic calendar					E	6
F.01.O.03	Roman Private Law	150	75	75	3	2		E	5
S.01.O.04	State-Judicial institutions	150	60	90	2	2		E	5
G.01.O.05	IT Communication	120	60	60			4	E	4
U.01. A.06	Philosophy	120	45	75	2	1		E	4
U.01. A.07	Psychology								
U.01. A.08	Political Science								
U.01. A.09	Social science								
G.01.O.10	Physical Training	30	30			2		C	
	Total sem. I	930	450	480	13	13	4	6 E	30
Semester II									
F.02.O.11	Civil Law (introduction and persons)	180	90	90	3	3		E	6
S.02.O.12	Administrative Law (project)	180	According to the academic calendar					E	6
F.02.O.13	Criminal Law. General Part I	180	90	90	3	3		E	6
U.02.A.15	History of Romanian Law	120	60	60	2	2		E	4

U.02.A.16	Philosophy of Law								
G.02.O.17	Foreign Language	120	60	60			4	E	4
U.02.A.18	Economy	120	45	75	2	1		E	4
U.02.A.19	European culture and civilization history								
U.02.A.20	European Integration								
U.02.A.21	Interpersonal and organizational communication culture								
G.02.O.22	Physical Training	30	30			2		C	
	Total sem. II	930	450	450	12	14	4	6 E	30
	Total year I	1860	930	900	25	27	8	12 E	60
Year II									
Semester III									
F.03.O.23	Criminal Law. General Part II	180	75	105	2	3		E	6
F.03.O.24	International Public Law	180	90	90	3	3		E	6
S.03.O.25	Contravention Law	150	75	75	2	3		E	5
F.03.O.26	Civil Law (real rights) (project)	150	According to the academic calendar					E	5
S.03.O.27	Financial Law	120	60	60	2	2		E	4
S.03.A.28	Diplomatic good practices and techniques	120	45	75	2	1		E	4
S.03.A.29	Juvenile delinquency								
S.03.A.30	Medical Law								
S.03.A.31	Comparative Legal Systems								

	Total semester III	900	450	450	13	15		6 E	30
Semester IV									
F.04.O.32	Civil Law. General Theory of obligations	180	90	90	3	3		E	6
F.04.O.33	Criminal Law. Special Part (I) (project)	150	According to the academic calendar					E	5
S.04.O.34	Tax Law	120	60	60	2	2		E	4
S.04.O.35	EU institutions Law	150	According to the academic calendar					E	5
S.04.O.36	Family Law	120	60	60	2	2		E	4
S.04.A.37	Armed conflicts Law	120	60	60	2	2		E	4
S.04.A.38	Comparative criminal Law								
S.04.A.39	Informational Law								
S.04.A.40	The organization of legal professions								
S.04.A.41	Legal status of real estate								
S.04.A.42	Social protection Law								
	Specialty Starting internship	60	According to the academic calendar					E	2
	Total semester IV	900	420	480	15	13		7 E	30
	Total Year II	1800	870	930	28	28		13 E	60
Year III									
Semester V									
F.05.O.43	Civil Law. Property transmitting contracts	150	75	75	3	2		E	5
F.05.O.44	Criminal Law. Special Part II	150	75	75	2	3		E	5
F.05.O.45	Criminal Process Law. General Part	180	75	105	2	3		E	6
F.05.O.46	Civil Process Law. General Part (project)	180	According to the academic calendar					E	6
S.05.O.47	Environmental Law	120	60	60	2	2		E	4
S.05.O.48	Criminology	120	60	60	2	2		E	4
	Total semester V	900	420	480	13	15		6 E	30
Semester VI									

S.06.O.49	Civil Law. Service Contracts. Succession.	150	60	90	2	2		E	5
F.06.O.50	Criminal Process Law. Special Part	150	90	60	3	3		E	5
F.06.O.51	Civil Process Law. Special Part	150	90	60	3	3		E	5
S.06.O.52	Private international Law	150	75	75	2	3		E	5
G.06.O. 53	Professional ethics	120	60	60	2	2		E	4
S.06.A.54	Crimes qualification	120	45	75	2	1		E	4
S.06.A.55	Transport and insurance Law								
S.06.A.56	Consumer protection law								
S.06.A.57	Civil procedure documents (project)		According to the academic calendar						
S.06.A.58	Criminal procedure documents								
S.06.A.59	Notary law								
S.06.A.60	Legislative techniques								
S.06.A.61	Human Rights legal protection (project)		According to the academic calendar						
S.06.A.62	International banking law								
	Specialty Starting internship	60	According to the academic calendar					E	2
	Total Semester VI	900	420	480	14	14		7E	30
	Total Year III	1800	900	900	27	29		13E	60
Year IV									
Semester VII									
S.07.O.63	Business Law	150	75	75	3	2		E	5
S.07.O.64	Forensic	180	90	90	3	3		E	6
S.07.O.65	Labor Law	180	90	90	3	3		E	6
S.07.O.66	International Trade Law	150	60	90	2	2		E	5
S.07.A.67	Labor conflicts	120	45	75	2	1		E	4
S.07.A.68	Competition Law								

S.07.A.69	Criminal execution Law								
S.07.A.70	Civil execution Law								
S.07.A.71	Constitutional comparative Law								
S.07.A.72	Actual problems of General Theory of Law								
S.07.A.73	European Convention for Human Rights Law								
S.07.A.74	Methods of specific crimes investigation								
S.07.A.75	Customs Law	120	60	60	2	2		E	4
S.07.A.76	Intellectual property Law								
	Total semester VII	900	420	480	15	13		6E	30
Semester VIII									
	Specialty internship	450	According to the academic calendar					E	15
	Research internship	180	According to the academic calendar					E	6
	Graduation exams	270		270				E	9
	Total semester VIII	900		900				3 E	30
	Total Year IV	1800	420	1380	15	13		9 E	60
	Total Program	7260	3120	4110	96	96	8	47 E	240

Romanian language for non-native speakers

Code	Module/discipline	Total hours	Including		week		Laboratory	Evaluation Form	Credits
			Direct contact	Individual work	lecture	seminars			
G.02.O.14	Romanian language	120	60	60		4		E	4

Facultative courses

Nr.	Facultative courses	Total hours	year	sem	Hours/week			Eva lu at	cr e d
						S	L		
1.	Latin	180	I	II	0	0	6	Exam	6
2.	Legal logic	180	II	I	3	3	0	Exam	6
3.	Initiation in German Law	180	III	II	3	3	0	Exam	6
4.	Rhetoric	180	IV	VII	3	3	0	Exam	6

Internships

Nr. d/o	Internships	Sem.	weeks	hours	Period	credits
1	Specialty Starting internship	IV, VI	4	120	May	4
2	Specialty internship	VIII	10	450		15
3	Research internship	VIII	4	180		6
Weeks				750		25

Graduation Exam

Nr. d/o	Graduation Exam	Period	Credits
1.	Integrated exam. law sciences	June	6
2.	Graduation (Licence) Thesis	June	3

Master studies preconditions

Code	Module/discipline	Total hours	Including		Hours/week			Evaluation form	Number of credits
			Direct contact	Individual work	course	Seminars	Laboratory		
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
F.01.O.02	Constitutional Law	180	45	135	2	1		E	6
F.01.O.01	General Theory of Law	180	60	120	2	2		E	6
F.02.O.11	Civil Law. Introduction and persons	180	45	135	2	1		E	6
F.02.O.13	Criminal Law. General Part	180	45	135	2	1		E	6
F.03.O.24	International Public Law	180	45	135	2	1		E	6
		900	240	660	10	6		5E	30

EXPLANATORY NOTE

Specialty Law is an important one in a contemporary society. A qualified and competent specialist in jurisprudence can be placed in any sphere of harmonious social life both nationally and internationally.

As a specialty aim is to achieve an effective field training, creating prerequisites for socio-secure successful professional people specialized in law in the legal system of the Republic of Moldova and the possibility of professional advancement abroad.

In this context, Law specialty aims to achieve its goals through:

1. Formation of the graduate professional skills based on theoretical and practical training in law.
2. Formation of research abilities in the field of jurisprudence based on scientific composition. In this sense specialist training aims to investigate contradictions in jurisprudence.
3. Ensure the future of multilateral developed specialist, training civic position and the ethical dimension of personality.

Applying for Bachelor specialty Law (Cycle I) can be based on High School/Lyceum (BAC) diploma or university diploma.

The specialist in jurisprudence (law degree) can carry on his professional activity in different fields - civil, criminal, financial, banking, criminology, psychology, legislation, human rights protection, etc., taking into account specialty nominated.

An efficient achievement of all mentioned objectives assures the graduate successful socio-professional integration. Lawyers can operate as judges, prosecutors, advocates, employee in different government structures, especially the Ministry of Justice, Ministry of Interior, legal departments and sections of the central and local public administration authorities, institutions, organizations, public and private enterprises, as judge in the Constitutional Court, Ombudsman, institutions with judicial expertise; NGOs sorting and dispute mediation; organizations defending human rights; embassies abroad; international government and regional organizations, as well as any other areas that require protection, surveillance of rights, freedoms and interests or values protected by law.

Upon completion of university studies (cycle) student shall have the following general skills:

1. The ability to learn independently;
2. Ability to meet and develop values and professional ethics;
3. Ability to exercise his profession as a member of a team;
4. Ability to solve problem situations;
5. The ability to make decisions independently;
6. Possess sufficient knowledge of the foreign language to be able to work effectively in the legal field;
7. The ability to use information technologies in research and legal practice.

Professional skills:

1. Knowledge of Moldovan legislation, European legislation and other international legal instruments;
2. Knowledge of the concepts, theories, paradigms and methodologies in the legal field;
3. Use knowledge needed in data collection and information relating to a specific practical issue in law;
4. Using specific methods applied in law;
5. Application of techniques and specific legal instruments in solving practical problems;
6. Using a variety of techniques, methods and solutions to interpretative enunciation of acts;
7. Initiate and detection as proposed for solving problems in the legal activity.

The most effective way to train professional skills is the PBL (problem-based learning) strategy, which is done through projects. The application of group projects contributes to the creation of favorable conditions for the formation of general skills, which are transversal. The work in a small group shapes the system of attitudes, values and behavior of the person, prepares him for professional activity in a real work team.

Vocational training through projects is a good strategy under the conditions of the 21st century as it favors the formation of professional skills and is not just about the accumulation of knowledge.

The PBL strategy teaches the future specialist to identify a problem, to study the work of the professional environment, to propose solutions and to implement them in practice.

Through the PBL strategy, the student becomes an active subject of his own training process. The PBL strategy is an effective way of training in the current context of higher education, with an emphasis on work outside the classroom oriented towards the needs of the labor market and the employer.

Appendix 5: The flyer of the PBL-based study programme in Law in 2017

- sporirea flexibilității în procesarea informației și îndeplinirea obligațiilor;
- exersarea abilităților necesare pentru activitatea profesională.

Cum este organizat procesul de studiu?

- Studenții lucrează în echipe;
- Echipa are un tutor sau supervisor;
- Întâlniri periodice ale echipei;
- Fiecare echipă are un lider.

Mobilități academice în universitățile din UE:

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Ce este învățarea bazată pe probleme?

- studenții soluționează probleme complexe, provocatoare, care sunt bazate pe cazuri reale;
- studenții lucrează în echipe sau grupuri mici (3-5 persoane) pentru elaborarea proiectului;
- studenții colectează și analizează informația necesară în mod individual, dar cu ghidare din partea profesorului;
- echipele/grupurile de studenți beneficiază de îndrumarea continuă a profesorului;
- studenții sunt evaluați în baza proiectelor elaborate în grup.

Care sunt avantajele învățării bazate pe probleme?

- explorarea și aplicarea cunoștințelor obținute;
- dezvoltarea abilităților de lucru în echipe;
- îmbunătățirea competențelor de comunicare;
- cultivarea abilităților de perfectare a documentelor juridice;
- formarea abilităților de formulare și apărare a pozițiilor sale cu dovezi și argumente raționale;



Appendix 6: Lessons learned following the implementation of the pilot study programme based on PBL

	Identified problems	Lessons learned	Examples
1	<p><i>Problem formulation</i></p> <p><i>For most students it is difficult to choose the subject of the project or the subject to research because they do not have any theoretical knowledge in the field of that discipline</i></p>	<p>Working as closely as possible with future employers, through organizing round tables, joint conferences, students visiting State and non-governmental institutions, conducting internships in the prosecution offices, judiciary courts, ministries, etc.</p>	<p>In the discipline of <i>Institutional law of the European Union</i>.</p> <p>The project concept was consulted in the round table with the Director of the Centre for Harmonisation of Law of the Ministry of Justice in the context of the study and analysis of the rights and obligations of the Republic of Moldova, resulting from the Associated statute with the EU, as well as consultation and negotiation processes with EU institutions and ways of maximising the benefits of association with the EU.</p> <p>In <i>Ecological Law</i> discipline, the concept of the project was consulted with the Secretary of State of the Ministry of Environment (PhD student of the Department) in the workshop, with the generic “Implementation of sustainable development goals in the environmental policy of Republic of Moldova”.</p>
2	<p><i>Problem formulation</i></p> <p><i>Most teachers are the ones who formulate problems or research topics, sometimes even presenting some solutions from which students must choose the right option</i></p>	<p>We believe that students have to be offered more freedom, giving them the right to formulate some complex and real problems, but also interesting for the learning process. The problem can be both theoretical and practical, but it is necessary to be formulated in such a way that it can be analyzed and resolved, sometimes even from an interdisciplinary point of view.</p>	<p>In the discipline of <i>Institutional law of the European Union</i>.</p> <p>The students were asked to formulate the name and concept of the project taking into account the knowledge accumulated during the study of the discipline of Public International Law in the previous semester, in the elaboration of the project students had to analyse the problem in its complexity, not only through the obligations of the Association Agreement, but also of the obligations resulting from the international conventions to which the RM is a party.</p> <p><i>Examples of project names:</i></p> <p>Analysis of international and EU rules on practical measures aimed at preventing cross-border damage caused to the environment;</p> <p>The International and EU strategy on solar energy – ecological and renewable, its effects on the development of the RM</p>

			<p>In <i>Criminal Law</i> discipline</p> <p>In drafting the concept of the project, which carries an interdisciplinary character, students were to demonstrate cumulative knowledge in the field of criminal law and criminal procedure. The task for each group was to study: on average 100 conviction sentences to determine how to motivate the application of the penalty of the court by categories of offences.</p>
3	<p>Group formation</p> <p><i>One problem, in the formation of the groups, is that there are students who want to elaborate the project only individually</i></p>	<p>The formation of groups must be determined by the problem or subject under research.</p>	<p>In <i>Ecological Law</i> discipline</p> <p>Every student writes on a note the problem that he/she wants to investigate. The notes are collected by the teacher, who subsequently unites them in groups. Obviously, students can formulate absolutely different problems, but the teacher's task is to choose topics that have some common points and help students to formulate a more complex problem.</p>
4	<p>Distribution of roles</p> <p><i>Shortcomings in the distribution of students into groups and involvement of the teacher in solving psychological conflicts (in some cases the unwillingness to work with peers, or the lack of experience of working in the group)</i></p>	<p>A way for the facilitator is to invite students who have already taken this course as co-facilitator. The facilitator can propose to students to draw up the working rules within the group or provide them with a set of rules already prepared.</p>	<p>In <i>Civil Law</i> discipline (special part) students of the Year III semester I (2017-2018, 2018-2019) in the Civil Law discipline (special part – translational property contracts) together with students from the University of Arkansas, the USA, participated in a case study (negotiation of a contract). Both teams were guided by a mentor (teachers) and an arbitrator.</p>
5	<p>Distribution of roles</p>	<p>The consolidation of groups can be done by involving groups in different team-building exercises or by which members of the group would be able to get to know better from the perspective of learning and interaction within the group.</p>	<p>In the discipline of <i>Criminal Law</i>, to ensure the consolidation of working in the group was chosen the option of introducing problematic learning elements to each topic discussed with students (case study), debates (because it requires more training duration - 2 times per semester) and the essay as a task in individual work. This approach was chosen due to the specificity of the discipline, combining individual and group tasks. This approach has proved to be a success because students identify and solve practical problems at each lesson (both seminars and lectures), and</p>

			<p>writing the essay includes studying literature and judicial practice (each student has the task of illustrating his/her arguments by, at least, a case of judicial practice), as well as learning the wording and presentation of the arguments – an indispensable ability for a future legal adviser. The group work used in almost every seminar proved to be a useful means of involving students and diversifying their way of learning. Organizing group work in seminars encouraged students to develop communication skills and teamwork, as well as learn to collaborate efficiently in solving certain more complex problems.</p>
6	<p>Monitoring the project elaboration activity</p> <p><i>Low work yield of some students within the group and the willingness of colleagues to justify the lack of their willingness to actively engage</i></p>	<p>The introduction of the clear and detailed methodological aspects of the application of the PBL, specific to the discipline in the curricula, raises the students' responsibility for working in the group. <i>The implementation of the PBL model requires the need to explain in the first seminars clear rules for students at each stage (formulation of the problem, distribution of team roles, monitoring and evaluation requirements of the project).</i></p>	<p>In the disciplines of <i>Administrative Law</i> and <i>Contravention Law</i> the monitoring occurred during practical lessons. Thus, 1 month after the beginning of the semester, each group had to present the project plan, bibliography, normative acts, the main ideas of the project. The presentation was made by each group in front of colleagues from other groups, who had the possibility to ask them questions. 2 months after the start of the semester each group had already to present 80% of the final project, with some concrete conclusions or proposals to address the problem. At the end of the semester, as a rule, the last seminars, the final presentation of the projects of each group/team in front of their peers takes place. The presentation is done in Power Point by all team members. At the same time, the team presents to the teacher the study performed on paper (as an annual or Bachelor's degree thesis, only developed in group).</p>
7	<p>Monitoring the project elaboration activity</p> <p><i>Ignoring the teacher's requirements</i></p>	<p>The process of facilitating student learning must encourage thorough learning. This is to be done by the tutor/facilitator through different ways. Motivating students and their interest may be provoked by the teacher's</p>	<p><i>Example: In Civil Law discipline (special part).</i> Students of the Year III semester I (2017-2018, 2018-2019) in Civil Law discipline (special part – translational property contracts) together with students from the University of Arkansas, the US, participated in a case study (negotiation of a contract). The students were divided into teams, and each team knew their counterparts in the team of the opponent University. Each team had</p>

		creativity, which can render this process an internationalised and interdisciplinary character.	<p>the task to negotiate most clauses in favor of the company it represented. Thus the students developed their negotiating skills, the skills of persuasion as well as the skills of knowing a problem in detail (the complex contract).</p> <p>– students were divided into groups of 3-5 people and had to identify the main problems in the contract as well as develop communication techniques, and a task was to apply the relevant legislation (lex fori, lex contracts).</p> <p>– the negotiations between the students took place online live, in English, the teams being limited both in time and in the arguments presented (being put in a situation to develop a strategy).</p>
8	<p>Monitoring the project elaboration activity</p> <p><i>Disorganization of the group, monopolisation of the group and others to be solved by the facilitator in a way that stimulates the interaction of group members and emphasize the contribution of each member of the group to achieve a common result</i></p>	At each stage of monitoring the project, the teacher must supervise not only the degree of project realization but also methodological aspects (roles distributed in the group, identification of communication problems, etc.)	<p><i>Example:</i> In the discipline of <i>Ecological Law</i>, at the III stage of monitoring (when students accumulated sufficient experience in the group) the students completed a questionnaire on the role of each person in the group in order to complete the project successfully.</p>
9	<p>Student assessment</p> <p><i>Deficiency in the assessment of each student in the group because the ones with a low yield based on the group's arguments</i></p>	<p>It is recommended, in the assessment, to be offered the possibility for student members of the project teams to assess their team mates, depending on the contribution to the work process on the project,</p> <p>It is recommended to diversify the forms of assessment, comprising the assessment of the process and the product of</p>	<p><i>Example:</i> In the discipline of <i>Civil Law (special part)</i> at the end of the negotiations on the contract each student had to write an essay describing the role or contribution of the colleagues in the team, the positive and negative aspects, the arguments presented in the debates and solving the identified problem.</p> <p>In <i>Ecological Law</i> discipline the final mark to the discipline sums up the result of the current assessment: activity in the course and seminars, including the work on the implementation of the project in the group (30%); the result of working</p>

		the learning process. The involvement of the group members may constitute a percentage part of the final mark.	in the group and the mark obtained at the exam (40%).
	<p>Student assessment</p> <p><i>The involvement of practitioners (external assessors) at the stage of the assessment of the work performed in the group, bears a non-systematic character,</i></p>	The implementation of the PBL involves the integration into the curriculum of the transferable skills identified with the help of employers, as well as the evaluation of problems based on experience in practice of the potential employers.	<p>In the discipline of <i>Criminal Law</i>, during the presentation of the results of the mini-projects doctoral students were involved (who are judges, prosecutors, employees of penitentiary institutions, judicial assistants). All groups developed PowerPoint presentations, and each member of the group had the task of presenting a certain segment of the results obtained. During the evaluation of the , the Master students mentioned: (1) the mini-project helped them communicate more efficiently with colleagues and the teacher; (2) the involvement of doctoral students was a successful exercise to facilitate discussions on the more complex practical aspects identified in the research; (3) mini-projects helped them to understand the judicial practice much better and to analyse how the criminal law is applied.</p> <p>In the discipline of <i>Civil Law (special part)</i> students of the year III together with students from the University of Arkansas, the US, participated in a case study (negotiation of a contract). Both teams were guided by a mentor (teacher) and an arbitrator. When evaluating the results, an arbitrator (being a US teacher) analyzed the negotiations and the work of the students in the group.</p>

Sustainability Strategy

Teaching and problem - based learning at State University of Medicine and Pharmacy "Nicolae Testemitanu"

Work Package 5

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Summary

The purpose of this Sustainability Strategy is twofold. One, the strategy aims to suggest how to ensure a transition from the pilot PBL study program to a fully-fledged PBL-based study by 2022 (sections 3, 4, and 5). Two, it aims at ensuring sustainability of PBL as a teaching and learning method by putting forward recommendations (section 6). These two aims are supported by inputs from section 2 in which the team discusses lessons learned, challenges encountered during the implementation of the pilot program and reflects on these.

List of definitions

PBL - student activity model with group task assignment to solve a problem, which is the cumulative result of activities from several courses, constituting an interdisciplinary product, guided by the teacher responsible and evaluated by practitioners in the field.

Student-centered learning - teaching and learning process in which the student becomes a partner in the educational process, and the teacher-student relationship is based on cooperation and collaboration.

Self-guided learning – teaching and learning process that emphasizes the student's responsibility to create learning and experimentation environments, in which they discover knowledge, make discoveries and solve problems on their own.

Learning objectives – general competences by training fields required for graduates of study programmes.

Learning outcomes - clear results, describing the student's knowledge or skills, expected from the teaching-learning process.

Progression – succession of expectations from the teaching-learning process in several stages.

Assessment - multicriterial examination of students' knowledge accumulated in the learning and teaching process.

Projects – are tasks given to students which consist of research and analysis of a problem (both theoretical and practical) and the generation of new approaches or solutions. Projects can be individual and in group.

Semester projects – are the projects carried out by students (usually in the group) during a semester. These projects may have inter-disciplinary character (may refer to two or more disciplines studied during the same semester).

Group/team work – is the joint work of a group of 4-5 students to perform a single task, which is based on communication, collaboration and self-discipline, each member of the group contributing to the achievement of the final result.

Research-based teaching and learning - the process of transmission and accumulation of knowledge, as well as the creation or development of skills that are based on some research tasks and aims to facilitate the learning (including individual) process of students.

Research-based teaching - is the process by which the student is involved in research exercises and is encouraged to reach his/her own conclusions and solutions using the results of the research carried out.

Sustainability strategy – is a long-term vision of an institution aimed at introducing key modifications in order to streamline the teaching-learning process. The strategy includes objectives and concrete actions, the deadline for achievement, as well as the potential outcomes that can be achieved.

(a) the path from a pilot programme to a comprehensive study programme based on problem-based learning (PBL) - the concrete steps to introduce PBL in a study programme

(b) support and promotion of PBL for teaching and learning - performing information and training measures about the advantages and efficiency of PBL.

Credit (ECTS) – the credit is a conventional unit used to calculate the workload performed by the student within a determined time period to achieve certain outcomes and competences. The credit is a tool to ensure the quality of the training.

ECTS (European Credit Transfer and Accumulation System) - European system of accumulation and transfer of credits. The Bachelor's degree studies correspond to 180-240 of transferable study credits, with 30 credits per semester.

Profile degree – the educational framework to be known by graduates in order to obtain the title of Bachelor, Master.

Professional development – opportunities offered to the teacher to strengthen their pedagogical skills, competences and approaches; continuous improvement of staff through trainings, internships, etc.

Facilitator – the person who helps a group of students understand their common goals and helps them plan how to achieve the objectives set out in the joint project.

Internship placement (training/practice) – institution/organization where students will conduct internship/training.

Quality assurance – a systematic monitoring and evaluation programme of the different aspects of a project in order to ensure compliance with quality standards.

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1 INTRODUCTION

The aim of this Work Package – WP5 – is to develop a sustainability strategy for student centred and active based teaching and learning at Nicolae Testemitanu State University of Medicine and Pharmacy and PBL implementing at Nicolae Testemitanu State University of Medicine and Pharmacy. This report will propose an innovative, PBL based BSs study programme in Optometry, a road map and a detailed action plan that will guide university management staff in their efforts to implement PBL, student centred and active based teaching and learning at the mentioned study programme across the university.

This report we draw on WP2 and WP3 was developed during 2015-2017. We also draw on the experience we accumulated during our study visits and staff mobility to the EU partner universities, as well as during PBL training sessions that were offered by the EU project partners in Chisinau.

1.1 KEY ASSUMPTIONS

There is no fit-all-purpose PBL-model. However, PBL – models are founded on two assumptions. The First is that the process should be student centred and designed to equip learners with knowledge, understanding and ability to implement their knowledge and understanding to achieve this PBL uses project work as its core, consisting of problem discovery and analysis, solving and reporting (Figure 1). The second is that the other, learning (face-to-face) activities such as literature [private/individual study/learning], lectures, group studies, and tutorials are designed to support the project work. These two assumptions are the foundation of our PBL, student centred and active based teaching and learning BSc study programme in Optometry.

This program is similar to the European higher education curricula and its structure is compatible with that of the curricula of the universities of the European Union. In addition, the program meets the requirements of the European Diploma in Optometry. Based on the Euroasia project CPEA-2015/10066 “Moldova – Norwegian collaboration program in optometry. Enhancing primary eye health care in Moldova” and the interuniversity collaboration between USMF "Nicolae Testemitanu" and the University of South-East Norway, the program of studies in the specialty of Optometry within the USMF "Nicolae Testemitanu" was initiated. The curriculum focuses on the defining components and, in the end, will ensure the achievement of a competence-based and student-centered education.

The Optometry Study Program is a recently launched (second year) program that allows us more opportunities:

1. The study program is an innovative one in medical university studies and is attractive for those who graduated high school in terms of future opportunities through the possibility of developing entrepreneurship (private practice).
2. Easier introduction of new study methods.
3. Flexibility in implementing changes

4. The design of the Optometry study program is conceived on the basis of the similar Optometry program in the South-Eastern University of Norway.

Strengths:

1. The expected number of admitted students is about 30, which allows for major flexibility in the logistics operation of the program.
2. The small number of students per group corresponds perfectly to the student's operational needs.
3. The modular type of the study program structure will be introduced from the second year of training.
4. Technical and material endowment of the program with the best technologies in the field (thanks to the support of Norway).

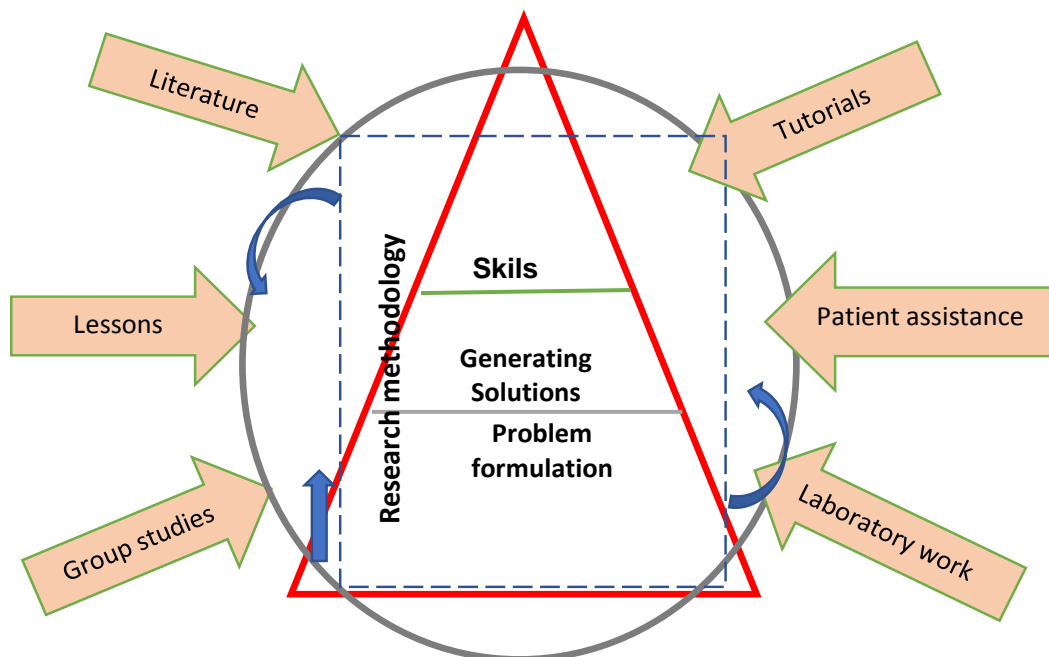
Weaknesses:

1. Low experience of the academic staff in the field of Optometry (lack of a precedent).
2. Exodus of academic staff from the medical system.
3. Reducing number of graduating school in the country (decrease in birth rates, negative natural growth and emigration).

Barriers

1. Insufficient capacity of staff involved in program management.
2. Resistance to change.
3. Specific socio-cultural background.

Figure 1: The PBL model for Optometric programe, USMF



LEGEND of the PBL model for USMF "Nicolae Testemitanu"

The proposed model is based on the AAU PBL model of the University of Aalborg and adapted to the realities, peculiarities and challenges of the medical training program within the USMF "Nicolae Testemitanu". The expected result of any process of university education and training require sustainable medical skills. Thus, the concept of the pyramid structure was used, where the apex of the pyramid is the competency / end result of any training process, the basis of the pyramid being the formulation of the problem and the analysis of the situation, supplemented by the methodology of the research, and its means of generating solutions. Process flow within the pyramid takes place from bottom up to the apex. And competences in research methodology are applied at all levels of competency training. The pyramid of the skill acquisition process is thus placed in the continuous cyclical context of standard academic activities such as theoretical courses, lessons and lectures, group studies, literature review, laboratory activities, tutorials and patient assistance. The evolution of the process of study flows gradually into the form of spirals / spheres in continuous motion.

Another hypothesis relates to the relationship between work on the project and didactic direct contact activities. In the context of this report, a study program, totally based on PBL, is the program where there is a 50:50 sharing between student work on the project and direct contact activities (lectures, seminars, workshops, laboratory work and experiments). At USMF "Nicolae Testemitanu", the sharing of work time on the project and the direct contact activities for the Optometry program is 50:50, according to the model presented in 2016 in the framework of the PBLMD project by Louise Faber, University Associate Professor at Aalborg University (Figure 2).

The PBL model of the Optometry study program was developed based on the experience of piloting the PBL model of the "Neuroscience" course.

The "Neuroscience" multidisciplinary course was developed as a pilot program based on the Neurology discipline curriculum and adapted to the requirements of the PBL training model in order to study the physiological and pathological changes of the nervous system according to the neural link between the neural substrate and the causal factor, structure and internal organization of the nervous system, revealing the laws of syndromology and topical diagnosis.

The PBL "Neuroscience" course was aligned to the objectives:

1. *The Development Strategy of USMF "Nicolae Testemitanu" for 2011-2020;*
2. *The Regulation on organization of studies in higher education based on the National Credit Studies System at the State University of Medicine and Pharmacy "Nicolae Testemitanu" of the Republic of Moldova, approved by the minutes of the Senate session USMF, no. 1/8 of 06.04.2017;*
3. *Quality Management System ISO 9001:2015 regarding the development of educational activities in the University*

The didactic activities related to the curriculum of the PBL "Neuroscience" course were structured in accordance with the study plans of the integrated subjects in the respective course, with application of student centered education.

The PBL model at the University of Aalborg, with the modification proposed by Romeo V. Turcan in 2017, was adapted to the requirements of the educational program in the Public Health

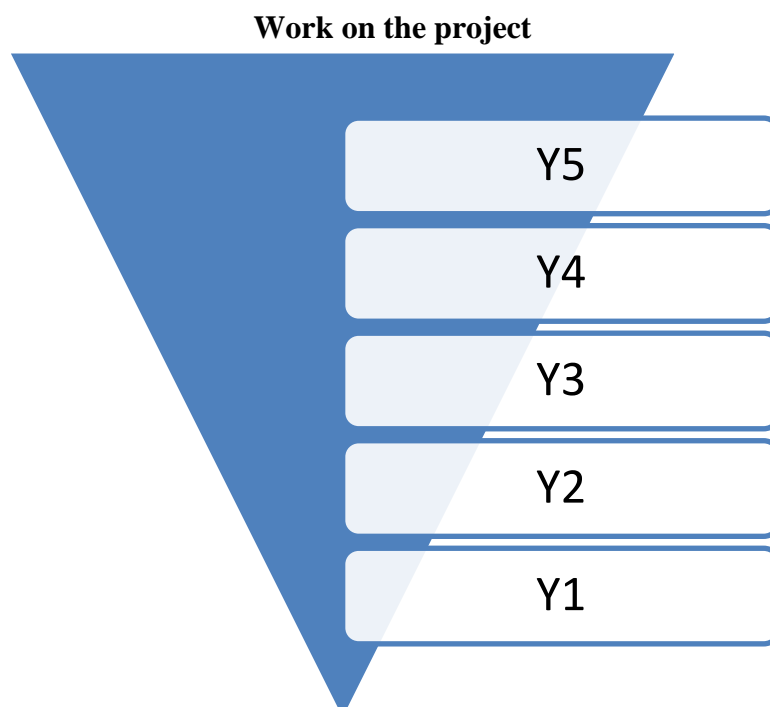
specialty for the "Neuroscience" course. The multidisciplinary "Neuroscience" course was developed for the third year and is scheduled for a full-term semester.

This course has been developed in accordance with the PBL teaching and learning requirements and methodology, so the distinctive and specific elements of the course refer to the training of competences and practical skills characteristic for problem-based education and includes the following components:

- student centered educational activities;
- developing team work skills;
- stimulating creativity;
- development of critical and clinical thinking;
- integrating disciplines to solve problems and case studies;
- developing practical dexterity;
- developing cooperative skills in unpredictable and stressful situations;
- student's freedom in decision-making;
- taking responsibility in actions;
- application of knowledge and dexterity in medical practice.

The workload of the student for the successful acquisition of the Neuroscience course was estimated in accordance with the 50:50 time sharing model of the project and 50:50 direct contact activities, presented in 2016 by the PBLMD project by Louise Faber, associate professor at the University of Aalborg (Figure 2).

Figure 2. Project distribution of working hours and the direct contact activities



Source: Louise Faber, PBLMD 2016

The use of the PBL-based training methodology, with the application of modern learning principles, favors students' progress and ability to participate in professional training, including

medical research, geared to the development of the theoretical and practical skills required for a Graduate and a successful employment.

The course "Neuroscience" was attended by 28 students, who are studying at the Public Health specialty of the Medical Faculty No. 1 of the USMF "Nicolae Testemitanu". The lectures were held interactively with the use of IT equipment, and later distributed to students via email or on stik. At practical hours the students were divided into 4 groups of 7 people.

The process of preparing students for the case study and other components of the training process was conducted by 4 facilitators who were trained in mobility at EU partner universities, in particular at the University of Aalborg, by PBL experts. At the same time, the facilitators also gained experience in the familiarization sessions with the PBL training methodology developed in the Republic of Moldova by the project partners.

Table 1. Study Plan for Public Health Program, the third year, semester VI

THIRD YEAR, semester VI (17 weeks)									
		Total	Direct contact	Individual study	Course	Practical work	Seminar		ECTS
S.06.O.046	Internal diseases - Semiology	150	85	65	34	30	21	E	4
S.06.O.047	Surgical-Semiology Diseases	120	68	52	17	30	21	E	4
S.06.O.048	Radiation hygiene	120	68	52	17	30	21	E	4
S.06.O.049	Neuroscience	120	68	52	17	30	21	CD	4
S.06.O.050	Radiology and imaging	90	51	39	17	17	17	CD	4
S.06.O.051	Traumatology and orthopedics	120	68	52	17	30	21	CD	
S.06.O.052	Placement learning* Internship	150	120	30		120	-	E	5

Upon implementation of the Neuroscience course, direct contact time amounted to 56.6% and the individual study 43.4%. The insignificant prevalence of direct contact hours results from the need to strengthen practical dexterity.

Table 2. The "Neuroscience" course timetable

Day/ Date	Time	Office	Lecture	Case	Manual dexterities	Consultation session	colloquy
February 8	08.00 – 09.40	Neurology	Introduction in PBL				
	09.50 – 11.30	Neurology	Anatomy				
February 15	08.00 – 09.40	Neurology	Morphopatology				
	09.50 – 11.30	Neurology	Fiziology				
February 22	08.00 – 09.40	Neurology	Microbiology				
	09.50 – 11.30	Neurology		Case no. 1			
March 1	08.00 – 09.40	Neurology	Pathophysiology				
	09.50 – 11.30	Neurology		Case no. 1			
March 15	08.00 – 09.40	Neurology	Neurology				
	09.50 – 11.30	Neurology	Psychiatrics				
March 22	08.00 – 09.40	Neurology			Manual dexterities (Case no. 1)		
	09.50 – 11.30	Neurology	Genetics				
March 29	08.00 – 09.40	Neurology		Case no. 2			
	09.50 – 11.30	Neurology	Anatomy + Imagistics				
April 5	08.00 – 09.40	Neurology		Case no. 2			
	09.50 – 11.30	Neurology	Histology				
April 12	08.00 – 09.40	Neurology			Manual dexterities (Case no. 2)		
	09.50 – 11.30	Neurology		Case no. 3			
April 19	08.00 – 09.40	Neurology				Consultation session	
	09.50 – 11.30	Neurology		Case no. 3			
April 26	08.00 – 09.40	Neurology	Biochemistry				
	09.50 – 11.30	Neurology			Manual dexterities (Case no. 3)		
May 10	08.00 – 09.40	Neurology	Pathophysiology				
	09.50 – 11.30	Neurology		Case no. 4			
May 17	08.00 – 09.40	Neurology	Psychiatrics				
	09.50 – 11.30	Neurology		Case no. 4			
May 24	08.00 – 09.40	Neurology	Neurology				
	09.50 – 11.30	Neurology			Manual dexterities (Case no. 4)		
May 31	08.00 – 09.40	Neurology	Psychiatrics				
	09.50 – 11.30	Neurology				Consultation session	
June 7	08.00 – 09.40						colloquy
	09.50 – 11.30						colloquy

From the total number of hours distributed for the Neuroscience course, 17 hours were allocated to the lecturing of the theoretical tangential courses of the given subject, while the rest of the hours were allocated to the studies of 4 clinical cases (12 hours / case). The distribution of theoretical courses was based on the principle of predominance of neuro subjects (physiology, pathophysiology, neurology, psychiatry) versus fundamental sciences (anatomy, histology, microbiology, genetics). The respected proportion was 2:1. This allowed an academic focus on skills in neuroscience.

The course finished with a colloquium that included two components:

1. Patient's Observation Sheet presentation
2. Pass an oral test exam.

Recorded results

The evaluation of the Neuroscience course allowed the quantification of the following knowledge, skills and competences:

At the level of knowledge and understanding the student:

- defines the theoretical basis of contemporary neurology
- identifies the anatomic-functional features of the nervous system;
- topographically highlights the place and the significance of different structures, formations and areas of the nervous system in performing concrete functions and neurological syndromes as a whole;
- establishes topical diagnosis based on defined clinical syndromes;

- knows the etiopathogenesis, clinical manifestations, diagnosis, treatment principles and prophylaxis of neurological diseases.

At application level:

- performs the collection of anamnesis and evaluation of data on nervous system functions;
- performs the special neurological examination on systems;
- applies the diagnostic methods for neurological diseases;
- knows how to interpret the results of clinical trials and tests, additional investigations of diagnosis for assessing the functional state of the nervous system;
- applies patient examination methods in emergency situations.

At the integration level

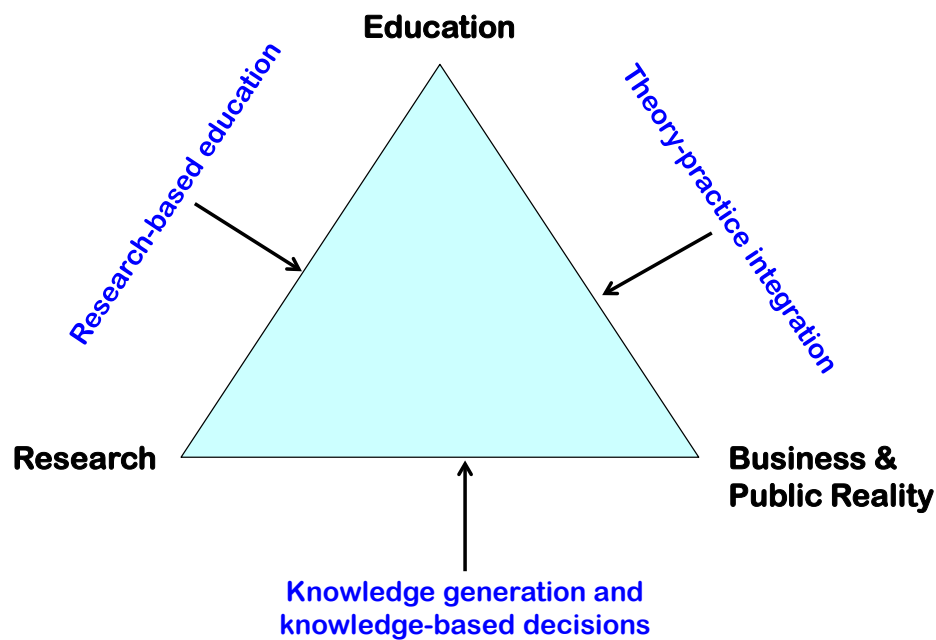
- appreciates the importance of neurology in the context of Medicine and integration with related medical disciplines;
- knows the evolution of physiological processes and the etiology of the pathological processes of the nervous system;
- uses the methods of investigation, treatment and prophylaxis of nervous system diseases;
- interprets the results of diagnostic methods in neurological diseases;
- is able to make optimal decisions in providing emergency aid in critical situations;
- generates ideas for scientific research projects in the field of neurology.

1.2 EXPECTED OUTCOMES

A number of outcomes are envisaged as a result of successful implementation of the PBL, student centred and active based BSc programme in Neurosciences. It is expected that by 2022 this programme will have become an internationally recognized programme that will attract European and international students, such as degree and exchange students. It is also expected that by 2022 at least five /three (Public Health/ AMP/PMA and Optometry) BSc study programmes from our university will have been redesigned based on PBL, student centred and active teaching and learning methodologies and methods and prospect students will have been enrolled in these programmes from September 1, 2020. A better alignment of knowledge, skills, and abilities of the students to the labour markets is envisaged.

Successful implementation of the study programme as well as its spill-over effects throughout our university will contribute to the development and strengthening of the integration of education, research, and business/policy collaboration (Figure 3). Academic staff will excel in engaging in research-based teaching, our students will learn and be able to apply theories in practice, be this in private or public sectors, and our researchers will collaborate with private and public organizations to create and transfer new knowledge.

Figure 3: Socially engaged university.



Source: Olav J. Sorensen, 2015

1.3 REPORT OUTLINE

We start the report by presenting our *visionary* PBL-based BSc in Optometry. Specifically we will start with a needs analysis; objective of the programme; general description of the study programme, its learning objectives and outcomes, potential future employment and further study of graduates, then a presentation of each semester, including its learning objectives and learning outcomes. Assessment and assessment criteria, progression from one semester to another, description of project work and semester projects, incl., their learning objectives, outcomes assessment and progression. Thereafter we will present the road map that will guide Nicolae Testemitanu State University of Medicine and Pharmacy in the process of implementing our visionary PBL-based BSc in Optometry. We will continue by presenting and discussing the action plan that will detail e.g., specific activities, resources, and internal policies needed to successfully implement our visionary study programme. We will conclude by providing to the University Management and the University Board a set of policy recommendations on how to enhance our learning and teaching by introducing PBL, student centered and active based teaching and learning methodologies and methods at our university.

2 LESSONS LEARNED FROM DEVELOPING AND IMPLEMENTING THE PILOT-PBL-BASED STUDY PROGRAMME

The implementation of the project at the USMF "Nicolae Testemitanu" started with a pilot program - the multidisciplinary interdisciplinary course of "Neuroscience". This course was developed and implemented for the third year students, semester VI, the Public Health specialty of the Faculty of Medicine no.1, ending with - a differentiated colloquy.


The whole process, from the moment the course concept was formulated to the post-implementation evaluation, generated a series of very precious experiences for the institutional long term development of the University, namely:

1. Resistance to change requires a multidisciplinary approach to all decisional levels. In our case, management of change with a strong focus on communication was a key element, absolutely indispensable for all stages from concept generation to implementation. The fear of leaving the comfort zone, insufficient skills to work in multidisciplinary teams, confusion about the concept of interdisciplinarity were registered at all stages of development and implementation of the "Neuroscience" course. All barriers and their consequences have been overcome mainly by improving communication.
2. Awareness of the need for change is successful only in the bottom-up approach when the need for change is prioritized at the hierarchically superior levels of the institution. In the case of PBL implementation, a consensus has not been achieved with reference to the need to implement new teaching models. This has delayed the continuity of the implementation of the "Neuroscience" course. As a result, any initiative involved the debut of the de novo "plan-do-check-act" cycle.
3. The change was, however, relatively easily accepted by students and trainers, who noticed the advantages of the new methodology almost instantly. Obviously, there was little flexibility in accepting the new methodology, low self-organization and self-expression skills, low teamwork skills, insufficient competence of methodology research, confusion with reference to the interdisciplinary concept, difficulties in prioritizing subjects with low research and communication skills, etc. But the openness to knowledge, the emphasis on communication and the marked flexibility of the young generation have made it possible to quickly overcome all the obstacles.
4. International good practices mention the sustainability marked in the framework of the progressively implemented reform. The implementation of PBL in the USMF started with a course in the study program, targeting a small number of involved students. It started from the premise: "small number - easy management" but also increased possibilities for applying the interdisciplinary approach to the Public Health program. There were registered the following difficulties:
 - Logistics management of the course;
 - Difficulties in the equitable distribution of hours;
 - Logical synchronization of the presented material;
 - Ensuring the continuity of the course idea;

- Implementing the course schedule in the university specific timetable;
- Difficulties in prioritizing selected topics for clinical cases;
- Insufficient skills in case formulation, etc.

At the end of the Neuroscience course students were unanymously surveyed on the quality of teaching and the achievement of the course objectives, with the satisfaction of the beneficiaries being 86% (figure 4)

Figure 4. Satisfaction of the beneficiaries with regard to the quality of teaching

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W		
1		FCP 9.1.2 FIȘĂ DE ÎNREGISTRARE A CALITĂȚII PREDĂRII																				03			
2																						30.11.2017			
3	Denumire Disciplină: Modulul Neuroștiințe																								
4	Cadrul didactic evaluat:																								
5	Evaluarea cadrului didactic - Modulul Neuroștiințe																								
6	Nr. Chestionar	Nr. întrebare																			Nivel de satisfacție pe				
7		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Total				
8	1	3	3	3	4	3	3	4	3	3	3	4	3	3	3	4	3	3	3	3	3	61	80%		
9	2	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	56	74%		
10	3	3	3	3	4	3	3	3	4	3	3	3	3	4	3	3	4	3	3	3	3	61	80%		
11	4	3	3	2	3	3	3	2	3	3	3	3	3	4	3	3	3	4	3	3	3	57	75%		
12	5	2	3	3	3	3	3	3	3	2	2	3	3	3	3	3	3	3	3	3	3	54	71%		
13	6	3	4	4	3	3	4	4	3	4	3	4	3	4	3	3	4	4	4	3	3	67	88%		
14	7	3	4	4	3	3	4	4	3	3	3	4	3	3	2	4	3	4	3	4	4	64	84%		
15	8	4	4	3	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	74	97%		
16	9	3	3	2	3	3	2	3	3	3	3	3	3	2	2	3	3	3	3	3	3	53	70%		
17	10	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	76	100%		
18	11	4	4	4	4	4	4	4	4	4	4	3	4	3	3	4	4	4	4	4	4	73	96%		
19	12	3	3	4	4	3	4	4	3	4	4	3	3	4	4	4	3	4	4	4	4	69	91%		
20	13	3	4	3	4	4	3	4	3	4	3	3	3	4	3	3	4	4	3	4	4	66	87%		
21	14	4	4	3	3	3	3	3	3	3	3	3	3	3	2	3	4	3	3	3	4	60	79%		
22	15	4	4	4	4	4	4	4	4	4	4	4	4	3	4	3	3	3	3	3	4	71	93%		
23	16	3	3	4	4	4	4	3	3	3	3	4	3	3	4	4	4	4	3	4	4	67	88%		
24	17	4	4	3	4	4	3	3	4	4	3	3	4	3	4	3	4	3	3	4	4	67	88%		
25	18	4	3	3	4	3	4	3	4	4	3	3	3	3	4	4	3	4	3	4	4	66	87%		
26	19	3	4	4	3	3	4	4	4	2	2	4	4	4	4	4	4	4	4	4	4	69	91%		
27	20	4	3	3	3	4	4	3	3	3	4	3	4	4	3	3	3	4	3	4	4	65	86%		
28	21	4	3	3	3	3	3	3	4	3	3	3	4	3	4	4	2	3	2	4	61	80%			
29	22	3	4	4	3	3	2	3	4	3	3	3	4	3	3	4	4	3	4	3	63	83%			
30	23	4	3	4	4	3	4	3	3	4	4	4	4	4	2	3	3	3	3	4	66	87%			
31	24	4	3	4	3	4	4	4	4	4	4	4	3	4	2	4	4	4	4	4	4	71	93%		
32	25	3	4	3	4	3	4	4	3	3	2	2	2	3	3	3	4	4	3	3	60	79%			
33	26	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	76	100%		
34																									
35	Nivel de satisfacție pe întrebare	3,3	3	3,4	4	3,4	4	4	3,6	4	3,5	4	4	4	4	4	4	4,1	3,9	3,6	65				
36																									
37		Nivel mediu de satisfacție:																						86%	
38																									
39	Data:																								
40	Semnătura responsabilului																								
41																									

FCP 9.1.2 Registration form for quality of teaching assessment

Subject name: Neuroscience module

The evaluated teacher:

Teacher's evaluation - Neuroscience module

Question nr.

Nr. Questionnaire


Level of satisfaction / Level of satisfaction per question / average level of satisfaction / Date:

/ Signature of the responsible person

Taking into account the results of post-implementation feedback, we wanted to extend the experience to a full-time program. In this context, the Optometry program, in its second year of implementation, is one that is suited to the sustainability of the project.

The challenges recorded in the internal validation process of the "Neuroscience" course are reflected in (Table 3).

Table 3. Achievement of the action plan within the "Neuroscience"

	OBC 5.1			RED: 03
	THE IMPLEMENTATION OF THE ACTIVITIES PLAN OF THE "NEUROSCIENCE" COURSE			Pag.
	2018			
Specific objectives	Activities	Responsible for implementation	Performance indicators	Notes
1	2	3	4	5
I. Achieving the student-centered curricular reform aimed at acquiring the necessary skills in the professional activity, in accordance with the national and international standards.	1. Periodic evaluation of the study program and its compatibility with the European PBL programs.	Vice-rector on quality Vice-rector on international students ✓ DDMA ✓ Deans FM1	1.1. Initial report of the Curriculum Reform Commission. 1.2. Coherence degree of the study program estimated according to the annual questionnaire of the trainees of at least 75%.	1.1 Achieved 1.2 Achieved

	1. Compatibility of the PBL study program based on ECTS with those of the European partner medical universities of the project to individualize the educational path of each student, ensuring student mobility.	Vice-rector on quality Vice-rector on international students ✓ DDMA Deans FM1	1.1. Number of students who have benefited from mobility of at least 4 .	2.1 Achieved
	2. Optimize the ratio of direct contact hours (lectures and practical tests) and individual work, group work, and project work.	Vice-rector on quality Vice-rector on international students ✓ DDMA Deans FM1	1.1. Sharing time between student work on the project and direct contact activities of at least 50:50 .	3.1 Achieved
II. Continuously improve the quality of admission, training and assessment processes for students.	1. Implement modern methods and techniques of training based on clinical case and problem.	Vice-rector on quality Vice-rector on international students ✓ DDMA ✓ Deans FM1	1.1 Number of teachers trained with PBL methods and techniques min ____14__ . 1.2 Number of teachers applying modern methods, according to the results of questionnaires of min ____14__ students .	1.1. Achieved 1..2 Achieved
	1. Ensure the transparency of the competence assessment process by publishing the results in the Intranet.	Vice-rector on quality Vice-rector on international students ✓ DDMA Deans FM1 ✓ DTIC	2.1 Number of facilitators who placed on the Intranet the results of evaluating the students' knowledge and practical skills of 100% .	2.1 Achieved - the results were placed in the SIMU

	1. Systematic questioning (at the end of the course) of the students regarding the quality of the PBL didactic process.	Vice-rector on quality Vice-rector on international students ✓ DDMA Deans FM1	3.1 Number of students undergoing systematic questioning of at least 75%. 3.2 Number of facilitators who practice systematic questioning of the students regarding the quality of the didactic process of at least 4	3.1 Interviewed 26 Stud. - 92.86% 3.2 Achieved
III. Promoting the PBL Program in the University and among high school graduates	4. Editing and distributing promotional materials related to the PBL program.	Vice-rector on quality Vice-rector on International Students Department of Public Relations Admissions Commission	4.1 Number of school graduates enrolled in the program promoted by min 10.	4.1 Achieved In 2018-2019, 25 students.

3 OUR VISIONARY PBL-BASED BSC IN OPTOMETRY

3.1 AN OVERVIEW

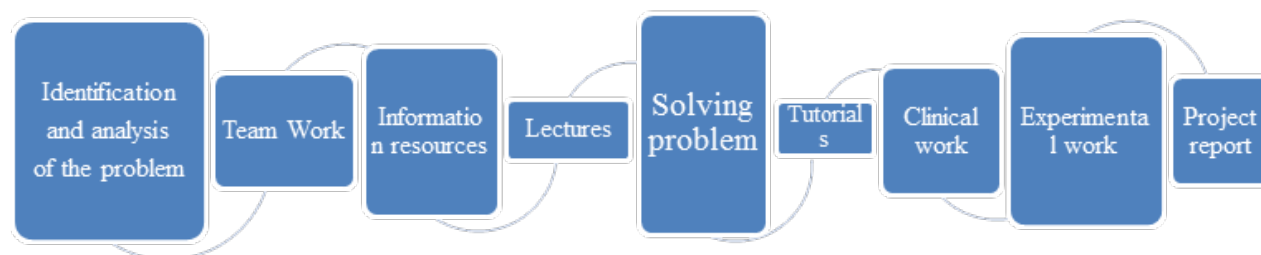
In order to ensure continuity of the PBL model at USMF "Nicolae Testemitanu", the introduction of problem-based education to the Optometry program will be achieved on the experience gained in implementing the multidisciplinary "Neuroscience" course.

The project of the Optometry study program was elaborated in accordance with the objectives of the USMF "Nicolae Testemitanu" Development Strategy for the period 2011-2020, Regulation for organization of studies in higher education based on the National Credit Studies System in the State University of Medicine and Pharmacy "Nicolae Testemitanu" of the Republic of Moldova, approved by the session of the USMF Senate' minute, no. 1/8 of 06.04.2017 and the standards of the Quality Management System ISO 9001: 2015 regarding the development of the educational activities in the University.

The didactic activities were structured in accordance with the provisions of the curriculum of the Optometry program with the application of student centered education.

For the Optometry study program we will continue to use the University of Aalborg PBL model, with the modification proposed by Romeo V. Turcan in 2017, which we will adapt to the peculiarities of the medical higher education in the Republic of Moldova (Figure 5).

Figure 5. Structure of activities related to the Optometry study program



The Optometry program is to be implemented during 4 years of study in line with the PBL teaching and learning methodology requirements. The distinctive features of the given program refer to the training of competences and practical skills characteristic for problem-based education and include the following components:

- student centered educational activities;
- developing team work skills;
- stimulating creativity;
- development of critical and clinical thinking;
- integrating disciplines to solve problems and case studies;

- developing practical dexterity;
- developing cooperative skills in unpredictable and stressful situations;
- student's freedom in decision-making;
- taking responsibility in actions;
- developing skills for managing entrepreneurial activity;
- application of knowledge and dexterity in medical practice.

The State University of Medicine and Pharmacy "Nicolae Testemitanu" applies systematic approach to curricular monitoring by elaborating, implementing and improving the efficiency of the training program according to the standards of the Quality Management System ISO 9001: 2015 for the beneficiaries' full satisfaction of their needs. Thus, there is a system of evaluation of the study program that monitors students' curricula and progression, with the identification and subsequent correction of nonconformities.

Curricular monitoring program of the processes and outcomes is ensured by applying the procedures of: assessment of the teaching quality and of teacher's satisfaction, including all the elements necessary to meet the established requirements.

Estimating the student's workload for the successful acquisition of the Optometry program was done in accordance with the 50:50 time sharing model for the project work and direct contact activities, presented in 2016 by the PBLMD project by Louise Faber, associate professor at University of Aalborg.

Problems based learning with application of modern learning principles favors students' progression and ability to participate in professional training activities including research competences aimed at developing both the theoretical and practical abilities necessary to a graduate for a successful integration in the workplace, as well as the application of entrepreneurial practices.

3.2 SEMESTERS

3.2.1 Semester 1

Skills / Competencies developed during the semester:

1. Apply basic optometric investigation techniques of patients in the professional activity process;
2. Use the basic knowledge in the given field to explain and interpret specific algorithms in the professional field;
3. Define the basic concepts, theories, methods and principles regarding the collection, processing, analysis and interpretation of the information necessary for the professional activity of the optometrist;
4. Apply rigorous and efficient working rules, manifest a responsible attitude towards the scientific domain, optimally and creatively exploit their own potential in specific situations, with respect for the principles and rules of professional ethics;
5. Apply group relationship techniques; developing empathetic empowerment of interpersonal communication and assuming specific roles in teamwork;

6. Objective self-evaluation of the need for continuous professional training, Identification of opportunities for continuous training and efficient use of learning resources and techniques for self development, efficient use of information and communication technologies, through correlation with the needs and professional development facilities specific to optometry.

Unit name course/module	Total hours			Nr. hours by type of activity			Form of evaluation	Nr. credits
	Total	Direct contact	Indivi dual Study	Course	Practic al work	Seminar		
FIRST YEAR, I Semester (15 weeks)								
Compulsory subjects (C)								
Anatomy of man	120	60	60	30	20	10	E	4
Optical Physics	150	75	75	30	20	25	E	5
Histology, cytology, embryology	120	60	60	30	20	10	E	4
English / French	120	60	60	-	-	60	E	4
Superior mathematics	120	60	60	30	20	10	E	4
Fundamental optometry	150	75	75	30	20	25	E	5
Total compulsory subjects	780	390	390	150	100	140	6E	26
Optional subjects (O) Package I								
Anthropology and philosophy in medicine	120	60	60	30	-	30	E	4
Introductory University Course (Information Technologies; History of the specialty; Basics of Information Culture)								
Total first curricular semester	900	450	450	180	100	170	7E	30

The teaching-learning methods used are student-centered and research-centered. Teachers are involved in many scientific-teaching activities using various teaching-learning interactive forms, including discussion, making current assessments, verification of reviews, reports, portfolios, case studies, patient observation sheets prepared by students, etc. The curriculum provides student-centered training, and at the end of each academic year the students defend a mini-project they have worked on during the semester. While planning the academic subjects, special attention is drawn to the realization and evaluation of the students' individual work. The students' opinions concerning the organization of the didactic process, the technical-material means, the content of certain subjects are taken into consideration and are appreciated according to the results of the survey applied in the SIMU. Individual support to students is provided through individual consultations at each studied subject and individual work management (the mini-project).

Evaluation methods:

The process and the assessment forms of the learning outcomes are carried out in strict compliance with the provisions of the normative acts in the field, namely: the Regulation for evaluation and academic performance, Regulation on the organization of the graduation exam of higher education integrated within the USMF. At the same time, the evaluation activity is also reflected in the curricula of the study subjects. The current assessment procedure for student learning activity is carried out during the educational process in the framework of the courses, seminars, practical activities (laboratory classes), consultations, individual work assigned to each student by oral evaluation, testing, written papers, practical activities, clinical case study, reports and the mini project.

The evaluation strategy is determined by the study program goals and aims at ascertainment / assessment of the formed competencies. It is elaborated by the faculty chair (for each department and subject) with the participation of the University's Evaluation Center and the faculty departments. In order to increase the degree of objectivity and transparency of the evaluation process, current assessments and screening sessions, at the Senate's decision, can be carried out by means of information technologies - assisted computer programs by tests. The results of the final evaluation are expressed in marks according to the scoring scale (minimum mark for promotion is grade 5) and study credits. The number of academic credits is determined by the curriculum and evaluates the full realization of the workload claimed out by the student, which proves the acquirement of certain competences. The final grade in the discipline is calculated from the average results for current assessments (50%) and the mark obtained on the exam (50%). The exam is considered to be passed if the student has received a promotion mark. If the exam consists of several stages, it will be considered to be passed if all stages are promoted, with a minimum promotion mark. Teachers indicate the results of the final evaluation in the scoring border, which is printed in the SIMU.

Expected outcomes

- Know the inspection procedures of the eyeball and the annexes;
- Know the eyeball investigation techniques and annexes;
- Know and be able to differentiate the normal and abnormal findings of the eyeball and the annexes;
- Know the construction, adjustment and use of various equipment and instruments for investigation in optometry;

- Know how to use different instruments for an eye inspection and explain the findings;
- Know to perform a basic examination of the anterior segment of the eyeball by biomicroscopy;
- Know to perform a basic examination of the posterior segment of the eyeball by direct and indirect ophthalmoscopy;
- Know how to make simple measurements of corneal curvature;
- Know how to use diagnostic drug remedies for the examination of the eye posterior segment;
- Be aware of the importance of cooperation with ophthalmologists and specialists from other fields in case of necessity;
- Perform a fundamental examination of the eye and its annexes using the tools included in the course (direct and indirect ophthalmoscope, biomicroscope, keratometer, retinoscope);
- Be able to evaluate and record the basic outcomes of the examinations used in the course.

3.2.2 Semester 2

Competences acquired during the course:

1. Applying the theories of visual and physical optics and visual neurophysiology;
2. Use the basic knowledge in the given domain to explain and interpret specific algorithms in the professional field;
3. Define the basic concepts, theories, methods and principles regarding the collection, processing, analysis and interpretation of the information necessary for the professional activity of the optometrist;
4. Apply rigorous and efficient working rules, manifest a responsible attitude towards the scientific domain, optimally and creatively exploit its potential in specific situations, with respect to the principles and norms of professional ethics;
5. Apply group relationship techniques; developing empathetic empowerment of interpersonal communication and assume specific roles in teamwork;
6. Objective self-evaluation of the need for continuous professional training, Identifying opportunities for continuous training and efficient use of learning resources and techniques for self development, efficient use of knowledge in the field of information and communication technologies, by correlation to the needs and professional development facilities specific for optometry.

Unit name course/module	Total hours			Nr. hours by type of activity			Form of evaluation	Nr. credits
	Total	Direct contact	Indivi dual studies	Course	Practic al work	Seminar		
YEAR I, Semester II (15 weeks)								
Compulsory subjects (C)								
Anatomy of the eye	180	90	90	30	30	30	E	6
Biochemistry	120	60	60	30	20	10	E	4
Geometry, Visual Optics and assembling optical products	120	60	60	30	20	10	E	4
Research methodology	120	60	60	30	20	10	E	4
Fundamental methods of investigation in optometry	120	60	60	30	20	10	E	4
Mini proiect	120	60	60	-	60	-	E	4
Total compulsory subjects	780	390	390	150	100	140	6E	26
Optional subjects (O) Package II								
History of medicine	120	60	60	30	-	30	E	4
History of illustrious medical scholars								
Total curriculum semester II	900	450	450	180	100	170	7E	30
Compulsory extracurricular subjects (OE)								
Physical education	30	30	-	-	30	-	C	-

The teaching-learning methods used are student-centered and research-centered. Teachers are involved in many didactic-scientific activities with the use of various interactive forms of teaching-learning, including discussions, making current assessments, verification of reviews, reports,

portfolios, case studies, the patient's observation sheet prepared by the students, etc. The curriculum provides student-centered training, and at the end of each academic year the students defend a mini-project they worked on during the semester. While planning the academic subjects, special attention is drawn to the realization and evaluation of the students' individual work. The students' opinions concerning the organization of the didactic process, the technical-material means, the content of certain subjects are taken into consideration and are appreciated according to the results of the survey applied in the SIMU. Individual support to students is provided through individual consultations at each studied subject and individual work management (the mini-project).

Evaluation methods:

The process and the forms of assessment of the learning outcomes are carried out in strict compliance with the provisions of the normative acts in the field, namely: the Regulation for evaluation and academic performance, Regulation on the organization of the graduation exam of higher education integrated within the USMF. At the same time, the evaluation activity is also reflected in the curricula of the study subjects. The current assessment procedure for student learning activity is carried out during the educational process in the framework of the courses, seminars, practical activities (laboratory classes), consultations, individual work assigned to each student by oral evaluation, testing, written papers, practical activities, clinical case study, reports and the mini project.

The evaluation strategy is determined by the study program goals and aims at ascertainment / assessment of the formed competencies. It is elaborated by the faculty chair (for each department and subject) with the participation of the University's Evaluation Center and the faculty departments. In order to increase the degree of objectivity and transparency of the evaluation process, current assessments and screening sessions, at the Senate's decision, can be carried out by means of information technologies - assisted computer programs by tests. The results of the final evaluation are expressed in marks according to the scoring scale (minimum mark for promotion is grade 5) and study credits. The number of academic credits is determined by the curriculum and evaluates the full realization of the workload claimed out by the student, which proves the acquirement of certain competences. The final grade in the discipline is calculated from the average results for current assessments (50%) and the mark obtained on the exam (50%). The exam is considered to be passed if the student has received a promotion mark. If the exam consists of several stages, it will be considered to be passed if all stages are promoted, with a minimum promotion mark. Teachers indicate the results of the final evaluation in the scoring border, which is printed in the SIMU.

Expected outcomes

- Know the principles of photometry, the spectral perception of ocular media, and the effect of electromagnetic radiation on ocular tissues;
- Explain neurophysiology and organization of visual field and visual cortex;
- Explain the perception of light, shape (spatial perception), space, movement and color of people with normal vision and those with aberrant perceptions;
- Describe in detail the methods and procedures for testing adaptation to darkness, examining visual acuity at high and low contrast, and contrast sensitivity, as well as examining chromatic vision;

- Perform practical light measurements using a luxmeter, and provide adequate illumination conditions;
- Perform clinical testing of adaptation to darkness, visual acuity at high and low contrast, contrast sensitivity and chromatic vision;
- Develop, analyze and form the conclusion of the clinical data performed and describe the normal or abnormal results obtained;
- Recognize their own limits of the knowledge gained in the context of the course;
- Explain the professional and ethical issues in accordance with applicable laws and ethical guidelines for optometrists and other medical staff;
- Be aware of the importance of cooperation with ophthalmologists and specialists from other fields in case of necessity;
- Analyze and critically evaluate their own and their colleagues' activity to ensure the quality of the examination.

3.2.3 Semester 3

Competences acquired during the course:

1. Apply the principles of use and distribution of contact lenses in the process of professional activity;
2. Use the basic knowledge in the given domain to explain and interpret specific algorithms in the professional field;
3. Define the basic concepts, theories, methods and principles regarding the collection, processing, analysis and interpretation of the information necessary for the professional activity of the optometrist;
4. Apply rigorous and efficient working rules, manifest a responsible attitude towards the scientific domain, optimally and creatively exploit its potential in specific situations with respect to the principles and norms of professional ethics;
5. Apply group relationship techniques; developing empathetic empowerment of interpersonal communication and assume specific roles in teamwork;
6. Objective self-evaluation of the need for continuous professional training, Identifying opportunities for continuous training and efficient use of learning resources and techniques for self development, efficient use of knowledge in the field of information and communication technologies, by correlation to the needs and professional development facilities specific for optometry.

Unit name course/module	Total hours			Nr. hours by type of activity			Form of evaluation	Nr. credits
	Total	Direct contact	Individual studies	Course	Practical work	Seminar		
YEAR II, Semester III (15 weeks)								
Compulsory subjects (C)								
Physiology of the eye	120	60	60	20	30	10	E	4
General pharmacology	120	60	60	20	20	20	E	4
Visual Optics and Optical Products	180	90	90	30	30	30	E	6
Research methodology	120	60	60	20	20	20	E	4
Microbiology, Virology and Immunology	120	60	60	20	10	30	E	4
Diagnostic methods in optometry	120	60	60	20	20	20	E	4
Total Compulsory subjects	780	390	390	150	100	140	6 E	26
Optional subjects (O) Package II								
Medical Sociology	120	60	60	30	-	30	E	4
Medical psychology								
Total curricular III semester	900	450	450	180	100	170	7 E	30

The teaching-learning methods used are student-centered and research-centered. Teachers are involved in many didactic-scientific activities with the use of various interactive forms of teaching-learning, including discussions; making current assessments, verification of reviews, reports, portfolios, case studies, the patient's observation sheet prepared by the students, etc. The curriculum provides student-centered training, and at the end of each academic year the students defend a mini-project they worked on during the semester. While planning the academic subjects, special attention is drawn to the realization and evaluation of the students' individual work. The students' opinions concerning the organization of the didactic process, the technical-material means, the content of certain subjects are taken into consideration and are appreciated according to the results of the survey applied in the SIMU. Individual support to students is provided through individual consultations at each studied subject and individual work management (the mini-project).

Evaluation methods:

The process and the assessment forms of the learning outcomes are carried out in strict compliance with the provisions of the normative acts in the field, namely: the Regulation for evaluation and academic performance; Regulation on the organization of the graduation exam of higher education integrated within the USMF. At the same time, the evaluation activity is also reflected in the curricula of the study subjects. The current assessment procedure for student learning activity is carried out during the educational process in the framework of the courses, seminars, practical activities (laboratory classes), consultations, individual work assigned to each student by oral evaluation, testing, written papers, practical activities, clinical case study, reports and the mini project.

The evaluation strategy is determined by the study program goals and aims at ascertainment / assessment of the formed competencies. It is elaborated by the faculty chair (for each department and subject) with the participation of the University's Evaluation Center and the faculty departments. In order to increase the degree of objectivity and transparency of the evaluation process, current assessments and screening sessions, at the Senate's decision, can be carried out by means of information technologies - assisted computer programs by tests. The results of the final evaluation are expressed in marks according to the scoring scale (minimum mark for promotion is grade 5) and study credits. The number of academic credits is determined by the curriculum and evaluates the full realization of the workload claimed out by the student, which proves the acquirement of certain competences. The final grade in the discipline is calculated from the average results for current assessments (50%) and the mark obtained on the exam (50%). The exam is considered to be passed if the student has received a promotion mark. If the exam consists of several stages, it will be considered to be passed if all stages are promoted with a minimum promotion mark. Teachers indicate the results of the final evaluation in the scoring border, which is printed in the SIMU.

Expected outcomes

- Know the relevant methods for applying contact lenses;
- Know the procedures for distributing contact lenses;
- Know the possible complications that may occur along the contact lens wearing;
- Know the ocular and systemic pathologies that can endanger the use of contact lenses;
- Know the legislation on contact lenses in the practice of optometrists;
- Can collect an anamnesis for the application of contact lenses;

- Know the technique of examinations and measurements relevant for the application of contact lenses to people of all ages (over 5 years) with normal visual functions;
- Know how to evaluate, analyze and describe the normal and abnormal findings in the previous segment associated with the wear of the contact lenses;
- Know how to request the consultation of other health professionals as appropriate;
- Know to complete a medical file in accordance with the specific instructions and procedures regarding contact lenses;
- Have practical skills on recommending cleaning remedies and measures to prevent complications to contact lens wearers;
- Recognize their own limits on knowledge gained in the context of the course;
- Be aware of the importance of cooperation with ophthalmologists and specialists from other fields in case of necessity;
- Analyze and critically evaluate their own and colleagues' activity to ensure the quality of the examination.

3.2.4 Semester 4

Visual perception

The discipline is intended to provide students with theoretical and practical knowledge in the field of human and binocular vision mechanisms by which they can perform their optometrist function. The students' activities aim at developing critical analysis capacities and integrating the information taught in the individual as well as in the team activity in the field of optometry. It is a discipline that contributes to the development of a clear, logical, articulate and coherent language for an optometrist.

Competences acquired during the course:

1. Apply the principles of use and distribution of contact lenses in the process of professional activity;
2. Use the basic knowledge in the given domain to explain and interpret specific algorithms in the professional field;
3. Define the basic concepts, theories, methods and principles regarding the collection, processing, analysis and interpretation of the information necessary for the professional activity of the optometrist;
4. Apply rigorous and efficient working rules, manifest a responsible attitude towards the scientific domain, optimally and creatively exploit its potential in specific situations, with respect to the principles and norms of professional ethics;
5. Apply group relationship techniques; developing empathetic empowerment of interpersonal communication and assume specific roles in teamwork;
6. Objective self-evaluation of the need for continuous professional training, Identifying opportunities for continuous training and efficient use of learning resources and techniques for self development, efficient use of knowledge in the field of information and communication technologies, by correlation to the needs and professional development facilities specific for optometry.

Expected outcomes at the end of the course

Upon completion of the course the student will be able to:

1. Know the sensory adaptations in strabismus and recognize the most common types of strabismus;
2. Know the methods of binocular and monocular vision evaluation;
3. Be familiar with methods of investigation and management of adult patients with oculomotor and / or acupuncture disorders;
4. Know the methods of investigation and management of children with abnormalities of binocular vision;
5. Understand the management of children at risk of developing an abnormality of binocular vision;
6. Know the management principles of patients with vision abnormalities.

At the application level:

1. Perform an orthopedic examination by themselves.
2. Identify and implement the necessary prophylaxis and monitoring measures for patients with binocular and / or acomodative problems or at risk of developing binocular vision problems.
3. Evaluate, analyze the results of the examinations and propose a proper monitoring scheme for the patient with ocular disturbances.

At the integration level:

1. Recognize their own limits on knowledge gained in the context of the course.
2. Be aware of the importance of cooperation with ophthalmologists and specialists in other fields in case of necessity.
3. Analyze and critically evaluate their own and colleagues' activity to ensure the quality of the examination.

Learning-teaching strategies: Presentation, interactive lecture, heuristic conversation, demonstration, problem-solving, brainstorming, group work, individual study, work with textbook and the scientific text, learning by examining and presenting clinical cases, debate.

Assessment strategies: tests for current assessment, tasks for individual work, oral evaluation, practical skills testing, written test for final assessment.

3.2.5 Semester 5

The basics of pediatric optometry

Competences acquired during the course:

1. Apply the principles of pediatric optometry in the process of professional activity;
2. Use the basic knowledge in the given field to explain and interpret specific algorithms in the professional field;
3. Define the basic concepts, theories, methods and principles regarding the collection, processing, analysis and interpretation of the information necessary for the professional activity of the optometrist;

4. Diagnosis of ocular pathologies and determination of the urgency degree, for patient orientation towards ophthalmologist;
5. Apply rigorous and efficient working rules, manifest a responsible attitude towards the scientific field, optimally and creatively exploit their own potential in specific situations, with respect to the principles and norms of professional ethics;
6. Applying group relationship techniques, developing empathetic empowerment of interpersonal communication and assume specific roles in teamwork;
7. Objective self-evaluation of the need for continuous professional training, Identifying opportunities for continuous training and efficient use of learning resources and techniques for self development, efficient use of knowledge in the field of information and communication technologies by correlation to the needs and professional development facilities specific for optometry.

Expected outcomes at the end of the course

Upon completion of the course the student will be able to:

1. Know the development principles of children's optical analyzer;
2. Know the classification of children's optical analyzer abnormalities;
3. Know the examination methods of visual functions in pediatric optometry;
4. Know the methods of assessment and diagnosis of children's refraction;
5. Know the symptoms of children's refractive anomalies;
6. Know the topical drug remedies in the refractive examination of children;
7. Know and interpret the symptoms and signs of abnormal eye conditions and pathologies that endanger the sight;
8. Know the risk factors for ocular pathologies;
9. Know the specific manifestations of systemic maladies affecting the vision organ.

At application level:

1. Be able to perform a visual examination of the small patient.
2. Possess the technique of children's retinoscopy.
3. Be able to diagnose a children's refractive abnormality.
4. Be able to apply ophthalmic drops in refractive examination of children.
5. Be able to recommend when necessary the ophthalmologist consultation and provide appropriate counseling to patients.
6. Apply knowledge in practice to prevent ocular pathologies and conditions of occurrence.
7. Know how to apply speciality knowledge and relevant research results for the treatment of the patient with ocular diseases.

At the integration level:

1. Recognize their own limits on knowledge gained in the context of the course.
2. Be aware of the importance of cooperation with ophthalmologists and specialists from other fields in case of necessity.
3. Analyze and critically evaluate their own and colleagues' activity to ensure the quality of the examination.
4. Be aware of the importance of ocular pathologies in the specialty of Optometry.

Learning-teaching strategies: Presentation, interactive lecture, heuristic conversation, demonstration, problem-solving, brainstorming, group work, individual study, work with textbook and the scientific text, learning by examining and presenting clinical cases, debate.

Assessment strategies: tests for current assessment, tasks for individual work, oral evaluation, practical skills testing, written test for final assessment.

3.2.6 Semester 6

Methods of visual examination and rehabilitation in optometry

The discipline is intended to provide students with theoretical knowledge, skills and general competences regarding visual function rehabilitation of patients with visual maladies. The students' activities aim at developing the critical analysis capacities and integrating the information taught in their own as well as in the team's activity in the field of optometry. It is a discipline that contributes to the development of a clear, logical, articulate and coherent language, and the knowledge gained will serve as tools for practicing the profession of an optometrist.

Competences acquired during the course:

1. Apply the principles of visual functions' rehabilitation to persons with disabilities in their professional activity process.
2. Use basic knowledge in the given field to explain and interpret specific algorithms in the professional field;
3. Define basic concepts, theories, methods and principles regarding the collection, processing, analysis and interpretation of the information necessary for the professional activity of the optometrist;
4. Apply rigorous and efficient working rules, manifest a responsible attitude towards the scientific domain, optimally and creatively exploit their own potential in specific situations, with respect to the principles and norms of professional ethics;
5. Apply group relationship techniques; developing empathetic empowerment of interpersonal communication and assume specific roles in teamwork;
6. Objective self-evaluation of the need for continuous professional training, Identifying opportunities for continuous training and efficient use of learning resources and techniques for self development, efficient use of knowledge in the field of information and communication technologies, by correlation to the needs and professional development facilities specific for optometry.

Expected outcomes at the end of the course

Upon completion of the course the student will be able to:

1. Know the classifying principles of ocular disabilities.
2. Know the examination methods of people with ocular disabilities.
3. Know the rehabilitation principles of visual functions.
4. Know the types of devices' use to help rehabilitating people with eye disabilities.
5. Know the legislation in force regarding people with ocular disabilities.

At application level:

1. Possess the technique of examining people with problems of the vision organ.
2. Know how to test visual aids of the people with eye disabilities.
3. Know how to prepare an application for visual aids assistance.
4. Know to provide advice on the use of such vision equipment as: magnifying glass, binoculars, telescope for people with eye problems.

At the integration level:

1. Recognize your own limits on knowledge gained in the context of the course.
2. Be aware of the importance of cooperation with ophthalmologists and specialists from other fields in case of necessity.
3. Use the knowledge and skills acquired to improve the quality of life of people with ocular disabilities.
4. Analyze and critically evaluate their own and colleagues' activity to ensure the quality of the examination.

Learning-teaching strategies: Presentation, interactive lecture, heuristic conversation, demonstration, problem-solving, brainstorming, group work, individual study, work with textbook and scientific text, learning by examining and presenting clinical cases, debate.

Assessment strategies: tests for current assessment, tasks for individual work, oral questionnaire, practical skills testing, written test for final assessment.

3.2.7 Semester 7

Competences acquired during the course:

1. Application of the principles of use and distribution of contact lenses in the process of professional activity.
2. Use basic knowledge in the given field to explain and interpret specific algorithms in the professional field.
3. Define basic concepts, theories, methods and principles regarding the collection, processing, analysis and interpretation of the information necessary for the professional activity of the optometrist.
4. Apply rigorous and efficient working rules, manifest a responsible attitude towards the scientific field, optimally and creatively exploit their own potential in specific situations, with respect to the principles and norms of professional ethics.
5. Apply group relationship techniques, developing empathetic empowerment of interpersonal communication and assume specific roles in teamwork.
6. Objective self-evaluation of the need for continuous professional training, Identifying opportunities for continuous training and efficient use of learning resources and techniques for self development, efficient use of knowledge in the field of information and communication technologies, by correlation to the needs and professional development facilities specific for optometry.

3.2.8 Semester 8

Clinical practice (Internship)

Competences acquired during the course:

1. Applying the principles of optometry in the process of professional activity;
2. Using the basic knowledge in the given field to explain and interpret specific algorithms in the professional field;
3. Define the basic concepts, theories, methods and principles regarding the collection, processing, analysis and interpretation of the information necessary for the professional activity of the optometrist;
4. Diagnosis of ocular pathologies and determination of the urgency degree, for patient orientation towards ophthalmologist;
5. Apply rigorous and efficient working rules, manifest a responsible attitude towards the scientific field, optimally and creatively exploit their own potential in specific situations, with respect to the principles and norms of professional ethics;
6. Applying group relationship techniques, developing empathetic empowerment of interpersonal communication and assume specific roles in teamwork;
7. Objective self-evaluation of the need for continuous professional training, Identifying opportunities for continuous training and efficient use of learning resources and techniques for self development, efficient use of knowledge in the field of information and communication technologies, by correlation to the needs and professional development facilities specific for optometry.

The research project

Expected outcomes at the end of the project

Upon completion of the course unit the student will be able to:

1. Know the management principles of eyeball diseases and auxiliary eye apparatus;
2. Know and apply the anomalies and maladies classifications of the optical analyzer;
3. Know and apply the examination methods of the functions of the eye organ in optometry;
4. Know and apply the evaluation methods and diagnosis of refraction;
5. Know the symptoms of refraction abnormalities;
6. Know the topical drug remedies in the refractive examination;
7. Know and interpret the symptoms and signs of abnormal eye conditions and pathologies that endanger the sight;
8. Know the risk factors of the ocular pathologies and their management;
9. Know the specific manifestations of systemic maladies that affect the organ of vision and apply effective management.

At application level:

1. Be able to perform a patient's visual function examination with sight problems.
2. Possess retinoscopy technique for adults and children.
3. Be able to diagnose adults' and children's refractive abnormality.
4. Apply eye drops to the framework of a refractive examination.

5. Be able to recommend the consultation of the ophthalmologist and provide appropriate counseling to patients.
6. Apply knowledge in practice to prevent eye pathologies and conditions of occurrence.
7. Know how to apply speciality knowledge and relevant research results for the treatment of the patient with ocular diseases.

At the integration level:

1. Awareness of the importance of cooperation with ophthalmologists and specialists from other fields in case of necessity.
2. Awareness of the importance of ocular pathologies in the Optometry specialty.
3. Analyze and critically evaluate their own and colleagues' activity to ensure the quality of the examination.
4. Apply in the territory the knowledge and dexterity accumulated during the studies.
5. Use modern management techniques with entrepreneurial elements.

Teaching and learning strategies: individual study and group work, working with text books and scientific text, learning by examining and investigating clinical cases.

Assessment strategies: tasks for individual work, oral evaluation, practical skills testing, presentation of the research project results, final testing at the state examination.

4 ROAD MAP

4.1 INTRODUCTION

The implementation of problem-based education in the Optometry program is based on the practice of the Neuroscience course. Analysis of strengths and weaknesses will provide us with the opportunity to improve the quality of student training in the Optometry program.

Thanks to mobility of partner universities in the EU, the academic framework has gained experience on problem-based learning methodology, we have documented the organization of the medical education process and we have learned how to elaborate the stages of the implementation of the study programs and their integration into universities at different hierarchical levels such as: university management, management at faculty level, departments and other university subdivisions.

For the successful implementation of the project objectives, staff and students will be initiated in the PBL method and will prepare the ground for starting the PBL program activities in Optometry.

4.2 PERIOD 1

January-June 2019 - Preparation Phase PBL_Optometry

This period coincides with the continuation of the PBL_Neuroscience course in the Public Health program. This gives a significant advantage to the preparation of the PBL launch within the Optometry program.

Purpose and specific objectives:

The purpose of the preparatory phase is to fully prepare all the necessary prerequisites for launching the PBL initiative for the Optometry program, namely:

1. Development, customizing and approval at all levels of:
 - PBL used model;
 - Adjustment to PBL curriculum components;
 - Completing the schedule;
 - Development of case studies;
 - Finalizing study objectives and research questions;
 - Compilation of bibliographic lists;
 - Preparing the team of trainers, moderators and project managers.

Expected results:

1. PBL intervention team trained and prepared to meet the qualifications needed to implement PBL;
2. Complete set of materials for the teaching process;
3. Curriculum and timetable finalized and approved.

4.3 PERIOD 2

July - December 2019 Implementation launch of PBL_Opto

Purpose and specific objectives:

The period is to be dedicated to the final preparations and debut of the PBL implementation in the Optometry program. The set of educational material is developed for the 2nd and 3rd year, having as a substrate the modular type of curricular development. Clinical cases prepared according to the pre-established plan will be introduced for studies.

Expected results:

1. Design process with minor impediments;
2. PBL team satisfied with the results;
3. Competent and happy students.

4.4 PERIOD 3

January-June 2020 Deployment implementation of PBL_Opto

Purpose and specific objectives:

The period is to be dedicated to continuing to apply PBL to prepare Optometrist students and to continue with the clinical cases study according to the pre-established plan. The final result is the research project that integrates all the modules studied, team-prepared by the students.

Expected results:

1. Developed quality projects;
2. PBL team satisfied with the results;
3. Competent and happy students.

4.5 PERIOD 4

July - December 2020 Continuation of PBL_Opto implementation

Purpose and Specific Objectives:

The period will be devoted to the continuation of PBL implementation in the Optometry program, this time for the final fourth year students of the program study, the third and the second year. For the fourth year there is a discussion on the advancement in the preparation of the bachelor thesis.

Expected results:

1. On going study process with minor impediments;
2. Easy engagement of second year students in the PBL philosophy;
3. PBL team satisfied with the results.

4.6 PERIOD 5

January-June 2021 - First Promotion PBL_Optomety

This period coincides with the launch of the first Optometrist graduate cycle. This provides the possibility of international accreditation of the Optometry program and the definitive institutionalization of PBL and other medical education programs.

Purpose and specific objectives:

The purpose of the period is to prepare an Optometrist first promotion, competent, competitive and equipped with practical certain skills to launch an entrepreneurial practice of optometry.

Another specific objective would be the preparation of the premises for the launch of the international accreditation process of the program but also of the initiation of PBL for other medical education programs such as General Medicine, Pharmacy, Dental Medicine, etc.

Expected results:

1. Competent and competitive optometrist promotion;
2. Package of documents required for international accreditation;
3. Full package of PBL educational material for at least one new medical educational program (timetable, curriculum, bibliographic list, completed and approved study cases).

4.7 PERIOD 6

July-December 2021:

- International Assessment and Accreditation of the PBL_Optomety Program
- PBL_next launch

Purpose and Specific Objectives:

The purpose of the period is international accreditation of the program and initiate the implementation of PBL for other medical education programs such as General Medicine, Pharmacy, Dental Medicine, etc.

Expected results:

1. Certificate of international accreditation of Optometry program;
2. Continue PBL_optometry with small adjustments and improvements;
3. PBL implementation for at least one new medical educational program

5 ACTION PLAN

5.1 INTRODUCTION

Curricular Reform of the Optometry Study Program and Modernization of the Higher Medical Education Program in the Republic of Moldova in accordance with the Bologna Process through the implementation of the PBL methodology.

5.2 ACTIVITIES

5.2.1 Period 1

- Developing the curriculum and / or adjusting it for the Optometry study program with the implementation of the "Problem Based and Simulation in Optometry" methodology.
- Develop and / or adjust curricula according to the PBL Curriculum in the partner universities of the project.
- Approval of the PBL-Optometry study program at all courts.

5.2.2 Period 2

- Familiarize the academic staff and the program managers of USMF "Nicolae Testemitanu" with the PBL methodology by the foreign partners.
- Identification of the facilitators of the academic staff and their involvement in the implementation of the new program.
- Initiating students in PBL.

5.2.3 Period 3

- Case design for PBL under the guidance of our EU partners.
- Implementation of PBL in Optometry program in USMF "Nicolae Testemitanu".
 1. Testing the new study program:
 - a) the results of the examinations promotion;
 - b) anonymous questioning of students.
 2. Final implementation of the PBL and continuous improvement of the new study program.
 3. The employment rate of graduates trained by the PBL method and comparative analysis with the employability of graduates trained by traditional methods.

5.2.4 Period 4

- Continuous improvement of the new PBL study program in Optometry.
- The employment rate of graduates trained at Optometry study program by the PBL method and comparative analysis with the employability of graduates trained by traditional methods.

5.3 RESOURCES

5.3.1 Period 1

- Preparing facilitators and developing the training methodology in PBL.
- Staff mobility and familiarization with PBL training methods in EU partner universities.

5.3.2 Period 2

- Arrangement of study rooms with the equipment needed to implement the program.
- Developing and continuously improving the technical-material basis for the Optometry program.
- Republic of Moldova students' mobility in the EU universities.

5.3.3 Period 3

- Identifying and attracting funds for the continued development of the PBL study program in Optometry.

6 UNIVERSITY LEVEL STRATEGIC RECOMMENDATIONS

6.1 INTRODUCTION

In order to ensure the sustainable development of the PBL study program in Optometry, it is necessary to progressively and gradually improve the capacities and competencies of all the decision and executive staff involved.

6.2 RECOMMENDATIONS: STUDY PROGRAMMES LEVELS

- Creating favorable conditions for aligning the expected changes to the vision, mission and values of the USMF Development Strategy of "Nicolae Testemitanu".
- Adjustment of Optometry study program to the needs and conditions of the Republic of Moldova.

6.3 RECOMMENDATIONS: DEPARTMENT AND FACULTY LEVELS

- Strengthening the capacities and raising the awareness of the changes to be implemented and their continuous prioritization.
- When implementing the program, take into account the wishes and proposals of the students trained in the Optometry program.

6.4 RECOMMENDATIONS: STAFF LEVEL

- Facilitating the training of staff for the PBL program in Optometry.
- Ensure an open, transparent communication that would remain *DECISIVE* in the sustainable development of any implemented change.

6.5 RECOMMENDATIONS: STUDENT LEVEL

- Continuous development of communication and teamwork skills;
- Applying the theoretical knowledge and skills obtained in daily activities;
- Training managerial and entrepreneurial skills;
- Encourage students to participate in the decision-making process.

6.6 RECOMMENDATIONS: ADMINISTRATION AND MANAGEMENT LEVELS

- Support and continuous guidance of top management to ensure project continuity and implementation of the agreed decisions.
- Acceptance, development and implementation of any expected change can only be achieved with the common effort of all subdivisions and staff of the University.

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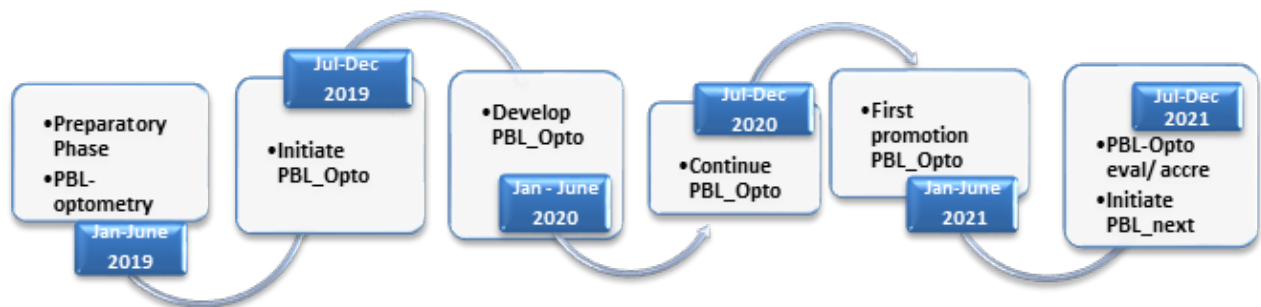
Appendix 1: Our Visionary BSc in Optometry

Optometry Study Program


Year of studies	Semester	Subjects				ECTS
I	1	Anatomy, physiology and biochemistry 8 ECTS	Physics and mathematics 6 ECTS	Optica și tehnica optometrică 6 ECTS	Introduction to problem-based learning, communication and medical practice (Course) 10 ECTS	30
	2	Fundamentals of Optometry 4 ECTS	Visual perception 6 ECTS	Metode de examinare 5 ECTS	Public health, epidemiology Research project 15 ECTS	30
II	3	Fundamental bases of contact lenses 6 ECTS	Pharmacology and pathology 5 ECTS	Studii sociale și optometria 4 ECTS	Evidence-based medicine Research project 15 ECTS	30
	4	Binocular view 4 ECTS	Examination methods in optometry 1 6 ECTS	Percepția vizuală 5 ECTS	Biostatistics Research project 15 ECTS	30
III	5	The basics of orthoptics and pediatrics 7 ECTS	Clinical optometry 5 ECTS	Patologia oculară 8 ECTS	Ocular pathologies and clinical optometry 10 ECTS	30
	6	Examination methods in optometry 2 6 ECTS	Visual rehabilitation and visual ergonomics 9 ECTS		Examination methods and visual reconciliation 15 ECTS	30

IV	7	Contact lenses 6 ECTS	Eye Pathology 5 ECTS	Entrepreneurship in optometry 4 ECTS	Manufacture and prescription of contact lenses 15 ECTS	30
	8	Clinical practice 7 ECTS		Research practice (research project) 15 ECTS	Graduation exam 8 ECTS	30

Appendix 2: Road Map



Appendix 3: Action plan

	OBC 5.1 ACTIVITIES IMPLEMENTATION PLAN OF PBL IN OPTOMETRY 2019			RED: 03
				Page
Specific Objectives	Activities	Responsible for implementation	Performance indicators	Note
1	2	3	4	5
Achieving the student-centered curricular reform aimed at acquiring the necessary skills in the professional activity, in accordance with the national and international standards.	2.Periodic evaluation of the study program and its compatibility with the European PBL programs.	Vice-rector on quality Vice-rector on international students ✓ DDMA ✓ Deans FM1	1.1. Initial report of the Curriculum Reform Commission. 1.2. Coherence degree of the study program estimated according to the annual questionnaire of the trainees of at least 75%.	
	1. Compatibility of the PBL study program based on ECTS with those of the European partner medical universities of the project to individualize the educational path of each student, ensuring student mobility.	Vice-rector on quality Vice-rector on international students ✓ DDMA ✓ Deans FM1	1.1. Number of students who have benefited from mobility of at least 4.	
	2. Optimize the ratio of direct contact hours (lectures and practical tests) and individual work, group work, and project work.	Vice-rector on quality Vice-rector on international students ✓ DDMA ✓ Deans FM1	1.1. Sharing time between student work on the project and direct contact activities of at least 50:50.	

II. Continuously improve the quality of admission, training and assessment processes for students.	1.Implement modern methods and techniques of training, based on clinical case and problem.	Vice-rector on quality Vice-rector on international students ✓ DDMA ✓ Deans FM1	1.1 Number of teachers trained with PBL methods and techniques min ____8____ . 1.2 Number of teachers applying modern methods, according to the results of questionnaires of min ____8____ students .	
	2.Ensure the transparency of the competence assessment process by publishing the results in the Intranet.	Vice-rector on quality Vice-rector on international students ✓ DDMA ✓ Deans FM1 ✓ DTIC	2.1 Number of facilitators who placed on the Intranet the results of evaluating the students' knowledge and practical skills of 100% .	
	3.Systematic questioning (at the end of the course) of the students regarding the quality of the PBL didactic process.	Vice-rector on quality Vice-rector on international students ✓ DDMA ✓ Deans FM1	3.1 Number of students undergoing systematic questioning of at least 75% . 3.2 Number of facilitators who practice systematic questioning of the students regarding the quality of the didactic process of at least 3	
III. Promoting the PBL Program in the University and among high school graduates	4. Editing and distributing promotional materials related to the PBL program.	Vice-rector on quality Vice-rector on International Students Department of Public Relations Admissions Commission	4.1 Number of school graduates enrolled in the program promoted by min 12 .	

Appendix 4: 2017 Programme Flier



ETAPELE PRINCIPALE ALE ÎNVĂȚĂMÂNTULUI BAZAT PE PROBLEME

- Obținerea informației inițiale;
- Generarea unei ipoteze clinice inițiale;
- Evidențierea datelor suplimentare importante pentru confirmarea ipotezei inițiale;
- Selectarea testelor de laborator și elaborarea unui plan de investigație pentru precizarea diagnosticului;
- Formularea unui diagnostic prezumptiv sau definitiv;
- Elaborarea unui plan de tratament;
- Sinteza lucrului efectuat și identificarea surselor informaționale necesare pentru o mai bună înțelegere a problemei prezentate.





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**SĂNĂTATE PUBLICĂ –
învățare bazată pe probleme**





Specialitatea Sănătate publică asigură pregătirea specialiștilor de înaltă calificare pentru monitorizarea sănătății publice și îmbunătățirea calității vieții populației prin prevenirea bolilor și informarea societății.

- Durata studiilor universitare integrate – 6 ani
- Oportunități de angajare la absolvire – centrele de sănătate publică, instituțiile medico-sanitare publice și private

METODE DE INSTRUIRE

- Prelegeri
- Lecții practice
- Învățare bazată pe probleme (PBL)
- Stagiile practice

În premieră, studenții de la specialitatea Sănătate publică vor beneficia de un modul integrat - *Neuroștiințe*, predat în format PBL (*Problem Based Learning*) grație Proiectului „Introducerea în Republica Moldova a metodelor de învățare bazate pe probleme: Sporirea competitivității și angajabilității studenților” (*Introducing Problem Based Learning in Moldova: Toward Enhancing Students' Competitiveness and Employability*), finanțat de Comisia Europeană în cadrul Programului Erasmus+.

DURATA MODULULUI
1 semestru (17 săptămâni)

LIMBI DE INSTRUIRE
Română și Engleză

ETAPELE PRINCIPALE ALE ÎNVĂȚĂMÂNTULUI BAZAT PE PROBLEME

- Formarea competențelor în echipă;
- Antrenarea și încurajarea gândirii critice, a creativității și a competitivității intelectuale;
- Schimbul de idei și colaborarea activă a studenților atât la nivel de grup, cât și cu facilitatorul.



OPORTUNITĂȚI

- Studenții vor beneficia de mobilități academice (semestriale) în universitățile partenere din UE (instruirea în limba engleză);
- Cooptarea și antrenarea în procesul de instruire a profesorilor din instituțiile partenere.

CONȚINUTUL PROGRAMULUI

- Anatomia omului
- Histologie
- Fiziologia omului
- Biochimie
- Fiziologie patologică
- Morfopatologie
- Imagistică
- Neurologie
- Psihiatrie





Appendix 5: Lessons learned from implementing pilot PBL-based study programme

Implemented activities	Learned lessons
Conceptualization, development, approval and implementation of the Neuroscience course	<ul style="list-style-type: none"> • Working in a multidisciplinary team • Tackle communication difficulties • Resistance to change • Insufficient skills • Managing prioritization of selected topics
Conceptualization, development, approval and implementation of the Neuroscience course's timetable	<ul style="list-style-type: none"> • Logistics management of the course • Difficulties in the equitable distribution of hours • Logical synchronization of the presented material • Ensuring the continuity of the course • Placing the course timetable in the university-specific timetable
Development of clinical cases	<ul style="list-style-type: none"> • Difficulties in prioritizing selected topics for clinical cases • Insufficient competence in case formulation
Organizing training programs for trainers involved in the course	<ul style="list-style-type: none"> • Working in a multidisciplinary team • Addressing communication difficulties • Resistance to change • Insufficient skills
Course progression / development	<ul style="list-style-type: none"> • Resistance to change by students • Low flexibility in accepting the new methodology • Low self-organization and self-expression skills • Low team work capabilities • Insufficient skills in relation to research methodology • Confusion on the concept of interdisciplinarity

“Sustainability Strategy”

Teaching and Problem-Based Learning at the Technical University of Moldova

Work Package 5

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Chişinău, 2019

Summary

The goal of the proposed sustainability strategy is twofold:

- Firstly, it refers to its own development and implementation experience of the new higher education Bachelor's level program based on PBL - Software Engineering (Section 2).
- Secondly, it refers to the description of the software engineering study program and program implementation vision (Section 3).
- Thirdly, it presents the translation from the PBL Pilot Program Software Engineering to the education based on the PBL 2022 Teaching Methodology (Sections 4 and 5).
- Fifthly, it offers recommendations at all levels to ensure the sustainability of the PBL as a teaching and learning methodology (Section 6).

List of definitions

PBL - student activity model with group task assignment to solve a problem, which is the cumulative result of activities from several courses, constituting an interdisciplinary product, guided by the teacher responsible and evaluated by practitioners in the field.

Student-centered learning - teaching and learning process in which the student becomes a partner in the educational process, and the teacher-student relationship is based on cooperation and collaboration.

Self-guided learning – teaching and learning process that emphasizes the student's responsibility to create learning and experimentation environments, in which they discover knowledge, make discoveries and solve problems on their own.

Learning objectives – general competences by training fields required for graduates of study programmes.

Learning outcomes - clear results, describing the student's knowledge or skills, expected from the teaching-learning process.

Progression – succession of expectations from the teaching-learning process in several stages.

Assessment - multicriterial examination of students' knowledge accumulated in the learning and teaching process.

Projects – are tasks given to students which consist of research and analysis of a problem (both theoretical and practical) and the generation of new approaches or solutions. Projects can be individual and in group.

Semester projects – are the projects carried out by students (usually in the group) during a semester. These projects may have inter-disciplinary character (may refer to two or more disciplines studied during the same semester).

Group/team work – is the joint work of a group of 4-5 students to perform a single task, which is based on communication, collaboration and self-discipline, each member of the group contributing to the achievement of the final result.

Research-based teaching and learning - the process of transmission and accumulation of knowledge, as well as the creation or development of skills that are based on some research tasks and aims to facilitate the learning (including individual) process of students.

Research-based teaching - is the process by which the student is involved in research exercises and is encouraged to reach his/her own conclusions and solutions using the results of the research carried out.

Sustainability strategy – is a long-term vision of an institution aimed at introducing key modifications in order to streamline the teaching-learning process. The strategy includes objectives and concrete actions, the deadline for achievement, as well as the potential outcomes that can be achieved.

(a) the path from a pilot programme to a comprehensive study programme based on problem-based learning (PBL) - the concrete steps to introduce PBL in a study programme

(b) support and promotion of PBL for teaching and learning - performing information and training measures about the advantages and efficiency of PBL.

Credit (ECTS) – the credit is a conventional unit used to calculate the workload performed by the student within a determined time period to achieve certain outcomes and competences. The credit is a tool to ensure the quality of the training.

ECTS (European Credit Transfer and Accumulation System) - European system of accumulation and transfer of credits. The Bachelor's degree studies correspond to 180-240 of transferable study credits, with 30 credits per semester.

Profile degree – the educational framework to be known by graduates in order to obtain the title of Bachelor, Master.

Professional development – opportunities offered to the teacher to strengthen their pedagogical skills, competences and approaches; continuous improvement of staff through trainings, internships, etc.

Facilitator – the person who helps a group of students understand their common goals and helps them plan how to achieve the objectives set out in the joint project.

Internship placement (training/practice) – institution/organization where students will conduct internship/training.

Quality assurance – a systematic monitoring and evaluation programme of the different aspects of a project in order to ensure compliance with quality standards.

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1 INTRODUCTION

The Working Package 5 - WP5 - describes the sustainability strategy for the implementation of PBL, student-centered and active teaching and learning at the Technical University of Moldova (TUM). This report details the new bachelor's degree program based on PBL - Software Engineering, and covers a road map and an action plan that will guide staff and university management in their efforts to fully implement PBL, student-centered and active teaching and learning in the respective study program and in the university.

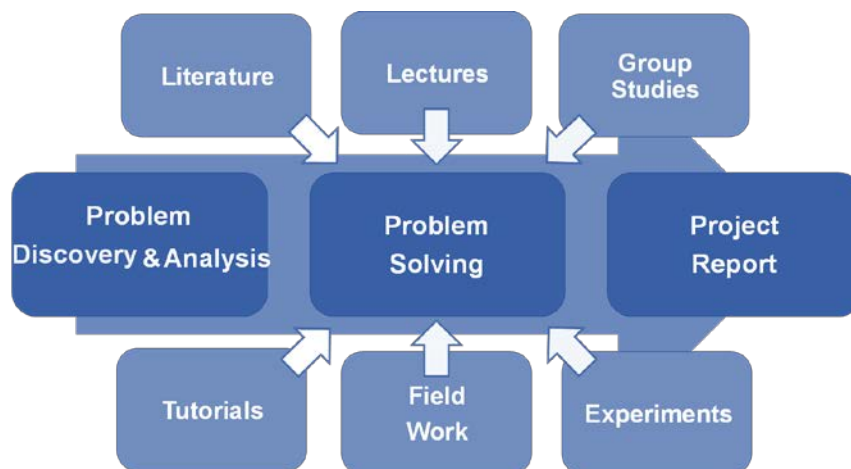
This report is based on WP2-WP4, developed between 2015-2017 and implemented since September 2017 through the launching of the Software Engineering Pilot Program at the Faculty of Computers, Informatics and Microelectronics at the TUM. The report took also into account the experience gained during the study visits and the mobility of the teaching staff at the partner universities in the EU and on the PBL training events carried out in Chisinau by the EU project partners.

1.1 KEY ASSUMPTIONS

Approaching the learning process through the student-centered learning has always been topical; the student is considered an actor of his/her own training, built on the basis of capitalizing on and assuming previous learning experiences. This fact implies the use of active learning methods based on problem solving.

PBL (Problem Based Learning) is a modern learning philosophy that involves students in finding problems and identifying solutions to overcome them. There is no one PBL model suitable for all purposes. However, the PBL-based models are mainly substantiated on two key assumptions. The first hypothesis is that work on the project is in the *center*, and consists of the problem discovery and analysis, problem solving and project report (Figure 1). The second hypothesis is that other teaching and learning (face-to-face) activities, such as literature, lectures, group studies, and tutorials, are designed to *support* work on the project.

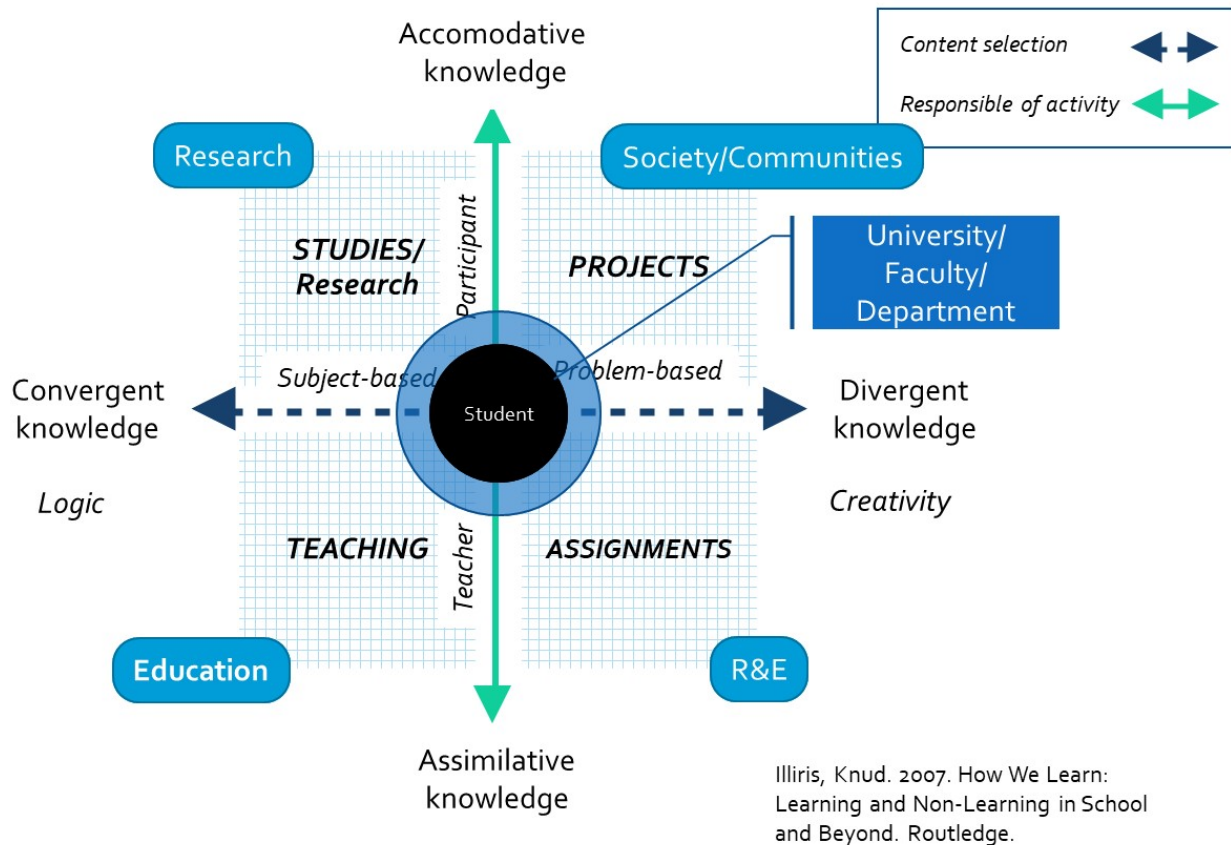
Figure 1: AAU PBL Model: An example



Source: AAU, 2017 (the word 'Discovery' is introduced by Romeo V. Turcan)

The above-mentioned aspects lied the basis of the PBL model development used in the Software Engineering Program Study, inspired from Illiris, Knud [1] (Figure 2). The given model involves problem solving through the implementation of interdisciplinary projects, with the introduction of the research aspects, where the process of education and assimilation of knowledge is accomplished in parallel through the process of teaching the course hours and assigning group or individual tasks contributing to developing student creativity.

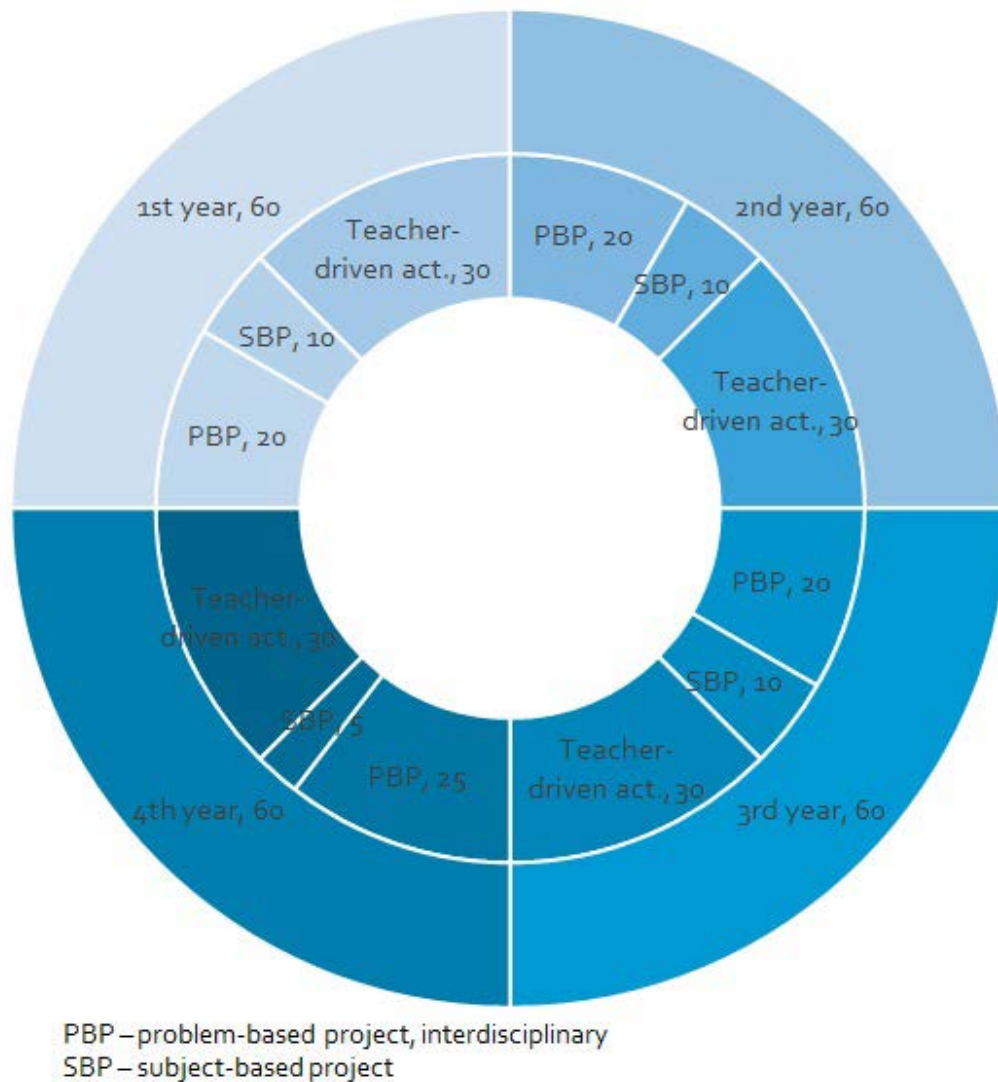
Figure 2: The PBL model implemented within the Software Engineering Study Program



The model shown in Figure 2 involves work on the project and face-to-face activities such as lectures, seminars, workshops, laboratories and experiments.

Another hypothesis relates to the relationship between work on the project and face-to-face activities. In the context of this report, all references to PBL-based mean a study program with an about 50:50 distribution between student work on the project and face-to-face activities (such as lectures, seminars, workshops, laboratories and experiments). An example of progression is shown in Figure 3. Of course, there are many ways to spread the relationship between work on the project and face-to-face activities during the semesters; the main purpose is to achieve an approximate 50:50 time distribution over the duration of the study program.

Figure 3: Time distribution, 50:50, between project work and face-to-face activities (Software Engineering / TUM)



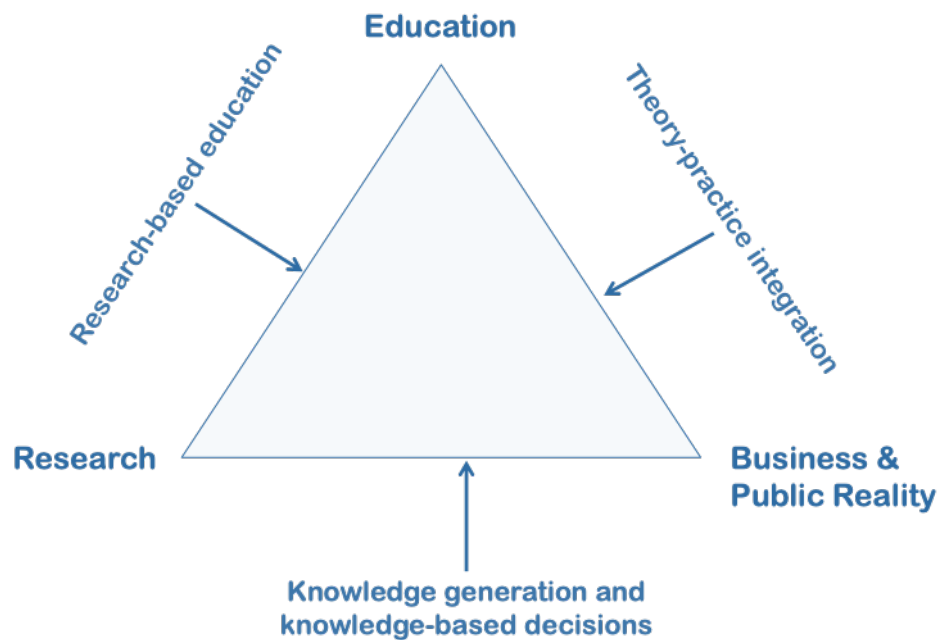
1.2 EXPECTED RESULTS

A number of results are expected to be achieved from the successful implementation of the student-centered Bachelor's Degree Program Software Engineering, based on PBL. It is expected that by 2020, this study program will become internationally recognized, attracting thus European and international students as full-time students or through exchange. Also, other bachelor and master degree programs at the Technical University of Moldova are expected to be redesigned based on PBL, with student-centered teaching methodologies and methods. Also, a better adjustment of students' knowledge, skills and competences is expected to match the needs of labor markets.

Successful implementation of this study program, as well as its dissemination effects across the university will contribute to the further development and enhancement of the integration of collaboration of education, research and business environment / policy makers (Figure 4). Academic staff will excel in engaging in research-based teaching, our students will learn and will become able

to apply theories in practice, both in the private and public sector, and our researchers will work with private and public organizations to create and transfer new knowledge.

Figure 4: Socially committed university



Source: Olav J. Sorensen, 2015

1.3 OUTLINE OF THE REPORT

This report begins by presenting the TUV vision of the PBL-based Bachelor's Degree Program on Software Engineering, in particular, with a general description of the curriculum, objectives and learning outcomes, and continues with a presentation of each semester, including learning objectives and learning outcomes, the transition from one semester to another, a description of the work on the project and the semestrial projects, including the learning objectives, the results and their evolution. Subsequently, the road map guiding the process of implementing the PBL-based bachelor's degree Software Engineering Program was presented and detailed. The report goes on with presenting and discussing the action plan detailing, for example, the specific activities, resources and internal policies needed to successfully implement the visionary study program. It concludes by providing the university management and university board with a set of policy recommendations on how to improve teaching and learning by introducing PBL, student-centered and active teaching and learning methodologies and methods in our university.

2 LESSONS LEARNED FROM DEVELOPING AND IMPLEMENTING THE SOFTWARE ENGINEERING PILOT PROGRAM

In order to implement the Software Engineering Pilot Program, the Roadmap presented in WP4 was developed. Several activities have been depicted in it for the successful implementation of the Software Engineering Pilot Program. The described activities have been grouped into three periods:

I Prepare for the launch of the new study program, where the aim is to prepare the legal framework, the physical environment, the teaching staff for the launch of the new Study Program - Software Engineering.

II Implementation, which provides for the launch of the new study program as of September 1, 2017.

III Promotion, where the promotion of the ERASMUS + PBLMD Project and the new Study Program - Software Engineering was planned.

Within these periods, a number of activities were carried out, and namely: developing and adopting the new Software Engineering Education Plan; teacher training on PBL; preparing the infrastructure for teaching based on the PBL methodology; developing educational documents; 2017, 2018 admission processes; initiating students in the new PBL teaching methodology; carrying out the study process based on PBL methodology. Hence, various lessons have been learned over these periods.

2.1 PERIOD 1

The duration of this period is up to 2 years (2015 - summer 2017) and the goal is to prepare the legal framework, the physical environment and the teaching staff for the launch of the new Software Engineering Study Program.

Activities carried out and lessons learned over this period are presented in the table below.

No.	Activities carried out	Lessons Learned
1.	Training programs for the trainers involved in the teaching process of the Software Engineering Study Program. Training teachers on applying the PBL methodology. Participating in the trainings organized under the project at the	A new pedagogical approach. Getting familiar with the problem-based teaching methodology. Changing the knowledge assessment manner. Switching to interactive, student-centered teaching.

No.	Activities carried out	Lessons Learned
	TUM or the AESM in 2016-2019. Academic mobilities for teachers to the partner universities in the European Union.	<p>Interdisciplinarity is present within each semester, making teachers collaborate with each other.</p> <p>Following the identification of teachers teaching within the Software Engineering Study Program, a resistance to switching from classical teaching to the new teaching method was noted.</p> <p>Use of the ICT in the teaching process.</p> <p>The need for teachers to undergo preventive training prior to being involved in the teaching process within the Software Engineering Program.</p> <p>The need for an as closely as possible interaction between teachers and program managers.</p>
2.	Preparing the infrastructure for the PBL teaching means buying equipment and preparing classrooms, making them suitable for team work.	<p>The PBL teaching methodology cannot be fully implemented without a well-formed infrastructure. This implies the existence of multiple rooms and workspaces where students can do teamwork; availability of ICT equipment and specialized communication media, such as the Moodle platform, or corporate mail; supplying library with literature.</p>
3.	<p>Developing and approving the Software Engineering Education Plan in accordance with:</p> <ul style="list-style-type: none"> – The Education Code of the Republic of Moldova. – Framework-Plan on Higher Education, approved through the Ministry of Education's Order No 1045 of October 29, 2015. – The Reference Framework of the University Curriculum, approved by the National Curriculum Council within the Ministry of Education of the Republic of Moldova, 2015. – Software Engineering Curriculum Guide, ACM (Association for 	<p>The basic lesson learned at this stage was the development of a new Software Engineering Study Program, for which it was necessary to identify the profile of the plan, the skills to be developed within the given study program, the establishment of the skills assessment methods and criteria expected learning outcomes.</p> <p>The adoption of the education plan's structure in compliance with the Framework-Plan and the provision of the 50/50 ratio between theoretical hours (course / lessons), on the one hand, and seminars (internships) and projects, on the other hand, the obstacle being the nomenclature, the framework-plan.</p>

No.	Activities carried out	Lessons Learned
	Computing Machinery) / IEEE Computer Society. – PBL methodology. – The draft of the new Nomenclature of Vocational Training Fields.	Interdisciplinary approach of the study program – to reflect a well-defined theme for each semester in the education plan. Ensure in the education plan the ratio between fundamental course units, general skills and competences development and socio-humanistic orientation.
4	Approving the Study Program at: - Department / Chair. - Faculty - TUM Senate. Internal and external evaluation of the Study Program.	In order for the changes to be introduced at the program level, instructional flexibility and support at the institutional, faculty and departmental levels is needed.
5	Developing educational documents: curriculum by subjects (analytical programs), guides, case studies, evaluations, etc. (for the first year of study).	In the Software Engineering Study Program, interdisciplinarity is provided in each semester, so that a problem encountered in the process of developing course cards and curriculum by subject was related to the formulation of course objectives to ensure interdisciplinarity. The Software Engineering program allows flexibility in carrying out study activities - seminars, design, laboratory work. These activities had to be identified and reflected in the subject curriculum. The semestrial project curriculum had to reflect the objectives and skills reflected in all semestrial subjects. Identification of possibilities to assess the skills developed during courses and project development.

2.2 PERIOD 2

The implementation period foresees the launch of the new study program from September 2017.

Between 2017 and 2019, two admissions took place, so the number of students enrolled in the Software Engineering Study Program is around 100 students.

Activities carried out and lessons learned over these two years are presented in the table below.

No.	Activities carried out	Lessons Learned
1.	2017 Admission 2018 Admission	<p>Establishing the criteria for the Software Engineering Study Program admission. All students have to pass the English and math admission exam.</p> <p>The number of students admitted to the Software Engineering Study Program varies because of the percentage of students who, after the admission, went to study in Romania.</p>
2.	Formulation and identification of design modules issues.	<p>In two years, two types of projects have been formulated: assignment project, subject project, problem project.</p> <p>Difficulties have been encountered in formulating interdisciplinary problems with the application of research methodologies, so as to achieve the objectives presented in the subject card.</p> <p>Interdisciplinary projects have led to a dialogue among the subject teachers in the same semester with the formulation of common themes or problems.</p>
3.	Teamwork.	<p>In two years, various methods of team formation were tested: random; free choice; by program manager.</p> <p>In the case of the first year students, the recommended option is when teams are formed by the program manager, while the second year students are already capable to independently form their teams.</p> <p>It has been noticed that some students lack group working skills, leading to interpersonal conflicts and conflicts related to the assignment and undertaking of roles within the project, group communication deficiencies and time organization issues. Project monitoring by a supervisor and introduction of the mid-term project assessment helped overcoming these problems.</p>
4.	Project development monitoring	<p>The Software Engineering Study Program has a program manager, and the project development monitoring process is carried out by the supervisors.</p> <p>When the study program was first launched, there were difficulties in relation to fulfilling the role of</p>

No.	Activities carried out	Lessons Learned
		<p>supervisor, namely in establishing duties and the project monitoring process.</p> <p>Based on the experience gained from the working visits to the partner universities, there have been established ways of monitoring the project development process, involving weekly meetings between supervisors and students, as well as communication on the moodle platform and via the corporate mail. The supervisor in turn has the role of guiding students and monitoring the evolution of their projects based on the objectives specified in the curriculum.</p>
5.	Team assessment	<p>The problem with the team assessment was to identify the input and involvement of each team member in the project. Thus, in two years, different types of team assessment were tested: group assessment, individual assessment, peer-review, team assessment by private sector representatives.</p> <p>It was noticed that an objective assessment was possible in the case of both group and individual assessment, as well as peer review.</p> <p>A questionnaire was provided to the team members to assess the input of each team member to the project.</p>
6.	Internships for students	<p>During these years, the collaboration with the business environment was established.</p> <p>According to the Education Program, there are three internships for the 2nd, 3rd and 4th years of study. Based on the mobility experience, the semestrial project was planned to be carried out during the internship, with supervisors from the university and the firm.</p> <p>It was noted that this type of internship had a positive effect on the development of students' professional skills.</p> <p>Students were assessed both by university and industry representatives.</p>

2.3 PERIOD 3

This period entails the promotion of the ERASMUS + PBLMD Project and the new Software Engineering Study Program. Activities and lessons learned are presented in the table below.

<i>No.</i>	Activities carried out	Lessons Learned
1.	Promoting the Software Engineering Specialty	<p>Various ways of promoting the Software Engineering Study Program have been applied: mass media, press conferences, informative visits, leaflets, one-day visits by students, magazine articles.</p> <p>Promotion also requires the visibility of the specialty, an activity that has to be carried out throughout the whole year of study.</p>
2.	Promoting the PBLMD Project	The PBLMD Project was promoted with the help of mass media, press conferences, articles in magazines.

3 PBL SOFTWARE ENGINEERING STUDY PROGRAM VISION

3.1 OVERVIEW

In accordance with the PBLMD Project Objectives, a new study program - Software Engineering (SE) was launched within the Department of Software and Automatic Engineering, Faculty of Computers, Informatics and Microelectronics of the Technical University of Moldova, in 2017.

The methodology of the education process in the Software Engineering Program is defined by a set of teaching-learning-assessment strategies corresponding to the problem-based learning principles. This is reflected by the ratio between theoretical hours (courses/lessons), on one hand, and seminars (internships) and projects, on the other hand, equal to about 50/50, the vision of the study program is presented in Figure 3.1, and the education plan in Annex 1.

Figure 3.1: Generic Structure of the Software Engineering Study Program

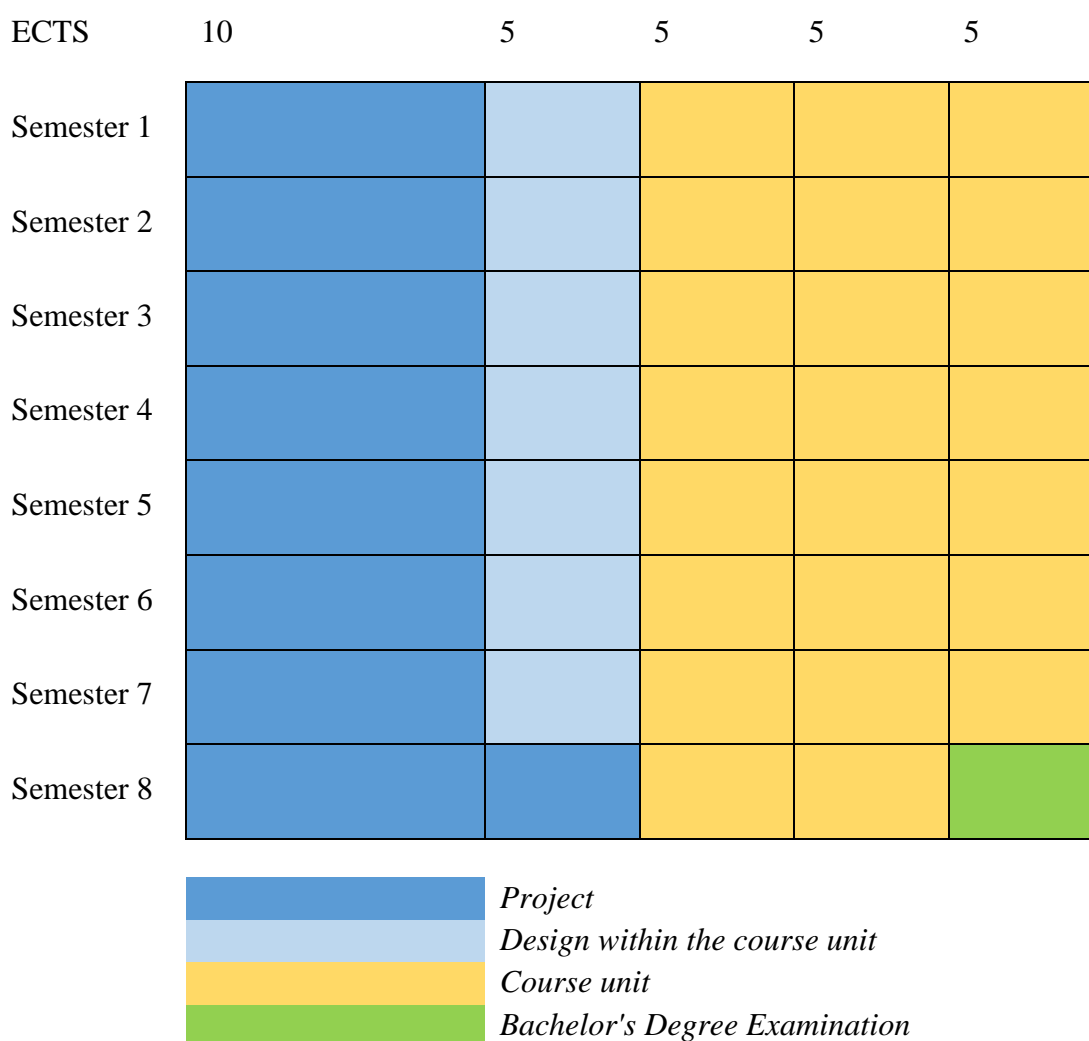
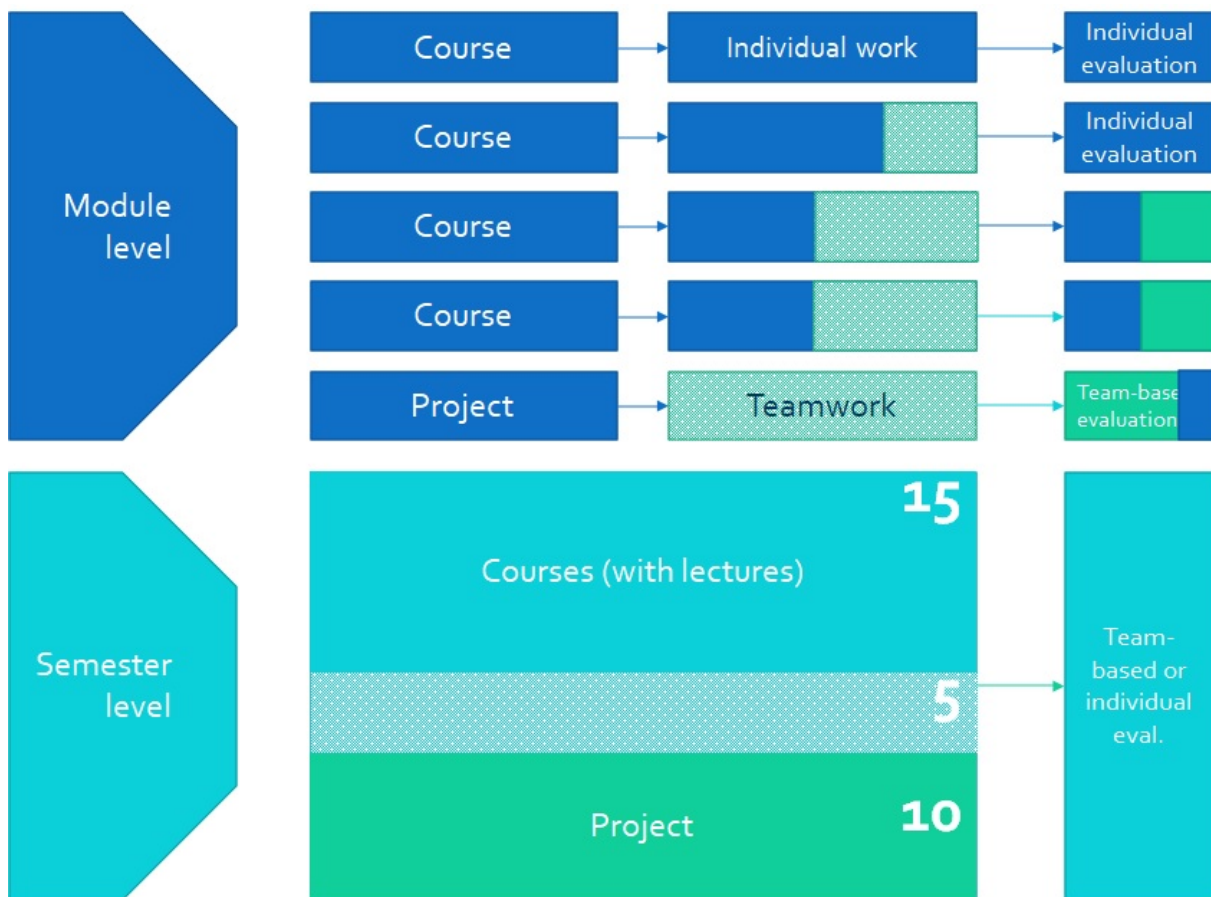


Figure 3.1 shows that it was proposed that every semester should have a separate design module of 10 ECTS, another 5 credits are included as work on design within the semester subjects (Figure 3.2).

Figure 3.2: The vision of organizing the study process within one semester



The Bachelor's Degree Education Plan (Cycle I) of the Software Engineering Program corresponds to the ISCED level 6, being part of:

- The fundamental field of science, culture and technology: *06 Information and Communication Technologies*
- General field of study: 061 Information and communication technologies
- Vocational training area: 0613 Development of program products and applications.

The study program is oriented towards training engineers, allowing them to obtain the qualification corresponding to Level 6 of the National Qualifications Framework / European Qualifications Framework (NQF/EQF). The key features of the professional training are presented in Table 3.1 and correspond to Level 6 of the National Qualifications Framework (National Qualifications Framework: Higher Education, 2013).

Table 3.1 - Essential characteristics corresponding to the NQF Level 6

<i>Level</i>	Bachelor's Degree (Cycle 1) - NQF/EQF Level 6
<i>Length of studies</i>	4 years
<i>ECTS study credits</i>	240 credits
<i>Form of organization</i>	Full-time attendance / non-attendance education
<i>Entry requirements</i>	Baccalaureate diploma, secondary specialized education diploma, higher education diploma
<i>Preconditions</i>	Achieving the pre-university education outcomes
<i>Internships</i>	Mandatory (35 ECTS)
<i>Examination and evaluation rules</i>	Current-formative, final-summative evaluation is mandatory; The current-formative evaluation is performed through seminars, practices, self-evaluation and evaluation of individual and / or team work; The methodology of final-summative evaluation is aimed at evaluating the learning outcomes expressed in skills.
<i>Final evaluation mode</i>	Bachelor's degree examination, thesis defense
<i>Certification</i>	Bachelor's degree diploma
<i>Awarded Title</i>	Licensed engineer
<i>Rights for graduates</i>	To apply to master programs; To apply to continuous training programs; To be hired.
<i>Body responsible for authorizing programs</i>	Ministry of Education, National Agency for Quality Assurance in Education and Research

3.2 SEMESTERS

The distribution of subjects on areas of knowledge, the grouping of these on professional skills and their relationships of interdependence are presented in Annexes 2 and 3. The following is a grouping of subjects on semesters defining a common theme.

The project evaluation includes: current evaluation and final evaluation. The current evaluation, being formative and providing students / team with continuous feedback on design activities or integrated modules, ensures the student evaluation with the grade assigned to the team.

The final evaluation, being a summative evaluation, is performed orally on the basis of the team project and individual discussions / interviews (in the presence of the team or not). The evaluation results of the examination are individual and represent 40% of the final grade.

3.2.1 Semester 1

The theme of the introductory semester is Learning based on problems of science, technology and society.

The content areas covered by the subjects taught in this semester are: Exact and Applied Sciences - 10 ECTS, General and Socio-Humanistic Fields - 9 ECTS, Programming - 5 ECTS, Software Development - 4 ECTS, Information Management - 1 ECTS, Architectures, Platforms and Technologies - 1 ECTS.

For the semester project students get 10 ECTS and it is carried out within the *Conceptual Design of an IT Application* module. Course units related to semester design are *Computer Programming* and *Personal and Professional Development / Computer Science and Society*.

Code	Course unit / module title	Total hours			Number of hours by type of activity			Evaluation form	Nr. credits
		Total	Direct contact	Individual study	Course	Internships	Design		
G.01.O.013	Conceptual Design of an IT Application	300	150	150			150	PA	10
F.01.O.001	Mathematics	150	75	75	45	30		E	5
F.01.O.002	Computer programming	150	75	75	30	15	30	E	5
F.01.O.003	Special Mathematics 1	150	75	75	30	45		E	5
U.01.A.021 U.01.A.022	Personal and professional development Computer science and society	150	75	75	30	30	15	E	5
	Total semester 1:	900	450	450	135 450	120	195	4E, 1PA	30

3.2.2 Semester 2

The theme of the semester is *The Engineering and Scientific Basics of the Calculation*. The content areas covered by the subjects taught in this semester are: Exact and Applied Sciences - 15 ECTS, Programming - 6 ECTS, Architectures, Platforms and Technologies - 5 ECTS, General and Socio-Humanistic Fields - 4 ECTS.

For the semester project students get 10 ECTS and it is realized within the *Equivalent models* module. Course units related to semester design are *Applied Sciences*, *Special Mathematics 2* and *Data Structures and Algorithms*.

Code	Course unit / module title	Total hours			Number of hours by type of activity			Evaluation form	Nr. credits
		Total	Direct contact	Individual study	Course	Internships	Design		
F.02.O.004	Equivalent models	300	150	150			150	PA	10
F.02.O.005	Applied Sciences	150	75	75	30	15	30	E	5
F.02.O.006	Special Mathematics 2	150	75	75	30	15	30	E	5
F.02.O.007	Computer architecture	150	75	75	30	45		E	5
F.02.O.008	Data Structures and Algorithms	150	75	75	30	30	15	E	5
	Total semester 2:	900	450	450	120	105	225	4E, 1PA	30
					450				

3.2.3 Semester 3

The theme of the semester is *Application Development Fundamentals*. The content areas covered by the subjects taught in this semester are: Programming - 13 ECTS, Software Development - 4 ECTS, Networks and Data Communications - 3 ECTS, Architectures, Platforms and Technologies - 2 ECTS, Exact and Applied Sciences - 2 ECTS, Information Management - 3 ECTS, General and Socio-Humanist Areas - 3 ECTS.

The semester project is awarded 10 ECTS and is realized within the framework of the *Application Development Fundamentals* module. Course units related to semester design are *Object-Oriented Programming*, *Computer Networks* and *Databases*.

Code	Course unit / module title	Total hours			Number of hours by type of activity			Evaluation form	Nr. credits
		Total	Direct contact	Individual study	Course	Internships	Design		
S.03.O.027	Application Development Fundamentals	300	150	150			150	PA	10
S.03.O.028	Object-Oriented Programming	150	75	75	30	15	30	E	5
S.03.O.029	Computer networks	150	75	75	30	45		E	5
S.03.O.030	Databases	150	75	75	30	15	30	E	5
S.03.A.039	Data Analysis and Visualization	150	75	75	30	30	15	E	5
S.03.A.040	Computer Graphics								
	Total semester 3:	900	450	450	120	105	225	4E, 1PA	30
					450				

3.2.4 Semester 4

The theme of the semester is *Formal Languages and Compilers*. The content areas covered by the subjects taught in this semester are: Software Development - 1 ECTS, Programming - 18 ECTS, Architectures, Platforms and Technologies - 8 ECTS, General and Socio-Humanistic Fields - 3 ECTS.

The semester project is awarded 10 ECTS and is realized within the *Developing Domain-Specific Languages* module. Course units related to semester design are *Formal Languages and Compiler Design*, *Calculability and Complexity* and *Multimedia Technologies / Simulation and Modeling Techniques*.

Code	Course unit / module title	Total hours			Number of hours by type of activity			Evaluation form	Nr. credits
		Total	Direct contact	Individual study	Course	Internships	Design		
F.04.O.009	Developing domain-specific languages	300	150	150			150	PA	10
F.04.O.010	Formal languages and compiler design	150	75	75	30	15	30	E	5
F.04.O.011	Calculability and complexity	150	75	75	30	15	30	E	5
S.04.O.031	Operating systems: internal mechanisms and design principles	150	75	75	30	45		E	5
S.04.A.041 S.04.A.042	Multimedia Technologies Simulation and modeling techniques	150	75	75	30	30	15	E	5
	Total semester 4:	900	450	450	120	105	225	4E, 1PA	30
					450				

Internships (performed at the student's choice based on the Application Development Fundamentals and Development of Domain-Specific Languages).

3.2.5 Semester 5

The theme of the semester is *Networks and Security*. The content areas covered by the subjects taught in this semester are: Programming - 10 ECTS, Software Development - 6 ECTS, Exact and Applied Sciences - 1 ECTS, Information Security - 4 ECTS, Software Quality - 3 ECTS, General and Socio-Humanistic 6 ECTS.

The semester project is awarded 10 ECTS and is realized within the module *Secure Application Development*. Course units related to semester design are *Network Programming*, *Cryptography and Security* and *Software Design Techniques and Mechanisms / Program Products Verification and Validation*.

Code	Course unit / module title	Total hours			Number of hours by type of activity			Evaluation form	Nr. credits
		Total	Direct contact	Individual study	Course	Internships	Design		
S.05.O.032	Secure application development	300	150	150			150	PA	10
S.05.O.033	Network programming	150	75	75	30	15	30	E	5
S.05.O.034	Cryptography and security	150	75	75	30	15	30	E	5
G.05.O.020	Ethics, communication and law	150	75	75	45	30		E	5
S.05.A.043 S.05.A.044	Software design techniques and Mechanisms <i>Program products verification and validation</i>	150	75	75	30	30	15	E	5
	Total semester 5:	900	450	450	135	90	225	4E, 1PA	30
					450				

3.2.6 Semester 6

The theme of the semester is *The Internet of Things (IoT)*. The content areas covered by the subjects taught in this semester are: Programming - 13 ECTS, Networks and Data Communications - 1 ECTS, Architectures, Platforms and Technologies - 8 ECTS, Exact and Applied Sciences - 5 ECTS, General and Socio-Humanist Areas - 3 ECTS.

The semester project is awarded 10 ECTS and is realized within the module *IoT Projects*. All course units of the semester are related to the semester design, accumulating 255 hours of guided study by the supervisor.

Code	Course unit / module title	Total hours			Number of hours by type of activity			Evaluation form	Nr. credits
		Total	Direct contact	Individual study	Course	Internships	Design		
S.06.O.035	IoT projects	300	150	150			150	PA	10
S.06.O.036	Embedded systems	150	75	75	30	15	30	E	5
F.06.O.012	Signal processing	150	75	75	30	30	15	E	5
S.06.A.045 S.06.A.046	Man-computer interaction Real time programming	150	75	75	30	15	30	E	5
S.06.A.047 S.06.A.048	Mobile application programming Web programming	150	75	75	30	15	30	E	5
	Total semester 6:	900	450	450	120	75	255	4E, 1PA	30
					450				

Technology Internship (performed at the student's choice based on the Secure Application Development modules, semester 5, or on the IoT Projects, semester 6).

3.2.7 Semester 7

The theme of the semester is *Information Systems*. The content areas covered by the subjects taught in this semester are: Programming - 8 ECTS, Software Development - 4 ECTS, Software Quality - 5 ECTS, Exact and Applied Sciences - 4 ECTS, Information Management - 2 ECTS, General and Socio-Humanistic Fields / Areas - 7 ECTS.

The semester project is awarded 10 ECTS and is realized within the *Information Systems Design* module. All course units of the semester are related to the semester design, accumulating 225 hours of guided study by the supervisor.

Code	Course unit / module title	Total hours			Number of hours by type of activity			Evaluation form	Nr. credits
		Total	Direct contact	Individual study	Course	Internships	Design		
S.07.O.037	Information systems design	300	150	150			150	PA	10
S.07.O.038	Programming distributed applications	150	75	75	30	15	30	E	5
U.07.A.023	Software project management	150	75	75	30	30	15	E	5
U.07.A.024	Enterprise management								
U.07.A.025	Electronic marketing	150	75	75	30	30	15	E	5
U.07.A.026	Digital entrepreneurship								
S.07.A.049	Software quality	150	75	75	30	30	15	E	5
S.07.A.050	Software requirements analysis and specification								
	Total semester 7:	900	450	450	120	105	225	4E, 1PA	30
					450				

3.2.8 Semester 8

The theme of the semester is *Bachelor's Project*. The content areas covered by the subjects taught in this semester are: Programming - 12 ECTS, Software Development - 12 ECTS, Information Management - 2 ECTS, General and Socio-Humanistic Fields - 4 ECTS.

The semester is dedicated to the Bachelor's Project, which is awarded 15 ECTS. The project shall be publicly defended, in front of a committee including at least one external reviewer, who shall also be the Chairman of the License Committee.

Code	Course unit / module title	Total hours			Number of hours by type of activity			Evaluation form	Nr. credits
		Total	Direct contact	Individual study	Course	Internships	Design		
S.08.A.051 S.08.A.052	Artificial intelligence fundamentals <i>Unrelated databases</i>	150	75	75	30	45		E	5
S.08.A.053 S.08.A.054	Game development fundamentals <i>Mixed reality technologies</i>	150	75	75	30	45		E	5
S.08.O.055	Bachelor's Internship and design	450		450				E	15
S.08.O.056	Theoretical synthesis test: algorithms, programming and databases	120		120				E	4
S.08.O.057	Defending the Bachelor's Project	30		30				E	1
	Total semester 8:	900	150	750	60	90		5E	30

4 ROADMAP

4.1 INTRODUCTION

The Roadmap is a consolidated list of measures, commitments and timelines for implementing actions to ensure the sustainability of the Software Engineering Pilot Program, which implements the problem-based learning. It aims to establish an institutional foundation in order to overcome certain barriers or certain existing threats and ensure the sustainability of the study program.

The objectives are to:

- Extend the PBL teaching methodology to other study programs at the 1st and 2nd cycle of studies.
- Internationalize the Software Engineering Study Program.
- Enhance interactivity with the private environment.
- Provide methodological support for teacher training in PBL.
- Upgrade the teaching infrastructure based on the PBL methodology.
- Revise the Software Engineering Education Plan with performance indicators.
- Promote the Software Engineering Study Program.
- Continuously improve the educational process with performance indicators.
- Integrate research at the teaching and student level into the study process.

Based on the above-mentioned objectives, the Roadmap presented in Annex 4 lists the key activities in the sustainability assurance process. Activities can be grouped in four periods:

Period 1: Prepare a new study program for implementing the PBL teaching methodology.

Period 2: Internationalize the Software Engineering Study Program.

Period 3: Develop and continuously adjust the Software Engineering Study Program to the needs of the economic environment with the integration of research elements at the teaching and student level.

Period 4: Provide methodological support for teacher training in PBL.

4.2 PERIOD 1

The first period includes activities related to the extension of the PBL teaching methodology to other study programs in the 1st and 2nd cycles of studies. Thus, over the following two years (2019-2021), it is planned to prepare the legal framework, physical environment, and teachers for

the implementation of the PBL methodology within another study program within the Software and Automatic Engineering Department. As a premise, the study program "Automatic and Informatics" was identified.

Automation and Informatics is a bachelor's degree program that is part of the System Engineering field, an interdisciplinary field of science and technology aimed at developing and implementing in a systemic conception the equipment, control, communications and information systems intended for managing processes in different sectors of activity: scientific, technical, industrial and economic.

Over this period, the following results are expected to be achieved:

- Education program adjusted to the needs of the economic environment with the integration of PBL elements.
- Education Plan adopted in accordance with the Framework - Plan so that it is based on a linear progress determined by relations at the semester level rather than at the level of subjects.
- Teachers trained in the PBL methodology, who will be involved in the education process.
- Upgrade the teaching infrastructure based on the PBL methodology.
- Curriculum by subjects, subject cards, guides, case studies, evaluations, etc. developed for the adopted program.

4.3 PERIOD 2

This period will include activities related to the internationalization of the Software Engineering Study Program and will encompass activities related to the establishment of international collaboration relations with the academic environment and the international organizations working in the Republic of Moldova, conclusion of international projects on mobility for both teachers and students, introduction of changes to the Education Plan to ensure mobility with the equivalency of accumulated credits, stimulation of students and teachers to improve language skills.

Over this period, the following results are expected to be achieved:

- Various cooperative and partnership activities carried out based on international projects with foreign universities.
- Interest of students and academic staff for external mobility increased.
- Number of external mobility for students and academic staff increased.
- Number of students with strong English language skills increased.
- Optional English language courses for teachers carried out.
- International compatibility of the study program increased and international aspects and study periods into the study process integrated.
- Study program revised from the point of view of international cooperation (student mobility, double diplomas, etc.).
- International teachers attracted to teach courses.

4.4 PERIOD 3

This period includes activities related to the development and continuous adjustment of the Software Engineering Study Program to the needs of the economic environment with the integration of the research elements at the teaching and student level. This is a continuation of the Software Engineering Study Program and course units' contents adaptation to the needs of students and society achieved through continuous communication (round tables, surveys, etc.) with the institutions interested in the faculty graduates and through the harmonization with other programs of similar prestigious institutions abroad, a factor that can facilitate student mobility.

Integrating the research process into the process of study involves strengthening the scientific research directions made in interdisciplinary (inter-departmental / university) groups with attracting students into scientific activities - by strengthening the students' scientific-practical groups and their involvement in the research activity.

Over this period, the following results are expected to be achieved:

- Interaction with the private environment in order to conduct semestrial projects is enhanced.
- Curriculum on subjects, subject cards, guides, case studies, evaluations, etc. is reviewed, so that students develop their transversal skills needed for a successful employment.
- Teaching infrastructure based on the PBL methodology is upgraded.
- Software Engineering Education Plan is revised and includes performance indicators.
- Software Engineering Study Program is promoted.
- Educational process is continuously improved with the continuous adjustment to the needs of the economic environment.
- Scientific research directions per faculty are strengthened.
- Interdisciplinarity per semester and study years is ensured.

4.5 PERIOD 4

This period implies activities related to the implementation of a university-level strategy for the PBL implementation in other study programs from other faculties. This requires the introduction, at the initial stage, of a compulsory continuous training course on the PBL methodology for teachers.

Over this period, the following results are expected to be achieved:

- Methodological support for teacher training in PBL is developed.
- Compulsory course of continuous teacher training in PBL methodology is initiated.
- Initial course in PBL for students in the first year of study is introduced.
- Methodical guide on project development for students is developed.
- Interdisciplinary year / bachelor's / master's degree projects among the CIM faculty students, as well as from other faculties, are initiated.
- Scientific research directions in groups are strengthened

5 ACTION PLAN

5.1 INTRODUCTION

The action plan contains the activities undertaken to ensure sustainability and, as mentioned in Chapter 4, activities are grouped in four periods:

Period 1: *Prepare a new study program for implementing the PBL teaching methodology.*

Period 2: *Internationalize the Software Engineering Study Program.*

Period 3: *Develop and continuously adjust the Software Engineering Study Program to the needs of the economic environment with the integration of research elements at the teaching and student level.*

Period 4: *Provide methodological support for teacher training in PBL.*

The Action Plan is presented in Annex 5.

5.2 PERIOD 1

In order to implement the PBL teaching methodology within the Automatics and Informatics Study Program of the Faculty of Computers, Informatics and Microelectronics, a series of activities, listed in the table below, are to be carried out:

Actions	Required resources
<i>Revise the Education Plan for the training of specialists in Automation and Informatics according to the TUM Regulation on the organization of studies based on the National Education Credit System, taking into account the Regulation on the organization of higher education based on the National Education Credit System, so that the program is linked to the national and international standards of training specialists in the field and is in line with the Framework-Plan.</i> <i>It is expected that starting with the 2nd year, in each semester, students will have a special subject dedicated to design/projects.</i>	Support at the department, faculty, University level
<i>Approve the Education Plan within the Software Engineering and Automation Department; the Faculty of Computers, Informatics and Microelectronics and the TUM Senate.</i>	Support at department, faculty, university level.

<i>Identify the teachers who will be involved in the teaching process under the new study program and train them on the PBL teaching methodology.</i>	Human resources.
<i>Upgrade the teaching infrastructure based on the PBL methodology.</i>	Financial resources. Support at department, faculty, university level.
<i>Revise curriculum by subjects (analytical programs), subject cards, guides, case studies, evaluations etc. (for the first year of study).</i>	Human resources.

5.3 PERIOD 2

This period will cover activities related to the internationalization of the Software Engineering Study Program and will include the activities listed in the table below:

Actions	Required resources
<i>Carry out various cooperative and partnership activities based on international projects with foreign universities.</i>	Support at University level. Developed infrastructure.
<i>Increase the interest of students and academic staff for external mobility.</i>	Support at University level. Human resources.
<i>Increase the number of external mobility for students and academic staff.</i>	Support at University level. Human resources. Foreign partners. Collaborative projects. Financial resources.
<i>Increase the number of students with strong English language skills.</i>	Human resources. Financial resources.
<i>Deliver optional English language courses for teachers.</i>	Human resources. Financial resources.
<i>Improve curricular content and teaching skills for all areas of study, increase international compatibility of study programs and integrate international aspects and study periods into the study process.</i>	Human resources. Support at department, faculty, university level.
<i>Re-design study program on the basis of international cooperation opportunities (student mobility, double diplomas, etc.).</i>	Human resources. Support at department, faculty, university level. Foreign partners.

<i>Attract international teachers to deliver courses.</i>	Foreign partners. Human resources. Financial resources.
<i>Launch several international projects providing mobility for both teachers and students.</i>	Support at University level. Human resources. Foreign partners. Collaborative projects. Financial resources.
<i>Introduce changes to the Education Plan to ensure that mobility is performed with the equivalency of accumulated credits.</i>	Human resources. Support at department, faculty, University level. Foreign partners.
<i>Enhance interaction with the private environment, attract international companies.</i>	Support at department, faculty, University level. Foreign partners.
<i>Promote the Software Engineering Study Program.</i>	Support at department, faculty, University level.

5.4 PERIOD 3

This period includes activities related to the development and continuous adaptation of the Software Engineering Study Program to the needs of the economic environment with the integration of research elements and covers the activities listed in the table below:

Actions	Required resources
<i>Develop research-oriented scientific partnerships with universities, institutions and companies from Moldova and abroad (Europe and the whole world).</i>	Support at University level. Human resources. Foreign partners. Collaborative projects. Financial resources.
<i>Revise Curriculum by subjects, subject cards, guides, case studies, evaluations, etc. so that students develop the transversal skills needed for a successful employment, taking into account performance indicators.</i>	Support at department, faculty, University level. Human resources.
<i>Upgrade the teaching infrastructure based on the PBL methodology.</i>	Support at department, faculty, University level. Financial resources.
<i>Participate in international scientific events.</i>	Support at department, faculty, University level. Financial resources. Human resources.

<i>Attract internationally recognized experts to participate in the events organized within the Software Engineering Study Program.</i>	Support at department, faculty, University level. Human resources. Financial resources.
<i>Initiate or revive cooperation agreements with international organizations operating in the Republic of Moldova.</i>	Support at University level. Human resources. Foreign partners. Collaborative projects. Financial resources.
<i>Organize international events with the participation of international partners from international programs / projects / organizations.</i>	Human resources. Support at department, faculty, University level. Collaborative projects. Financial resources.
<i>Identify companies undertaking the responsibility to support knowledge transfer at the level of content, teachers and internships.</i>	Human resources. Support at department, faculty, University level. Private Partners.
<i>Integrate research at the teaching and student level into the study process.</i>	Support at University level. Human resources. Research projects. Financial resources.
<i>Initiate interdisciplinary year / bachelor's / master's degree projects, among the students of the study programs of the CIM faculty, but also from other faculties, by encouraging teamwork.</i>	Human resources. Support at department, faculty, University level.
<i>Strengthen scientific research directions carried out in interdisciplinary groups (inter-departmental / university).</i>	Support at University level. Human resources. Research projects. Financial resources.
<i>Attract students to scientific activities - by strengthening students' scientific and practical groups and their involvement in the research activity of the teaching staff.</i>	Support at University level. Human resources. Research projects. Financial resources.
<i>Promote performance in educational and research processes.</i>	Support at department, faculty, University level.

5.5 PERIOD 4

This period includes activities related to the promotion of the PBL methodology at the university level with a view to implement it in other study programs:

<i>Actions</i>	Required resources
<i>Continuous assistance in professional problem solving.</i>	Support at department, faculty, University level.
<i>Provide methodological support for teacher training in PBL.</i>	Support at department, faculty, University level. Human resources.
<i>Initiate compulsory course of continuous teacher training in PBL methodology.</i>	Human resources. Support at department, faculty, University level. Financial resources.

6 STRATEGIC RECOMMENDATIONS AT UNIVERSITY LEVEL

6.1 INTRODUCTION

The Technical University of Moldova assumes the general mission of scientific research and permanent promotion of the student-centered educational process. To achieve its mission, the following strategic priorities have been established:

- 1 Quality and academic excellence (research and education).
- 2 Development and motivation of human resources.
- 3 Diversification of educational offer, teaching and learning methods and funding sources.
- 4 Responsible and transparent university management.
- 5 Deeper integration with industry / business.

The launch of the PBLMD Project has highlighted some *important issues* related to the implementation of the PBL teaching methodology at the Technical University of Moldova, which are listed below in a SWOT analysis perspective:

Issues	Notes
Strengths (internal source)	
<i>TUM is an institution with traditions</i>	Authority transfer and well-established processes
<i>Recognized for the good training provided</i>	USAID Survey
<i>Internationalization actions</i>	A plan developed in the spirit of the international ACM standard Programs delivered in English
<i>Teachers with good professional experience</i>	Teachers are also working for IT companies
<i>High number of students</i>	The relatively higher number of students offers possibilities for optimizing the teaching load
<i>Alternatives in education</i>	Interdisciplinarity, teamwork, etc.
<i>Experience of the Anglophone groups</i>	The existence of the Anglophone Student Community, which allows multiple extra-curricular activities
Weaknesses (internal source)	
<i>Few teachers with PhD</i>	It diminishes the academic value of the program evaluation
<i>Few teachers are fluent in English</i>	

<i>Few teachers are involved in research topics</i>	It diminishes from the scientific value of the program evaluation
<i>Uncompetitive salaries paid to IT teachers compared to specialists in the field</i>	The difference between the salary paid to a beginner in the field and a teacher becomes significant
<i>Insufficient technical equipment to cover new directions</i>	The local industry is already actively seeking for IoT, VR, GameDev, etc. specialists
<i>Insufficient use of institutional collaboration relationships with IT associations / companies</i>	Program engagement, technical endowment, etc.
<i>Opportunities (external source)</i>	
Internationalization of the study program	Cooperative agreements Academic mobility through programs, such as Erasmus +
External financing for technical means	The PBLMD project USAID Collaboration - IoT Laboratory Orange Collaboration - Mobile Technologies
Internships / workshops for staff training	
IT career promotion campaigns by associations related to the field	Choose a Career in IT (ATIC)
Required professional field (a sector developing dynamically in Moldova)	Admission Contest Extensive internship / collaboration base
<i>Threats (external source)</i>	
Reduction in the number of high school graduates	Especially among those with a science profile
Migration of students after the start of the academic year	In particular, to Romania
Confusions with related specialties	Information Technologies, Informatics, Computers, Automation
Competition with "accelerated studies" in IT	Continuous training programs.
Deterioration of the social-political situation in the country	Reduction of budget funding Salaries and scholarships paid with delays

6.2 RECOMMENDATIONS: STUDY PROGRAM LEVEL

To ensure the sustainability of the Software Engineering Study Program at the study program level, the following recommendations are proposed:

Recommendations	Planned measures
<i>Continuous adaptation of study programs and content of course units to the needs of students and society.</i>	<ul style="list-style-type: none">- Apply the best teaching and examination methods based on the university's experience and specificity.- Consolidate subject groups depending on the areas of knowledge and identify skills supervisors to ensure consistency in the flow of studies.- Apply non-formal education methods (workshops, meetings with specialists in the field / alumni).- Develop cross-cutting skills for a successful ICT employee.- Actively involve employers, as well as graduates, in the review of the study program content.- Consult businesses and economic agents on the content of education plans.
<i>Create a system for collecting feedback from students and graduates on the quality of the study program.</i>	Carry out surveys among students on the quality of the study program.
<i>Encourage the use of ICT in the educational process.</i>	<ul style="list-style-type: none">Enhance the use of new e-learning technologies.Promote modern teaching-learning and evaluation methods and technologies.
<i>Promote research-based and student-centered learning.</i>	Apply a proactive approach to motivate and support teachers in scientific research.
<i>Integrate research at the teaching and student level into the study process.</i>	<ul style="list-style-type: none">Motivate and support interdisciplinary and applied research.Initiate interdisciplinary projects with research elements.

6.3 RECOMMENDATIONS: AT DEPARTMENT AND COLLEGE LEVEL

To ensure sustainability, the following recommendations and measures are proposed at the department and faculty level:

No.	Recommendations	Planned measures
1	Active involvement in the teacher training activity and increase the number of teaching staff holding scientific degrees and scientific-didactic titles.	<ul style="list-style-type: none"> -Teacher training in the PBL pedagogical module. - Expand the continuous training partnerships of teachers. - Increase the number of teachers attending English courses organized by the TUM for teachers. - Support and motivate young tenured teachers to develop and improve psycho-pedagogical skills. <p>Internships / workshops for staff training.</p> <ul style="list-style-type: none"> - Continuing training of the teaching staff. -Organize the ground for a more active involvement of teachers in the research process. - Conduct scientific seminars at the department. -Organize didactic seminars and share the PBL teaching experience.
2	Actively involve teachers and students in research activities.	<ul style="list-style-type: none"> -Strengthen scientific research directions performed at the department in research groups. - Orientate research directions at the department to the priority research themes Horizon 2020. - Attract students to scientific activities.
3	Promote the image of the department and study program.	<ul style="list-style-type: none"> - Career promotion campaigns. - Internationalization of the study program. - Strengthen academic partnerships. - Promote the image of the department.
4	Develop the technical and material basis for laboratory works and scientific research.	<ul style="list-style-type: none"> - External financing for technical means. - Improve the teaching and research infrastructure.
5	Expand the basis for internships.	<ul style="list-style-type: none"> - Sign new collaboration protocols with businesses to ensure students' internships. - Mobility programs for students.

6	Campaigns to promote mobility with the help of Erasmus students and dissemination of their experience.	Provide assistance and counseling to students and teachers about the opportunity to participate in international mobility programs.
7	Improve faculty-employer interaction.	Conclude or revitalize the cooperation agreements with organizations operating in the Republic of Moldova.

6.4 RECOMMENDATIONS: AT THE LEVEL OF TEACHERS

At the level of the teaching staff, the following recommendations and measures are proposed:

No.	Recommendations	Planned measures
1	Active involvement in continuous training activities.	<ul style="list-style-type: none"> - Continuous training activities in the PBL training module. - Increase the number of teachers attending English courses organized by the TUM for teachers. - Internships / workshops for staff training. - Continuous training courses.
2	Active involvement in the research process.	<ul style="list-style-type: none"> - Strengthen scientific research directions carried out in interdisciplinary groups. - Actively integrate teaching staff in the research process. - Actively participate in scientific seminars organized within the department, the faculty. - Actively participate in national and international scientific events. - Attract students to the research process. - Submit research project proposals.
3	Active involvement in mobility programs.	<ul style="list-style-type: none"> - Initiate several international projects providing mobility for teachers. - Provide assistance and counseling to students and teachers about the opportunity to participate in international mobility programs.
4	Initiate interdisciplinary projects on study programs at the CIM faculty, but also in other faculties.	<ul style="list-style-type: none"> - Encourage teamwork. - Identify subjects for the implementation of interdisciplinary projects. - Carry out methodological seminars at the department to assure interdisciplinarity.

6.5 RECOMMENDATIONS: AT THE STUDENT LEVEL

At the student level, the following recommendations and measures are proposed:

No.	Recommendations	Planned measures
1	Active involvement in scientific activities.	<ul style="list-style-type: none">- Create scientific-practical groups of students within the departments.- Organize Students' Conference.
3	Active involvement in mobility programs.	<ul style="list-style-type: none">- Initiate several international projects providing mobility for students.- Provide assistance and counseling to students about the opportunity to participate in international mobility programs.
4	Participate in interdisciplinary projects.	<ul style="list-style-type: none">- Encourage teamwork.- Identify subjects for the implementation of interdisciplinary projects.- Provide support in implementing interdisciplinary projects.

6.6 RECOMMENDATIONS: AT THE LEVEL OF TEACHER TRAINING IN *PBL*

According to the University Charter, the teaching and scientific staff are obliged to permanently improve their professional and cultural level, so at the level of the teacher training in PBL, the following recommendations and measures are proposed:

No.	Recommendations	Planned measures
1	Perform continuous teacher training.	<ul style="list-style-type: none">- PBL teacher training module.- Organize internships / workshops for staff training.- Attract teachers to the research process.- Academic mobility.
2	Develop the technical and material basis for laboratory works and scientific research.	<ul style="list-style-type: none">- External financing for technical means.- Adapt areas for active learning.
3	Plan PBL-based education in other study programs.	<ul style="list-style-type: none">- Identify study programs and provide support in terms of legal framework, infrastructure.
4	Create methodological support platforms in PBL for students.	<ul style="list-style-type: none">- Strengthen the working group creating a PBL support platform for students.

6.7 RECOMMENDATIONS: AT THE SOCIETY LEVEL

At the society level, the following recommendations and measures are proposed:

No.	Recommendations	Planned measures
1	Ensure correlation between education and economic development.	<ul style="list-style-type: none"> - Stimulate employers to invest more actively in the future workforce by creating partnerships between businesses and educational institutions. - Adjust the education system to labor market requirements by involving all stakeholders, especially the state and employers. - Increase investments in education. Streamline them through the financing of the priority sectors, with the gradual increase and in line with the economic growth.

6.8 RECOMMENDATIONS: AT THE ADMINISTRATION AND MANAGEMENT LEVEL

At the level of administration and management, the following recommendations and measures are proposed:

No.	Recommendations	Planned measures
1	Develop the technical and material basis for laboratory works and scientific research.	<ul style="list-style-type: none"> - External financing for technical means. - Adapted areas for active learning.
2	Plan PBL-based education in other study programs.	- Identify study programs and provide support in terms of legal framework, infrastructure.
3	Extend institutional collaboration relationships with IT associations / companies.	- Conclude new collaboration agreements with IT associations / companies.
4	Integrate the scientific research element into the study process.	<ul style="list-style-type: none"> - Motivate and support teachers in scientific research. - Support teachers' participation in scientific events. - Develop mechanisms to motivate and support interdisciplinary and applied research. - Provide laboratories and research centers with equipment.
5	Internationalise study programs.	- Update the regulations for the deployment of Erasmus + mobility programs for both students and staff.

		<ul style="list-style-type: none"> - Initiate several international projects providing mobility for teachers. - Improve the flexibility of recognition procedures for academic achievements and skills acquired in mobility. - Improve marketing policy in promoting TUM in order to attract foreign students. - Further update the TUM web page with information for potential foreign students, including regular updates with legislative information / changes. - Identify the main recruitment fairs in the geographic areas of interest where the university could participate and encourage faculties to participate in fairs related to their specific areas of interest.
6	Reupdate the library content	<ul style="list-style-type: none"> - Optimize the structure and content of library collections according to the needs of the study process and research activities.
7	Develop and implement support and motivation mechanisms for teacher development and professional development.	<ul style="list-style-type: none"> - Organize foreign language courses. - Provide institutional and financial support to participation in various training courses and internships. - Increase the language and practice training offer for English, French or German for the academic staff.

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Annex 1: Study Plan implemented from 1 September 2017

MINISTERUL EDUCAȚIEI
AL REPUBLICII MOLDOVA
**UNIVERSITATEA TEHNICĂ
A MOLDOVEI**



MINISTRY OF EDUCATION
OF THE REPUBLIC OF MOLDOVA
**TECHNICAL UNIVERSITY
OF MOLDOVA**

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APPROVED

at the Senate Meeting of
Technical University of Moldova
Minutes No. 4
of 27 December 2016
Chairperson of Senate
Rector, PhD _____ (stamp)
Viorel BOSTAN

COORDINATED

Ministry of Education of the
Republic of Moldova
24 July 2017
Registration No. ISL-01-18130
(stamp)

CURRICULUM

for

Cycle I, Licentiate/Bachelor's Degree (Level 6 according to ISCED)

General field of study:	<i>061 Information and Communication Technologies</i>
Field of professional study:	0613 Software and Application Development
Specialty/ Major:	0613.1 Software Engineering
Total number of credits:	240
Degree obtained upon the completion of studies:	Licentiate Engineer/Bachelor's Degree
Certification:	Licentiate Diploma
Basis for Admission:	High school diploma or an equivalent education document; higher education diploma
Language of instruction:	Romanian, Russian, English
Form of education:	Full-time attendance

1. ACADEMIC CALENDAR

Academic year	Teaching activities		Examination period		Intern-ships	Vacations		
	Semester I	Semester II	Semester I	Semester II		winter	spring	summer
I	15 weeks	15 weeks	4 weeks	4 weeks	-	2 weeks	Vacation on Easter – one week (according to the Christian calendar)	10 weeks
II	15 weeks	15 weeks	4 weeks	4 weeks	15 weeks	2 weeks		6 weeks
III	15 weeks	15 weeks	4 weeks	4 weeks	15 weeks	2 weeks		6 weeks
IV	15 weeks	7 weeks	4 weeks	2 weeks	10 weeks	2 weeks		9 weeks

2. Curriculum by semesters/academic years

Year I

Semester I. *Problem Based Learning in Science, Technology and Society*

Code	Name of the Course Unit/Module	Total number of hours			Number of hours by types of activity				Type of final assessment	Number of credits
		total	direct instruction	individual work	C	S/P	Pr	per week		
G.01.O.013	Conceptual Design of an IT Application	300	150	150			150		PA	10
F.01.O.001	Math	150	75	75	45	30			E	5
F.01.O.002	Computer Programming	150	75	75	30	15	30		E	5
F.01.O.003	Special Math 1	150	75	75	30	45			E	5
U.01.A.021 U.01.A.022	Personal and Professional Development <i>Computer Science and Society</i>	150	75	75	30	30	15		E	5
GM.O.014	<i>Foreign Language 1 **</i>	90	45	45		45			E*	3
G.01.O.015	<i>Romanian (for non-speakers of Romanian) 1 *</i>	60	30	30		30			T*	2
G.01.O.016	<i>Physical training 1 *</i>	60	30	30		30			T*	
Total per Semester I:		900	450	450	135	120	195	0	4E, 1PA	30
					450					

Semester II. *Engineering and Scientific Bases for Computing*

Code	Name of the Course Unit/Module	Total number of hours			Number of hours by types of activity				Type of final assessment	Number of credits
		total	direct instruction	individual work	C	S/P	Pr	per week		
F.02.O.004	Equivalent Models	300	150	150			150		PA	10
F.02.O.005	Applied Science	150	75	75	30	15	30		E	5
F.02.O.006	Special Math 2	150	75	75	30	15	30		E	5
F.02.O.007	Computer Architecture	150	75	75	30	45			E	5
F.02.O.008	Data Structures and Algorithms	150	75	75	30	30	15		E	5
G.02.O.017	<i>Foreign Language 2 *</i>	90	45	45		45			E*	3
G.02.O.018	<i>Romanian (for non-speakers of Romanian) 2 *</i>	60	30	30		30			T*	2
G.02.O.019	<i>Physical training 2 *</i>	60	30	30		30			T*	
Total per Semester II:		900	450	450	120	105	225	0	4E, 1PA	30
					450					
Total per Year I:		1800	900	900	255	225	420	0	8E, 2PA	60

* - This is not included in the total sum of evaluation forms (the course units are provided in extracurricular regime, and those 240 credits per program are supplement with additional credits, while the course unit "Physical training" is not quantified with credits).

T* - Testing assessed as "passed/failed".

Year II

Semester III. *Application Development Bases*

Code	Name of the Course Unit/Module	Total number of hours			Number of hours by types of activity				Type of final assessment	Number of credits
		total	direct instruction	individual work	C	S/P	Pr	per week		
S.03.O.027	Application Development Basics	300	150	150			150		PA	10
S.03.O.028	Object Oriented Programming	150	75	75	30	15	30		E	5
S.03.O.029	Computer Networks	150	75	75	30	45			E	5
S.03.O.030	Databases	150	75	75	30	15	30		E	5
S.03.A.039	Data Analysis and View;	150	75	75	30	30	15		E	5
S.03.A.040	<i>Computer Graphics</i>									
Total per Semester III:		900	450	450	120	105	225	0	4E, 1PA	30
					450					

Semester IV. *Formal Languages and Compilers*

Code	Name of the Course Unit/Module	Total number of hours			Number of hours by types of activity				Type of final assessment	Number of credits e
		total	direct instruction	individual work	C	S/P	Pr	per week		
F.04.O.009	Developing Industry Specific Languages	300	150	150			150		PA	10
F.04.O.010	Formal Languages and Compiler Design	150	75	75	30	15	30		E	5
F.04.O.011	Calculability and Complexity	150	75	75	30	15	30		E	5
S.04.O.031	Operating Systems: Internal Mechanisms and Design Principles	150	75	75	30	45			E	5
S.04.A.041 S.04.A.042	Multimedia Technologies <i>Simulation and Modelling Techniques</i>	150	75	75	30	30	15		E	5
Total per Semester IV:		900	450	450	120	105	225	0	4E, 1PA	30
					450					
Internship in Production (It shall be carried out at the Student’s choice on the basis of Modules <i>Application Development Basics and Developing Industry Specific Languages</i>)										
Total per Year II:		1800	900	900	240	210	450	0	8E, 2PA	60

Year III

Semester V. *Network and Security*

Code	Name of the Course Unit/Module	Total number of hours			Number of hours by types of activity				Type of final assessment	Number of credits
		total	direct instruction	individual work	C	S/P	Pr	per week		
S.05.O.032	Developing Secure Applications	300	150	150			150		PA	10
S.05.O.033	Network Programming	150	75	75	30	15	30		E	5
S.05.O.034	Cryptography and Security	150	75	75	30	15	30		E	5
G.05.O.020	Ethics, Communication and Law	150	75	75	45	30			E	5
S.05.A.043 S.05.A.044	Software Design Techniques and Mechanisms <i>Software Verification and Validation</i>	150	75	75	30	30	15		E	5
Total per Semester V:		900	450	450	135	90	225	0	4E, 1PA	30
					450					

Semester VI. *Internet of Things (IoT)*

Code	Name of the Course Unit/Module	Total number of hours			Number of hours by types of activity				Type of final assessment	Number of credits e	
		total	direct instruction	individual work	C	S/P	Pr	per week			
S.06.O.035	IoT Projects	300	150	150			150		PA	10	
S.06.O.036	Embedded Systems	150	75	75	30	15	30		E	5	
F.06.O.012	Signal Processing	150	75	75	30	30	15		E	5	
S.06.A.045 S.06.A.046	Human-Computer Interaction Real Time Programming	150	75	75	30	15	30		E	5	
S.06.A.047 S.06.A.048	Mobile Application Development WEB Programming	150	75	75	30	15	30		E	5	
Total per Semester VI:		900	450	450	120	75	255	0	4E, 1PA	30	
					450						
Technological Internship (It shall be carried out at the Student's choice on the basis of Modules <i>Developing Secure Applications and IoT Projects</i>)											
Total per Year III:		1800	900	900	255	165	480	0	8E, 2PA	60	

Year IV

Semester VII. *Information Systems*

Code	Name of the Course Unit/Module	Total number of hours			Number of hours by types of activity				Type of final assessment	Number of credits e
		total	direct instruction	individual work	C	S/P	Pr	per week		
S.07.O.037	Information System Design	300	150	150			150		PA	10
S.07.O.038	Programming of Distributed Applications	150	75	75	30	15	30		E	5
U.07.A.023 U.07.A.024	Software Project Management <i>Enterprise Management</i>	150	75	75	30	30	15		E	5
U.07.A.025 U.07.A.026	Electronic Marketing <i>Digital Entrepreneurship</i>	150	75	75	30	30	15		E	5
S.07.A.049 S.07.A.050	Software Quality <i>Analysis and Specification of Software Requirements</i>	150	75	75	30	30	15		E	5
Total per Semester VII:		900	450	450	120	105	225	0	4E, 1PA	30
		450								

Semester VIII. *Licentiate Project*

Code	Name of the Course Unit/Module	Total number of hours			Number of hours by types of activity				Type of final assessment	Number of credits e
		total	direct instruction	individual work	C	S/P	Pr	per week		
S.Q8.A.051 S.V8.A.052	Foundations of Artificial Intelligence <i>Non-relational Databases</i>	150	75	75	30	45			E	5
S.08.A.053 S.08.A.054	Foundations for Game Development <i>Technologies of Mixed Reality</i>	150	75	75	30	45			E	5
S.08.O.055	Licentiate Internship and Design	450		450					E	15
S.08.O.056	Summary Theory Exam: <i>Algorithms, Programming and Databases</i>	120		120					E	4
S.08.O.057	Defending the Licentiate Project	30		30					E	1
Total per Semester VIII:		900	150	750	60	90	0	0	5E	30
Total per Year IV:		1800	600	1200	180	195	225	0	9E, 1PA	60
Total for the Study Programme:		7200	3300	3900	930	795	1575	0	33E, 7PA	240

3. Internships

Internships*		Semester	Duration, number of weeks/hours	Period	Number of credits
1	Internship in Production	3/4	15	September - December/	10
2	Technological Internship	5/6	15	February - May	10
3	Licentiate Internship and Design	8	10	March - May	15
Total:			24/990		35

* *Internships shall be carried out on the basis of a Semestrial Design Module.*

4. Free choice (optional) course units

Criterion #	Name	Year	Sem.	Number of hours by types of activity per week			Type of final assessment	Number of credits
				C	S/P	L		
1	Introduction into the Specialty	1	2	30			E	2
2	Psychology of Invention	2	4	30			E	2
3	Cognitive Philosophy	2	4	30			E	2
4	Graphical Representation of Data	3	5	30		30	E	4
5	Programming in Virtual Reality	3	5	30		30	E	4
6	Techniques for Reverse Engineering	3	6	30		30	E	4
7	Managerial Psychology	3	6	30			E	2
8	E-Governance	4	7	30			E	2
9	Romanian (for non-speakers of Romanian) 3	2	3		30		E	2
10	Romanian (for non-speakers of Romanian) 4	2	4		30		E	2
11	Romanian (for non-speakers of Romanian) 5	3	5		30		E	2
12	Romanian (for non-speakers of Romanian) 6	3	6		30		E	2
13	Foreign Language 3	2	3		30		E	2
14	Foreign Language 4	2	4		30		E	2
15	Foreign Language 5	3	5		30		E	2
16	Foreign Language 6	3	6		30		E	2
17	Foreign Language 7	4	7		30		E	2
18	Physical training 3	2	3		30		T*	
19	Physical training 4	2	4		30		T*	
20	Physical training 5	3	5		30		T*	
21	Physical training 6	3	6		30		T*	
22	Physical training 7	4	7		30		T*	

T - Testing assessed as "passed/failed".*

5. Licentiate Exam

Criterion #	Name of activity	Period	Number of credits
1	Summary Theory Exam: <i>Algorithms, Programming and Databases</i>	29.02. - 12.03	4
2	Defending the Licentiate Project	06.06. - 25.06	1
Total:			5

Approved at the TUM Senate meeting, Minutes No. 4 of 27.12.2016.

Ion BALMUS

Dumitru CIORBA

Dean of CIM Faculty, Dr., Associate Professor

Head of Department of Software Engineering and
Automatics, Dr., Associate Professor

EXPLANATORY NOTE to the Curriculum for Licentiate Studies (Cycle I)

Fundamental Area of Science, Culture and Technique: 06 Information and Communication Technologies

General Area of Study: 061 Information and Communication Technologies

Area of Professional Education: 0613 Software and Application Development

Programme of Study: 0613.3 Software Engineering

Description of Software Engineering Specialty Profile

Software Engineering (SE), along with *Information Technology*, falls within the *Computer Science area*, which pursues the goal to address certain issues related to organising human activities. Relative to *Information Technology*, *Software Engineering* has got a more theoretical approach focused on training professionals whose essential mission is to develop models and techniques for software production, which scope covers systems infrastructure, as well as organisation and information aspects of enterprises.

This theoretical aspect of Software Engineering stems from the fact that the studied software development procedures have a theoretical sublayer, which is better founded under the Software Engineering Study Programme.

At the same time, the *Software Engineering Study Programme* covers procedures for using the information with the specific aim to design, build and use IT products and services, thus, having established common areas with the *Information Technology Programme*.

Description of professional training in Software Engineering

Since the beginning of electronic computing in the 40s of the past Century, the computing systems and all the sectors involving them have showed an ever-growing utilization rate. Nowadays,

software already defines the essential elements of human activity: governance, communications, production, banks and finances, education, transportation, entertainment, healthcare, agriculture and law. Software products help the world be more efficient and more productive. The OECD data show huge amounts of money spent on software development. Despite such successes, there are serious challenges in terms of development costs, timeliness and quality of many software products. The ACM curricular Guidelines mentions several reasons explaining these challenges, which are definitional for the emergence of a new programme:

- Software products are among the most complex man-made systems, and by its nature, software has got intrinsic, essential properties, which cannot be easily tackled;
- The programming techniques that work well in small teams and for developing moderate products may be not suitable for producing large and complex systems;
- The pace of changes in the area of information and communication technologies (ICT) leads towards new and more advanced/sophisticated products. Therefore, the expectations of beneficiaries and other driving forces put pressure on quality and timeliness of developed products;
- The availability of highly qualified software engineers has not kept pace with the industry demand; therefore, pretty frequently the systems are designed and built by people who lack appropriate training or experience.

The relevance of the new Study Programme is underpinned also by the data of the USAID Survey (*Updating the IT skills gap* - O'Sullivan and Bercu, 2016), which revealed the stringent need for even more professionals in the area of software development.

The high pace of globalization has been largely due to information technologies, which provide opportunities for exploiting the information. The acknowledgment of this fact has been embodied in diverse national and international acts:

- Digital Agenda for *Europe 2020* is part of those seven remarkable initiatives of the European Strategy for Sustainable and Comprehensive Development and is aimed at bringing major economic and social benefits to be generated by a digital single market, which by the middle of its implementation term shall provide the following: a) 50% of population buying online; b) 33% of small and medium-sized enterprises selling online; c) 50% of citizens benefiting from e-Governance services; d) most public services being accessible online in all EU-member countries, etc.
- Transformation of the Republic of Moldova in a modern and effective country is possible only through *technological modernisation* at the level of society, organisations and individuals (*actions that are envisaged also in the Strategic Programme for Technological Modernisation of Governance*).

Therefore, the primary goal pursued by the Study Programme is determined by the demand for highly trained engineers in compliance with the area of professional training, who are able to offer advanced software solutions and innovations applied in diverse areas of human activity.

The Technical University of Moldova (TUM), through its Department on Software Engineering and Automatics, is the *first University that* has trained licentiate engineers in Information Technologies for the national economy *since* 1993. However, the consultations held

with its partners (public organisations, private companies and students) have revealed the need for new approaches: *team work and interdisciplinarity*.

As consultations are carried out on a continuous basis, collaboration events are conducted through different workshops and inter-institutional projects involving the Department staff. Among the private companies engaged in the process of consultation or support partnership we can mention Orange, StarNet, Allied Testing, Endava, Pentalog, JMD Planet, Winify, Evisoft, TenerLab, Dekart, etc.

Ensuring Quality Education

The quality of educational activities is a permanent priority of the Department of Software Engineering and Automatics as the unit delivers many study programmes: *Information Technologies, Information Security*, as well as *Automatics and Informatics*. The quality evaluation process comprises a multi-criteria approach, which considers the study results expressed in *knowledge, skills and competences*. The approach components cover the following aspects:

- compliance with the Higher Education Framework Plan (*approved by the Ministry of Education Order No. 1045 of 29 October 2015*);
- compliance with referenced standards (*Software Engineering 2014/ Curriculum Guidelines for Undergraduate Degree Programs in Software Engineering, Association for Computing Machinery (ACM), IEEE Computer Society*),
- in terms of the content and structure of the subjects taught – their topicality, integration of research outcomes, developing the skills on how to apply the knowledge in new situations;

Providing with Teaching Staff

Our teaching staff managed to take part in many scientific and didactic activities embedded in *institutional, national and international projects*, by collaborating lately with researchers of similar institutions from Romania, Russia, Denmark, Germany, France, Great Britain, Sweden, Israel, etc. The multidisciplinary feature of this area includes the works of many researchers with academic degrees who have been involved in the study programme:

Total course units/modules	Number of Course Holders with the functions of			
	University Professors	Associate Professors	University Lecturers	University Assistants
54	2	11	6 + 1 (with academic degree)	-

Competences developed by the Study Programme and coordination between them and the course units/modules

Professional competences developed by the Study Programme are determined by the definition of Software Engineering Specialty in compliance with the *ACM Standard – Association for Computing Machinery and IEEE Computer Society*, involving a mixture of skills aimed at addressing certain categories of issues outlined through key *competences* related to:

- scientific and engineering foundations of information technologies ;
- organisation and information aspects of systems;

- application technologies;
- software development methods and technologies;
- architecture and infrastructure of computing systems.

The professional and crosscutting competences are covered by fundamental, general, socio-humanistic and specialty subjects, which shares have been set in compliance with the Framework Plan. Further specification of competences developed, as well as their distribution by the content areas is displayed in the matrixes presented in Annexes 1 and 2.

Graduates' Employability

Taking account of the growing need in qualified professionals on the national and regional markets, the TUM graduates have shown a high rate of employability, which is proved also by the USAID Survey. The Classifier of Occupations in the Republic of Moldova, approved by the Government of the RM on 03.03.2014, through the major subgroup *25 Professionals in Information and Communication Technology* with the minor group *251 Software Programmers Analysts* (2511 System Analysts, 2512 Software Designers, 2513 Designers of WEB Systems and Multimedia, 2514 Programmers of Applications, 2519 Software Programmers Analysts not assigned to any of the previous main groups) covers the basic functions/professions of the Software Engineering Programme graduates.

Taking into account the competences acquired following the completion of the *Software Engineer* Programme, the graduates may hold positions other than those mentioned above: from teachers and researchers to director and managers of different levels.

Possibilities for Subsequent Education

Through the stated competences to be attained by the graduates, the Software Engineering Study Programme enables the latter to continue their university studies (Cycle II, Master's Degree) in the ICT area in any local or foreign university within the existing national and international partnerships.

Methods and criteria for competence evaluation

The minimum standards for competence evaluation are displayed in Matrix 1L (Annex 1), the essential evaluation methods comprising: papers/essays, laboratory works intended to develop engineering skills, projects with individual or team tasks with practical completion, tests/exams, licentiate exams and licentiate thesis.

The criteria for competence evaluation, in compliance with the Regulation for organizing the higher education studies on the basis of the National Credit System (the Ministry of Education Order No.726 of 20.09.2010), have been defined through the TUM regulatory acts. Hence, the Regulation for organizing the evaluation of students' learning activity (Order issued by the TUM Rector, entered in force during the 2011/2012 academic year), paragraph 2.3 *Evaluation Criteria*, describes in great details the general and specific evaluation criteria (to be supplemented by attitudinal and motivation aspects).

Rules for academic promotion

Promotion to the next year level is conditioned by the accumulation of the mandatory number of credits throughout the academic year foreseen by the Study Plan. It is possible to acquire the allocated credits only when students have been evaluated with marks ranging from “5” to “10”, as per the grading scale outlined in the Regulation for organizing the evaluation of students’ learning activity.

To be awarded the Licentiate Diploma, students shall fulfil the Study Plan and pass the evaluation tests/exams (including the licentiate exams) and defend their licentiate project/thesis with the mark "5" at least.

Foreseen Study Objectives

The Software Engineering Study Programme is aimed at training engineers who shall be able to demonstrate the following qualities:

- Have knowledge and skills in software engineering, be familiar with professional standards required to start the engineering practical activity;
- Demonstrate the understanding and ability to apply theories, models and techniques, which define the foundations for identifying, analyzing, designing, building, implementing, verifying and documenting objectively the industry issues;
- Be able to work both independently and in teams with the aim to develop and deliver high quality software products;
- Demonstrate understanding and pay attention to leadership and communication abilities for negotiations with beneficiaries, which are indispensable components of a typical environment for software development;
- Be able to offer solutions for different areas of application, using software engineering methods and integrating ethic, social, legal and economic aspects;
- Be able to find acceptable solutions, matching the project contradictory objectives, taking into account the existing costs, time, knowledge and systems.

Hence, the Study Programme 0613.3 Software Engineering pursues the following objectives: to train professionals – holders of Licentiate Engineer’ degree, who are able to demonstrate knowledge, skills and crosscutting and professional competences that meet the employers’ requirements, corroborated by the Licentiate Diploma comprising 240 transferable credits and ensuring their employability and/or continuation of Cycle II (Master’s Degree) studies.

Head of Department of Software Engineering and Automatics, Technical University of Moldova

Associate Professor, Dr. Dumitru CIORBA

Annex 2: Matrix 1L – Description of the Study Area/Programme via professional and crosscutting competences.

General Area of Study: Area of Professional Education: Study Programme:
061 Information and 0613 Development of Software 0613.3 Software Engineering
Communication Technologies and Applications

Qualification: <i>Software Engineering</i> Level of qualification: Licentiate/Bachelor's Degree	Possible occupations (in compliance with the Classifier of Occupations in the RM): <i>25 Professionals in Information and Communication Technology</i> <i>251 Software Programmers Analysts (2511 System Analysts, 2512 Software Designers, 2513 Designers of WEB Systems and Multimedia, 2514 Programmers of Applications, 2519 Software Programmers Analysts not assigned to any of the previous main groups).</i>
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Professional Competences Level Descriptors of structural elements of professional competences	C1 Scientific and engineering foundation of information technologies	C2 Systems organisation and information aspects	C3 Application technologies	C4 Software development methods and technologies	C5 Computing systems architecture and infrastructure
Knowledge					
D1 Knowledge, understanding the basic industry and specialty concepts, theories and methods; their appropriate use during the professional communication.	C1.1 Identifying and defining <i>fundamental scientific and applied</i> concepts, theories and methods supporting the information technology engineering.	C2.1 Identifying and defining concepts, theories and methods used to conduct <i>human and information focused analyses</i> on systems operated at the level of organisations.	C3.1 Identifying and defining concepts, procedures and methods for information processing used in <i>application development</i> depending on the <i>human activity needs</i> .	C4.1 Identifying and defining concepts and methods focused on <i>software development, implementation and utilization process</i> .	C5.1 Identifying and defining hardware, software and communication architecture components, as well as those required for <i>the description of a computing infrastructure</i> .
D2 Using the basic knowledge for explaining and interpreting various	C1.2 Explaining engineering solutions by using	C2.2 Explaining concepts, theories and methods used to conduct	C3.2 Explaining technologies appropriate for developing	C4.2 Explaining concepts and methods used for software	C5.1 Explaining the interaction and functioning of architecture and

types of concepts, situations, processes, projects, etc. associated with the industry.	techniques, concepts and principles from pure and applied science.	analyses of systems operated at the level of organisations.	applications required for the organizations activities.	development, implementation and use.	infrastructure components.
Skills					
D3 Applying certain basic principles and methods to address well defined issues/situations, specific for the field under qualified assistance conditions.	C1.3 Addressing the issues related to human activity by applying, in particular, numerical computation techniques and methods.	C2.3 Applying basic concepts, theories and methods to <i>prepare the information necessary</i> to develop systems operated at the level of organisations.	C3.3 Using modern technologies to define software applications.	C4.3 Applying programming languages, modelling and development environment, methodologies to produce software.	C5.3 Applying basic methods to specify architecture and infrastructure solutions for typical computing issues.
D4 Appropriate use of standard evaluation criteria and methods to assess the quality, performance and limits/constraints of certain processes, programmes, projects, concepts, methods and theories.	C1.4 Selecting criteria and methods for analysing the advantages and disadvantages of methods and procedures applied in resolving <i>typical computing issues</i> .	C2.4 Selecting criteria and methods to assess the quality, performance and limits/constraints of <i>systems to be developed in</i> compliance with the needs of the organisation subject to study, including those necessary for defining a quality and security management system.	C3.4 Using criteria and methods determined by the application technologies to assess compliance with interoperability standards.	C4.4 Using criteria and methods to assess the <i>system development process</i> in terms of its quality and performance.	C5.4 Using criteria and methods to <i>assess the functional and non-functional features of system components</i> .
D5 Devising professional projects using proven industry related principles and methods.	C1.5 Modelling certain standard issues from applied science using math tools.	C2.5 Devising a project (system specification) under the conditions of having a quality and security management system in place.	C3.5 Developing software applications using advanced technologies to convey, store and process data in compliance with the organisation needs.	C4.5 Developing and implementing software for specific problems from diverse areas of human activity.	C5.5 Implementing architecture and infrastructure solutions based on constraints defined by the project.
Minimum Performance	Identifying and applying	Analysing and modelling a	Identifying and using	Analysing, modelling and	Identifying hardware,

Standards for Competence Evaluation.	methods and algorithms learned for standard issues of pure and applied science.	system focused on standard organisation and/or information issues in an area of human activity.	technologies necessary for developing software applications.	devising a functional prototype in compliance with the technological development processes.	software and communication components intended for the applications specific for a selected area.

Level descriptors for structural elements of professional competences	Crosscutting Competences	Minimum Performance Standards for Competence Evaluation
D6. Carrying out professional tasks with due diligence under limited autonomy and qualified support.	CT1. Applying principles, rules and values of professional ethics	Carrying out projects, having complied with the rules of professional deontology.
D7. Getting acquainted with team work specific roles and activities and assigning the tasks to subordinated levels.	CT2. Identifying, describing and unrolling the team activities aimed to develop communication and collaboration skills and to undertake different roles (executive and management roles).	Carrying out team projects, having undertaken different roles.
D8. Acknowledging the need for continuous education; efficient use of resources and learning techniques for personal and professional development	CT3. Demonstrating the spirit of initiative and action for refreshing the professional, economic and organizational culture knowledge.	Devising and applying an individual plan for personal development; communication project in Romanian/Russian and English/French.

Annex 3: Matrix 2L – Coordination between the acquired competences and the course units/module.

Professional Competences	Competences Explained by Level Descriptors	Content Areas	Subjects of Study	Credits	
				per sub-ject	per compe-tence
1	2	3	4	5	6
C1 Scientific and engineering foundation of information technologies	C1.1 Identifying and defining <i>fundamental scientific and applied</i> concepts, theories and methods supporting the information technology engineering. C1.2 Explaining engineering solutions by using techniques, concepts and principles from pure and applied science. C1.3 Addressing the issues related to human activity by applying, in particular, numerical computation techniques and methods.	Pure and Applied Science	Math	5	68
			Special Math 1	5	
			Special Math 2	5	
			Equivalent Models	5	
			Applied Science	5	
			Signal Processing	5	
			Personal and Professional Development/Computer Science and Society	3	
			Project Management/Enterprise Management	3	
			Electronic Marketing/Digital Entrepreneurship	3	
			Cryptography and Security	1	
	C1.4 Selecting criteria and methods for analysing the advantages and disadvantages of methods and procedures applied in resolving <i>typical computing issues</i> . C1.5 Modelling certain standard issues from applied science using math tools.	Programming	Computer Programming	5	
			Data Structures and Algorithms	5	
			Formal Languages and Compiler Design	5	
			Calculability and Complexity	5	
			Data Analysis and View/Computer Graphics	1	
			Developing Industry Specific Languages	4	
			Licentiate Internship and Design	2	
			Summary Theory Exam	1	
C2 Systems organisation and information aspects	C2.1 Identifying and defining concepts, theories and methods used to conduct <i>human and information focused analyses</i> on	Information Security	Ethics, Communication and Law	2	17
			Developing Secure Applications	1	
			Cryptography and Security	1	

	<p>systems operated at the level of organisations.</p> <p>C2.2 Explaining concepts, theories and methods used to conduct analyses of systems operated at the level of organisations.</p> <p>C2.3 Applying basic concepts, theories and methods to <i>prepare the information necessary</i> to develop systems operated at the level of organisations.</p> <p>C2.4 Selecting criteria and methods to assess the quality, performance and limits/constraints of <i>systems to be developed in</i> compliance with the needs of the organisation subject to study, including those necessary for defining a quality and security management system.</p> <p>C2.5 Devising a project (system specification) under the conditions of having a quality and security management system in place.</p>	Information Management	Project Management/Enterprise Management	1	
			Electronic Marketing/Digital Entrepreneurship	1	
		Software Development	Conceptual Design of an IT Application	3	
			Information System Design	3	
			Summary Theory Exam	1	
			Licentiate Internship and Design	2	
		Software Quality	Software Quality/Analysis and Specification of Software Requirements	2	
C3 Application technologies	<p>C3.1 Identifying and defining concepts, procedures and methods for information processing used in <i>application development depending on the human activity needs</i>.</p> <p>C3.2 Explaining technologies appropriate for developing applications required for the organizations activities.</p> <p>C3.3 Using modern technologies to define software applications.</p> <p>C3.4 Using criteria and methods determined by the application technologies to assess</p>	Architectures, Platforms and Technologies	Multimedia Technologies/Simulation and Modelling Techniques	3	52
			Personal and Professional Development/Computer Science and Society	1	
			IoT Projects	2	
			Embedded Systems	3	
			Mobile Application Development/WEB Programming	1	
		Information Management	Databases	5	
			Conceptual Design of an IT Application	2	
			Foundations of Artificial Intelligence/Non-relational Databases	2	

	<p>compliance with interoperability standards.</p> <p>C3.5 Developing software applications using advanced technologies to convey, store and process data in compliance with the organisation needs.</p>	Programming	<p>Basics for Application Development</p> <p>Developing Secure Applications</p> <p>Equivalent Models</p> <p>Developing Industry Specific Languages</p> <p>Network Programming</p> <p>Object Oriented Programming</p> <p>Information System Design</p> <p>Programming of Distributed Applications</p> <p>Data Analysis and View/ Computer Graphics</p> <p>Software Design Techniques and Mechanisms</p> <p>Software Verification and Validation</p> <p>Mobile Application Development/WEB Programming</p> <p>Foundations for Game Development/ Technologies of Mixed Reality</p> <p>Licentiate Internship and Design</p> <p>Summary Theory Exam</p>	<p>4</p> <p>4</p> <p>2</p> <p>2</p> <p>2</p> <p>2</p> <p>3</p> <p>2</p> <p>2</p> <p>2</p> <p>2</p> <p>3</p> <p>1</p>	
C4 Software development methods and technologies	<p>C4.1 Identifying and defining concepts and methods focused on <i>software development, implementation and utilization process</i>.</p> <p>C4. Explaining concepts and methods used for software development, implementation and use.</p> <p>C4.3 Applying programming languages, modelling and development environment, methodologies to produce software.</p>	Programming	<p>Object Oriented Programming</p> <p>Network Programming</p> <p>IoT Projects</p> <p>Embedded Systems</p> <p>Programming of Distributed Applications</p> <p>Data Analysis and View/ Computer Graphics</p> <p>Multimedia Technologies/Simulation and Modelling Techniques</p> <p>Human-Computer Interaction/ Real Time Programming</p>	<p>3</p> <p>2</p> <p>4</p> <p>2</p> <p>2</p> <p>2</p> <p>2</p> <p>3</p>	54

	C4.4 Using criteria and methods to assess the <i>system development process</i> in terms of its quality and performance. C4.5 Developing and implementing software for specific problems from diverse areas of human activity.		Mobile Application Development/WEB Programming	1	
		Software development	Basics for Application Development	4	
			Developing Secure Applications	3	
			Developing Industry Specific Languages	2	
			Conceptual Design of an IT Application	2	
			Cryptography and Security	3	
			Information System Design	2	
			Foundations of Artificial Intelligence/Non-relational Databases	3	
			Foundations for Game Development/technologies of Mixed Reality	3	
			Summary Theory Exam	1	
			Licentiate Internship and Design	3	
			Defending the Licentiate Project	1	
		Software Quality	Software Design Techniques and Mechanisms Software Verification and Validation	3	
			Software Quality/Analysis and Specification of Software Requirements	3	
C5 Computing systems architecture and infrastructure	C5.1 Identifying and defining hardware, software and communication architecture components, as well as those required for <i>the description of a computing infrastructure</i> .	Programming	Programming of Distributed Applications	1	24
			Mobile Application Development/WEB Programming	1	
			Network Programming	1	
			Licentiate Internship and Design	2	
	C5.2 Explaining the interaction and functioning of architecture and infrastructure components.	Networks and Data Communications	Computer Network	5	
			IoT Projects	2	
	C5.3 Applying basic methods to specify architecture and		Computer Architecture	5	

	infrastructure solutions for typical computing issues.	Architectures, platforms and Technologies	Operating Systems: Internal Mechanisms and Design Principles	5	
	C5.4 Using criteria and methods to <i>assess the functional and non-functional features of system components</i> .		Human-Computer Interaction/Real Time Programming	2	
	C5.5 Implementing architecture and infrastructure solutions based on constraints defined by the project.				

Crosscutting Competences	Subjects of Study	Credits	
		Per Subject	Per Competence
CT1. Applying principles, rules and values of professional ethics	Ethics, Communication and Law	3	8
	Conceptual Design of an IT Application	1	
	Personal and Professional Development/Computer Science and Society	1	
	Project Management/Enterprise Management	1	
	Electronic Marketing/Digital Entrepreneurship	1	
	Licentiate Internship and Design	1	
CT2. Identifying, describing and unrolling the team activities aimed to develop communication and collaboration skills and to undertake different roles (executive and management roles).	Equivalent Models	2	9
	Developing Industry Specific Languages	1	
	Conceptual Design of an IT Application	1	
	Basics for Application Development	1	
	Developing Secure Applications	1	
	IoT Projects	1	
	Information System Design	1	
	Licentiate Internship and Design	1	
CT3. Demonstrating the spirit of initiative and action for refreshing the professional, economic and organizational culture knowledge.	Equivalent Models	1	8
	Developing Industry Specific Languages	1	
	Conceptual Design of an IT Application	1	
	Basics for Application Development	1	
	Developing Secure Applications	1	
	IoT Projects	1	
	Information System Design	1	
	Licentiate Internship and Design	1	
Total per Study Programme			240

Annex 4: Grid 1L - Description of the field / study program by professional and transversal skills

Name of qualification: <i>Software Engineering</i>		Possible occupations (according to CORM): 25 Specialists in information and communication technology			
Level of qualification: Bachelor		251 Programmer Analysts in the Software Field (2511 System Analysts, 2512 Software Developers, 2513 Web and Multimedia Systems Designers, 2514 Application Programmers, 2519 Software Program Analysts Unclassified in Previous Basic Groups)			
Desc-riptors level of the structural elements of professional skills	Professional skills	C1	C2	C3	C4
		On the scientific and engineering fundamentals of information technologies	On the organizational and informational aspects of the systems	On application technologies	On software development methods and technologies
C5					
On the architecture and infrastructure of computing systems					
Knowledge					
D1	C1.1	C2.1	C3.1	C4.1	C5.1
Know, understand concepts, theories and basic methods of the field and of the specialization area; proper use of these in professional communication	Identify and define concepts, theories and methods of <i>fundamental and applied sciences</i> support for information technology engineering	Identify and define concepts, theories and methods applied to carry out <i>analyzes focused on people and information</i> on systems operating at the organization level	Identify and define concepts, processes and methods of processing the information applied to carry out <i>applications resulting from the needs of human activity</i>	Identify and define concepts and methods focused on <i>the process of development, implementation and use of software</i> acquis	Identify and define architectural components hardware, software and communications, as well as those needed to <i>describe a computing infrastructure</i>
D2	C1.2	C2.2	C3.2	C4.2	C5.1
Make use of basic knowledge to explain and interpret various types of concepts, situations, processes, projects, etc. associated with the field	Explain engineering solutions by using techniques, concepts and principles in exact and applicative sciences	Explain concepts, theories and methods used to analyze systems operating at the organization level	Explain the right technologies for producing applications needed in the organization's activities	Explain concepts and methods applied to develop, implement and use the software	Explain the interaction and operation of architectural and infrastructure components
Skills					
D3	C1.3	C2.3	C3.3	C4.3	C5.3

Apply basic principles and methods for solving well-defined problems / situations, typical for the field, under qualified assistance	Solve problems in human activity fields by applying, in particular, numerical techniques and methods	Apply concepts, theories and basic methods for <i>preparing the information needed for the development of</i> systems	Apply modern technologies in defining software applications	Apply programming languages, modeling and development environments, and methodologies for software development	Apply basic methods for specifying architectural and infrastructure solutions for computational problems
D4 Appropriate use of standard criteria and methods of assessment to assess the quality, merits and limits of processes, programs, projects, concepts, methods and theories	C1.4 Select criteria and methods for analyzing the advantages and disadvantages of the methods and procedures applied to solve <i>numerical computational problems.</i>	C2.4 Select quality, performance and limits assessment criteria and methods <i>for the systems to be developed</i> in accordance with the needs of the study organization, including those required to define a quality and security management system	C3.4 Apply criteria and methods determined by the application technologies to assess compliance with interoperability standards	C4.4 Apply elaboration process assessment criteria and methods a of the systems in terms of quality and performance	C5.4 Apply criteria and methods to evaluate functional and non-functional features of system components
D5 Develop professional projects with the use of established principles and methods in the field	C1.5 Model typical problems in applied sciences using the mathematical system	C2.5 Develop a project (system specification) under the conditions of a quality and security management system	C3.5 Develop software applications using modern technologies for transmitting, storing and processing data in line with what is needed	C4.5 Develop and implement software for concrete problems in various fields of human activity	C5.5 Implement an architectural and infrastructure solution based on constraints stated by the project
Minimum performance standards for skills assessment	Identify and apply learned methods and algorithms to standard problems of fundamental and applied sciences	Analyse and model a system oriented on a organizational and / or informational standard problem of a	Identify and use the technologies needed to develop a software application.	Analyse, model and develop a functional prototype in accordance with technological development processes	Identify the hardware, software and communications components for applications specific to the selected field

		field of human activity.			
Level descriptors of the structural elements of professional skills	Transversal skills		Minimum performance standards for skills assessment		
Responsible execution of professional tasks, under restricted autonomy and qualified assistance conditions	CT1. Apply principles, norms and values of professional ethics		Carry out projects in accordance with the rules of professional ethics		
Get familiar with roles and activities specific to teamwork and distribute tasks to subordinate levels	CT2. Identify, describe and carry out activities organized in a team with the development of communication and collaboration abilities, as well as with the undertaking of different roles (execution and leadership)		Carry out a project with the team, with the responsible undertaking of different roles		
Be aware of the need for continuous training, effective use of learning resources and techniques for personal and professional development	CT3. Show initiative and action spirit to update professional, economic and organizational culture knowledge		Develop and implement a personal development plan; project communication in Romanian / Russian and in English / French.		

Annex 5: Grid 2L - Coordination between developed skills and course units / modules

Professional skills	Skills explained by level descriptors	Content areas	Study disciplines	Credits	
				By discipline	By skills
1	2	3	4	5	6
C1 On the scientific and engineering fundamentals of information technologies	C1.1 Identify and define concepts, theories and methods <i>of fundamental and applied sciences</i> support for information technology engineering C1.2 Explain engineering solutions by applying the techniques, concepts and principles in exact and applicative sciences C1.3 Solve problems in human activity fields by applying, in particular, numerical calculation techniques and methods C1.4 Select criteria and methods for analyzing advantages and disadvantages of the methods and procedures applied to solve <i>numerical computational problems</i> . C1.5 Model typical problems in applied sciences using the mathematical system	Exact and applicative sciences	Mathematics	5	67
			Special Mathematics 1	5	
			Special Mathematics 2	5	
			Equivalent models	5	
			Applied Sciences	5	
			Signal Processing	5	
			Personal and Professional Development / Computer Science and Society	1	
			Project Management / Enterprise Management	2	
			Electronic Marketing / Digital Entrepreneurship	2	
			Cryptography and Security	1	
			Databases	2	
		Programming	Computer programming	5	
			Data Structures and Algorithms	5	
			Formal languages and compiler design	5	
			Calculability and complexity	5	
			UNTRANSLATED_CONTENT_START Analiza și vizualizarea datelor/ Grafica pe calculator UNTRANSLATED_CONTENT_END	2	
			Develop domain-specific languages	4	

			Bachelor Internship and Design	2	
			Theoretical synthesis test	1	
C2 On the organizational and informational aspects of the systems	UNTRANSLATED_CONTENT_START C2.1 Identificarea și definirea conceptelor, teoriilor și metodelor folosite în realizarea de analize focusate pe oameni și informație privind sistemele ce operează la nivel de organizații UNTRANSLATED_CONTENT_END C2.2 Explain concepts, theories and methods used to analyze systems operating at the organization level C2.3 Apply concepts, theories and basic methods for the preparation of information needed for the development of systems operating at the level of organizations C2.4 Select criteria and methods for assessing the quality, performance and limits of the systems developed in accordance with the organization's needs, including those needed to define a quality and security management system C2.5 Develop a project (system specification) under the conditions of a quality and security management system.	Information security	Ethics, Communication and Law	2	15
			Secure Application Development	1	
			Cryptography and Security	1	
		Information Management	Project Management / Enterprise Management	1	
			Electronic Marketing / Digital Entrepreneurship	1	
		Software development	Conceptual Design of an IT Application	2	
			Information Systems Design	2	
			Theoretical synthesis test	1	
			Bachelor Internship and Design	2	
		Software quality	Software Quality / Analyze and Specify Software Requirements	2	
C3 On application technologies	C3.1 Identify and define concepts, processes and methods of processing the information applied developer <i>applications resulting from the needs</i> of human activity C3.2 Explain the right technologies for producing	Architectures, platforms and technologies	Multimedia Technologies / Simulation and Modeling Techniques	3	47
			Personal and Professional Development / Computer Science and Society	1	
			IoT projects	2	
			Embedded Systems	3	

<p>applications needed in the organization's activities</p> <p>C3.3 Apply modern technologies in defining software applications</p> <p>C.3.4 Apply criteria and methods determined by the application technologies to assess compliance with interoperability standards</p> <p>C3.5 Develop software applications using modern technologies for transmitting, storing and processing data in accordance with the needs of an organization</p>			Mobile Application Programming / Web Programming	1	
			Computer networks	2	
	Information Management		Databases	3	
			Conceptual Design of an IT Application	1	
			UNTRANSLATED_CONTENT_START Fundamente ale inteligenței artificiale/Baze de date nerelaționale UNTRANSLATED_CONTENT_END	2	
	Programming		Application Development Fundamentals	3	
			Secure Application Development	3	
			Equivalent models	1	
			Develop domain-specific languages	2	
			Network Programming	2	
			Object-Oriented Programming	2	
			Information Systems Design	3	
			Programming Distributed Applications	2	
			UNTRANSLATED_CONTENT_START Analiza și vizualizarea datelor/ Grafica pe calculator UNTRANSLATED_CONTENT_END	1	
			Techniques and mechanisms for software design	2	
			Verification and validation of program products		

			Mobile Application Programming / Web Programming	2	
			UNTRANSLATED_CONTENT_START Fundamente ale dezvoltării jocurilor/ Tehnologii de realitate mixtă UNTRANSLATED_CONTENT_END	2	
			Bachelor Internship and Design	3	
			Theoretical synthesis test	1	
C4 On software development methods and technologies	C4.1 Identify and define concepts and methods focused on <i>the process of development, implementation and use of software</i> acquisition C2.4 Explain concepts and methods applied to develop, implement and use the software C4.3 Apply programming languages, modeling and development environments, and methodologies for software development C4.4 Apply elaboration process assessment criteria and methods of the systems in terms of quality and performance C4.5 Develop and implement software for concrete problems in various fields of human activity	Programming	Object-Oriented Programming	3	52
			Network Programming	2	
			IoT projects	4	
			Embedded Systems	2	
			Programming Distributed Applications	2	
			UNTRANSLATED_CONTENT_START Analiza și vizualizarea datelor/ Grafica pe calculator UNTRANSLATED_CONTENT_END	2	
			Multimedia Technologies / Simulation and Modeling Techniques	2	
			UNTRANSLATED_CONTENT_START Interacțiunea om-calculator/ Programarea în timp real UNTRANSLATED_CONTENT_END	3	
			Mobile Application Programming / Web Programming	1	
		Software development	Application Development Fundamentals	4	
			Secure Application Development	3	

			Develop domain-specific languages	1	
			Conceptual Design of an IT Application	1	
			Cryptography and Security	3	
			Information Systems Design	2	
			UNTRANSLATED_CONTENT_START Fundamente ale inteligenței artificiale/Baze de date nerelaționale UNTRANSLATED_CONTENT_END	3	
			UNTRANSLATED_CONTENT_START Fundamente ale dezvoltării jocurilor/Tehnologii de realitate mixtă UNTRANSLATED_CONTENT_END	3	
			Theoretical synthesis test	1	
			Bachelor Internship and Design	3	
			Defend Bachelor's Project	1	
			Software quality	3	
C5 On the architecture and infrastructure of computing systems	C5.1 Identify and define architectural components hardware, software and communications, as well as those needed to <i>describe a computing infrastructure</i>	Programming	Techniques and mechanisms for software design	3	20
			Verification and validation of program products		
			Software Quality / Analyze and Specify Software Requirements	3	
			Programming Distributed Applications	1	
			Mobile Application Programming / Web Programming	1	
			Network Programming	1	

C5.1 Explain the interaction and operation of architectural and infrastructure components C5.3 Apply basic methods for specifying architectural and infrastructure solutions for computational problems C5.4 Apply criteria and methods to evaluate functional and non-functional features of system components C5.5 Implement an architectural and infrastructure solution based on constraints stated by the project		Bachelor Internship and Design	1	
	Networks and data communications	Computer networks	3	
		IoT projects	1	
	Architectures, platforms and technologies	Computer architecture	5	
		Operating systems: internal mechanisms and design principles	5	
		UNTRANSLATED_CONTENT_START Interacțiunea om-calculator/Programarea în timp real UNTRANSLATED_CONTENT_END	2	

Transversal skills	Study disciplines	Credits	
		By discipline	By skills
CT1. Apply principles, norms and values of professional ethics	Ethics, Communication and Law	3	17
	Conceptual Design of an IT Application	2	
	Personal and Professional Development / Computer Science and Society	3	
	Project Management / Enterprise Management	1	
	Electronic Marketing / Digital Entrepreneurship	1	
	Equivalent models	1	
	Application Development Fundamentals	1	
	Develop domain-specific languages	1	
	Secure Application Development	1	
	IoT projects	1	
	Information Systems Design	1	
	Bachelor Internship and Design	1	
CT2. Identify, describe and carry out activities organized in a team with the development of communication and collaboration abilities, as well as with the	Equivalent models	2	10
	Develop domain-specific languages	1	
	Conceptual Design of an IT Application	2	

undertaking of different roles (execution and leadership)	Application Development Fundamentals	1	
	Secure Application Development	1	
	IoT projects	1	
	Information Systems Design	1	
	Bachelor Internship and Design	1	
CT3. Show initiative and action spirit to own update professional, economic and organizational culture knowledge	Project Management / Enterprise Management	1	12
	Electronic Marketing / Digital Entrepreneurship	1	
	Equivalent models	1	
	Develop domain-specific languages	1	
	Conceptual Design of an IT Application	2	
	Application Development Fundamentals	1	
	Secure Application Development	1	
	IoT projects	1	
	Information Systems Design	1	
	Bachelor Internship and Design	2	
Total study program			240

Annex 6: Roadmap

2020

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Prepare a new study program for the PBL methodology implementation.												
Revise the Automation and Informatics Education Plan.												
Approve the Education Plan.												
Prepare the teaching infrastructure based on the PBL methodology.												
Identify the involved teachers and conduct the teacher training in PBL.												
Review the curriculum by subjects, subject sheets, case studies.												
Admission 2021.												
Internationalization of the Software Engineering Study Program.												
Carry out various cooperative and partnership activities based on international projects with foreign universities.												
Enhance international compatibility of the Software Engineering study program.												
Embark on international projects providing mobility for teachers and students.												
Introduce changes to the Education Plan to ensure that mobility is performed												

with the equivalency of accumulated credits.												
Carry out optional English language courses for teachers.												
Implement external mobilities for students and academic staff.												
Promote the Software Engineering Study Program.												
Attract international companies that will support the knowledge transfer at the level of content, teachers and student practice.												
Further develop and adapt the Software Engineering Study Program to the needs of the economic environment by integrating research elements at the teaching and student level.												
Enhance interactivity with the private environment.												
Review the curriculum by subjects, subject sheets, guidelines, case studies, evaluations.												
Upgrade the PBL-based teaching infrastructure.												
Ensure interdisciplinarity.												
Develop research partnerships focused on research with other universities, institutions.												
Organize scientific events.												
Strengthen scientific research directions.												
Promote the Software Engineering Study Program.												

Provide methodological support for teacher training in PBL.												
Develop methodological support for teacher training in PBL.												
Continuous training of teachers in PBL methodology.												

2020

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Prepare a new study program for the PBL methodology implementation.												
Revise the Automation and Informatics Education Plan.												
Approve the Education Plan.												
Prepare the teaching infrastructure based on the PBL methodology.												
Identify the involved teachers and conduct the teacher training in PBL.												
Review the curriculum by subjects, subject sheets, case studies.												
Admission 2021.												
Internationalization of the Software Engineering Study Program.												
Carry out various cooperative and partnership activities based on international projects with foreign universities.												
Enhance international compatibility of the												

Software Engineering study program.												
Embark on international projects providing mobility for teachers and students.												
Introduce changes to the Education Plan to ensure that mobility is performed with the equivalency of accumulated credits.												
Carry out optional English language courses for teachers.												
Implement external mobilities for students and academic staff.												
Promote the Software Engineering Study Program.												
Attract international companies that will support the knowledge transfer at the level of content, teachers and student practice.												
Further develop and adapt the Software Engineering Study Program to the needs of the economic environment by integrating research elements at the teaching and student level.												
Enhance interactivity with the private environment.												
Review the curriculum by subjects, subject sheets, guidelines, case studies, evaluations.												
Upgrade the PBL-based teaching infrastructure.												
Ensure interdisciplinarity.												
Develop research partnerships focused on research with other universities, institutions.												
Organize scientific events.												

Strengthen scientific research directions.												
Promote the Software Engineering Study Program.												
Provide methodological support for teacher training in PBL.												
Develop methodological support for teacher training in PBL.												
Continuous training of teachers in PBL methodology.												

2021

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Prepare a new study program for the PBL methodology implementation.												
Revise the Automation and Informatics Education Plan.												
Approve the Education Plan.												
Prepare the teaching infrastructure based on the PBL methodology.												
Identify the involved teachers and conduct the teacher training in PBL.												
Review the curriculum by subjects, subject sheets, case studies.												
Admission 2021.												
Internationalization of the Software Engineering Study Program.												

Carry out various cooperative and partnership activities based on international projects with foreign universities.												
Enhance international compatibility of the Software Engineering study program.												
Embark on international projects providing mobility for teachers and students.												
Introduce changes to the Education Plan to ensure that mobility is performed with the equivalency of accumulated credits.												
Carry out optional English language courses for teachers.												
Implement external mobilities for students and academic staff.												
Promote the Software Engineering Study Program.												
Attract international companies that will support the knowledge transfer at the level of content, teachers and student practice.												
Further develop and adapt the Software Engineering Study Program to the needs of the economic environment by integrating research elements at the teaching and student level.												
Enhance interactivity with the private environment.												
Review the curriculum by subjects, subject sheets, guidelines, case studies, evaluations.												

Upgrade the infrastructure adapted to the PBL methodology.												
Ensure interdisciplinarity.												
Develop research partnerships focused on research with other universities, institutions.												
Organize scientific events.												
Strengthen scientific research directions.												
Promote the Software Engineering Study Program.												
Provide methodological support for teacher training in PBL.												
Develop methodological support for teacher training in PBL.												
Continuous training of teachers in PBL methodology.												

2022

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
Prepare a new study program for the PBL methodology implementation.										
Revise the Automation and Informatics Education Plan.										
Approve the Education Plan.										
Prepare the teaching infrastructure based on the PBL methodology.										
Identify the involved teachers and conduct the teacher training in PBL.										
Review the curriculum by subjects, subject sheets, case studies.										
Admission 2021.										
Internationalization of the Software Engineering Study Program.										

Carry out various cooperative and partnership activities based on international projects with foreign universities.										
Enhance international compatibility of the Software Engineering study program.										
Embark on international projects providing mobility for teachers and students.										
Introduce changes to the Education Plan to ensure that mobility is performed with the equivalency of accumulated credits.										
Carry out optional English language courses for teachers.										
Implement external mobilities for students and academic staff.										
Promote the Software Engineering Study Program.										
Attract international companies that will support the knowledge transfer at the level of content, teachers and student practice.										
Further develop and adapt the Software Engineering Study Program to the needs of the economic environment by integrating research elements at the teaching and student level.										
Enhance interactivity with the private environment.										
Review the curriculum by subjects, subject sheets, guidelines, case studies, evaluations.										
Upgrade the PBL-based teaching infrastructure.										
Ensure interdisciplinarity.										
Develop research partnerships focused on research with other universities, institutions.										
Organize scientific events.										
Strengthen scientific research directions.										
Promote the Software Engineering Study Program.										
Provide methodological support for teacher training in PBL.										
Develop methodological support for teacher training in PBL.										
Continuous training of teachers in PBL methodology.										

Annex 7: Action Plan

Actions	Required resources
PERIOD 1	
Revise the Education Plan for the training of specialists in Automation and Informatics according to the TUM Regulation on the organization of studies based on the National Education Credit System, taking into account the Regulation on the organization of the higher education based on the National Education Credit System, so that the program is linked to the national and international standards of training specialists in the field and is in line with the Framework-Plan. It is expected that starting with the 2nd year, in each semester, students will have a special subject dedicated to design/projects.	Provide support at department, faculty, university level.
Approve the Education Plan within the Software Engineering and Automation Department; Faculty of Computers, Informatics and Microelectronics and the TUM Senate.	Support at department, faculty, university level.
Identify the teachers who will be involved in the teaching process under the new study program and train them for their use of the PBL teaching methodology.	Human resources.
Upgrade the teaching infrastructure based on the PBL methodology.	Financial resources Support at department, faculty, university level.
Revise curriculum by subjects (analytical programs), subject fiches, guides, case studies, evaluations etc. (for the first year of study).	Human resources.
PERIOD 2	
Carry out various cooperative and partnership activities based on international projects with foreign universities.	Support at University level. Developed infrastructure.
Stimulate the interest of students and academic staff in the external mobility.	Support at University level. Human resources.
Enhance the number of external mobilities for students and academic staff.	Support at University level. Human resources. Foreign partners. Collaborative projects. Financial resources.
Increase the number of students with strong English language skills.	Human resources. Financial resources.
Carry out optional English language courses for teachers.	Human resources. Financial resources.

Improve curricular content and teaching skills for all areas of study, increase international compatibility of study programs and integrate international aspects and study periods into the study process.	Human resources. Provide support at department, faculty, university level.
Re-design study program on the basis of international cooperation opportunities (student mobility, double diplomas, etc.).	Human resources. Provide support at department, faculty, university level. Foreign partners.
Attract international teachers to deliver courses.	Foreign partners. Human resources. Financial resources.
Launch several international projects provide mobility for both teachers and students.	Support at University level. Human resources. Foreign partners. Collaborative projects. Financial resources.
Introduce changes to the Education Plan to ensure that mobility is performed with the equivalency of accumulated credits.	Human resources. Provide support at department, faculty, university level. Foreign partners.
Enhance interaction with the private environment, attract international companies.	Provide support at department, faculty, university level. Foreign partners.
Promote the Software Engineering Study Program	Provide support at department, faculty, university level.
PERIOD 3	
Develop research-oriented scientific partnerships with universities, institutions and companies from Moldova and abroad (Europe and the whole world).	Support at University level. Human resources. Foreign partners. Collaborative projects. Financial resources.
Revise Curriculum by subjects, subject fiches, guides, case studies, evaluations, etc. so that students develop the transversal skills needed for a successful employment, taking into account performance indicators.	Provide support at department, faculty, university level. Human resources.
Upgrade the PBL-based teaching infrastructure.	Provide support at department, faculty, university level. Financial resources.
Participate in international scientific events.	Provide support at department, faculty, university level. Financial resources. Human resources.
Attract internationally recognized experts to participate in the events organized within the Software Engineering Study Program.	Provide support at department, faculty, university level. Human resources. Financial resources.

Initiate or revive cooperation agreements with international organizations operating in the Republic of Moldova.	Support at University level. Human resources. Foreign partners. Collaborative projects. Financial resources.
Organize international events with the participation of international partners from international programs / projects / organizations.	Human resources. Provide support at department, faculty, university level. Collaborative projects. Financial resources.
Identify companies undertaking the responsibility to support knowledge transfer at the level of content, teachers and internships.	Human resources. Provide support at department, faculty, university level. Private Partners.
Integrate research at the teaching and student level into the study process.	Support at University level. Human resources. Research projects. Financial resources.
Initiate interdisciplinary annual/Bachelor's/Master's projects among students from the study programs of the CIM faculty, but also from other faculties, by encouraging teamwork.	Human resources. Provide support at department, faculty, university level.
Strengthen scientific research directions carried out in interdisciplinary groups (inter-departmental / university)/.	Support at University level. Human resources. Research projects. Financial resources.
Attract students to scientific activities - by strengthening students' scientific and practical groups and their involvement in the research activity of the teaching staff.	Support at University level. Human resources. Research projects. Financial resources.
Promote performance in educational and research processes.	Provide support at department, faculty, university level.
PERIOD 4	
Provide continuous assistance in professional problem solving.	Provide support at department, faculty, university level.
Develop methodological support for teacher training in PBL.	Provide support at department, faculty, university level. Human resources.
Initiate compulsory course of continuous teacher training in PBL methodology.	Human resources. Support at department, faculty, university level. Financial resources.

Annex 8: Promotional Flier Software Engineering

Mobilitate academică

În cadrul programului PBLMD „Introducing Problem Based Learning in Moldova: Toward Enhancing Students Competitiveness and Employability”, programul Erasmus+, studenții cu rezultate academice înalte vor învăța timp de un semestru în cadrul universităților europene - partenerie ale proiectului.

Stagii de practică

Programul de studii prevede desfășurarea stagiilor de practică pe parcursul semestrului, în cadrul modului de proiectare semestrială.

Ce vei face după?

După finalizarea programului vei activa în calitate de programator aplicații:

- web
- mobile
- server
- jocuri



Sală dedicată pentru active learning

Activități sociale

- ◆ Tekwill – Centru de excelență în domeniul TIC
- ◆ iHUB – Centru de inovare și antreprenoriat în domeniul IT
- ◆ Parcul dendrologic – muzeu al tehnicii în aer liber

Contacte:

- MD-2004, bd. Ștefan cel Mare și Sfânt, 168, Chișinău, R. Moldova,
- Comisia de admitere – 022 23 51 85
- admiterea@adm.utm.md
- www.utm.md
- www.facebook.com/UTMoldova

Erasmus+

Acest program a fost finanțat cu suportul Uniunii Europene

Research problem

pblmd.aau.dk

Departamentul Ingineria Software și Automatică

Programul de studii

Ingineria software

» » »

FACULTATEA CALCULATOARE, INFORMATICĂ ȘI MICROELECTRONICĂ



Programul de studii *Ingineria software* se încadrează în știința metodelor și instrumentelor de prelucrare a informației (*computing* – eng.) pentru soluționarea unor probleme specifice legate de organizarea activităților umane. Acesta cuprinde proceduri de aplicare a informației cu un scop specific în proiectarea, construirea și utilizarea produselor și serviciilor informatice.

» » »

Durata studiilor – 4 ani
Forma de învățământ – cu frecvență
Limba de predare – română/engleză
Titlul obținut – inginer licențiat
Numărul de credite transferabile – 240 ECTS
Admiterea – în baza diplomei de bacalaureat

Programul de studii prevede învățarea bazată pe soluționarea de probleme (PBL)

Metoda de învățare PBL, aplicată în programul de studii *Ingineria Software*, se bazează pe identificarea și soluționarea unei probleme în grup, urmată de susținerea rezultatelor acesteia. Astfel, studenții devin motivați și combină munca în echipă la rezolvarea problemelor (activități practice, teoretice), care, conform studiilor, îmbunătățește capacitatea de a reflecta și de a comunica.





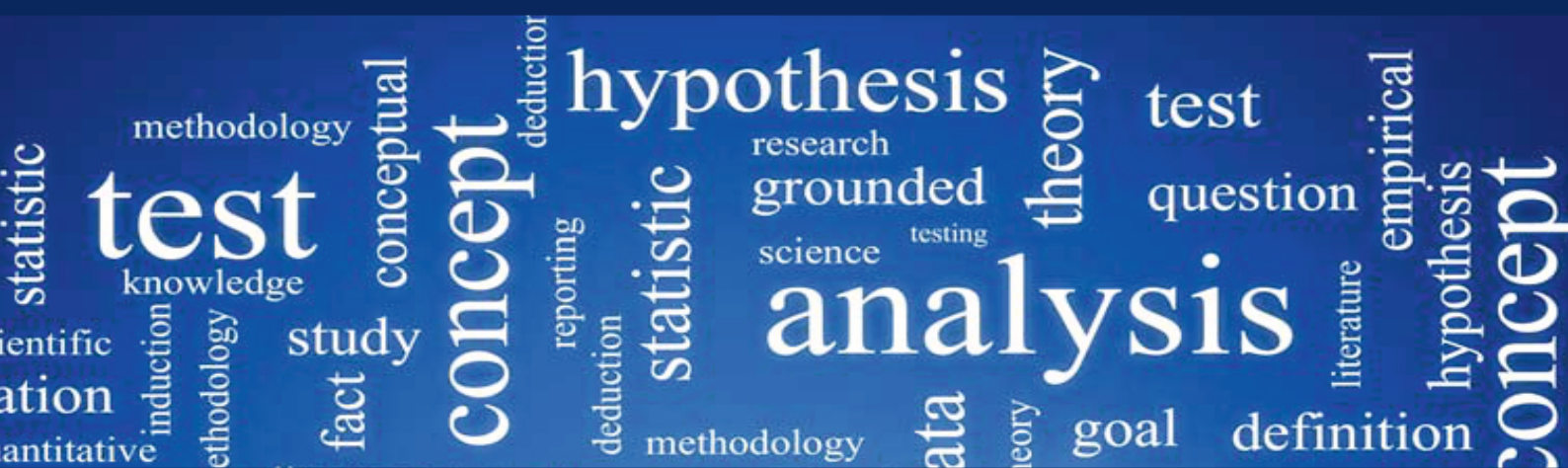
Fiecare semestru de studii are o tematică proprie:

» » »

- ◆ Învățarea bazată pe probleme ale științei, tehnologiei și societății
- ◆ Bazele ingineresti și științifice ale calculului
- ◆ Bazele dezvoltării aplicațiilor
- ◆ Limbaje formale și compilatoare
- ◆ Rețele și securitate
- ◆ Internetul lucrurilor (IoT)
- ◆ Sisteme informaționale
- ◆ Proiectul de licență.

*Tell me and I forget,
Teach me and I may remember,
Involve me and I learn.*

Folklore



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