Georgian National University SEU

Formation of the Learning Outcomes of the Educational Program and Evaluation Methods

Approved by
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Foreword

The present document regulates the formation of the learning outcomes of the educational program and evaluation methods at Georgian National University SEU.

Teaching and learning process, as a dynamic and coherent action, consists of a number of interrelated stages that complement and modify one another, and take on an appearance of a single chain of actions. Though it is all about a cycle, but it is not a one-time, instead a set of continuous activities of a multi-stage PDCA cycle, which involves defining the outcome, planning and implementation of the process, monitoring, analyzing the monitoring results and making appropriate changes if necessary.

Achieving the above-mentioned goals and implementing the actions is allowed to berealized, first of all, within the framework of the educational program, the formation, evaluation and improvement of the learning outcomes of which ensures the coaching of highly qualified specialists and the realization of the potential of HEIs in relation to the environment. It is exactly the evaluation of learning outcomes that enables:

- To determine the learning outcomes achieved by students;
- To plan the relevant activities for further improvement of the program;
- To meet the requirements of accreditation standards;
- To describe the extent which the students achieve their learning outcomes to;
- To identify how unique a particular educational program is;
- To make correct and purposeful decisions based on the evaluation results.

Evaluation Cycle in Learning Outcomes of the Educational Program

Evaluation of the learning outcomes of an educational program involves the following five stages:
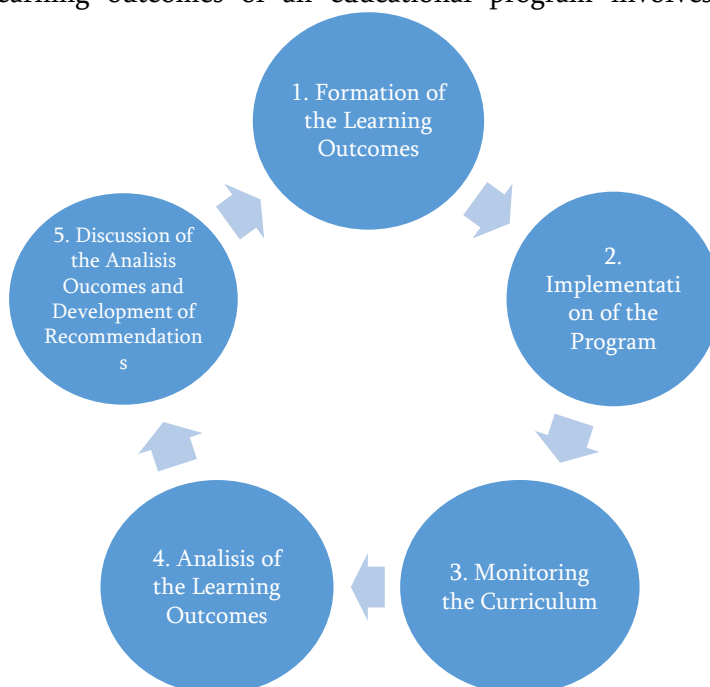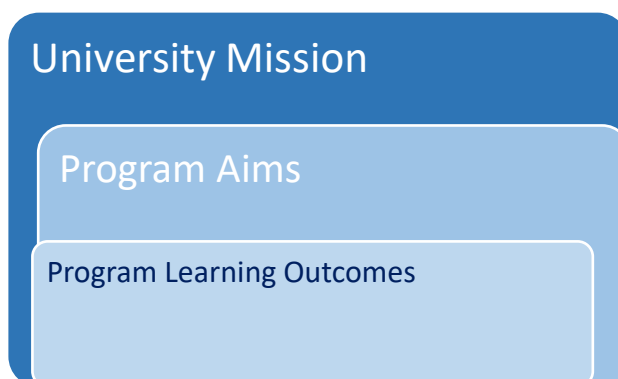
1. **Formation of Learning Outcomes of the Educational Program** - planning stage. It involves the learning outcomes to be formed by sharing and taking into account the existing best practices, market demands, and approaches of other HEIs.

2. **Implementation of the Program** – (Do) stage. It involves the complete implementation of all activities provided by the educational program, in a pre-planned and agreed form, which is an important stage for the further development of the program. At this stage, current changes in the field are monitored and studied, the progress of the program is evaluated (analyzing the students' academic performance, academic staff success), stakeholder involvement in the implementation of the program, etc.

3. **Curriculum Monitoring and Learning Outcome Analysis** – (Check) phase, during which it is determined whether the educational program fully provides and creates opportunities for students (including intermediate level students) to achieve their learning outcomes. Monitoring is carried out during the implementation of the program, during which various data are collected and analyzed as well as developing appropriate recommendations to improve the program and their discussion;

4. **Takeing Specific Steps to Improve the Program** – the adaptation (Adjust) stage, when, based on the developed and agreed recommendations, the specific steps are taken to improve the program.

Formulation of Learning Outcomes of the Educational Program

In formulation of the learning outcomes of the educational program, the goals of the program are taken into account, which in turn derives from the mission of the university and the strategic development plan. As a result, a close link is established between the learning outcomes, program goals and the university mission, implying that the achievement of program learning outcomes by students demonstrates the degree to which program goals and the mission of the University are realized.

University Mission

Program Aims

Program Learning Outcomes

The purpose of the educational program is an affirmation to teaching intent, which describes the results to be achieved within the given program. It introduces students to what knowledge they need to acquire, develop skills, and formulate values or attitudes that program graduates will be able to do (including what they will contribute to the development of a particular field, sharing knowledge and experience, etc.).

The learning outcomes of the educational program describe what the student knows, understands, and can do after completing the program. The learning outcomes are described by three competencies:

- Knowledge and understanding
- Expertise
- Accountability and autonomy

In order to determine the compliance of the program learning outcomes with the program objectives, **a map of compliance of the program objectives and learning outcomes** is prepared, in the form of a table, in the following way:

Learning Outcomes of the Program / Program Aims	Learning Outcome of the Program 1	Learning Outcome of the Program 2	Learning Outcome of the Program 3	Learning Outcome of the Program 4	Learning Outcome of the Program 5	Learning Outcome of the Program 6
Program Aim 1	√	√				
Program Aim 2		√	√	√		
Program Aim 3			√		√	√
Program Aim 4		√	√	√		

The following requirements should be considered when formulating the learning outcomes of the program:

- The learning outcomes of the program should be directly related to the qualifications awarded by the program (see the Classifier of field of Study).
- The complexity of the learning outcomes of the program should vary according to the level of the program (undergraduate, graduate, doctoral) and should correspond to the descriptors of the qualification level given in the National Qualifications Framework (see National Qualifications Framework).
- The above descriptions can not be directly reflected in the learning outcomes of the program, as the framework describes only general phrases to what extent the learning outcomes should be developed according to three categories (knowledge and understanding, expertise, accountability and autonomy) on the undergraduate, graduate or doctoral program, and the descriptors given in the framework should be tailored to the specific field and program.
- When formulating the learning outcomes of the program of the regulated profession (medicine, veterinary medicine, law, teacher education, marine sciences), we should be guided by the field characteristics created specifically for them (see Industry Characteristics). It would be desirable to use industry characteristics developed by different countries for orientation and sharing of experience.
- Given that the University prepares staff in both national and global contexts, the learning outcomes of the program should reflect the needs and key trends in both the local and international labor market.
- The learning outcomes of the program indicate only the knowledge and skills that students receive from the basic / compulsory courses, as the learning outcomes of the program must be achievable for all students of the program.
- Learning outcomes should be set out in such a way that we can use some kind of assessment / assignment to determine whether students have achieved a particular learning outcome, in other words, it should be possible to observe and evaluate learning outcomes.
- The study outcomes should be formulated in simple and understandable manner.
- Learning outcomes should be achievable within the given program, which should be provided by the content of the program. The learning outcomes of the program convey the knowledge and skills that a student should eventually have at the end of the program. Therefore, when shaping the learning outcomes of a program, the focus should be on only the key issues that are most relevant to the given

field. At the same time, the learning outcomes should reflect the upper level of knowledge and skills that the student should eventually pass.

- The learning outcomes of the program should not include the learning outcomes of individual courses and the learning outcomes of the program are not a mechanical sum of the learning outcomes of the educational courses or other components of the program. The learning outcomes of the program are much more than the learning outcomes of a single course, or a combination of them, as it should show the student's ability to relate knowledge gained from different program components and ultimately demonstrate the knowledge, skills and attitudes required for the qualification to be awarded.

- It is necessary to evaluate the learning outcomes of the program. Only by evaluating the individual course and other components of the program can we determine whether students have achieved the learning outcomes of the program.

- It is desirable for the program to have no more than 10 learning outcomes.

- Learning outcomes must be formed in the present tense, and during their formation, verbs of the instrumental case must be used, so that we can then evaluate the result of this learning;

- The following principle can be used to write down a learning outcome:

Upon completion of the program, students can/to be able to + instrumental case verb(s) + object and phrase (what students will know / skills / emotional change)

e.g. After completing the program, students will be able to analyze statistics in the organization during the decision-making process;

Also, the learning outcomes can be formulated as follows:

Upon completion of the program, students + instrumental case verb(s) + (what students will know / skills / emotional change).

e.g. After completing the program, students analyze statistics in the organization during the decision-making process;

- It is advisable to use Bloom's revised taxonomy to determine the level of complexity of the learning outcomes as well as the learning complexity of the learning outcomes of the program.

- It should be noted that it is quite difficult to assess what students know and understand. The verbs "to know" and "to understand" can have a lot of different meanings as well as being ambiguous and vague. Therefore, their appplication is not advisable. However, it is possible to assess how students demonstrate their knowledge

> *e.g.*
> ✓ *Upon completion of the program, the student is able to demonstrate an understanding of an ongoing issue in marine biology. (**bad example**)*
> ✓ *Upon completion of the program, the student is able to analyze a current issue in marine biology (**better example**)*
> ✓ *Upon completion of the program, the student is able to analyze the current issue of the ecosystem using the principles of scientific research (**good example**)*

and understanding. Therefore, instead of the phrases "students know", "students understand", "students comprehend", "students appreciate", we should think about what students will be able to do with this knowledge and understanding; how they will be able to demonstrate their knowledge and understanding. Involvement of various stakeholders (program head(s), program and academic staff, project employers, students, alumni, etc.) in the process of developing and refining learning outcomes is yielding very good results. In this case, the learning outcomes of the program can more clearly and fully reflect, on the one hand, the specifics of the field and, and on the other hand, the labor market requirements or key trends in general.

Program Implementation

The teaching / learning process in which the educational program is implemented is very important both in terms of creating conditions for the achievement of the program outcomes as well as in terms of observing, identifying shortcomings or achievements. This, in turn, creates all the conditions for proper analysis and planning of appropriate actions. At this stage, attention should be paid to both substantive and technical issues, such as program resource provision, learning process planning, organization of exam sessions and so on. In general, the degree of difficulty in implementing the program is calculated per average student. Consequently, a keen student will be able to do more in the same amount of time, or achieve the same result in less time, and vice versa.

Curriculum Monitoring

The curriculum monitoring phase is important to ensure that the content of the program provides the learning outcomes formed by the students to be achieved. We need to distinguish between two cases:

1. When developing a new educational program, first of all its learning outcomes are write down and only then the content of the program is determined, which should ensure the achievement of the learning outcomes of the program.

2. When updating the learning outcomes of the existing program, the content of the existing program is analyzed and it is determined to what extent it creates opportunities for students to achieve the learning outcomes.

To monitor the curriculum, a **curriculum map** is developed, on one side of which the learning outcomes of the program are presented, while the other side accomodating the compulsory educational courses, activities and research components offered by the educational program. It should be noted on the map which educational course provides the development of which learning outcome, with three progressive levels:

1- Introduction, 2- Deepening the knowledge, 3 - Mastering

A currciulum map could be broken down as follows:

Learning Outcomes of the Program Program Component	Program learning Outcome 1	Program learning Outcome 2	Program learning Outcome 3	Program learning Outcome 4	Program learning Outcome 5	Program learning Outcome 6
Program Component 1		I	I			M
Program Component 2			I			M
Program Component 3	I				M	
Program Component 4				D		M
Program Component 5	I	I		D/M	D	
Program Component 6		I	I/D			

It is important that all learning outcomes are developed at all three levels and that consistency should be reflected in the syllabi of specific educational courses.

Curriculum monitoring also involves analyzing the extent to which it ensures the achievement of program learning outcomes. To do this, we need to focus on the curriculum map to see how many courses develop each learning outcome of the program and how many program learning outcomes a particular course develops.

It should also be determined whether the given number of educational courses is adequate to achieve the learning outcomes of the program. Several questions need to be addressed, namely:

➢ Whether too many courses develop the same learning outcome or not.
➢ Whether the number of subjects is sufficient to achieve a specific learning outcome.
➢ Whether we inlude a compulsory educational course in the program that does not develop any learning outcomes of the program.
➢ Whether there a learning outcome in the program that no educational course and/or other activity envisions.

It is essential that each compulsory component of the program be passed on to at least one learning outcome!

The outcome of each learning program must be developed at all three levels. It is also possible for one course to introduce and enhance any learning outcome (I / R) or to enhance and enhance (R / E).

It is important that the head of each course be involved in compiling and analyzing the curriculum, together with the program head(s). Also, the lecturer of each course should know what role their subject plays in the whole program.

It is a very positive factor when the academic staff implementing the program discusses the learning outcomes of the program and the curriculum map together; many important issues are also analyzed, for example:

➢ What learning outcomes do we want students to achieve at the end of the program?
➢ What is taught in which course and at what level?
➢ Are there overlaps in different educational courses, or are there issues left out of the program whose teaching is important to achieve the learning outcomes of the program?
➢ In what order is this or that particular education course taught, the program issue, etc.

The relevance of teaching-learning methods and activities to learning outcomes is of great importance in achieving learning outcomes. However, the impact of teaching-learning method / activity can be "high" (H), "medium" (M) or "low" (L).

To analyze this, the following table can be used, where in addition to the impact, in each box, specific activities can be indicated:

Program Learning Outcomes / Teaching-Learning Methods/Activities	Program Learning Outcome 1	Program Learning Outcome 2	Program Learning Outcome 3	Program Learning Outcome 4	Program Learning Outcome 5
Teaching-Learning Method/Activity 1	H (case study, practical assignment)				M (case study)
Teaching-Learning Method/Activity 2		L (open type test)		M (practical assignnment)	
Teaching-Learning Method/Activity 3		M (practical assignnment)			M
Teaching-Learning Method/Activity 4			H (case study)		L (closed type test)
Teaching-Learning Method/Activity 5			H (open type test, case study)		
Teaching-Learning Method/Activity 6				L (closed type test)	

It is important that within each educational course, the appropriate methods are used to use the methods or activities that are used to achieve "high" quality learning outcomes.

Analyzing the Learning Outcomes

Quality assurance and the evaluation of an educational program in general is an ongoing, dynamic process that determines how well students have been able to achieve the learning outcomes of the program and, how and in what ways, it is possible to improve the program.

Program learning outcomes are assessed at the end of the program. Once we are sure that the curriculum is structured in such a way as to ensure that students achieve the program's learning outcomes, a program's learning outcome evaluation plan should be developed.

The Learning Outcome Evaluation Plan should reflect how the learning outcomes of the program will be assessed at the end of the program. It is important that the learning outcomes of the program are evaluated in the learning course(s) and/or activities in which the curriculum map reinforces the learning outcomes of the program. It is possible to evaluate the results of several studies in one educational course/activity. It is considered a piece of good practice that while evaluating the learning outcomes of master's and doctoral programs, the learning outcomes of the program are predominantly evaluated in master's and/or dissertations.

In the case of a bachelor's program, in order to evaluate the learning outcomes of the program, it may be appropriate to use a so-called application of "Capstone Course". This happens if the number of students involved in the program is very large and it is difficult to complete the bachelor's thesis in order to fully meet the academic requirements set for it. At this time, the part of the students (randomly selected) can be evaluated, which will allow us to find the evaluation as valid, reliable and transparent one.

Program learning outcomes should be assessed using both **direct** and **indirect** methods.

- The direct method of assessment involves the assessment and analysis of students' academic performance during the course. This relies on assessing student achievement using a variety of methods. Assessment methods are defined within each educational program.
  This method checks whether the student has achieved the learning outcome of the program through the completed assignment. Basically, it is the direct evidence used by the student to confirm the achievement of the program's learning outcomes. It can be:
  ✓ Test results, measuring the ability associated with more than one result. Therefore, the summary score may not reflect a certain result. In the process of evaluating the learning outcomes of the program, the results of the exams should be divided into components (midterm exam, activity, final exam), which allows the assessment components to be properly matched to the relevant learning outcome(s), grouping the assessment components of relevant courses and formulating evaluation criteria.
  ✓ Portfolio, being directly designed to achieve a specific result and their evaluation, can be used quite easily in the evaluation process.
  ✓ Capstone course summarizes the knowledge and skills acquired during the learning process. Assessment components are directly designed to assess practical skills and relevant learning outcomes;
  ✓ Fieldwork assessment is used to assess practical skills;

In addition to the above, simulation, license examination, practical clinical evaluation, certification examination, publication, defense of master and dissertation thesis, evaluation by field experience supervisor, closed (MCQs) and open-ended questions, practical and theoretical type questions, laboratory questions, presentations and projects, objectively structured examinations (OSCE) etc.

Indirect Assessment Method is the assessment and evidence that can be used to draw conclusions about a student's knowledge, skills, and responsibilities and autonomy, even if you do not have direct evidence of this. Indirect evaluation methods are:

- ✓ Employment rate to be determined by surveys of graduates.
- ✓ Surveys and questionnaires, the main respondents of which are employers, graduates, students, etc.

Student self-assessment can also be considered as a form of indirect evidence as well as student assessment by employer, focus group discussions, interviews, scores obtained in educational courses, program completion and seeding rates, etc.

Evaluation rubrics and target marks should be drawn up for direct and indirect evidence.

However, it is important that this assessment is not confused with the student's assessment of the course or the results of the satisfaction survey. In order to evaluate the learning outcomes of the program, a questionnaire can be prepared, which will list the learning outcomes of the program and students will express their opinion on the level of achievement of this or that particular learning outcome. The same questionnaire can be sent to employers as well. There are evaluation methods that can be used as both direct and indirect evaluation methods, depending on how the method is evaluated.

For example, an article published by a student could be both a direct and an indirect method of assessment. If we just mention publishing, then it will be indirect evidence of learning achievement(s). But if this article is to be evaluated according to certain criteria that are directly related to one or more of the learning outcomes of the program, then it will be a direct evaluation. The same can be said about the certification exams.

It is crucial that all compulsory components and all registered students in them participate in the assessment process. The obtained result will be distributed in the so-called "Gaussian curve", which shows the distribution of results obtained by students according to grades and determines the share of each grade. Observations should be carried out annually, which allows observation the current situation and the dynamics as well. Based on the latter, the persistence and the extent of the problem in a particular learning component (if any) will be identified and the need and the scale of the response will be determined.

The direct evaluation process should involve the academic staff (including the invited staff) conducting the course, as well as the faculty administration, the program manager, the program advisory board, and the quality development department.

Indirect assessment process involves graduates (with self-assessment), employers (with graduaters' assessment), internships (with students' assessment), which allows the program to be assessed in an indirect way.

While choosing a method for evaluating the learning outcome (s) of the program, we should be guided by the following principles:

- Assessment must be directly related to the learning outcome;
- the use of assessment rubric is considered to be a good practice;

For example, if we want to evaluate the results of three learning outcomes of a program in one writing assignment, we can prepare a corresponding rubric. Due to that, we need to define the criteria for each learning outcome that must be met to achieve that learning outcomes (although we may not need to define the criteria and evaluate the learning outcomes directly). Each learning outcome may include from 2 to 8 criteria.
After establishing the achievement criteria of learning outcome(s), we need to determine the maximum and minimum assessment marks for each criterion (e.g.: from 1 to 3, from 1 to 5). It is desirable to define the characteristics of the marks as well (a brief description of the scores of the cases when a certain mark is written) (see Annex 2).

- Before using a newly created rubric, it is desirable to pilot it, i.e. - evaluation of the same paper with the same rubric by several lecturers and comparision of obtained results. If the results obtained are very different, the rubric should be refined.
- The use of assessment methods that already exist in the course is desirable;
- We must have a written assessment for each learning outcome;
- The grade received in a course / exam / project is not a direct method of assessing learning outcomes. The course grade reflects how a student met the requirements of the course and not the level of achievement of the program(s) learning outcomes. Typically, depending on the requirements of the course, the course includes several learning outcomes related to one or more learning outcomes of the program.

For example, it is true that successful completion of a course cannot be used to assess the learning outcome of a program, but marks on the components of a course, exams, and assignments that are directly related to just one specific learning outcome of a program can be considered as an adequate evidence of achievement level of the outcome.

Moreover, a course grade often include activity, or other activities that are not directly related to the program learning outcomes.

A target benchmark should be set for each learning outcome of the program that reflects our expectations of the level at which students will achieve each learning outcome. Not all students will be able to get high grades for the accomplishment of a learning outcome. Due to that, program implementers should determine the margin that will be satisfactory for them and consider that the graduates of the program have the knowledge and skills that are defined by the learning outcome.

In order to determine the target benchmarks, firstly it is advisable to determine how the learning outcomes will be assessed.

For example, 60% of students will receive a grade of 15 to 20 on the first result of the program (in case if we evaluate this learning outcome through an essay with a maximum grade of 20), or 80% of students or more will receive a B grade or higher in the exam . Or 75% or more of the students will be graded with 3 in accordance to the rubric (Scale 1-5) by which a research paper is graded.

Target benchmarks should be defined before assessing learning outcomes. The target benchmark should not be unreasonably high or, conversely, low. Students' prior results can help you determine realistic target benchmarks.

Here is a simple diagram for a possible application of the above-mentioned units, where a specific example is given:

Learning Outcomes	Assessment Rubric	Assessment Period	Target Benchmark
Example 1: Based on the analysis of alternative options, finds and substantiates solution ways to problems arisen during the design and construction process	The average of the total points of courses of appropriate concentration. The maximum possible grade is 100 points.	After passing all courses of appropriate concentration	The assessment of 60% of students should not be less than 61 points
Example 2: Describes the structure of living organisms at the level of a cell, tissue, organ and organ system	According to the criteria for the assessment of the components of the midterm, final exams and participation described in the syllabus of the course.	Learning Outcome will be assessed in the 6th semester with the course "Human and Animal Physiology"	The assessment of 60% of students should not be less than 71 points
Program Learning Outcome 3			
Program Learning Outcome 4			
Program Learning Outcome 5			
Program Learning Outcome …			

The mechanism for assessing the learning outcomes of the program should be described in the learning outcomes evaluation plan, which should represent by which assignment, when, by whom, and on what number of students each learning outcomes of the program will be assessed. In case if the rubric / rubrics are used to assess a task (which is considered to be the best practice), it should be attached to the evaluation plan.

To do this, the following scheme can be used as an example:

Assessment levels / Evaluation indicators	Completely unsatisfactory	Not satisfactory	satisfactory	Mostly satisfactory	Completely satisfactory
Evaluation indicators 1	√				
Evaluation indicators 2			√		
Evaluation indicators 3		√			
Evaluation indicators 4					√
Evaluation indicators 5				√	

Defining assessment indicators and rubrics for assessing indicators themselves for each learning outcome set by the program is very important for evaluating the achievement of the program and the development of the program as a whole.

When a new educational program is created, it should have a plan for evaluating the learning outcomes of the program. Naturally, a new program will not have assessment of learning outcomes of the program and evaluation of the learning outcomes of the program will be possible within a few years after it starts. Nevertheless, it is essential that the academic staff implementing the program is aware of the learning outcomes of the program and is familiar with the evaluation plan from the very first day of program development. It is no less important that the academic staff implementing the program knows which courses and / or other activities provided by the educational program introduce, deepen and reinforce the learning outcomes of the program.

Review the results of the analysis and developing recommendations

The main purpose of evaluating the learning outcomes of the program is to use the evaluation results to further perfect and improve the program and not just to improve a particular course of study or to assess a particular student. Accordingly, when we have the results of the evaluation of the learning outcomes of the program, this data is analyzed and compared with the target benchmarks. At this stage, the staff implementing the program discusses:

- To what extent the students achieved their learning outcomes at the level they expected;
- If there is one or more learning outcomes of the program that most students are weak or unable to achieve. In that case, the map of curriculum is reviewed and the courses that develop that learning outcome(s) are alaysed.

It is also important to provide feedback to students on the issue how they have achieved the learning outcomes of the program, what their strengths and weaknesses are. However, it should also be clarified that unlike student assessment, the primary purpose of evaluating program learning outcomes is to evaluate the program and work on its continuous improvement.

From the results obtained in the process of evaluating the learning outcomes by indirect methods, the following facts are noteworthy, such as:

- More than 25% of employers believe that a graduates (in the case of an internship - a student) of a given educational program does not have or poorly masters significant knowledge and skills relevant to the field;
- A considerable number of graduates (about 30%) believe that they have not acquired significant knowledge and skills in the field within the given educational program;
- A large number of interns (about 35%) found out that while internship they have not been able to expose and have developed many of the practical skills that should have been acquired at higher education institution;

The following reactions may occur to the above-mentioned facts:

1. **Research and determination of the causes of the problem.** This can be done through qualitative research with focus groups, interviews, interviews with specific course professors and / or students, syllabus revisions, monitoring of papers created under the program, etc.;
2. **Taking specific measures to overcome the identified problem(s).** After analyzing the evaluation results, the program staff may consider that it is necessary to:
   - Implementation of changes in the contents of the course(s), its preconditions;

- ➢ Changing the sequence of courses;
- ➢ Changing of teaching-learning method(s);
- ➢ Changing the distribution of credits and hours among courses;
- ➢ Adding course (s), or vice versa;
- ➢ Introducing changes in student consultation process and various services;
- ➢ Reviewin learning outcomes of the program and / or their evaluation mechanism;
- ➢ Updating educational literature, etc.

After taking above-mentioned measures, the evaluation report of the program learning outcomes is written, where obtained results, their analysis and the changes implemented based on the analysis (if any) are reflected.

Appendix 1: Updated Bloom's taxonomy

According to Bloom's updated taxonomy, cognition is divided into six progressive levels. These are: remember, understanding, application, analysis, evaluation, creation. A description of each level and the corresponding verbs are given below. It is important to determine the complexity of the learning outcome while formulating learning outcomes, and use a verb appropriate to that complexity and been measurable as well. The use of Bloom's updated taxonomy in formulating the learning outcome simplifies that process. Due to the fact that, the latter gives us the structure of knowledge complexity and the corresponding verbs, it is widely used in many countries and universities.

Creation

Evaluation

Analysis

Application

Understanding
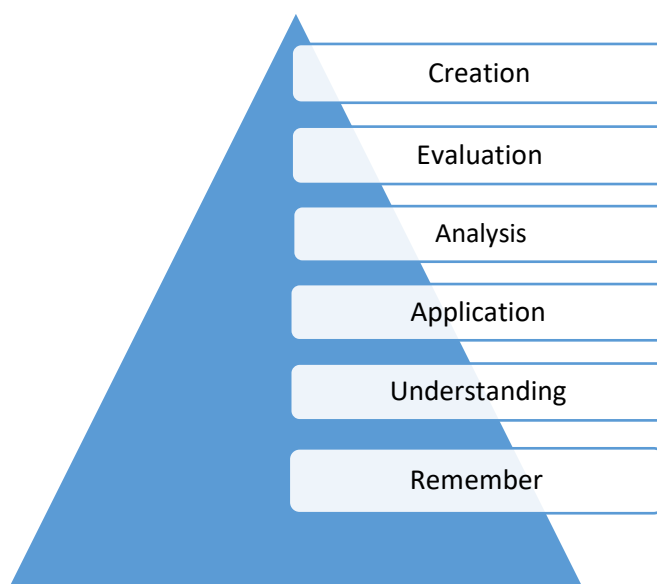
Remember

1. Remember – identifing and recalling facts and key concepts.

   Key verbs: define, list, select, find, name, recall, match, show, reproduce, choose, tell, describe, mark, identify, name, and more.

2. Understanding – Explaining ideas and concepts. Explain, summarize, classify this or that theory, issue, event. Express the same information differently and / or give an example. Understand and interpret learned information.

   Key verbs: describe, discuss, classify, compare, contradict, contrast, explain, illustrate, select, translate, interpret, review, highlight, connect, paraphrase, summarize, explain, change, cite, and more.

3. Application – Use of information / learning material in a new situation. Use of ideas and concepts to solve a problem.

   Key verbs: use, introduce, experiment, model, organize, select, demonstrate, solve, calculate, modify, compute, illustrate, modify, operate, use in practice, predict, manufacture, and more.

4. Analysis – *Seeing the connection between ideas. Comparing the characteristics of different concepts, processes or events without expressing an opinion and reasoning. Break down information into constituent components in order to understand the relationship and structure between them.*

   Key verbs: difference, organize, contrast, compare, analyze, classify, discover, select, condition, divide, check, inspect, simplify, rank, classify, divide, contrast, differentiate, distinguish, divide, connect, separate, categorize, etc.

5. Evaluation – substantiation / justification of a decision and / or a position. Discuss of complexities and limitations of concepts, processes, ideas. Forming an opinion around an event or idea and criticizing or supporting it.

   Key verbs: argumentative reasoning, praise, define, summarize / reconcile, agree, resolve, defend, deny, support, criticize, evaluating, accounting, drawing conclusions, persuade, making recommendations, validate, measure, prioritize, etc.

6. Create – Create a new or an original work. Creating a new concept different from the one learned, or use the concept to create something new.

   Key verbs: build, assemble, design, develop, formulate, investigate, author, modify, compile, construct, create, invent, maximize, minimize, modify, plan, start, assume, solve, test, etc.

Program learning outcomes should include the most complicated level a student coveres at the end of the program. For example, when a student is able to do something at the third, application level, it means that the student also has a level of remebering and understanding. Due to that, it is not necessary to describe learning outcomes at all levels. That will help us to avoids over-detailed description of learning outcomes and it will also help to reduce the number of learning outcomes. As a rule, verbs from the third, fourth, fifth and sixth levels of the taxonomy are used to formulate the learning outcomes of the program.

Appendix 2: Sample rubric for assessing program learning outcome (s)

Name of an assignment:					
	4 points excellent	3 points good	2 points average	1 point poor	Accepted points
Program learning outcomes 1:					
Criterion 1.1.	Description	Description	Description	Description	
Criterion 1.2.	Description	Description	Description	Description	
Criterion 1.3.	Description	Description	Description	Description	
Criterion 1.4.	Description	Description	Description	Description	
Program learning outcomes 2:					
Criterion 2.1.	Description	Description	Description	Description	
Criterion 2.2.	Description	Description	Description	Description	
Criterion 2.3.	Description	Description	Description	Description	
Program learning outcomes 3:					
Criterion 3.1.	Description	Description	Description	Description	
Criterion 3.2.	Description	Description	Description	Description	
Criterion 3.3.	Description	Description	Description	Description	
Criterion 3.4.	Description	Description	Description	Description	
Criterion 3.5.	Description	Description	Description	Description	
				Final points	