

# **YEREVAN STATE UNIVERSITY (YSU)**

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## **METHODOLOGICAL GUIDELINES FOR DEVELOPMENT OF YSU EDUCATIONAL PROGRAMMES**

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## INTRODUCTION

This Guideline is aimed at giving special instructions to the teaching staff and working groups engaged in the development of YSU educational programs in compliance with the basic requirements raised in respect of the educational programs of the University and gives practical recommendations for the meeting of the given requirements. This Guideline shows the fundamental tenets for the development of YSU educational programs and the standards which are to be observed by working groups engaged in the development of YSU educational programs in the course of the designing and development process of the educational program. In designing and developing the educational program, all the educational subdivisions of Yerevan State University ought to abide by the fundamental tenets of the present methodological guideline.

Well-organized process of the development of the educational program favors the creation of such educational programs which will facilitate the conveyance of educational end results envisaged by the educational program to students and will foster the successful realization of further approval, monitoring (constant observation) and review processes of the educational program to be developed. The proper designing and development of the educational program is also very essential for the needs of the society and students so as to ensure their compliance.

The designing and development of new educational program is to be based on a series of the following fundamental principles:

- the educational programs are to have a specific designed purpose and anticipated educational end results,
- the development of the educational program is to be based on both internal and external program references<sup>1</sup> and /or standards, including relevant subject references. Also, it is to be based on European and/or national standards inherent for higher educational qualifications and, if necessary, the requirements of professional, legislative and field-regulating authorities/structures and employers, opportunities for future career of the graduates of the educational program are to be defined,
- the manners and types are to be defined which will contribute to the formation and evaluation of the educational end results envisaged for the educational program,
- required humane and material resources are to be revealed for the implementation of the educational program.

The development of the educational program is directed at the settlement of the following three important tasks, such as:

1. What students should learn (educational end results).
2. How they should learn it (teaching and educational methods).

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<sup>1</sup> Subject references are educational requirements minimally formulated in a general form for awarding qualifications in the given subject area and educational level and serve an essential source in designing and developing educational programs in a specific subject area for higher educational establishments

3. How to ascertain whether the educational results have been achieved or not (evaluation modes).

The proper development of the educational program requires that the three constitutive of the educational program be interconnected both logically and in a coordinated manner.

## **SECTION 1. EDUCATIONAL PROGRAMME**

The development of the educational program is to commence right from the definition of its purposes and objectives which then will be followed by the formation of educational end results of the educational program. Hereafter, the evaluation modes are to be determined which will enable students to display the achieved educational end results and later measure them on equal basis. The next step is the choice of more efficient teaching and educational methods.

Therefore, in order to ensure a proper development of the educational program, the mutual co-ordination of the following three principal elements for the development of the educational program is to be highly considered.

1. anticipated educational end results of the educational program,
2. teaching and educational methods which are intended for students to successfully achieve the given end results.
3. evaluation which is to determine the level of achievement of the given end results.

In the course of the development of the educational program, the given three aspects are to be regarded as united and interconnected. In other words, the planned educational and teaching modes are to be interconnected with the end results of the educational program which will then be determined to foster the efficient achievement of the given end results by students. Simultaneously, the achievement of each educational end results is to be evaluated by such methods which will provide students with best opportunities to materialize them.

As noted above, in defining the end results of the educational program, the educational program references or standards for the given subject area, the description of levels of higher educational qualifications (national or European), as well as the requirements of respective professional organizations (partnerships and employers) are to be considered, if available.

## 1. Statement of Aims of the Educational Programme

The aims of the educational program (or academic modules) are the educational intentions and objectives planned by educational program developers which describe in a generalized manner what learners can benefit by the participation in the educational program (academic module<sup>2</sup>).

The educational program is aimed at meeting the following principal requirements:

- all the educational programs and academic modules are to pursue a specific formulated aims and objectives,
- all aims and objectives are to be described briefly and formulated in such a manner so that students will face no difficulty in comprehending them,
- all aims and objectives are to emphasize the possibilities to be achieved by students by taking up the educational program (or the course of study),
- the objectives and aims of the educational program are to embrace the aims of academic modules/constitutive studies of the educational program in a generalized manner.

Therefore, the objectives and aims of the educational program differ from educational end results and bear distinctive and distinguishing peculiarities.

1. The aims outline the educational achievements reached by students participating in the educational program.
2. The implementation of the aims cannot be estimated right in the course of studies.

Therefore, the enumeration of 5 or 6 aims is quite enough for the presentation of the general provisions of the educational program and descriptive features. It is desirable to start the formulation of aims with the following words,

*"The educational program is aimed at..."*

which is to be followed by the enumeration of specific aims which can begin with the following words. For example, *to develop, to ensure, to assist, to support, to bring up, to inform, to acquaint, to form, to prepare, to provide, to promote, to encourage etc.*

As an example, below is the enumeration of the aims of the Master's Degree program on information systems of Yerevan State University:

<b>AIMS OF THE EDUCATIONAL PROGRAMME</b>
<p>The educational program is aimed at training specialists qualified to use and introduce information technologies within industry who are to be apt at:</p> <ul style="list-style-type: none"><li>• analyzing and coordinating the information data related to the given sphere,</li><li>• making decisions and forecasts within non-valuable availability of information,</li><li>• introducing information technologies within the given business environment with a view to ensuring efficient activity,</li><li>• organizing and promoting the development process of information systems of business-</li></ul>



<sup>2</sup> The guarantees set forth in this section equally relates to the definition of aims of educational module/course of study.

## 2. Formulation of Programme Learning Outcomes

The educational end result is aimed at ascertaining the fact of what a student is to know, understand or be able to do upon graduation. The approach based on end results of the development of the educational program clearly shows what is expected from students, how they will use the knowledge obtained and what kind of standards are to be used for their evaluation. Therefore, educational end results are to be realistic and measurable.

In contrast to end results of academic modules/course of studies, education end results of the educational program cannot be evaluated by a direct method. Their achievement is at best measured and evaluated by indirect methods through the evaluation of educational end results of constitutive academic modules.

End results of the educational program are to meet the following principal requirements:

1. All educational end results of the educational program are to be formulated at minimally admissible (threshold) level.
2. All educational end results of the educational program are to mention the academic year by the end of which students are to acquire the given educational program.
3. The achievement of all educational end results of the educational program are to be evaluated which will be conducted by an indirect method through the evaluation of end results of constitutive academic modules and mapping<sup>3</sup> of the curriculum.
4. Students are to assimilate all educational end results of the educational program for a successful completion of the educational program.

Educational end results are to be formulated or written in such a manner so that they will be comprehensible for the students and their estimation will be possible.

Educational end results of the educational program are to fall into the following classification:

- professional theoretical knowledge,
- professional practical skills,
- generalized (transmissible) skills

Moreover, the formulation of educational end results of the first classification (professional theoretical knowledge) is preferably to begin with the following words:

*"Upon successful completion of this educational program, students will acquire professional knowledge..."*

The remaining two classifications are to be begin with the following words:

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<sup>3</sup> See Clause 4 of this Section regarding the curriculum map.

*"Upon successful completion of this educational program, students will be skillful..."*

Since it is impossible to indirectly and completely evaluate the educational end results of the educational program, therefore, they tend to be included in the academic modules as per their academic years and expressed on basis of their educational end results.

The number of educational end results stipulated by the educational program are to be maintained within reasonable limit. As a rule, the definition of 20-25 (including 5-6 generalized skills) of educational end results is sufficient for the expression of the principal description of the educational program.

As an example, below is the complete set of educational end results of Master's Degree Educational program on Information Systems of Yerevan State University.

<b>Programme Learning Outcomes</b>
<p><b>A. Professional Theoretical Knowledge</b></p> <p>Upon successful completion of this program students will be able to:</p> <ol style="list-style-type: none"><li>1) master the theoretical principles of analyzing and designing algorithms, data models and computing systems.</li><li>2) master the fundamental principles of data retention and protection.</li><li>3) be conversant with principles of designing and implementation of processes within the distributed environment.</li><li>4) master the means of communication processes and Web technologies.</li><li>5) have knowledge of economic models, financial operations and electronic business.</li><li>6) master the methodology of building business-oriented program systems.</li><li>7) be conversant with legal and ethical standards regarding the use and structure of information systems.</li></ol>
<p><b>B. Professional Practical Skills</b></p> <p>Upon successful completion of this program students will be able to:</p> <ol style="list-style-type: none"><li>1) choose and build efficient algorithms or data retention models.</li><li>2) create dynamic Web pages, partake in the operations for the creation of databases and network applications.</li><li>3) utilize diverse marketing strategies, financial instruments and business processes.</li><li>4) make proposals for the enhancement of the efficiency of operations within the given sphere.</li><li>5) build new applications for the information systems of the given business sphere.</li><li>6) display high efficiency of operations by acting both as a team leader and team member.</li></ol>
<p><b>C. Generic (Transferable) Competences</b></p> <p>Upon successful completion of this program students will be able to:</p> <ol style="list-style-type: none"><li>1) use diverse sources (Internet resources, electronic libraries, scientific articles and reports) for the acquisition of necessary information.</li><li>2) analyze facts and make up conclusions.</li><li>3) apply the available pieces of knowledge in a creative manner and promote new ones.</li><li>4) timely plan other resources in an efficient manner.</li><li>5) observe professional ethical standards.</li></ol>

### **3. Formulation of Study Module Learning Outcomes**

Educational end results of academic modules provide information to students as to what they have to know, understand and can do and emphasize what particularly must be evaluated upon the end of the academic module.

Educational end results of academic modules are to meet the following requirements:

1. All educational end results of academic modules are to be formulated at minimally acceptable (threshold) level.
2. The educational program is to describe only the educational end results which are to be achieved by all students involved in the educational program.
3. Acquisition of all educational end results of academic modules are to be evaluated.
4. In order obtain a transitional mark students are to assimilate all the educational end results determined for the academic module.

In writing educational end results of academic modules, it is recommended to abide by the following principles:

- to write using the future tense,
- to determine 4-6 educational end results for the academic module,
- they are to be realistic and measurable,
- they are to be written in a language comprehensible for students,
- the level of their acquisition are to be interconnected with the evaluating specific standards,
- it must be described what students will be able to do upon the end of the module.

Educational end results of academic modules are to be formulated based on the following classification:

- theoretical knowledge,
- practical skills (professional and general).

One of the most acceptable modes of classification and subdivision of educational end results is Bloom's Taxonomy<sup>4</sup>. The list of verbs offered for the description of each level is shown below:

	Level	Knowledge types	Corresponding verbs (the list is not complete)
Knowledge and understanding	1	Knowledge (memory of certain facts/data)	Express, realize, choose, reproduce, measure, determine, enumerate, name, recall, register, insist etc.
	2	Knowledge (skills for systematization of facts/data so as to understand the meaning)	Determine, define, present, formulate, explain, oppose, describe, discuss, recognize, substantiate, choose, point out, highlight, classify etc.
Competences	3	Application (use of knowledge within the context of task or assignment)	Forecast, choose, evaluate, find, display, use, build, calculate, apply, show, highlight, realize in practice, teach, perform etc.
	4	Analysis (ability to divide the information into constitutive parts or meanings for the comprehension of the interconnection of the parts or their significance)	Compare, differentiate, oppose, divide, distinguish, analyze, calculate, experiment, reveal, dissociate, solve etc.
	5	Synthesis/comparison (ability to compare information or facts anew for a better or detailed comprehension of the task or the main task)	Unite/join, sum up, argue, establish connection, organize/co-ordinate, conclude, design, propose, reregister, discuss, receive/take out, comment, generalize etc.
	6	Estimation/evaluation (making conclusions based on the available information and the ability to evaluate them)	Evaluate, assist/support, oppose, choose, criticize, determine, compare, estimate, conclude, make conclusions, suppose, protect etc.

It is essential that the educational end results be measurable and evaluable. Therefore, it is necessary that the circumstance of their achievement be obvious through the establishment of a direct connection with the respective estimable standard. Thus, it is vital that the educational end results be formulated in such a manner that they ensure the maximum level of obviousness of their achievement. For example, it is necessary to avoid such formulations of educational end results as *"a student will be informed..."*, *"a student will have ... knowledge"*, *"a student will know..."* or *"a student will understand..."* etc., since they seem to be ambiguous from the point of view of their evaluation. Whereas both students and teachers are to be able to find out

<sup>4</sup> It is a mode for the classification of the level of knowledge in the process of education ("Taxonomy" means "classification") which was elaborated by an American scientist Benjamin Bloom. This hierarchic classification of the knowledge types falls into 6 levels as per growing complication (See the table) ranging from mere memory of facts in the lower level to the evaluation in the highest level.

easily whether the given end results have been achieved (and to what extent) or not.

#### **4. Curriculum Map**

The curriculum of Yerevan State University is presented by means of the curriculum map (Appendix 1). It is deemed to be an important document which obviously shows how the curriculum of the program ensures the achievement of the expected educational end results by means of academic modules and how the latter are interconnected with the constitutive academic modules.

The YSU forms of the curriculum map are shown in Clause 12 of educational program specification set forth in Appendix 1 where the educational end results formed within the educational program are arranged in perpendicular column (as per respective classification), whereas in horizontal rows – as per academic modules which ought to favour their creation. The intersected cell of each educational end results and the academic module(s) forming it (in which the acquisition of the given end results is evaluated) is to bear signs “√” or “X” by uniting them together.

The completed map graphically shows the presence of bonds of “Educational end result-academic module” in the educational program, the given modules which ensure the formation of the educational end results (perpendicular column of the map) and the constituent part of the educational end results formed within the particular academic module (horizontal lines of the map).

The curriculum plan includes the academic year at the end of which the given educational end results<sub>12</sub> are achieved by all students involved in the educational program.

#### **5. Choice of Teaching and Learning Methods**

To successfully achieve the expected educational end results by students, it is necessary to consider what types of education must be chosen. The given types of education include the teaching methods which will at best favour and further their successful realization. The role of teaching must be aimed at the creation of the opportunity for students so that they will successfully gain the expected knowledge, skills and abilities and assimilate them.

Teaching and educational methods are to

- favour at best the acquisition of knowledge, skills and abilities formulated by educational end results,
- consider different levels of knowledge and skills of students and be diverse,
- encourage students’ activity in the lecture hall, self-dependence and offer opportunities for team work where it is required.

The corresponding section of the specification of the educational program (See Section 10 of Appendix 1) is to clearly show how the teaching and educational selected methods will contribute to students for the acquisition of the expected educational end results of the educational program. Respective

teaching and educational methods are to be presented for each educational end result (or their group) shown in the specification. In addition, it is not sufficient to record that the given end result is achieved *"through lectures, seminars or practical trainings and other means"*, without showing clearly how each of them will contribute to the formation of the expected educational end results among students. For example, if certain lectures are selected for teaching, then this fact is to be specified and defined more exactly. It is not sufficient to state that *"Lectures are to be mainly used for the assimilation of subject educational programs"*. It is preferable to detail that *"The main part of the subject educational program is to be assimilated based on the literature materials offered by a lecturer which are to be used for the completion of main sources of the given materials, clarification of incomprehensible provisions to students, as well as the development of their critical thinking"*.

## **6. Graduates' Career and Employment Opportunities**

If the educational program envisages (a) productive practical training(s), then students are to be provided with respective information about the role of the nature and qualification awarded, as well as the support provided by the educational program and the teaching staff in the course of the practical training.

The educational program is to prepare its graduates for further study at a different level and successful career. To this effect, it is necessary to clearly specify the bond of the educational program with the business market and/or possible employers, the involvement of employers in the development of the curriculum, involvement of specialists in the teaching process invited from production, the bond of the program with the professional structures, capabilities of the productive practical training, opinions expressed by previous graduates regarding the program, study of practical professional skills regarding the future work, practical professional activity of the teaching staff etc. The educational programs which do not pursue any professional direction, it is necessary to acquaint future students with a number of characteristic examples of the professional activity carried out by graduates involved in the program.

## **7. Use of Programme Reference Points**

Educational programs are to be in full conformity with the existing external and internal program references and/or standards. The latter are to be presented in the specification of the program (See Clause 18 and 19 of Appendix 1).

The following sources can serve for the designing and development of programs as external references:

- law about higher and post-institutional professional education of the Republic of Armenia.
- state educational standards of higher education,

- European base (framework) of qualification of long-term study.
- qualification base (Dublin descriptions) of European higher educational area,
- national base of qualification of higher education,
- requirements and indications of respective professional organizations/structures, legislative and sphere-regulating authorities (if available),
- subject references determined at supranational level (e.g. British program references for various subject areas),
- program certified/evaluation standards of the National Center on Quality Maintenance of the Professional Education.
- program development of similar leading foreign universities and other related sources.

The following documents can serve as internal references for the development of educational programs:

- the regulations of the University related to the educational program (e.g. documents defining the structure and contents of educational programs for Master's and Bachelor's Degree on instruction by correspondence and full time education in Yerevan State University, the classes of organization of educational activity for students studying on Bachelor's and Master's Degree program by a credit system either by correspondence or on full time basis etc).
- respective provisions for the development of strategical program of Yerevan State University.
- Other documents related to a specific program.

## **SECTION 2. PROGRAMME DOCUMENTATION PACKAGE**

### ***8. Programme Specification***

The program specification is the final conclusion of aims and expected educational end results. The program specification is to detail the expected end results expressed by knowledge, skills and abilities. It is to acquaint students with the teaching and educational methods which can facilitate the achievement of the end results and the evaluation of the evaluation methods which will enable students to display the given end results.

All educational programs of Bachelor's and Master's degree of Yerevan State University are to be provided with respective specifications, the form of which are shown in Appendix 1. One copy of the program specification is to be provided to Educational-and-Methodological department of Yerevan State University.

The program specification of Yerevan State University is to include:

1. The program name and number of specialty.
2. Institute of higher establishment,
3. Certification and/or licensing of the program carried out by professional or other authorized bodies, if available.
4. Name of awarding qualification.
5. Academic year of the launch of the program,
6. Learning language.
7. Learning mode (full-time, by correspondence)
8. Admission standards of the program.
9. Aim of the program
10. The educational end results of the program (theoretical knowledge, skills and abilities), teaching, educational and evaluation methods and modes which allow to achieve and display the given end results.
11. The program structure, academic modules as per academic years and terms (including modes of practical trainings and graduation thesis), credits and progress requirements.
12. The curriculum map which is interconnected with the educational end results of the program with the constitutive educational modules of the plan and states the academic year at the end of which the given end results are to be achieved by all students.
13. Information about the evaluation of the procedure and standards of information.
14. Opportunities of a future career.
15. Resources and modes of support of education.
16. Respective state educational standards or subject reference(s) which have been used for the definition of end results of the program.
17. Other internal and external references of the program which have been used in developing the program.
18. Additional information.

The program specification is used as an information source

- by students and applicants willing to understand the essence and purposes of the program,
- employers, educational experts and independent appraisers for the purpose of acquainting with professional skills and abilities formed through the program.
- by professional and/or field-regulating authorized bodies which certify higher educational programs or privilege professional activity (For example, in case of regulated professions), since the program specification also shows the aspect of the program envisaged for the satisfaction of the requirements of a respective regulating authority.
- by internal structures in charge of approving higher educational establishments and programs so as to rest assured that program developers have clearly and exactly defined the expected educational end results and that the given end results are realistic and manifestive. They can serve also as standards for the exercise of an internal expert examination and monitoring of the program.
- by program realizers for the purpose of establishing feedback with students and graduates and finding out how the granted educational opportunities of the program ensure the complete achievement of expected educational end results.

## **9. Module descriptors**

The course of studies/academic models included in the Bachelor's and Master's degree educational program of Yerevan State University are shown with the following descriptors in the Course Directory.

1. Academic module number.
2. Academic module name.
3. Number of credits for module.
4. Total number of hours per week.
5. Number of hours as per modes of studies.
6. Semester (autumn/spring).
7. Evaluation mode (examinations, pass-examinations)
8. Academic module aims.
9. Educational end results.
10. Brief contents of the course of study.
11. Evaluation methods and standards.
12. List of basic literature (3+5 names and the last 15 years' publications)

Forms of introduction of descriptors of an academic module are shown in Appendix 2.

### SECTION 3. EDUCATIONAL RESOURCES

The precondition of successful implementation of any educational program is the availability of respective resources. The quality of resources has a direct impact upon the quality of the program. The essential resources embrace respective teaching and auxiliary staff. The resources also include educational substructures and material and technical resources required for educational and research activities.

Below is the list of principal resources of education required for successful implementation of the educational program.

- **Teaching and auxiliary staff** - This program is to consist of experienced and skillful teaching and educational staff for its the implementation and evaluation. The given staff is to possess respective skills (professional, pedagogical and technical) and qualification, be aware of not only its role in the program, but also the whole program for the contextual harmonious implementation of students' studies.
- **Educational-and-methodological materials** (*textbooks, magazines and multimedia resources*) - The list of an educational manual, basic textbooks and other educational materials required for the holding of studies included in the program is to be defined by a respective teaching staff. The university acquires them and gives them to students for free use. But they are to be complemented with other educational resources, such as magazines (printed or online) and various multimedia packages. YSU library is the principal structure for the acquisition and conveyance of the given resources, but other additional resources can also be used such as YSU local network and libraries of faculties and chairs.
- **Technical resources** include technical resources of information and audio-and-video equipments, laboratory equipments, video posters etc.
- **Educational space** - Students are to be provided with equivalent classroom or educational areas in the course of all stages of the program. Lecturers are to be provided with respective area for the preparation of lectures and meeting with students.
- **Organization and mentoring of productive training** - It is one of the most essential constitutive parts of the program directed at the formation and development of a number of professional skills stipulated by the program and should be realized appropriately.
- **Financial resources** - To ensure a regular process of the program it is required to provide equivalent financing.