

Support to strengthening the higher education system in Azerbaijan



Twinning project ENI/2018/395-401

Mission Report

Short-Term Mission on Activity 2.4 Improve study programmes in the priority areas in pilot universities to incorporate learning outcomes and inform and raise awareness about these achievements

Short-Term Mission on Activity 4.1 Assess the current legal and regulatory framework on education standards, quality assurance, credits and recognition of periods of studies

(June 24, 25, 29, July 2, 3, 6, 2020)

1. Name and Function of the Expert:

Full name of experts

Ms. Inga Juknytė-Petreikienė, Lithuania

Signature

Ms. Tatjana Volkova, Latvia

Signature



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2. Objective and Tasks of the Mission:

The mission is carried out within the framework of:

COMPONENT 2: PILOT STUDY PROGRAMME IN PRIORITY AREAS ARE IMPROVED TO BE MORE STUDENT-CENTRED

Activity 2.4 Improve study programmes in the priority areas in pilot universities to incorporate learning outcomes and inform and raise awareness about these achievements

COMPONENT 4: RECOMMENDATIONS ON AMENDMENTS OF LEGISLATIVE AND REGULATIVE FRAMEWORK DEVELOPED

Activity 4.1. Assess the current legal and regulatory framework on education standards, quality assurance, credits and recognition of periods of studies

Benchmarks for this activity are:

- Minimum 12 study programmes revised and updated to incorporate learning outcomes;
- Adjusted methodological compendium;
- Recommendations for relevant regulatory framework to be provided.



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3. Time schedule of mission:

| Date and Time | Activity |
|---------------------------------|--|
| Wednesday - 24 June 2020 | <i>Reported under Act.2.4</i> Deskwork. Working on learning outcomes for 15 study programmes. Updating the Compendium on Learning Outcomes. |
| Thursday - 25 June 2020 | <i>Reported under Act.2.4</i> Deskwork. Working on learning outcomes for 15 study programmes. Updating the Compendium on Learning Outcomes. |
| Monday - 29 June 2020 | <i>Reported under Act.2.4</i> Deskwork. Working on learning outcomes for 15 study programmes. Updating the Compendium on Learning Outcomes. |
| Thursday - 2 July 2020 | <i>Reported under Act.2.4</i> Deskwork. Working on learning outcomes for 15 study programmes. Updating the Compendium on Learning Outcomes. |
| Friday - 3 July 2020 | <i>Reported under Act.2.4+4.1</i> Deskwork. Working on learning outcomes for 15 study programmes. Drafting a mission report. |
| Monday - 6 July 2020 | <i>Reported under Act.2.4+4.1</i> Deskwork. Working on learning outcomes for 15 study programmes. Drafting a mission report. |

4. Relevant Background Information/State of Affairs regarding the mission

The mission comes as continuation of work done under Components 2 and 1 and was focused on elaborating examples of learning outcomes for pilot study programmes. Under previous activities of Component 2, a Compendium on how to write learning outcomes was designed. The deliverables of this mission shall provide additional information for universities on how to properly write learning outcomes of the study programme.

5. Achievement of the Expected Results

Learning outcomes for 15 pilot study programmes at Bachelor level, in line with the list of competences defined in state standards of those programmes were elaborated and recommended to be included as annex to Compendium as a sample how to write learning outcomes, designed in previous missions of the project.



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6. Unexpected Results

No particular points to be mentioned.

7. Issues Left Open After the Mission

N/A

8. Recommendations (including recommendation for future missions)

1. It is recommended to require for all universities in Azerbaijan to write learning outcomes (LOs) at the study programme and each individual study course levels ensuring that study course LOs have to be aligned with study programme level LOs. The bachelor study programme's LOs have to comply with requirements (for knowledge, understanding, skills, autonomy and responsibility) of Level 6 of the National Qualifications Framework for Lifelong Learning of the Republic of Azerbaijan.
2. It is recommended for HEIs carefully to consider the number of LOs on the level of study programme and the study course levels following the best international practices to avoid overburdening of students and academic staff with assessments of each of those LOs. LOs should be achievable and corresponding study level, simply and clearly described, capable of being validly assessed.
3. The study programme LOs formulated in the methodological Compendium on identifying and defining LOs are illustrative as LOs are specific to study programmes.
4. It is recommended to provide training to HEIs for academic and administrative staff responsible for study programmes on designing, achieving (teaching /learning methods) and assessment of LOs.
5. It is recommended to place the links between general competences and its LOs of the programme and between professional competences and its LOs of the programme in each State Standard to ensure the awareness about the differences between competences and LOs, also logic and coherence of relations among them (see Annex XVII). The Republic of Azerbaijan is strongly recommended to continue such projects in order to consolidate the achievements of this project and to move on master's level study programmes.

9. Acknowledgments (if any)

We would like to thank the Twinning office for support in organization of this mission.

Annexes (if any)

Annex I. Examples of learning outcomes for general competences

Annexes II – XVI. Examples of learning outcomes for general and professional competences of 15 pilot study programmes.

Annex XVII. Example of State Standard.



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Annex I. Examples of learning outcomes for general competences

| Generic competences | | Programme learning outcomes | |
|----------------------------------|--|-----------------------------|---|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argue his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |
| | | 5.3 | To summarize the outcomes obtained and identify key points |
| Interpersonal competences | | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able to identify, recognise and apply moral personality and ethical principles |
| | | 6.2 | To be able to apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| Systemic competences | | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet challenges in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able to methodically organise one's work, resources and time, depending on available possibilities and priorities |

Annex II. Examples of learning outcomes for Bachelor in Biology

| Generic competences | | Programme learning outcomes | |
|----------------------------------|--|-----------------------------|---|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argument his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |
| | | 5.3 | To summarize the outcomes obtained and identify key points |
| Interpersonal competences | | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able identify, recognise and apply moral personality and ethical principals |
| | | 6.2 | To be able apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| Systemic competences | | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self- | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |

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| | learning and skills enhancement, capacity to manage time and respect deadlines | 10.2 | To be able methodically organise one's work, resources and time, depending on available possibilities and priorities |
| Professional competences | | Programme learning outcomes | |
| 1. | Mastering broad scientific understandings from molecular to evolutionary processes. | 1.1 | To be able to define chemical, biochemical, cellular, immunological and physiological basis of human biology |
| | | 1.2 | To be able to integrate facts, concepts, and methods from multiple disciplines and apply to biological problems |
| 2. | Ability to formulate and test hypotheses based on relevant theoretical and practical knowledge and skills in different fields of biological sciences. | 2.1 | To be able to describe the principles and concepts in biology at three different scales, molecular, organismal, and ecosystem |
| | | 2.2 | To be able to mobilize the concepts and tools of mathematics, physics, chemistry and computer science in the context of life sciences issues |
| 3. | Ability to carry out work which is based on specialty-related laboratory and computer technologies. | 3.1 | To be able to use biochemical techniques: methods of separation and purification, spectrophotometric, dosage methods; enzymatic activity |
| | | 3.2 | To be able to use molecular techniques in molecular biology: PCR/RT-PCR; plasmid extraction; cloning and construction of genes as well as the related bioinformatic tools |
| | | 3.3 | To be able to use standard cell biology techniques, cell ionization, cell culture (prokaryotes and eukaryotes) and characterization, immunological techniques |
| | | 3.4 | To be able to use current genetic engineering techniques: transformation, transgenesis, mutagenesis; genetic labeling |
| 4. | Ability to analyse and exploit information, evaluate sources of errors and uncertainty and probe a model by comparing its predictions to the experimental results | 4.1 | To be able to use techniques of plant tissues and animals and are able to interpret the data from classical observation techniques |
| | | 4.2 | To be able to identify and lead independently the different stages of an experimental procedure |
| 5. | Broad knowledge of the principles and limitations of global analysis methods and tools in biology | 5.1 | To be able to describe the main structures of natural systems, principles of functioning, possible development, adaptation of living organisms in a changing environment |
| | | 5.2 | To be able to identify, select and apply a combination of analytical tools (standard techniques, instrumentation) adapted to characterize organisms (from the bio-molecule to the individual in its complexity) and their operation at different levels of analysis (intracellular metabolism, biology and physiology of complex organisms, interactions between individuals and groups, interactions with the environment) |
| 6. | Ability to use laboratory and field-based methods to generate data to solve interdisciplinary biological problems in different fields of society and industry relevant for Azerbaijan | 7.1 | To be able to use quantitative and qualitative reasoning, observation, technical and analytical skills for scientific problem-solving and interpretation of biological data |
| | | 7.2 | To be able to interpret experimental data to validate a model by comparing its predictions to experimental results. Exploit data acquisition and analysis software with a critical mind. |

Annex III. Examples of learning outcomes for Bachelor in Chemical engineering

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|---------------------------------|--|------------------------------------|---|
| Generic competences | | Programme learning outcomes | |
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |

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| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argument his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |
| | | 5.3 | To summarize the outcomes obtained and identify key points |
| Interpersonal competences | | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able identify, recognise and apply moral personality and ethical principals |
| | | 6.2 | To be able apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown profesional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| Systemic competences | | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able methodically organise one's work, resources and time, depending on availabale possibilities and priorities |
| Professional competences | | Programme learning outcomes | |
| 1. | Mobilize appropriate concepts and methods in the fields of mathematics, physics, chemistry and computer science to address and solve problems in chemical engineering | 1.1 | To be able to synchronise theoretical and applied knowledge in solving engineering issues |
| | | 1.2 | To be able to solve complex problems and tasks by using principles of mathematics, physics, chemistry and chemical engineering. |

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| 2. | Identify and lead independently the different stages of an experimental approach in physics, chemistry and chemical engineering | 2.1 | To be able to perform, coordinate and document laboratory processes while carrying out a quantitative analysis |
| | | 2.2 | To be able to obtain and extract chemical compounds using standard methods and synthesis |
| 3. | Analyze and exploit experimental data, taking into account sources of errors and uncertainty and probe a model by comparing its predictions to the experimental results | 3.1 | To be able to use basics of mathematics, algorithmic principles and methods of computer engineering in modeling and designing of chemical-technology systems. |
| | | 3.2 | To be able to analyze and interpret data using statistical methods |
| 4. | Use a programming language and analysis software with a critical mind to collect and exploit data | 4.1 | To be able to use the knowledge and skills gained when learning computer technologies for chemical engineering activities |
| | | 4.2 | To be able to select the most significant elements and their relations in complex chemical engineering situations |
| 5. | Apply, control, manage and design chemical processes by using information and computer technologies | 5.1 | To be able to use engineering techniques and skills and modern engineering tools |
| | | 5.2 | To be able to lead industrial and chemical processes, control them and apply chemical engineering principles in designing these processes |
| 6. | Apply, manage, design, launch and repair technological processes by using information and computer technologies | 6.1 | To be able to prepare, modify, interpret and present technical documents used in chemical technology |
| 7. | Identify specific regulations and implement the main prevention measures in terms of health, safety and environmental responsibility | 7.1 | To be able to design systems, components, nodes and processes that meet the necessary requirements, taking into account natural restrictions such as economics, ecology and social aspects |

Annex IV. Examples of learning outcomes for Bachelor of Chemistry teacher

| Generic competences | | Programme learning outcomes | |
|--------------------------|--|-----------------------------|--|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argument his/her opinion and have a critical approach for the results obtained |

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| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |
| | | 5.3 | To summarize the outcomes obtained and identify key points |
| | Interpersonal competences | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able identify, recognise and apply moral personality and ethical principals |
| | | 6.2 | To be able apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| | Systemic competences | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able methodically organise one's work, resources and time, depending on available possibilities and priorities |
| Professional competences | | Programme learning outcomes | |
| 1. | Capacity to use and mastering fundamental concepts and methods of organic, inorganic, analytical and physical chemistry to address and solve global problems in chemistry | 1.1 | To be able to explain properties of elements groups of the periodical table of elements and their compounds, types and characteristics of chemical reactions, basics of chemical thermodynamics and chemical kinetics, nature and properties of inorganic and organic compounds; properties of functional groups of organic molecules, properties of aliphatic, aromatic, heterocyclic, and organometallic compounds, main methods of inorganic and organic synthesis |
| | | 1.2 | To be able to apply quantum mechanics, description of the structure and properties of atomic and molecular structures, relation between atoms and molecules that make up the substance, also the relation between the properties of the whole substance, the structure of elements and compounds and its main examination methods |
| 2. | Ability to analyze critically, lead efficiently and propose adapted improvements increasing efficiency and safety of experimental approaches in organic, inorganic, analytical and physical chemistry; | 2.1 | To be able to use and maintain the standard laboratory equipment and devices, to select a proper methodology for synthesis or analysis of chemical compounds |
| | | 2.2 | To be able to interpret data obtained from laboratory observations and measurements, monitor and measure chemical properties of quantitative and qualitative nature, chemical variations, also to document them in a systematic and reliable manner; |

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| 3. | Capacity to choose and use appropriate scientific instruments and methods to study chemical reactions, physical properties of matter or efficiency of processes; | 3.1 | To be able to use methods and theoretical foundation of qualitative and quantitative chemical analysis, natural and synthetic macromolecular compounds and their properties; |
| | | 3.2 | To be able to explain essential biochemical processes, the structure and chemical properties of biomolecules, technological processes applied in chemical industry; electrochemical processes: corrosion of metals and accumulation of energy and apply basic mathematics and physics for solution of problems in chemistry |
| 4. | Planning of teaching / learning process | 4.1 | To be able to plan an inclusive teaching/learning process and environment by formulating particular expected outcomes for each learner and selecting appropriate methods and resources |
| | | 4.2 | To be able to explore learner's individual development, learning results, personality and social growth needs, language and civic competence to plan and implement a learner-centred teaching/learning process |
| 5. | Implementation of teaching/learning process | 5.1 | To be able to develop inclusive, intelligent and emotionally secure teaching/learning environment according to learner's learning and development needs which is based on collaboration |
| | | 5.2 | To be able to recognise different learning needs to support both talented and learners with learning difficulties, choose and apply language teaching, learning methods appropriately |
| 6. | Assessment of learner's learning performance and development | 6.1 | To be able purposefully select and apply appropriate assessment criteria and methods corresponding to expected learning outcomes |
| | | 6.2 | To be able to balance formative and summative assessment methods |
| 7. | Professional competence development | 7.1 | To be able to engage in an individual and collective approach to professional development |
| | | 7.2 | To be able critically analyze situations, self-evaluate and reflect in order to improve one's own knowledge and skills |
| | | 8.3 | To be able to reflect and critically evaluate own teaching practice, considering learning outcomes achieved by learner, feedback provided by colleagues, the latest issues in education |
| 8. | Engagement in development of education institution and education field | 8.1 | To be able to plan, in cooperation with colleagues in an education institution, a coordinated teaching/learning process with the aim to include all learners and promote their growth |
| | | 8.2 | To be able to cooperate with other teachers with the aim to evaluate their teaching competence and improve teaching practice in the education institution |

Annex V. Examples of learning outcomes for Bachelor of Ecology

| Generic competences | | Programme learning outcomes | |
|--------------------------|--|-----------------------------|--|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |

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| | and appropriately | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argue his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |
| | | 5.3 | To summarize the outcomes obtained and identify key points |
| Interpersonal competences | | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able to identify, recognize and apply moral personality and ethical principles |
| | | 6.2 | To be able to apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| Systemic competences | | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenge in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organize one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able to methodically organize one's work, resources and time, depending on available possibilities and priorities |
| Professional competences | | Programme learning outcomes | |
| 1. | Use fundamental concepts in natural, social sciences and humanities to identify and analyze environmental problems. | 1.1 | To be able to describe the main structures of natural, social and human systems, principles of functioning, possible development, adaptation in a changing environment |
| | | 1.2 | To be able to integrate facts, concepts, and methods from multiple disciplines and apply to ecological problems |
| 2. | Identify and lead independent research on environmental problems using management data, experimental results and techniques in the different fields of environmental problems. | 2.1 | To be able to explain fundamental natural and anthropogenic phenomena, their qualitative and quantitative expression; modern methods of research and assessment of the condition of ecosystems and habitat biodiversity systems |
| | | 2.2 | To be able to apply the latest quantitative and qualitative achievements in ecology and other fields of science and research methods in today's complex research of various types of ecosystems |
| 3. | Analyse and exploit information, | 3.1 | To be able to identify and lead independently the different |

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| | evaluate sources of errors and uncertainty and probe a model by comparing its predictions to the experimental results | | stages of an experimental procedure |
| | | 3.2 | To be able to interpret the data from classical observation techniques |
| 4. | Ability to use mathematical, GIS, remote sensing methods of ecological (environmental) science in the course of processing and analyzing information and data to support decision-making process | 4.1 | To be able to apply mathematical, statistical analysis methods and use information technologies to assess the processes taking place in ecosystems |
| | | 4.2 | To be able to systematize the acquired knowledge of different subjects, analyze, summarize research data, interpret research results, formulate and defend research conclusions |
| 5. | Develop capacity to solve interdisciplinary environmental problems in different fields of society and industry relevant for Azerbaijan | 5.1 | To be able to explain the most important local, regional and global environmental problems caused by human activities |
| | | 5.2 | To be able to assess the impact of economic activities on ecosystems and species diversity |
| 6. | Suggest solutions to actual global environmental problems related to environmental pollution, climate change, biodiversity protection, sustainable development and others at national scale. | 6.1 | To be able to summarize the most important environmental problems and their determinants and possible consequences |
| | | 6.2 | To be able to discuss the solution of ecological and environmental problems based on the principles of modern life sciences and their knowledge-based ecology |
| 7. | Apply concepts of environmental science in the fields of: education, management, technologies, nature conservation, human environment, biodiversity protection. | 7.1 | To be able to combine the interests of various groups in society by analyzing and evaluating ecological and environmental solutions |
| | | 7.2 | To be able to make optimal management decisions for a changing environment based on the latest scientific knowledge, environmental law and best practices |
| 8. | Can apply environmental impacts assessment, monitoring, environmental risk evaluation and management methods in practical activities. | 8.1 | To be able to take moral responsibility for the impact of one's professional activities and results on society, economic, cultural development, well-being and the environment |
| | | 8.2 | To be able to determine the risks of government, business, society activities and take actions to address these risks. |

Annex VI. Examples of learning outcomes for Bachelor of Electrical and Electronic Engineering

| Generic competences | | Programme learning outcomes | |
|---------------------------------|--|-----------------------------|--|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argument his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select | 5.1 | To identify information and data gaps |

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| | additional information resources for treatment of relevant data | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |
| | | 5.3 | To summarize the outcomes obtained and identify key points |
| | Interpersonal competences | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able identify, recognise and apply moral personality and ethical principals |
| | | 6.2 | To be able apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| | Systemic competences | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able methodically organise one's work, resources and time, depending on available possibilities and priorities |
| Professional competences | | Programme learning outcomes | |
| 1. | Ability to mobilize appropriate concepts and methods in the fields of electronics; power electronics, power distribution and conversion; computer systems; automated systems and associated local area networks | 1.1 | To be able to synchronise theoretical and applied knowledge in solving engineering issues |
| | | 1.2 | To be able to to develop automation process algorithm and prepare technical task for equipment design |
| | | 1.3 | To be able to orientate in servicing, diagnostics and repair of automated equipment |
| 2. | Ability to perform engineering analysis to build a technical specification in the field of electric energy production and distribution | 2.1 | To be able to perform, coordinate and document laboratory processes while carrying out a quantitative analysis |
| | | 2.2 | To be able to perform visual assessment of electrical equipment performance |
| | | 2.3 | To be able to evaluate the level of production automation |
| 3. | Ability to exploit the knowledge of modeling and architecture of systems, using Computer Aided Design (CAD), measurement techniques, data transmission solutions between systems and | 3.1 | To be able to work with special design software for electrical equipment |
| | | 3.2 | To be able to compile computer programs for automated systems |
| | | 3.3 | To be able to analyze and interpret data using statistical |

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| | local networks design, data acquisition and processing systems, signal detection and transmission systems (up to microwave) | | methods |
| 4. | Ability to contribute to design systems or devices implementing the technologies of digital, analog and power electronics, electrical engineering, automation, industrial computing or networks | 4.1 | To be able to use the knowledge and skills gained when learning computer technologies for chemical engineering activities |
| | | 4.2 | To be able to select the most significant elements and their relations in complex chemical engineering situations |
| | | 4.3 | To be able to choose appropriate materials when constructing equipment |
| 5. | Ability to develop, choose technical solutions; install, maintain and troubleshoot equipment in the field of electric energy production and distribution | 5.1 | To be able to use engineering techniques and skills and modern engineering tools |
| | | 5.2 | To be able to to develop electrical equipment monitoring and visualization systems |
| 6. | Ability to organize and manage the quality control operations of a device or network | 6.1 | To be able to keep track of spare parts for electrical equipment and place orders |
| | | 6.2 | To be able to determine the accuracy of electrical system operation and the lifetime of an electrical system |
| | | 6.3 | To be able to navigate International Standards Organizations (ISO) quality assurance and environmental protection systems |
| 7. | Ability to identify specific regulations and implement the main prevention measures in terms of health, safety, societal and environmental responsibility | 7.1 | To be able to choose alignment dimensions and design in the design process tolerances to ensure the quality and durability of the equipment |
| | | 7.2 | To be able to evaluate the most economical technical solutions and to estimate the cost of equipment to be designed or manufactured and to determine the time of reimbursement |
| | | 7.3 | To be able to fulfil environmental and labor protection regulatory requirements execution |

Annex VII. Examples of learning outcomes for Bachelor of Foreign Language Teacher

| Generic competences | | Programme learning outcomes | |
|---------------------------------|---|-----------------------------|--|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argument his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with |

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| | | | outcomes obtained from other sources |
| | | 5.3 | To summarize the outcomes obtained and identify key points |
| | Interpersonal competences | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able identify, recognise and apply moral personality and ethical principals |
| | | 6.2 | To be able apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| | Systemic competences | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able methodically organise one's work, resources and time, depending on available possibilities and priorities |
| Professional competences | | Programme learning outcomes | |
| 1. | Capacity to communicate effectively through translating, interpreting and rendering information | 1.1 | To be able to speak and write simple texts and presentations as well as more complex and scholarly texts required in the final years, using appropriate terminology and communication registers. |
| | | 1.2 | To be able to translate and interpret various texts from English into the national language and vice versa. |
| 2. | Understand the overall system of foreign language and establish connections between its elements | 2.1 | To be able to recall linguistic concepts and aspects of language origin and ability to explain them. |
| | | 2.2 | To be able to describe and explain the structure of English |
| 3. | Demonstrate awareness of cultural specifics and civilization of the foreign language speaking countries: interdependence of language, culture, religion and socio-economic factors | 3.1 | To be able to use the terminology and phraseology associated with its registers, including English for specific purposes (politics, education, business, technical registers, etc). |
| | | 3.2 | To be able to depict historical and recent trends and issues that have shaped British, American, Canadian and Irish culture and institutions. |
| 4. | Use relevant academic concepts, theories and terminology regarding issues connected with language, literature and culture | 4.1 | To be able to use background information and information retrieval skills to formulate a coherent discussion of a linguistic and literary problem. |
| | | 4.2 | To be able to demonstrate knowledge and comprehension of concepts of literary theory and of structure of literary works. |

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| 5. | Planning of teaching / learning process | 5.1 | To be able to plan an inclusive teaching/learning process and environment by formulating particular expected outcomes for each learner and selecting appropriate methods and resources |
| | | 5.2 | To be able to explore learner's individual development, learning results, personality and social growth needs, language and civic competence to plan and implement a learner-centred teaching/learning process |
| 6. | Implementation of teaching/learning process | 6.1 | To be able to develop inclusive, intelligent and emotionally secure teaching/learning environment according to learner's learning and development needs which is based on collaboration |
| | | 6.2 | To be able to recognise different learning needs to support both talented and learners with learning difficulties, choose and apply language teaching, learning methods appropriately |
| 7. | Assessment of learner's learning performance and development | 7.1 | To be able purposefully select and apply appropriate assessment criteria and methods corresponding to expected learning outcomes |
| | | 7.2 | To be able to balance formative and summative assessment methods |
| 8. | Professional competence development | 8.1 | To be able to engage in an individual and collective approach to professional development |
| | | 8.2 | To be able critically analyze situations, self-evaluate and reflect in order to improve one's own knowledge and skills |
| | | 8.3 | To be able to reflect and critically evaluate own teaching practice, considering learning outcomes achieved by learner, feedback provided by colleagues, the latest issues in education |
| 9 | Engagement in development of education institution and education field | 9.1 | To be able to plan, in cooperation with colleagues in an education institution, a coordinated teaching/learning process with the aim to include all learners and promote their growth |
| | | 9.2 | To be able to cooperate with other teachers with the aim to evaluate their teaching competence and improve teaching practice in the education institution |

Annex VIII. Examples of learning outcomes for Bachelor of Informatics teacher

| Generic competences | | Programme learning outcomes | |
|---------------------------------|---|-----------------------------|--|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argument his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |

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| | | 5.3 | To summarize the outcomes obtained and identify key points |
| | Interpersonal competences | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able identify, recognise and apply moral personality and ethical principals |
| | | 6.2 | To be able apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| | Systemic competences | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able methodically organise one's work, resources and time, depending on available possibilities and priorities |
| Professional competences | | Programme learning outcomes | |
| 1. | Ability to mobilize appropriate concepts and methods in the fields of mathematics and/or computer science to address simple problems and experiments in informatics | 1.1 | To be able to explain mathematical concepts, axioms, theorems, methods of proof, formal models |
| | | 1.2 | To be able to link fundamental knowledge of nature and its phenomena, to discuss knowledge of humanities and social sciences to explain the impact of information technology on the development of society |
| 2. | Ability to find out the knowledge of the purpose and operation principles of operating systems and the ability to select, implement and upgrade operating systems | 2.1 | To be able to use discrete structures, algorithms and complexity, computer architecture, operating systems, computer networks, programming languages, human-computer interaction, graphics and visualization, basics of intelligence, information and database management, software systems engineering |
| | | 2.2 | To be able to operate software and systems life cycle processes: requirements collection, system requirements analysis, system architecture design, software requirements analysis, software design, software construction, software integration, software testing, system integration, system testing, software installation, software and system maintenance. |
| 3. | Demonstrate understanding and ability to apply knowledge of operating system management and protection mechanisms and ability to ensure information security | 3.1 | To be able to develop prototypes of software systems and perform experimental research with them, necessary to substantiate design decisions |
| | | 3.2 | To be able to process, evaluate, interpret data obtained by working with information technology programs |
| 4. | Planning of teaching / learning process | 4.1 | To be able to plan an inclusive teaching/learning process and environment by formulating particular expected outcomes for |

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| | | | each learner and selecting appropriate methods and resources |
| | | 4.2 | To be able to explore learner's individual development, learning results, personality and social growth needs, language and civic competence to plan and implement a learner-centred teaching/learning process |
| 5. | Implementation of teaching/learning process | 5.1 | To be able to develop inclusive, intelligent and emotionally secure teaching/learning environment according to learner's learning and development needs which is based on collaboration |
| | | 5.2 | To be able to recognise different learning needs to support both talented and learners with learning difficulties, choose and apply language teaching, learning methods appropriately |
| 6. | Assessment of learner's learning performance and development | 6.1 | To be able purposefully select and apply appropriate assessment criteria and methods corresponding to expected learning outcomes |
| | | 6.2 | To be able to balance formative and summative assessment methods |
| 7. | Professional competence development | 7.1 | To be able to engage in an individual and collective approach to professional development |
| | | 7.2 | To be able critically analyze situations, self-evaluate and reflect in order to improve one's own knowledge and skills |
| | | 7.3 | To be able to reflect and critically evaluate own teaching practice, considering learning outcomes achieved by learner, feedback provided by colleagues, the latest issues in education |
| 8. | Engagement in development of education institution and education field | 8.1 | To be able to plan, in cooperation with colleagues in an education institution, a coordinated teaching/learning process with the aim to include all learners and promote their growth |
| | | 8.2 | To be able to cooperate with other teachers with the aim to evaluate their teaching competence and improve teaching practice in the education institution |

Annex IX. Examples of learning outcomes for Bachelor of Mathematics Teacher

| Generic competences | | Programme learning outcomes | |
|--------------------------|---|-----------------------------|--|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argument his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of | 5.1 | To identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |

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| | relevant data | 5.3 | To summarize the outcomes obtained and identify key points |
| | Interpersonal competences | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able identify, recognise and apply moral personality and ethical principals |
| | | 6.2 | To be able apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| | Systemic competences | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able methodically organise one's work, resources and time, depending on available possibilities and priorities |
| Professional competences | | Programme learning outcomes | |
| 1. | Ability to mobilize basic knowledge of mathematics and to solve relevant mathematical problems | 1.1 | To be able to explain basic fields of mathematics (mathematical analysis, linear algebra, analytical geometry, numerical methods) |
| | | 1.2 | To be able to use basic mathematical concepts, principles, theories and results to solve corresponding mathematical problems |
| 2. | Demonstrate understanding and ability to apply knowledge of mathematical reasoning, mathematical proof, to distinguish the various types of mathematical statements | 2.1 | To be able to manage mathematical symbols and formalisms (mathematical language, roles of mathematical symbols, mathematical texts) |
| | | 2.2 | To be able use mathematical statements and proofs, to construct proof of new statements related to the known statements |
| 3. | Ability for mathematical modelling of phenomena, processes and situations | 3.1 | To be able to analyse the structure and properties of mathematical models, as well as to assess their usability |
| | | 3.2 | To be able to use mathematical software and to apply it for solving both theoretical and practical mathematical problems of different kinds |
| 4. | Planning of teaching / learning process | 4.1 | To be able to plan an inclusive teaching/learning process and environment by formulating particular expected outcomes for each learner and selecting appropriate methods and resources |
| | | 4.2 | To be able to explore learner's individual development, learning results, personality and social growth needs, language and civic competence to plan and implement a learner-centred teaching/learning process |

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| 5. | Implementation of teaching/learning process | 5.1 | To be able to develop inclusive, intelligent and emotionally secure teaching/learning environment according to learner's learning and development needs which is based on collaboration |
| | | 5.2 | To be able to recognise different learning needs to support both talented and learners with learning difficulties, choose and apply language teaching, learning methods appropriately |
| 6. | Assessment of learner's learning performance and development | 6.1 | To be able purposefully select and apply appropriate assessment criteria and methods corresponding to expected learning outcomes |
| | | 6.2 | To be able to balance formative and summative assessment methods |
| 7. | Professional development competence | 7.1 | To be able to engage in an individual and collective approach to professional development |
| | | 7.2 | To be able critically analyze situations, self-evaluate and reflect in order to improve one's own knowledge and skills |
| | | 7.3 | To be able to reflect and critically evaluate own teaching practice, considering learning outcomes achieved by learner, feedback provided by colleagues, the latest issues in education |
| 8. | Engagement in development of education institution and education field | 8.1 | To be able to plan, in cooperation with colleagues in an education institution, a coordinated teaching/learning process with the aim to include all learners and promote their growth |
| | | 8.2 | To be able to cooperate with other teachers with the aim to evaluate their teaching competence and improve teaching practice in the education institution |

Annex X. Examples of learning outcomes for Bachelor of Primary school teacher

| Generic competences | | Programme learning outcomes | |
|----------------------------------|---|-----------------------------|--|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argument his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To be able to identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |
| | | 5.3 | To summarize the outcomes obtained and identify key points |
| Interpersonal competences | | | |
| 6. | Ability to act with social and environmental responsibility, | 6.1 | To be able identify, recognise and apply moral personality and ethical principals |

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| | civic awareness and ethical commitment, and concern for quality | 6.2 | To be able apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| | Systemic competences | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able methodically organise one's work, resources and time, depending on available possibilities and priorities |
| | Professional competences | | Programme learning outcomes |
| 1. | Practical application of primary education content | 1.1 | To be able to select the content of primary education according to educational goals, pupil's age, experience, environment |
| | | 1.2 | To be able to plan and organize pupil activities based on the provisions of child-centered, integrated education |
| 2. | Management of primary education process | 2.1 | To be able creatively take into account the needs and situation of pupils to model the primary educational process, foster a culture of child learning |
| | | 2.2 | To be able to explain the purpose and procedures of assessment of pupil's learning outcomes and is able to base on it the education of primary school pupil |
| | | 2.3 | To be able to provide pupils and their parents with objective information about pupils' learning outcomes |
| 3. | Individualization of the education of younger school-age children | 3.1 | To be able to individualize education according to pupils' needs, opportunities, achievements and social, cognitive experience |
| | | 3.2 | To be able to provide support to pupils with different educational needs, use measures to prevent educational problems (e.g., develop modified and differentiated curricula) |
| 4. | Planning of teaching / learning process | 4.1 | To be able to plan an inclusive teaching/learning process and environment by formulating particular expected outcomes for each learner and selecting appropriate methods and resources |
| | | 4.2 | To be able to explore learner's individual development, learning results, personality and social growth needs, language and civic competence to plan and implement a learner-centred teaching/learning process |
| 5. | Implementation of teaching/learning process | 5.1 | To be able to develop inclusive, intelligent and emotionally secure teaching/learning environment according to learner's learning and development needs which is based on |

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| | | | collaboration |
| | | 5.2 | To be able to recognise different learning needs to support both talented and learners with learning difficulties, choose and apply language teaching, learning methods appropriately |
| 6. | Assessment of learner's learning performance and development | 6.1 | To be able purposefully select and apply appropriate assessment criteria and methods corresponding to expected learning outcomes |
| | | 6.2 | To be able to balance formative and summative assessment methods |
| 7. | Professional competence development | 7.1 | To be able to engage in an individual and collective approach to professional development |
| | | 7.2 | To be able critically analyze situations, self-evaluate and reflect in order to improve one's own knowledge and skills |
| | | 7.3 | To be able to reflect and critically evaluate own teaching practice, considering learning outcomes achieved by learner, feedback provided by colleagues, the latest issues in education |
| 8. | Engagement in development of education institution and education field | 8.1 | To be able to plan, in cooperation with colleagues in an education institution, a coordinated teaching/learning process with the aim to include all learners and promote their growth |
| | | 8.2 | To be able to cooperate with other teachers with the aim to evaluate their teaching competence and improve teaching practice in the education institution |

Annex XI. Examples of learning outcomes for Bachelor in Computer engineering

| Generic competences | | Programme learning outcomes | |
|----------------------------------|--|-----------------------------|--|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argument his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |
| | | 5.3 | To summarize the outcomes obtained and identify key points |
| Interpersonal competences | | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able identify, recognise and apply moral personality and ethical principals |
| | | 6.2 | To be able apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown profesional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |

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| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| Systemic competences | | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able methodically organise one's work, resources and time, depending on available possibilities and priorities |
| Professional competences | | Programme learning outcomes | |
| Instrumental competences | | | |
| 1. | Capacity to mobilize fundamental concepts in order to simulate, analyse and solve simple computer science problems | 1.1 | To be able to explain fundamental concepts in computer engineering |
| | | 1.2 | To be able apply fundamental concepts in order to simulate, analyse and solve simple computer science problems |
| | | 1.3. | To be able to communicate fundamental concepts in order to simulate, analyse and solve simple computer science problems |
| 2. | Capacity to identify and lead independently the different steps of an experimental approach using common devices and techniques in the different fields of computer sciences | 2.1 | To be able to identify different steps of an experimental approach using common devices and techniques in the different fields of computer sciences |
| | | 2.2 | To be able to lead the different steps of an experimental approach using common devices and techniques in the different fields of computer sciences |
| 3. | Capacity to analyse and exploit experimental data, considering sources of errors and uncertainty and probe a model by comparing its predictions to the experimental results | 3.1 | To be able to analyse experimental data, considering sources of errors and uncertainty |
| | | 3.2. | To be able to exploit experimental data, considering sources of errors and uncertainty and probe a model by comparing its predictions to the experimental results |
| | | 3.3. | To be able to probe a model by comparing its predictions to the experimental results |
| | | 3.4 | To be able to share experimental data, considering sources of errors and uncertainty and probe a model by comparing its predictions to the experimental results |
| 4. | Capacity to use programming language and analysis software with a critical mind to collect and process data | 4.1 | To be able to critically apply programming language and analysis software for collecting and processing data |
| | | 4.2 | To argument his/her opinion by having a critical approach for the results obtained on the use of programming language and analysis software for collecting and processing data |

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| 5. | Ability to use the main mathematical tools relevant for computer sciences. | 5.1 | To be able to explain mathematical tools relevant for computer sciences |
| | | 5.2 | To be able to use the main mathematical tools relevant for computer sciences |

Annex XII. Examples of learning outcomes for Bachelor in Computer sciences

| Generic competences | | Programme learning outcomes | |
|----------------------------------|--|-----------------------------|---|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argument his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To be able to identify information and data gaps |
| | | 5.3. | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |
| | | 5.4 | To summarize the outcomes obtained and identify key points |
| Interpersonal competences | | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able identify, recognise and apply moral personality and ethical principals |
| | | 6.2 | To be able apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| Systemic competences | | | |
| 9. | Capacity to adapt to new situations, capacity to take | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in |

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| | initiative and will to success | | a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able methodically organise one's work, resources and time, depending on available possibilities and priorities |
| Professional competences | | Programme learning outcomes | |
| Instrumental competences | | | |
| 1. | Capacity to mobilize fundamental concepts in order to simulate, analyse and solve simple computer science problems | 1.1 | To be able to explain fundamental concepts in computer engineering |
| | | 1.2 | To be able apply fundamental concepts in order to simulate, analyse and solve simple computer science problems |
| | | 1.3 | To be able to communicate fundamental concepts in order to simulate, analyse and solve simple computer science problems |
| 2. | Capacity to identify and lead independently the different steps of an experimental approach using common devices and techniques in the different fields of computer sciences. | 2.1 | To be able to identify different steps of an experimental approach using common devices and techniques in the different fields of computer sciences |
| | | 2.2 | To be able to lead the different steps of an experimental approach using common devices and techniques in the different fields of computer sciences |
| 3. | Capacity to analyse and exploit experimental data, considering sources of errors and uncertainty and probe a model by comparing its predictions to the experimental results | 3.1 | To be able to analyse experimental data, considering sources of errors and uncertainty |
| | | 3.2 | To be able to exploit experimental data, considering sources of errors and uncertainty |
| | | 3.3 | To be able to probe a model by comparing its predictions to the experimental results |
| | | 3.4 | To be able to share experimental data, considering sources of errors and uncertainty |
| 4. | Capacity to use programming language and analysis software with a critical mind to collect and process data | 4.1 | To be able to apply programming language and analysis software with a critical mind to collect and process data |
| | | 4.2 | To argue his/her opinion demonstrating a critical approach for the results obtained |
| 5. | Ability to use the main mathematical tools relevant for computer sciences | 5.1 | To be able to exploit the main mathematical tools relevant for computer sciences |
| 6. | Ability to apply concepts and experimental methods of computer science everywhere it is needed. Computer science is transdisciplinary, therefore it applies everywhere, from the industry to finance, to health, to connected objects such as watches, shoes, etc. | 6.1. | To be able to exploit concepts and experimental methods of computer science in different sectors and for diverse products. |

Annex XIII. Examples of learning outcomes for Bachelor in Information technologies

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| Generic competences | Programme learning outcomes |
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| Instrumental competences | | | |
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| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argument his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |
| | | 5.3 | To summarize the outcomes obtained and identify key points |
| Interpersonal competences | | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able identify, recognise and apply moral personality and ethical principals |
| | | 6.2 | To be able apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| Systemic competences | | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able methodically organise one's work, resources and time, depending on available possibilities and priorities |
| Professional competences | | Programme learning outcomes | |
| Instrumental competences | | | |

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| 1. | Ability to analyse the problems and apply necessary software or/and hardware-based solutions in order to solve as well as support IT system according the user needs | 1.1 | To be able to analyse the user needs problems related to IT system |
| | | 1.2 | To be able to apply necessary software or/and hardware-based solutions in order to solve as well as support IT system according the user needs |
| 2. | Ability to understand user requirements correctly in order to design develop, test, install and maintain Information Technologies and Communications based solutions, fulfilling user needs | 2.1 | To be able to explain user requirements correctly in order to designing, testing, installing and maintaining Information Technologies and Communications based solutions, fulfilling user needs |
| 3. | Ability to create and put into the practice solutions based on multimedia and virtual reality technologies | 3.1 | To be able to create solutions based on multimedia and virtual reality technologies |
| | | 3.2. | To be able to deliver solutions based on multimedia and virtual reality technologies |
| 4. | Ability required to develop, test, integrate, administer and install databases, user interface, business and other modules of information systems | 4.1 | To be able to develop databases, user interface, business and other modules of information systems |
| | | 4.2 | To be able to test, integrate, administer and install databases, user interface, business and other modules of information systems |
| 5. | Ability to understand of state-of-the-art software and hardware technologies and tools and the skills required to use them | 5.1 | To be aware of the state-of-the-art software and hardware technologies and tools and the skills required to use them |
| | | 5.2. | To be able to demonstrate skills required to use the state-of-the-art software and hardware technologies and tools |
| 6. | Ability to create, configure and apply virtual solutions to particular servers | 6.1. | To be able to create, configure and apply virtual solutions to particular servers |
| 7. | Ability to identify and apply effective decisions through application of information technologies and processes in the field of management of Informational Technologies and Communications | 7.1. | To be able to identify effective decisions through application of information technologies and processes in the field of management of Informational Technologies and Communications |
| | | 7.2. | To be able to apply effective decisions through application of information technologies and processes in the field of management of Informational Technologies and Communications |
| 8. | Ability to apply modern methods for modelling in the analysis of information technologies and systems | 8.1. | To be able to apply modern methods for modelling in the analysis of information technologies and systems |
| 9. | Ability to understand and analyse information in the field of Information Technologies and Communications and apply it in relevant circumstances | 9.1. | To be able to understand information in the field of Information Technologies and Communications and apply it in relevant circumstances |
| | | 9.2. | To be able to analyse information in the field of Information Technologies and Communications and apply it in relevant circumstances |
| 10. | Ability to lead the staff in engineering developments in relevant field | 10.1. | To be able to lead the staff in engineering developments in the relevant field |

Annex XIV. Examples of learning outcomes for Bachelor in Physics

| Generic competences | | Programme learning outcomes | |
|----------------------------------|--|-----------------------------|---|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argue his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |
| | | 5.3 | To summarize the outcomes obtained and identify key points |
| Interpersonal competences | | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able to identify, recognise and apply moral personality and ethical principles |
| | | 6.2 | To be able to apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| Systemic competences | | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able methodically organise one's work, resources and time, depending on available possibilities and priorities |

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| | deadlines | | |
| Professional competences | | Programme learning outcomes | |
| Instrumental competences (subject specific) | | | |
| 1. | Mobilize the basic concepts in order to: simulate, analyse and solve simple problems | 1.1 | To be able to understand and exploit the basic concepts in order to: simulate, analyse and solve simple problems |
| 2. | Address a complex problem and solve it step by step | 2.1 | To be able to recognize and address a complex problem and offer its solutions |
| 3. | Identify the different steps of an experimental approach and perform it | 3.1 | To be able to identify the different steps of an experimental approach and perform it |
| 4. | Use the measurement devices and measurement techniques commonly used in the lab and in different areas of physics | 4.1 | To be able use the measurement devices and measurement techniques commonly used in the lab and in different areas of physics |
| 5. | Probe a model upon comparing its predictions to experimental results and assess its validity range | 5.1 | To be able to probe a model upon comparing its predictions to experimental results and assess its validity range |
| 6. | Identify the sources of errors for an experimental result in order to assess its uncertainty range | 6.1. | To be able to identify the sources of errors for an experimental result in order to assess its uncertainty range |
| 7. | Suggest analogies, estimate orders of magnitude, and be able to understand their meaning | 7.1. | To be able to suggest analogies, estimate orders of magnitude, and be able to communicate their meaning |
| 8. | Use the main mathematical tools relevant for physics | 8.1. | To be able to apply the main mathematical tools relevant for physics |
| 9. | Handle the basic mechanisms at the microscopic scale, simulate the macroscopic phenomena, and make the bridge between macro and micro | 9.1. | To be able to handle the basic mechanisms at the microscopic scale, simulate the macroscopic phenomena and make the bridge between macro and micro |
| 10. | Make a sound use of some data acquisition and analysis software | 10.1. | To be able to make efficient and effective use of some data acquisition and analysis software |
| 11. | Use an up-to-date programming language | 11.1. | To be able to understand and use an latest programming language |
| 12. | Identify the currently used techniques in the areas of fluid mechanics and solid state mechanics, materials science, chemistry, geosciences, thermodynamics and thermal engineering, computer sciences, astronomy | 12.1. | To be able to identify the currently used techniques in the areas of fluid mechanics and solid-state mechanics, materials science, chemistry, geosciences, thermodynamics and thermal engineering, computer sciences and astronomy |
| Instrumental competences (on the programme level) | | | |
| 13. | Knowledge of basic mathematics and related subjects (including mathematical methods for physics; computing; numerical analysis) | 13.1. | To be able to demonstrate understanding of basic mathematics and related subjects (including mathematical methods for physics; computing; numerical analysis) |
| 14. | Knowledge of basic physics (introduction to physics; mechanics, vibrations and waves, acoustics, optics, | 14.1. | To be able to explain the basic physics (introduction to physics; mechanics, vibrations and waves, acoustics, optics, thermodynamics, electromagnetism; quantum physics, statistical physics) |

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| | thermodynamics, electro-magnetism; quantum physics, statistical physics) | | |
| 15. | Knowledge of experimental methods (asking the right questions, measurement theory and treatment of experimental errors, instrumentation) and awareness about professional integrity and how to avoid plagiarism | 15.1. | To be able to discuss experimental methods (asking the right questions, measurement theory and treatment of experimental errors, instrumentation) and demonstrate awareness about professional integrity and how to avoid plagiarism |
| | | 15.2. | To be able to demonstrate awareness about professional integrity and approaches for avoiding plagiarism |
| 16. | Knowledge of basic elements in theoretical physics (analytical mechanics; classical electromagnetism, relativity, etc.; quantum mechanics / theory; statistical physics) | 16.1. | To be able to explain the basic elements in theoretical physics (analytical mechanics; classical electromagnetism, relativity, etc.; quantum mechanics / theory; statistical physics) |
| 17. | Knowledge of elements of applied physics and related subjects (chemistry; electronics & related; etc.) | 17.1 | To be able to explain elements of applied physics and related subjects (chemistry; electronics & related; etc.) |
| 18. | Knowledge of basic elements in modern physics (atomic, nuclear and sub-nuclear, solid state, astrophysics) | 18.1 | To be able to explain and discuss the basic elements in modern physics (atomic, nuclear and sub-nuclear, solid state, astrophysics) |
| 19. | Small intermediate or final physics project(s) | 19.1 | To be able to lead small intermediate or final physics project(s) |

Annex XV. Examples of learning outcomes for Bachelor in Geography

| Generic competences | | Programme learning outcomes | |
|----------------------------------|---|-----------------------------|--|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argument his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |
| | | 5.3 | To summarize the outcomes obtained and identify key points |
| Interpersonal competences | | | |
| 6. | Ability to act with social and environmental responsibility, | 6.1 | To be able identify, recognise and apply moral personality and ethical principals |

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| | civic awareness and ethical commitment, and concern for quality | 6.2 | To be able apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| | Systemic competences | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able methodically organise one's work, resources and time, depending on available possibilities and priorities |

| Professional competences | | Programme learning outcomes | |
|--------------------------|--|-----------------------------|--|
| Instrumental competences | | | |
| 1. | Use fundamental concepts in natural, social sciences and humanities to identify and analyse spatial and regional problems, the extent of critical changes and forecasts | 1.1 | To be able to explain fundamental concepts in natural, social sciences and humanities |
| | | 1.2 | To be able apply fundamental concepts in order to identify and analyse spatial and regional problems, the extent of critical changes and forecasts |
| | | 1.3. | To be able to communicate fundamental concepts natural, social sciences and humanities in order to identify and analyse spatial and regional problems, the extent of critical changes and forecasts |
| 2. | Identify and lead independent research on spatial and regional problems using quantitative and qualitative data | 2.1 | To be able to recognize different approaches and methods in conducting research |
| | | 2.2 | To be able to lead independent research on spatial and regional problems using quantitative and qualitative data |
| 3. | Apply and use modern technologies and methods in geography (geographic information systems and remote sensing materials, methods for data analysis) and other geographic information acquisition in the course of processing and analysing information and data to support decision-making process | 3.1 | To be able to use modern technologies and methods in geography (geographic information systems and remote sensing materials, methods for data analysis) and other geographic information acquisition in the course of processing and analysing information and data to support decision-making process |
| 4. | Capacity to identify and analyse spatial and regional problems in Azerbaijan | 4.1 | To be able to identify and analyse spatial and regional problems in Azerbaijan |
| | | 4.2. | To be able to analyse spatial and regional problems in Azerbaijan |
| 5. | Be able to communicate the spatial and regional problems and their solution to stakeholders and society | 5.1 | To be able to communicate the spatial and regional problems and their solution to stakeholders and society |
| 6. | Suggest solutions to actual sustainable development and environmental protection at local, regional and national scale | 6.1. | To be able to propose solutions to actual sustainable development and environmental protection at local, regional and national scale |
| 7. | Apply geographical concepts in the fields of education, government, management, business, spatial and regional planning, environmental protection | 7.1. | To be able to apply geographical concepts in the fields of education, government, management, business, spatial and regional planning, environmental protection |
| 8. | Identify legal regulations, their consequences and implementation as well as control possibilities relevant for spatial and regional problems | 8.1. | To be able to identify legal regulations relevant for spatial and regional problems |
| | | 8.2. | To be able to identify consequences of legal regulations during implementation towards relevant for spatial and regional problems |
| | | 8.2. | To demonstrate skills to control possibilities relevant for spatial and regional problems |

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| 9. | Apply environmental impacts assessment, monitoring and management methods in practical activities | 9.1. | To be able to apply environmental impacts assessment, monitoring and management methods in practical activities |
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Annex XVI. Examples of learning outcomes for Bachelor in Oil and gas engineering

| Generic competences | | Programme learning outcomes | |
|----------------------------------|--|-----------------------------|---|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argument his/her opinion and have a critical approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |
| | | 5.3 | To summarize the outcomes obtained and identify key points |
| Interpersonal competences | | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able identify, recognise and apply moral personality and ethical principals |
| | | 6.2 | To be able apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| Systemic competences | | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in a new and changing situations |

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| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able methodically organise one's work, resources and time, depending on available possibilities and priorities |
| Professional competences | | Programme learning outcomes | |
| Instrumental competences | | | |
| 1. | Capacity to mobilize fundamental concepts from deep knowledge in basic sciences (some with experimental work) that includes mathematics, computer science, physics, chemistry, and geology to solve problem in oil and gas engineering | 1.1 | To be able to exploit fundamental concepts from deep knowledge in basic sciences (some with experimental work) that includes mathematics, computer science, physics, chemistry, and geology to solve problem in oil and gas engineering |
| | | 1.2 | To be able to communicate solutions based on fundamental concepts to solve problem in oil and gas engineering |
| 2. | Ability to apply a scientific approach of Engineering topics that develop a working knowledge of exploration production in oil and gas. | 2.1 | To be able to use a scientific approach of Engineering topics that develop a working knowledge of exploration production in oil and gas |
| 3. | Capacity to design and monitor the drilling and completing wells | 3.1 | To be able to design the drilling and completing wells |
| | | 3.2 | To be able to monitor the drilling and completing wells |
| 4. | Ability to characterize and evaluate subsurface geological formations and their resources using geoscientific and engineering methods | 4.1 | To be able to characterize subsurface geological formations and their resources using geoscientific and engineering methods |
| | | 4.2 | To be able to evaluate subsurface geological formations and their resources using geoscientific and engineering methods |
| 5. | Capacity to design and analysis of systems for producing, injecting, and handling fluids | 5.1 | To be able to design systems for producing, injecting, and handling fluids |
| | | 5.2 | To be able to analyse systems for producing, injecting, and handling fluids |
| 6. | Capacity to operate and maintain power and handling equipment in accordance with approved industry standards, quality procedures, safety guidelines | 6.1 | To be able to operate power and handling equipment in accordance with approved industry standards, quality procedures, safety guidelines |
| | | 6.2 | To be able to maintain power and handling equipment in accordance with approved industry standards, quality procedures, safety guidelines |
| 7. | Ability to use project economics and resource valuation methods for design and decision making under conditions of risk and | 7.1 | To be able to use project management and resource valuation methods for design and decision making under conditions of risk |

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| | uncertainty | | |
| 8. | Ability to work in a highly safety sensitive environment and complying with both company and client safety standards | 8.1. | To be able to work in a highly safety sensitive environment |
| | | 8.2. | To be able to comply with both company and client safety standards |

Annex XVII. Examples of State Standard

***THE MINISTRY OF EDUCATION OF THE REPUBLIC OF
AZERBAIJAN***

APPROVED BY THE DECREE NO ...

OF THE MINISTRY OF EDUCATION OF THE REPUBLIC OF AZERBAIJAN OF ...

STATE STANDARD OF HIGHER EDUCATION

STATE STANDARD OF BACHELOR PROGRAMME

SPECIALTY CIPHERS AND NAMES:

050641- CHEMICAL ENGINEERING

1. GENERAL PROVISIONS

The **State standard of Bachelor level 050641- Chemical Engineering** (hereinafter, the State standard) has been developed pursuant to the “Law on Education” of the Republic of Azerbaijan, ... *(to be completed)*.

The current state standard defines compulsory provisions for the programme, which can be offered on a full-time and/or part-time basis.

This State standard aims to:

- Assist higher education institutions in **designing, implementing and self-assessing** study programmes;
- **Inform students and employers** about the knowledge and skills acquired by the graduates;
- Give guidelines to experts who **assess the study programmes**.

The State standard is obligatory for all higher education institutions which function in the territory of the Republic of Azerbaijan regardless of their subordination, ownership and organizational and legal forms and carry out studies in this specialty.

2. COMPETENCES AND LEARNING OUTCOMES OF THE PROGRAMME REQUIRED FROM GRADUATES

The following general and professional competences shall be developed, and following learning outcomes should be attained within the study programme at Bachelor level:

| Generic competences | | Programme learning outcomes | |
|---------------------------------|--|-----------------------------|--|
| Instrumental competences | | | |
| 1. | Oral and written communication skills in native language | 1.1 | To use native language skills obtained in the field of professional activity |
| | | 1.2 | To use native language skills acquired in order to collect data from external sources and to exchange knowledge |
| 2. | Communication skills in at least one foreign language | 2.1 | To utilise basic second language structures (phonic, grammatical, lexical and written) |
| | | 2.2 | To be able to communicate correctly orally and in writing in a second language in daily exchanges and simple texts |
| 3. | Capacity to use information technology at work effectively and appropriately | 3.1 | To be able to use information technologies in order to get knowledge from digital information sources |
| | | 3.2 | To be able to analyze, process, produce and share the data obtained |
| 4. | Ability for abstract thinking and critical analysis | 4.1 | To analyze a problem and to identify main requirements |
| | | 4.2 | To argument his/her opinion and have a critical |

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| | | | approach for the results obtained |
| 5. | Capacity to identify and select additional information resources for treatment of relevant data | 5.1 | To identify information and data gaps |
| | | 5.2 | To analyze the outcomes obtained and compare them with outcomes obtained from other sources |
| | | 5.3 | To summarize the outcomes obtained and identify key points |
| | Interpersonal competences | | |
| 6. | Ability to act with social and environmental responsibility, civic awareness and ethical commitment, and concern for quality | 6.1 | To be able identify, recognise and apply moral personality and ethical principals |
| | | 6.2 | To be able apply professional, ethical, legal and safety issues and also responsibilities in well known and unknown professional situations |
| | | 6.3 | To be able to meet requirements in daily professional work |
| 7. | Capacity for teamwork, developing a collaborative approach to problem solving | 7.1 | To be able to participate and collaborate in a team tasks and promote confidence, cordiality and focus on shared work |
| | | 7.2 | To be able to contribute to the consolidation and development of the team, foster communication, balanced distribution of work, good team atmosphere and cohesion |
| 8. | Ability to perform self-evaluation and questioning himself/herself in order to improve knowledge and skills | 8.1 | To have a critical approach toward one's knowledge and skills and to be able to develop the skills obtained |
| | | 8.2 | To be able to respect the opposite side's views and reckon with others' views |
| | | 8.3 | To work out a strategy for his/her own personal and professional development in order to boost work efficiency in organisation |
| | Systemic competences | | |
| 9. | Capacity to adapt to new situations, capacity to take initiative and will to success | 9.1 | To be able to perform well under pressures of time, disagreements and hardship as well as meet a challenges in a new and changing situations |
| | | 9.2 | To be able to take initiatives and communicate them with conviction and integrity, stimulate others |
| 10. | Ability to plan and organise one's own activities, self-learning and skills enhancement, capacity to manage time and respect deadlines | 10.1 | To be able to set the goals and demonstrate the feasibility of own plans by fulfilling them |
| | | 10.2 | To be able methodically organise one's work, resources and time, depending on available possibilities and priorities |
| Professional competences | | Programme learning outcomes | |
| 1. | Mobilize appropriate concepts and methods in the fields of mathematics, physics, chemistry and computer science to address and solve | 1.1 | To be able to synchronise theoretical and applied knowledge in solving engineering issues |
| | | 1.2 | To be able to solve complex problems and tasks by using principles of mathematics, physics, chemistry and chemical engineering. |

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| | problems in chemical engineering | | |
| 2. | Identify and lead independently the different stages of an experimental approach in physics, chemistry and chemical engineering | 2.1 | To be able to perform, coordinate and document laboratory processes while carrying out a quantitative analysis |
| | | 2.2 | To be able to obtain and extract chemical compounds using standard methods and synthesis |
| 3. | Analyze and exploit experimental data, taking into account sources of errors and uncertainty and probe a model by comparing its predictions to the experimental results | 3.1 | To be able to use basics of mathematics, algorithmic principles and methods of computer engineering in modeling and designing of chemical-technology systems. |
| | | 3.2 | To be able to analyze and interpret data using statistical methods |
| 4. | Use a programming language and analysis software with a critical mind to collect and exploit data | 4.1 | To be able to use the knowledge and skills gained when learning computer technologies for chemical engineering activities |
| | | 4.2 | To be able to select the most significant elements and their relations in complex chemical engineering situations |
| 5. | Apply, control, manage and design chemical processes by using information and computer technologies | 5.1 | To be able to use engineering techniques and skills and modern engineering tools |
| | | 5.2 | To be able to lead industrial and chemical processes, control them and apply chemical engineering principles in designing these processes |
| 6. | Apply, manage, design, launch and repair technological processes by using information and computer technologies | 6.1 | To be able to prepare, modify, interpret and present technical documents used in chemical technology |
| 7. | Identify specific regulations and implement the main prevention measures in terms of health, safety and environmental responsibility | 7.1 | To be able to design systems, components, nodes and processes that meet the necessary requirements, taking into account natural restrictions such as economics, ecology and social aspects |

3. THE SCOPE OF STUDY PROGRAMME

The scope of the programme shall be **240 ECTS**, out of which shall be:

- ✓ no less than 165 credits should be for special subjects in the study field of Chemistry and Chemical Engineering;
- ✓ no less than 60 credits should be for practical works in scientific teaching laboratories;
- ✓ no less than 15 credits should be for foreign language/ foreign languages;
- ✓ no less than 15 credits should be devoted to supporting student employability.

Block 1. Humanities and soft skills - 30 ECTS:

- **Professional and academic communication in the native language** (this subject shall provide students with oral and written skills in Azerbaijani language, with focus on presentation skills, public speaking skills, academic and professional writing skills).
- **History and culture of Azerbaijan** (this subject shall be implemented as students' work in small groups on a concrete project, which can be of use in a local, regional or national context of Azerbaijan).
- **Professional and academic communication in a foreign language.**
- **Introduction into management and business world (including basics of entrepreneurship).**
- **Preparation of a Personal Professional Project (PPP)** (this subject shall include career guidance and personal research on future career opportunities, introduction into professional environment and basics of project management, preparation of the internship).
- **Computer skills and information technology.**

Block 2: Compulsory subjects related to the field or other close areas – 117 ECTS:

Introduction to chemical engineering (3 ECTS)

Mathematics for engineering (10 ECTS) including Analysis of multiple variable functions, linear algebra and applications in physics and chemical engineering, Fourier transforms, probability, statistics.

Physics (10 ECTS), including Experimental physics at least for 7 ECTS and Mechanics, Electromagnetism, Vibration, waves, optics, Electrostatic, Electricity and Electronics.

Computer Science (12 ECTS) including Practical works for 4 ECTS and Algorithms and Programming, Web programming, databases, Computer sciences for chemical engineering (Python programming, uses of software for processes simulation and control)

Chemistry (28 ECTS), including Atomic structure, Chemical bond, Chemical thermodynamics, Wave-matter interactions, Kinetics and electrochemistry, Analytical Chemistry, introduction to Quantum mechanics for chemistry.

Experimental Chemistry, Organic Chemistry, General Chemistry, Analytical Chemistry, Chemical Engineering (54 ECTS) including Practical works for 15 ECTS and Unitary Operations, Heat and mass Transfer, Distillation, Operations on solids, separation processes, chemical reaction engineering, Process simulation and optimization, system dynamics and regulation, Catalysis and environmental engineering, Human and process safety, Fluid Mechanics and dynamics, Thermodynamics, Chemical Engineering Labs.

Block 3: Civil defense and first aid – 3 ECTS

Block 4: Subjects to be decided by university – 60 ECTS

To be suggested by the university according to local expertise of the teaching staff, research infrastructures, local and national job perspectives. In this block of subjects, it should also be possible for the students to go abroad.

Block 5: Internship – 30 ECTS (whole semester duration, including achievement of the internship project within a company or within a research lab, written report, and defense in front of a mixed jury, composed of academic staff from the university and representatives of the company/institution where the internship took place).

4. TEACHING AND LEARNING

- 4.1. Teaching and learning shall be organised in such a way that students can effectively achieve and demonstrate the intended **learning outcomes of the study programme**.
- 4.2. The teaching and learning methods shall be described in relevant documents and **made publicly available** (i.e. on university web-site, programme leaflets, etc.).
- 4.3. The teaching and learning methods shall be constantly reviewed and improved, taking into account innovative teaching practices in higher education internationally. The regular update of teaching and learning methods shall be part of the **quality assurance** process of the university.
- 4.4. A **variety of teaching methods** shall be used during the study process. These techniques shall promote a student-oriented approach with an active role of student in the learning process. Examples of the teaching and learning technics that can be used:
- Lecture, seminars, practical assignments,
 - presentations and discussions, debates,
 - independent work/studies (e.g. case studies),
 - projects,
 - problem-based teaching,
 - field visits,
 - role plays,
 - reports,
 - collegiate assessment,
 - expert method,
 - video and audio conferencing,
 - video and audio lectures,
 - distance learning,
 - simulations,
 - etc.
- 4.5. The studies shall provide a **good balance between theoretical and practical training**. A focus should be made on strengthening practical skills in line with changing needs of the labour market.
- 4.6. The study programme shall support **student's autonomy** and develop the **concept of lifelong learning**. At the end of the study process the student shall be able to work autonomously in a given field and capable to further continue studies throughout lifetime.

5. ASSESSMENT

- 5.1. Assessment shall be organised in such a way that students can effectively **measure the achievement of the intended learning outcomes** of the study programme. It should help to monitor progress and evaluate the extent to which study program outcomes are achieved, maintain feedback with students, and create preconditions for improving study programs.
- 5.2. The assessment methods shall be **described in relevant documents** and **made publicly available** (i.e. on university web-site, programme leaflets, etc.).

- 5.3. The assessment methods shall be constantly reviewed and improved, taking into account innovative teaching practices in higher education internationally. The regular update of assessment methods shall be part of the **quality assurance** process of the higher education institution.
- 5.4. A **variety of assessment methods** shall be used during the study process. These techniques shall promote a student-oriented approach with an active role of student in the learning process. Examples of the teaching and learning technics that can be used:
- written assignments,
 - tests of knowledge and skills, computer-based tests
 - oral presentations,
 - public discussions,
 - work placement reports, fieldwork reports
 - assessment of skills based on observations in work placements, laboratories
 - project work reports,
 - professional portfolios assessment,
 - peer assessment,
 - demonstrations in simulated environment,
 - collegiate and self-assessment,
 - e-study methods
 - etc.
- 5.5. The methods applied to the assessment of learning achievements shall be based on **clearly formulated criteria** allowing to correctly and reliably reflect the level of knowledge, abilities and skills achieved by the student during (subject) studies. When assessing learning outcomes, teachers should follow the principles of transparency, impartiality mutual respect and benevolence.
- 5.6. Students shall be given the opportunity to discuss with the teachers/assessors all the aspects of their studies, including their assessments. **Procedures for appeal** concerning the assessment process or assessment grade shall be established by a higher education institution.
- 5.7. **Academic ethics** are high onto agenda of the study process. Students are taught to observe academic integrity, understand the risks of plagiarism, are familiar with the intellectual and property rights on product of intellectual work.

6. LEARNING OUTCOMES, SUBJECTS AND ECTS CREDITS

- 6.1. The learning outcomes of the study programme, learning outcomes of each subjects, each subject's syllabus, and the choice of teaching, learning and assessment methods are part of the pedagogical autonomy of universities and have to be **defined by the university academic staff** based on the current state standard.
- 6.2. A **mapping of learning outcomes** shall be presented in a form of matrix, prepared by the university academic staff (Annexes 1 - 2). The matrix of the learning outcomes shall indicate how the learning outcomes of the programme and of subjects relate to each other.

- 6.3. The **syllabus of study subjects shall be regularly updated** so that programme provides an updated theoretical and practical content, which meets the changing needs of the society and the labour market.

7. INFRASTRUCTURE AND STAFF CAPACITY

- 7.1. The teaching, learning and assessment process of the study programme requires that the higher education institution possesses the **following infrastructure**:

up-to-date practical work laboratories, supporting capacity to provide training in chemical engineering, supporting research laboratories, computer rooms provided with updated software, rooms for workshops and group work, etc. Learners shall have access to local network, internet, databases of scientific literature, e-libraries and information search systems of HEI. Moreover, there shall be U-visible and IR spectrophotometers, gas chromatographs, high performance liquid chromatographs, X-ray diffractometer, NMR spectrometers, etc.

- 7.2. As a rule, **HEI teaching staff** will hold required **scientific degrees**. Persons coming from other **public or private institutions and/or any other relevant organizations** may also be involved in teaching on **part-time basis**. Teaching staff is actively involved in scientific research, regularly participates in national and international conferences, publish their research in scientific journals included in major reference data bases. Research results of the teaching staff are regularly communicated to local society.

8. INTERNSHIP

- 8.1. The programme ends with an **internship**, to which **30 ECTS** are allocated. This part of the programme is important as it enables to **reinforce the practical and professional skills** of student.
- 8.2. The internship can take place in **a private company, in a public institution, in a research laboratory** (i.e. university, ANAS, private local or international companies, etc.).
- 8.3. Before the internship starts, a **tripartite agreement** shall be signed between the university, the company/institution/laboratory, where the internship takes place, and the student. The agreement shall define conditions, functions and responsibilities of the student and other relevant details. The topic or the title of the project on which the student worked during the internship shall be indicated in the Diploma Supplement.
- 8.4. **Internship assessment**: the student shall prepare a 20-30 pages internship report which is to be defended in front of a jury that includes the internship tutor from the company.
- 8.5. The **internship** can also be undertaken **abroad**. The recognition procedures as per the new regulations regarding recognition procedures shall be applied to recognize the internship taken abroad as the integral part of the program, if the competences and learning outcomes acquired fit with the objectives of the programme.

9. EMPLOYABILITY AND ACCESS TO FURTHER EDUCATION

- 9.1. Graduates of this programme may work in positions in private companies and public institutions **in the areas** of Chemical Engineering.
- 9.2. Graduates of this programme may also work in various positions in **other private companies and public institutions** where the mastery of the competences acquired during the programme are required.
- 9.3. The university **should do surveys about the employability of the graduates** from the program **on a regular basis**. The university should provide examples of jobs on their webpage.
- 9.4. Each study programme shall nominate a **Steering Committee**, composed of the **academic staff of the programme and representatives of employers**. The Committee shall sit two times per year to discuss the quality of the study programme and its relevance to the labour market needs.
- 9.5. Graduates of this Bachelor programme can **pursuit their education** in relevant Master's **programmes**.
- 9.6. The knowledge, skills and attitudes acquired during studies shall be preconditions for graduates to **engage independently in lifelong learning**.

Annex 1. Define how each subject contributes to study programme learning outcomes

The head of study programme at university shall define how each subject support the development of generic and professional learning outcomes of the study programme, using the table below.

| Title of module | Subjects | Learning outcomes of the programme | | | | | | | | | | | | |
|--|--|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|--|
| | | GLO 1 | GLO 2 | GLO 3 | GLO 4 | GLO 5 | GLO 6 | PLO 1 | PLO 2 | PLO 3 | PLO 4 | PLO5 | PLO 6 | |
| Block 1. Humanities and soft skills | Professional and academic communication in the native language | X | | | | | | | | | | | | |
| | History and culture of Azerbaijan | | | | | | | | | | | | | |
| | Professional and academic communication in a foreign language | X | | | | | | | | | | | | |

Annex 2. Indicate learning outcomes, learning, teaching and assessment method for each subject

The head of study programme at university shall make sure that learning outcomes for each subject (a maximum of 4-5 per subject) are defined, indicating teaching, learning and assessment methods for each learning outcome. *The below table shall be used for presenting this information*

| Name of subject | Learning outcomes of each subject | Teaching and learning methods for each learning outcome | Assessment methods for each learning outcome |
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