Learning outcomes of the degree program

The degree program intends to prepare masters and graduate them with a number of abilities and skills. Learning outcomes are presented below. Chemical Engineering Master degree program is divided into three specializations. These are “Industrial technology of inorganic substances”, “Oil refining technology” and “Technology of petrochemical synthesis”. Therefore, learning outcomes of the Program are given for each specialization separately.

Learning outcomes of the “Industrial technology of inorganic substances” specialization include development of:

- Ability to demonstrate well-developed erudition of chemistry, mathematical-scientific and engineering principles of chemical engineering.
- Ability to analyse and solve extraordinary or partly determined problems scientifically revealing contesting specifications, as well as defend the advanced scientific propositions.
- Ability to summarize, formulate and research complex problems regarding with chemistry, technology and research of properties of ceramic, glass and binding composite materials, refractories, inorganic compounds and mineral fertilizers.
- Ability to apply innovative methods based on key principles of nanochemistry and membrane technology to problem-solving of scientific and technological character.
- Ability to develop concepts and scientific-technological solutions in the field of electrochemical technology, processing of mineral raw materials and water treatment.
- Ability to utilize creativity in elaborating new and inventive products, processes and methods of utilization of solid waste in metallurgy and other areas of inorganic substances manufacturing.
- Ability to identify, find, and provide necessary information, as well as, plan and conduct analytical, model and experimental investigations of inorganic substances and composite materials particularly in the field of catalysts and adsorbents synthesis with further studying their activity.
- Ability to systematize and systematically unify knowledge of different areas of science, cope with the complexity and also ability to assess of applied research methods and their limits in accordance with relevant laws, regulations, standards, methods and guidelines.
- Ability to function efficiently as a team leader being composed of different countries, disciplines and levels representatives.
- Ability to use the foreign language skills to obtain needful information of scientific and technical character and also to prepare of research and review articles, conference materials and master thesis. Ability to use the foreign language to prepare presentations and in oral speech.

Learning outcomes of the “Oil refining technology” specialization include development of:

- Ability to demonstrate well-developed erudition of chemistry, mathematical-scientific and engineering principles of chemical engineering.
- Ability to analyse and solve extraordinary or partly determined problems scientifically revealing contesting specifications, as well as defend the advanced scientific propositions.
- Ability to summarize, formulate and solve complex problems related to the technology and research of the properties of alterative and conventional fuels, lubricants and additives, taking into account production safety issues.
- Ability to apply modern analytical methods to solve scientific problems and to develop new scientific methods in the field of chemistry of petroleum and oil products.
- Ability to develop design and scientific-technological solutions in the field of design, modeling and optimization of refining and petrochemical processes, as well as apply the acquired knowledge to improve the management system of the oil refining industry.
- Ability to use creativity to develop new and improved methods of separation and extraction processes used in processing of petroleum and oil products, as well as methods of heat recovery of production processes.
- Ability to identify, find and provide necessary information, as well as plan and conduct analytical, modeling and experimental research in the field of catalytic and non-catalytic processes of oil and petroleum products refining.
- Ability to systematize and systematically unify knowledge of different areas of science, cope with the complexity and also ability to assess of applied research methods and their limits in accordance with relevant laws, regulations, standards, methods and guidelines.
- Ability to function efficiently as a team leader being composed of different countries, disciplines and levels representatives.
- Ability to use the foreign language skills to obtain needful information of scientific and technical character and also to prepare of research and review articles, conference materials and master thesis. Ability to use the foreign language to prepare presentations and in oral speech.

Learning outcomes of the “Technology of petrochemical synthesis” specialization include development of:

- Ability to demonstrate well-developed erudition of chemistry, mathematical-scientific and engineering principles of chemical engineering.
- Ability to analyse and solve extraordinary or partly determined problems scientifically revealing contesting specifications, as well as defend the advanced scientific propositions.
- Ability to summarize, formulate, and solve complex problems related to the chemistry, technology, and research of the properties of organic compounds and industrial products based on them.
- Ability to apply modern methods to solve scientific problems and develop new scientific

research in the field of synthesis and modification of the properties of organic compounds.
- Ability to develop concepts and scientific-technological solutions in the field of petrochemical and basic organic synthesis.
- Ability to use creativity to develop new and improved methods of utilization of waste of petrochemical and organic synthesis, as well as methods of effective use of renewable energy sources.
- The ability to identify, find and provide the necessary information, as well as to plan and conduct analytical, model and experimental studies of catalytic processes involving organic compounds.
- Ability to systematize and systematically unify knowledge of different areas of science, cope with the complexity and also ability to assess of applied research methods and their limits in accordance with relevant laws, regulations, standards, methods and guidelines.
- Ability to function efficiently as a team leader being composed of different countries, disciplines and levels representatives.
- Ability to use the foreign language skills to obtain needful information of scientific and technical character and also to prepare of research and review articles, conference materials and master thesis. Ability to use the foreign language to prepare presentations and in oral speech.