BURGAS STATE UNIVERSITY "PROF. DR. ASSEN ZLATAROV"

Approved:
RECTOR:
/Prof. Dr. Hristo Bozov, MD/

QUALIFICATION CHARACTERISTICS
of the specialty "CHEMICAL ENGINEER"

field of higher education: **5. TECHNICAL SCIENCES**
professional field: **5.10. CHEMICAL TECHNOLOGIES**
educational qualification degree **"BACHELOR"**
of specialty: "**CHEMICAL ENGINEERING**"
professional qualification: **„CHEMICAL ENGINEER"**

LEVEL: 6
SUBLEVEL: 6b
ACCORDING TO THE NATIONAL QUALIFICATION FRAMEWORK

BURGAS, 2025

ANNOTATION

The present qualification characteristics defines the aims of the training, the methods and means for their acquisition by the specialist with higher education given the educational qualification degree of "Bachelor" and professional qualification of "Chemical engineer" in the specialty of "Chemical engineering".

The specialty is based on the classical knowledge of the persons who had graduated secondary school and the comprehensive use of modern information technology which gives the bachelors graduating in "Chemical engineering" mobility and adaptiveness.

The primary objective of the education of the bachelors in the specialty "Chemical engineering" is to prepare them for work as engineers in scientific research institutions, industrial and technological enterprises, project-design and management units in the chemical, petroleum, food-processing, pharmaceutical and other industries related to the physicochemical and biochemical treatment of substances, including solution of ecological engineering problems.

The education in the specialty includes solid fundamental general education study and broad interdisciplinary professional training. The educational disciplines are systematically selected based on the objectives and competencies of the specialty, forming the foundation of a well-structured curriculum.

The students trained in the specialty "Chemical engineering" should have good fundamental, general engineering and broad-based special training and competence in the field of specialization. The fundamental training should include targeted knowledge in: higher mathematics, physics, chemistry, information technology, thermodynamics, fundamental knowledge of chemical technology, mathematical modelling and optimization, modern analytical methods, technical safety and industrial management, ecology and environment protection. The general engineering training should include training in

engineering graphics, mechanics, machine components, electrical engineering and electronics, automation of production. The specialized training should include knowledge on hydromechanics of fluids, basics of heat- and mass transfer, applied software in the field of chemical engineering, technological dimensioning and design of heat-exchange and mass-exchange equipment, reaction and refrigerator techniques, automated design of assemblies and installations in chemical plants, analysis and synthesis of chemical technology systems.

OBJECTIVES FOR THE SPECIALIST "CHEMICAL ENGINEER"

The aim of the specialty "Chemical engineering" is to train qualified engineering personnel who can compete not only in Bulgarian economy but also abroad. The graduates of the education and qualification degree of "Bachelor" acquire interdisciplinary knowledge and competence to influence in general the chemical technology and production processes. They will be capable to identifying problems in the operation, analyzing and suggesting solutions of these problems, setting and achieving goals, motivating the personnel for continuous learning.

REQUIREMENTS TO THE TRAINING OF THE SPECIALIST "CHEMICAL ENGINEER"

In the process of education, not only general education knowledge is acquired but also profound knowledge in the field of chemical engineering. The educational curriculum includes theoretic, practical and applied disciplines which are divided into mandatory, elective and optional courses.

The following requirements apply to those graduating with Bachelor's degree in the specialty "Chemical engineering":

- They should have good knowledge in physics and mathematics, general chemistry, general engineering and broad-based profile special knowledge.;

- They should know the fundamental laws of hydrodynamics, heat- and mass-transfer processes, as well as the methods of their quantitative description in order to design and manage the relevant equipment.;
- They should be well aware of the construction specifics of the equipment, be able to carry out engineering analysis of the operational regime of individual units, technological assemblies and installations and suggest solutions to improve their efficiency of operation.;
- They should know and be able to use practically various compute based systems and software for design of technological equipment and installations, as well as the means of control and automated management of production lines. Да познават и използват в практиката различни компютърни системи и програмни продукти за проектиране на технологични апарати и инсталации, както и средствата за контрол и автоматизирано управление на производството;
- They should be able to use technologic and design documentation;
- They should have mastered the safety requirements and environment protection rules;
- They should have basic economic knowledge and apply it in the management of production processes, as well as manage production teams.

FIELDS OF REALIZATION

The students graduating the specialty "Chemical engineering" with Bachelor's degree acquire the professional qualification of "Chemical engineer" and could realize their knowledge and skills in the following fields:

1. In all branches of the chemical, oil processing, polymer processing, biotechnological and other industries;
2. Specialists in planning, design and implementation of technological processes; specialists in the development of innovative technical, technological and managerial solutions;

3. In production-technological, organizational management departments and specialized laboratories for analysis and control;
4. In consultant and design companies;
5. They can work as freelance engineers, work as experts, consultants of industrial factories or in patent activities, including solution of environmental engineering problems;
6. As lecturers at universities, colleges and specialized secondary schools.

Approved by the FC of the FTS, Protocol № 26 / 15.04.2025
Approved by the Academic council, Protocol № 36 / 29.04.2025