



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Professional training (6 weeks)

Course

Field of study

Pharmaceutical Engineering

Area of study (specialization)

-

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

III/6

Profile of study

Course offered in

Polish

Requirements

Number of hours

Lecture

0

Tutorials

0

Laboratory classes

0

Projects/seminars

0

Other (e.g. online)

0

Number of credit points

4

Lecturers

Responsible for the course/lecturer:

Justyna Werner, PhD

Faculty of Chemical Technology

Berdychowo 4/101A, 60-965 Poznań

phone: 61 665 28 83

e-mail: justyna.werner@put.poznan.pl

Responsible for the course/lecturer:



Prerequisites

The student has structured, theoretically founded knowledge covering key issues in the field of engineering and technology used in the pharmaceutical industry. Is able to obtain information from the indicated sources, correctly interprets them and draws conclusions.

Course objective

Familiarization with technological processes in the pharmaceutical, cosmetic, chemical and related industries. Preparation for work in the pharmaceutical, cosmetic, chemical and related industries, research and development institutions.

Course-related learning outcomes

Knowledge

1. The student has a structured general knowledge in the field of pharmacy, cosmetology, technology and chemical engineering as related fields, directly related to pharmaceutical engineering - [K_W1]
2. The student has knowledge of basic techniques, methods of characterization and identification of pharmaceutical products and research tools used in pharmaceutical engineering, knows the classical and instrumental methods used in the assessment of the quality of substances for pharmaceutical purposes and in quantitative analysis in medicinal products, knows the physicochemical properties of substances for pharmaceutical use affecting the biological activity of drugs, knows the classification of analytical techniques along with the method selection criteria and method validation - [K_W7]
3. The student has knowledge of natural and synthetic raw materials, products and processes used in the pharmaceutical industry - [K_W13]
4. The student has a solid knowledge of the processes of separation and purification of raw materials and products in the pharmaceutical, cosmetic and chemical industries - [K_W15]
5. The student knows the principles of construction and selection of reactors and devices used in the pharmaceutical, cosmetic and chemical industries - [K_W16]
6. The student has basic knowledge in the field of materials science and mechanical engineering as well as the principles of strength calculations of apparatuses used in the pharmaceutical, cosmetic and chemical industries - [K_W17]
7. The student has basic knowledge in the field of construction of apparatus and installations in the pharmaceutical industry and related industries - [K_W18]
8. The student knows the basic methods, techniques, tools and materials used in solving simple engineering tasks in the field of pharmaceutical engineering and related industries - [K_W21]
9. The student knows the basics of pharmaceutical law, has basic knowledge of management in the field of pharmacy, including quality management, drug distribution system and the principles of ethics and deontology, as well as protection of industrial property and copyright, as well as technology transfer, is



able to use patent information resources, knows the principles of Good Manufacturing Practice and documenting technological processes - [K_W23]

10. The student has basic knowledge of the methods of searching for new medicinal substances, plant and synthetic drugs and their biochemical and molecular targets, pharmacopoeial standards and norms related to pharmaceutical engineering; knows the methods and techniques of testing medicinal products in chemical, pharmaceutical and toxicological terms - [K_W24]

11. The student has detailed knowledge of substances for pharmaceutical and cosmetic use, dietary supplements, plant raw materials, their production, analysis and quality control, technology and general knowledge of metabolism and effects of drugs and the correct use of medicinal products, knows the principles of creating the characteristics of a medicinal product and the information leaflet for the patient, knows and understands the rules for releasing medicinal products, medical devices, cosmetics and dietary supplements, knows the pharmacopoeial requirements for the assessment of the quality of substances and medicinal products - [K_W25]

Skills

1. The student uses chemical and pharmaceutical terminology and nomenclature of chemical compounds correctly, also in a foreign language - [K_U3]

2. The student uses basic techniques, equipment and research apparatus useful in biotechnology, synthesis and analysis of pharmaceutically active substances, drug form technology and toxicology, appropriate for pharmaceutical engineering, uses pharmacopoeial methods, prepares documentation - [K_U8]

3. The student is able to use the basic equipment and apparatus used in pharmaceutical engineering, obtains pharmaceutically active substances by synthetic and biotechnological methods, isolates active ingredients from plant raw materials based on the knowledge of basic physical and chemical operations as well as biochemical and molecular processes, develops the form of a drug, performs tests in the field of drug form quality assessment, interprets and documents the results of product quality tests - [K_U9]

4. The student uses computer programs that support the implementation of tasks typical for pharmaceutical engineering; uses information technology to describe phenomena and data analysis - [K_U19]

Social competences

1. The student is ready to critically assess his knowledge, understands the need for further education, supplementing his knowledge of the field and improving his professional, personal and social competences, understands the importance of knowledge in solving problems and is ready to seek expert opinion - [K_K1]

2. The student is aware of the importance of understanding the non-technical aspects and effects of engineering activities, including its impact on the environment and the related responsibility for decisions, correctly recognizes problems and makes the right choices related to the profession, in



accordance with the principles of professional ethics, care for achievements and traditions of the profession. – [K_K3]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The credit on the basis of the contract, certificate of internship and report on the internship.

Programme content

The workplace as a place of future professional activity.

Understanding the technologies used in the production plant (pharmaceutical and related).

Detailed familiarization with the technology chosen by the plant.

The methods used to control process efficiency and product quality.

Business practice and information acquired during education.

Independent task in the position indicated by the workplace.

The plant's activities in the field of environmental protection.

Teaching methods

Practical classes in the workplace

Bibliography

Basic

Information materials provided by the company

Additional

Documents, instructions in force in the workplace - the place of the internship

Breakdown of average student's workload

	Hours	ECTS
Total workload	240	4,0
Classes requiring direct contact with the teacher	0	0,0
Student's own work ¹	240	4,0

¹ delete or add other activities as appropriate