KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego

UNIA EUROPEJSKA
EUROPEJSKI
FUNDUSZ SPOŁECZNY

Course title	ECTS code
Basics of chemical apparatus	13.3.0896

Name of unit administrating study

null

Studies

faculty	field of study		
Faculty of Chemistry	Chemical Business	type	first tier studies (BA)
		form	full-time
		specialty	all
		specialization	all

Teaching staff

dr inż. Paweł Mazierski

Forms of classes, the realization and number of hours

Forms of classes

Auditorium classes, Laboratory classes, Lecture

The realization of activities

classroom instruction

Number of hours

Auditorium classes: 15 hours, Lecture: 15 hours, Laboratory classes: 15 hours

ECTS credits

4
classes - 45 h
tutorial classes – 15 h
student's own work – 40 h

Total: 100 h - 4 ECTS

The academic cycle

2023/2024 winter semester

Type of course

obligatory

Language of instruction

polish

Teaching methods

- conducting experiments
- discussion
- group work
- multimedia-based lecture
- project-based method (research, implementation, practical project)

Form and method of assessment and basic criteria for eveluation or examination requirements

Final evaluation

- Graded credit
- Examination

Assessment methods

- written exam with open questions
- assignment work – project or presentation
- assignment work – completing a specific practical assignment
- graded course credit based on individual grades obtained during the semester

The basic criteria for evaluation

	Lecture: • positive grade for the written exam consisting of 10-20 open-ended questions covering the issues listed in the curriculum of the subject; • exam - (the term "0", only for students who obtained the grade "very good" from the completion of the auditorium exercises) • the condition for taking the exam is obtaining a pass in laboratory exercises and auditorium exercises. Laboratory exercises: • Presence at laboratory classes and carrying out practical exercises in accordance with the instructions • Positive grade for the written test (colloquium) covering the issues listed in the contents of the laboratory exercises, the scale is in line with the University of Gdańsk's Study Regulations • Positive evaluation of the written report on the performed laboratory exercises Auditorium exercises: • Attendance at auditorium classes • Positive evaluation of the completed project, the scale complies with the University of Gdańsk Study Regulations

Method of verifying required learning outcomes

The method of verifying the acquisition of knowledge:
The student answers the questions concerning the issues presented in the program content of the course (K_BCh_W07).
The method of verifying the acquisition of skills:
The student performs a number of tasks provided for in the exercise program. Assessment of the presented conclusions and discussions on them. During the course and final tests, the student demonstrates the knowledge of the language in the field of chemical apparatus (K_ BCh_U01, K_ BCh_U02, K_ BCh_U05).
The method of verifying the acquisition of social competences:
Assessment of the ability to cooperate with other group members during tasks and experiments, assessment of the ability to plan the sequence of execution of individual stages of work, compliance with the laboratory regulations and the teacher's instructions, verification of the obtained results in various sources (K_ BCh_K02).

Required courses and introductory requirements

A. Formal requirements
Technical Drawing

B. Prerequisites
mathematics, physics

Aims of education

Aims of education
• familiarize students with all the issues mentioned in the lecture's program content
• developing skills of critical evaluation and interpretation of the work parameters of the discussed devices and analysis of source texts

Course contents

A. The topics of the lecture include: presentation of basic information in the field of construction, principles of operation and operation of typical machines and apparatus used in the chemical and related industries, including devices used in environmental protection technologies. The lecture also covers the relationship between the theory of operation of devices and their design, along with the presentation of the relationships that determine the values of their operating parameters. Discussed types of transport and technological machines and apparatuses shown below:
Machines for transporting solids, liquids and gases; (solids conveyors, pumps, fans)
Machines for grinding solids; (crushers, mills)
Apparatus for mixing loose materials, liquids and high viscosity systems
Apparatus for the separation of liquid-solid and liquid-liquid systems (settlers, filters, centrifuges, hydrocyclones)
Apparatus for gas-solid and gas-liquid separation; (dry and wet dust collectors)
Heat exchange apparatus. Evaporators. Mass exchange apparatus; (distillation and rectification apparatus, dryers)
B. Issues of auditorium exercises: includes the presentation of the methodology of calculation and selection of selected machines and apparatuses as well as the presentation of problems related to the development of the apparatus part of the process design.
C. Problems of laboratory exercises: includes presentation of the methodology of calculation and selection of various types of pumps, examination of pump characteristics, determination of pump operation parameters, familiarization with absorption processes in bubble columns and the grinding process with the use of a ball mill.

Bibliography of literature

A. Literature required for the final completion of the course (passing the exam):

A.1. used during classes
A.2. studied independently by the student
B. Supplementary literature:
Błasiński H., Młodziński B. - Aparatura przemysłu chemicznego, WNT 1983
Pikoń J., - Aparatura chemiczna, PWN 1978
Bieszk H., Urządzenia do realizacji procesów mechanicznych w technologii chemicznej, Wyd. PG. 2001
Bieszk H., Urządzenia do realizacji procesów cieplnych w technologii chemicznej, Wyd. PG. 2010

The learning outcomes (for the field of study and specialization)

K_BCh_W07 describes the construction and operating principles of scientific, technological and control-measuring apparatus
K_BCh_U01 on the basis of the acquired knowledge, identifies, analyses and solves engineering tasks and problems in broadly understood chemistry
K_BCh_U02 uses methods, techniques and tools in formulating and solving engineering tasks in the field of chemistry
K_BCh_U05 evaluates the usefulness and functioning of existing engineering and technical solutions as well as research and measurement methods in the chemical industry
K_BCh_K02 works individually demonstrating initiative and independence in actions, and effectively cooperates in a team, performing various roles in it

Knowledge

Knowledge
Student:
1. defines and presents the construction of typical technological devices
2. describes, illustrates and explains their functioning
3. characterizes the basic parameters of their work
4. understands the relationships and dependencies between their operation and construction

Skills

Skills
Student:
1. uses terminology to present (in written and oral form) the content of the subject
2. knows the operation of devices based on their graphic schemes
3. uses the basic computational techniques used in designing
4. analyzes the results of calculations, draws conclusions about the correctness of their operation

Social competence

Social competence

Student:
1. Understands the need for continuous education,
2. is aware of the need for honest and reliable work,
3. appreciates the need to be able to work in a team in accordance with its role in it,
4. is aware of the need for a critical analysis of own work
5. shows cautious criticism in receiving information, especially available in the mass media

Contact

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