POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Technological project [S1IFar2>PrT]

Course

Field of study
Pharmaceutical Engineering

Year/Semester
3/6

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
0

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
30

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

Student has basic knowledge of mathematics in the field enabling him to use mathematical methods to describe chemical issues and processes and perform calculations needed in engineering activities. He has basic knowledge of chemistry in the scope enabling him to understand chemical phenomena and processes. He has basic knowledge of products and processes used in chemical technology.

Course objective

The aim of the course is to familiarise students with the principles of designing steady-state processes in chemical technology and solving such constructed problems using CAD tools. In addition, the aim of the design is to search for the optimum possible steady state given the assumed requirements.

Course-related learning outcomes

Knowledge:
1. The student has knowledge in the field of chemical technology and engineering, machinery and

apparatus of the chemical industry. The student has basic knowledge about the life cycle of products, equipment and installations in the chemical industry. Student knows basic methods, techniques, tools and materials used in solving simple tasks in the field of chemical technology and engineering. [K_W01, K_W03, K_W06, K_W07]

Skills:
1. he student is able to work both individually and as a team in professional and other environments. He/she can prepare technological documentation and communicate using various techniques in a professional and other environment, also in a foreign language. [K_U01, K_U06, K_U07, K_U14]

Social competences:
1. The student is aware of the cost of conducting numerical calculations. The student understands the importance of using a digital approach to solving issues in an engineering environment. Additionally, the student is aware of the necessity of using solutions in terms of apparatus and energy savings. [K_K02]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Semester evaluation of the completed organic chemical technology project, which consists of a preliminary pre-design analysis, the quality of the completed project, and the production of a final report, as well as an assessment of the ability to solve engineering design issues. In addition, independent solving of tasks within the framework of the conducted written assessment is evaluated. In the case of stationary classes, credit is given in a computer laboratory, while in the case of online classes credit is given using the university's network and computer infrastructure (VPN) via the Remote Desktop Protocol (RDP) using a remote desktop connection tool.

Programme content

In this course, students are introduced to the principles of industrial plant design based on solutions used in organic chemical technology. Issues related to chemical reactions and all unit processes are considered. At the same time, students are introduced to the principles of control and measurement equipment placement, identifying both potential sources of emissions and the need for sensor placement for process reasons. The final outcome is the ability to create a process flow chart, using diagramming and process flowcharting tools, together with quantitative process continuity assurance.

Course topics

none

Teaching methods

Discussion of the methodology of formulating mathematical relationships in the selected CAD environment necessary for design preparation, as well as creating a block structure of the process flow. The instructor assists students at this stage in the area of CAD tool use without solving any assigned design problems.
During the completion of the target credit projects, students are assisted in the operation of the software but make the design decisions for which they are responsible themselves.

Bibliography

Basic:
1. K. Schmidt, J. Sentek, J. Raabe, E. Bobryk, Podstawy technologii chemicznej. Procesy w przemyśle nieorganicznym. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2004.
2. A. Sobczyńska, J. Szymanowski, ”Bilanse masowe procesów stacjonarnych”, Wydawnic-two Politechniki Poznańskiej, Poznań 2003.
3. J. Kępiński, Technologia Chemiczna Nieorganiczna, PWN, Warszawa,1984.
4. E. Bortel, H. Koneczny, Zarys technologii chemicznej, PWN, Warszawa 1992
5. J. Molenda, Technologia Chemiczna, Wyd. Szk. i Ped., Warszawa 1997.
6. T. Grzywa, J. Molenda, Technologia podstawowych syntez chemicznych, tom 1 i tom 2, WNT, Warszawa 2008.
7. K. Staszak, K. Wieszczycka, B. Tylkowski, Chemical Technologies and Processes , de Gruyter,

2020.

Additional:
1. Praca zbiorowa pod redakcją W. Bobrownicki, Technologia chemiczna nieorganiczna, WNT, Warszawa 1965.
2. Current articles in the field of chemical technology.

Breakdown of average student's workload

	Hours	ECTS
Total workload	55	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	25	1,00