POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Technological project of obtaining active pharmaceutical or cosmetic ingredients [S1IFar1>PTOASFIK]

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 (e.g. online)
0

Tutorials
0

Projects/seminars
30

Number of credit points

2,00

Coordinators

dr hab. inż. Katarzyna Dopierała
katarzyna.dopierala@put.poznan.pl

dr hab. inż. Katarzyna Staszak
katarzyna.staszak@put.poznan.pl

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. Student has knowledge of computer science to the extent necessary to formulate and solve simple calculation and design tasks related to pharmaceutical engineering. Student has basic knowledge of natural and synthetic raw materials, products and processes used in the pharmaceutical industry.

Course objective

The aim of the course is to learn how to balance technological processes in the field of obtaining active pharmaceutical and cosmetic ingredients and how to solve such constructed problems with the use of Mathcad numerical calculation tool. The second aim is to learn the correct distribution of control and measurement aperture in the process diagram.

Course-related learning outcomes

Knowledge:
student has knowledge about natural and synthetic raw materials, products and processes used in the pharmaceutical industry and about the directions of development of the pharmaceutical industry in poland and worldwide. he knows the basics of control and measurement systems and control systems (k_w13, k_w14, k_w19).

Skills:
student is able to formulate and solve complex engineering problems (typical and unusual) connected with pharmaceutical engineering by simulation methods. student is able to read and execute technological diagrams and is able to use a selected computer program to create them. moreover, student uses computer programs which support the realization of tasks typical for pharmaceutical engineering. in the professional and research environment, student is able to plan and organise individual and team work and work both individually and as a team (k_u13, k_u18, k_u19, k_u25).

Social competences:
student is ready to make decisions on his/her own and to lead a team, to critically assess his/her own and the team"s actions, to take responsibility for the effects of those actions and is able to cooperate and work in a group, inspire and integrate the professional environment (k_k2).

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Semester evaluation of the completed project, consisting of a preliminary pre-project analysis, the quality of the completed project and the preparation of the final report and assessment of the ability to solve issues related to mass balance of stationary processes.
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

Building mass balances in the form of mathematical equations and solving them with a numerical tool - the Mathcad program. Using the tools for creating diagrams and technological diagrams - Ms Visio.

Teaching methods

Presentation of aproaches for equation resolution and nonlinear equation systems with the Mathcad tool. At this stage, the teacher assists students in using the CAD tool without solving any design problems.
During the completion of target credit projects, students are assisted in the functioning of the software, but they make their own design decisions for which they are responsible

Bibliography

Basic
1. E. Kociołek - Balawejder, Technologia chemiczna organiczna - wybrane zagadnienia, Uniwersytet Ekonomiczny we Wrocławiu, 2013
2. E. Kociołek - Balawejder, Technologia chemiczna nieorganiczna - wybrane zagadnienia, Uniwersytet Ekonomiczny we Wrocławiu, 2013.
3. T. Tkaczyński, D. Tkaczyńska, Synteza i technologia chemiczna leków: podręcznik dla studentów farmacji, Państwowy Zakład Wydawnictw Lekarskich (PZWL), Warszawa, 1984.
4. S. Janicki, A. Fiebig, M. Sznitowska, Farmacja stosowana. Podręcznik dla studentów farmacji, Państwowy Zakład Wydawnictw Lekarskich (PZWL), Warszawa, 2008.
5. K. Schmidt, J. Sentek, J. Raabe, E. Bobryk, Podstawy technologii chemicznej. Procesy w przemyśle nieorganicznym. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2004.
6. A. Sobczyńska, J. Szymanowski, ”Bilanse masowe procesów stacjonarnych”, Wydawnictwo Politechniki Poznańskiej, Poznań 2003.
Additional
1. K.H. Bauer, Technologia postaci leku z elementami biofarmacji, MedPharm Polska, 2012.

2. J. Kępiński, Technologia Chemiczna Nieorganiczna, PWN, Warszawa,1984.
3. E. Bortel, H. Koneczny, Zarys technologii chemicznej, PWN, Warszawa 1992.
4. J. Molenda, Technologia Chemiczna, Wyd. Szk. i Ped., Warszawa 1997.
5. T. Grzywa, J. Molenda, Technologia podstawowych syntez chemicznych, tom 1 i tom 2, WNT, Warszawa, 2008
6. Current articles in the field of chemical and pharmaceutical industry.

Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,00
Classes requiring direct contact with the teacher	35	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	25	1,00