Detailed course description
(SUBJECT CARD)

Course title: Problem seminar
Course code:
Affiliation to a course group:
Course type: core
obligatory
Field of study: Industrial and Engineering Chemistry
Level of study: first-cycle programme
Study profile: general academic
Mode of study: full-time programme
Specialty (specialisation):
Year of study: 2019/2020
Semester:
Teaching modes and teaching hours:
seminar – 15 h

Language/s of instruction: English
Number of ECTS credits *(according to the study programme)*: 2
* – *leave the appropriate option*

1. Course objectives:

2. Relating the field-specific learning outcomes to teaching modes, verification methods and assessment of student's learning outcomes:

symbol	assumed learning outcomes *a student who completed the course:*	teaching modes	verification methods and learning outcome assessment
Knowledge: a student knows and understands			
K1A_W07	has ordered, theoretically founded general knowledge in inorganic, organic, physical, analytical and chemical engineering chemistry	project	presentation
K1A_W09	knows the basics of kinetics, thermodynamics and catalysis of chemical processes	project	presentation
K1A_W12	has basic knowledge in the field of chemical engineering, machine science and the apparatus of the chemical industry	project	presentation
Skills: a student can			
K1A_U05	uses computer programs to support the implementation of tasks typical of chemical technology and engineering	project	presentation
K1A_U08	based on general knowledge, explains the basic phenomena associated with relevant processes in chemical technology and engineering	project	presentation
K1A_U08	applies the principles of thermodynamics in the implementation of chemical and unit processes	project	presentation
Social competences: a student is able to			
K1_K01	understands the need for further training and raising their professional and personal competences	project	observation, discussion

3. Study programme contents ensuring the learning outcomes *(according to the study programme)*: solves simple engineering tasks related to the implementation of unit processes and operations in production

4. Description of methods to determine the ECTS credits:

Type of activity	Number of hours / ECTS credits
Number of course hours regardless of a teaching mode	15/0,5
Student workload preparation for the course	15/0,5
Student workload preparation of a course report	30/1,0
Other	-
Total hours:	**60**
Number of ECTS credits allocated for a course	**2,0**

Description:
* – student workload, types of activities need to be provided, e.g. preparation for the course, interpretation of results, preparation of a course report, preparation for the examination, getting familiar with the literature, preparation of a project, presentation, written work, report, etc.
** – other e.g. additional course hours

5. Summary indicators:
   - number of course hours and ECTS credits at the course with a direct participation of academic teachers or other persons teaching the course and students: 15 h/0,5 pt.
   - number of course hours and ECTS credits at the course related to the scientific activity conducted at the Silesian University of Technology in a discipline or in disciplines to which a field of study is assigned - in the case of studies with a general academic profile: 60 h/2 pts.
   - number of course hours and ECTS credits at the course shaping practical skills - in the case of practical studies: 45/1,5 pts.
   - number of course hours conducted by academic teachers employed by the Silesian University of Technology as their primary workplace: 15/0,5 pt.
6. Persons conducting particular types of courses (name, surname, academic degree or degree in arts, title of professor, business e-mail address):

   Grzegorz Dzido, DSc, PhD, Eng, gdzido@polsl.pl
7. Detailed description of teaching modes:

   1) lectures:

      – detailed programme contents:

      The classes are of project nature, but they require theoretical introduction necessary for the efficient implementation of the project. Students will be briefly presented on issues related to material and energy balance of chemical processes, heat and mass transport kinetics, numerical solving of differential equations, and algebraic equation systems. The methods of approximate solution of differential equations using Excel and Word software will also be presented.

      – teaching methods, including distant learning:

      using the distance learning platform as a digital repository for materials necessary to conduct lectures, laboratory exercises and final test, the basis for asynchronous communication with students,

      – form and criteria for successful semester completion, including retakes, as well as the conditions for admission to the examination:

      The condition of passing the course is to independently develop a selected topic in the field of chemical technology or engineering and to present the results of their work during a public seminar. Paper version of final report presenting results of the project will also be required. Students can retake classes they were absent as part of their own work or consultation.

      – course organisation and rules of participation in the course, with an indication whether a student ‘s attendance is obligatory

      In the first phase of the project, classes will be conducted using multimedia presentations prepared at the Power Point. Then the individual classes will be conducted in a computer laboratory providing access to the Excel application. At this stage, students will independently calculate the development of their problem based on previously prepared materials. Great emphasis will be placed on the independent work of students in the field of data collection and preparation. Students' attendance is obligatory and will be checked.

   2) description of other teaching methods:

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8. Description of the method to determine the final grade (rules and criteria for evaluation, as well as a calculation method for the evaluation in the case of a course which includes more than one teaching mode, including all teaching modes and all examination and credit dates including retake examinations):

   The final grade will be determined on the basis of an analysis of the content of the presentation and the final paper report.
9. Method and procedure for filling up arrears resulting from:

   - student's absence from the course,

   The student has the opportunity to work up the unaccomplished activities as part of the consultation or

own work,

- differences in study programmes for persons changing a field of study, changing university or resuming studies at the Silesian University of Technology,

In order to compensate for differences in study programs, a student who has moved from another university or resumed studies may be required to participate in part of the class or prepare an independent study on the subject of the subject differences in the program.

10. Prerequisites and additional requirements, taking into account the course sequence:

Mathematics, Physics, IT and programming laboratory.

11. Recommended sources and teaching aids:

B.A. Finalyson, Introduction to chemical engineering computing, Wiley, 2012

J. Ingham, I. Dunn, E. Heinzle, J. Prenosil, Chemical engineering dynamics, Wiley, 1996

Z. Pakowski, M. Głębowski, Symulacja procesów inżynierii chemicznej. Wydawnictwo Politechniki Łódzkiej, Łódź 2001

12. Description of teacher's competences (e.g. publications, professional experience, certificates, trainings etc. related to the programme contents implemented as part of the course):

The teacher has many years of experience in teaching on topics closely related to the content of the subject in the field of Chemical Engineering and Chemical Technology. The person conducting the course completed post-graduate studies in the field of: Computer networks, microcomputer systems and databases, at the Faculty of Automatic Control, Electronics and Computer Science.

13. Other information:

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