COURSE DESCRIPTION CARD - SYLLABUS

Course name
History of chemical science and industry [S2TCh2E-KiN>HNCiPC]

Course

Field of study
Chemical Technology

Year/Semester
2/3

Area of study (specialization)
Composites and Nanomaterials

Profile of study
general academic

Level of study
second-cycle

Course offered in
english

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
0

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

Students starting this subject should possess a basic knowledge in the field of chemical sciences, i.e. chemistry, electrochemistry, chemical technology, and chemical engineering. He/she should also be able to obtain information from the indicated sources.

Course objective

To provide students with the basic knowledge regarding the history of chemistry and industry, persons and teams working on given laws, phenomena or processes. To develop students' ability to perceive and analyze processes leading to the presented discoveries and inventions. Knowledge • the student has a well-established knowledge about the processes and people leading to the development of theories, phenomena and discoveries in the field of chemical sciences and the latest chemical and material technologies • knows the trends in the development of chemical industrial processes Skills • the student has the ability to acquire and critically evaluate historical information and descriptions presented in literature and other available sources and, on this basis, formulate opinions a given discovery • can critically analyze the industrial chemical processes by utilizing the acquired knowledge about the achievements in the field of chemical sciences and industry Social competences • the student is aware of the possibilities and limitations of a man and a research team in the usefulness of knowledge, laboratory aids and advanced technologies for the development of science and technology • understands that the knowledge and skills needed to analyze a given process or phenomenon relatively quickly become obsolete and, at the same time, they are necessary for the raise and further development of the scientific issues

Course-related learning outcomes

Knowledge:
-

Skills:
-

Social competences:
-

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge acquired during the course is verified by a colloquium, consisting of about 50 questions (mainly test and several open); passing threshold: 50% of points. Final issues on the basis of which questions are developed are presented to students thematically after each lecture, and then, they are sent in full using the university e-mail system.

Programme content

The program content includes the procedures of discoveries, view development processes, and key characters associated with:
• atom's construction
• the laws of ideal and real gas,
• the discovery of electricity, the invention of energy storage and conversion devices
• the discoveries of the individual elements and formation of the periodic table
• the influence of observations conducted by philosophers living in antiquity on the development of modern science
• the impact of collaboration of outstanding scientists on the development of chemical sciences in the 20th century
• the classification of surrounding phenomena and laws according to classical mechanics and quantum theories
• the discoveries and scientists awarded by the Nobel prizes in chemistry and physics
• perceiving differences and relationships between theory and practice (mathematical description of phenomena and conducted experiments) affecting the changes in the individual postulates over the centuries
• the Industrial Revolution
• the development of chemical engineering and increasing the scale of production of individual compounds and chemical substances
• the development of chemical technology and new trends in the implementation of industrial processes

Teaching methods

multimedia presentation (PowerPoint) illustrated with examples on the blackboard

Bibliography

Basic:
1. Partington, J. R., History of Chemistry. Macmillan Education, Limited: 1964.
2. Partington, J. R., A Short History of Chemistry. Dover Publications: 1989.
3. Debus, A. G., The Significance of Chemical History. Ambix 1985, 32 (1), 1-14.

Additional:
4. Mehra, J.; Rechenberg, H., The Historical Development of Quantum Theory. Springer New York: 2000.
5. Scerri, E. R., The Periodic Table: Its Story and Its Significance. Oxford University Press, USA: 2007.
6. Pullman, B.; Reisinger, A. R., The Atom in the History of Human Thought. Oxford University Press: 2001.
7. Priestley, J., The History and Present State of Electricity: With Original Experiments. J. Dodsley, J. Johnson, B. Davenport, and T. Cadell: 1767.
8. Agassi, J., Science and Its History: A Reassessment of the Historiography of Science. Springer Netherlands: 2008.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	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)	20	1,00