

Course description

Course abbreviation:	KCH/PRUCH	Page:	1 / 3
Course name:	Industrial Chemistry		
Academic Year:	2016/2017	Printed:	22.05.2018 10:10

Department/Unit /	KCH / PRUCH	Academic Year	2016/2017
Title	Industrial Chemistry	Type of completion	Exam
Accredited/Credits	Yes, 4 Cred.	Type of completion	Oral
Number of hours	Přednáška 2 [Hours/Week]		
Occ/max	Status A Status B Status C	Course credit prior to	NO
Summer semester	0 / - 0 / - 0 / -	Counted into average	YES
Winter semester	19 / - 2 / - 1 / 1	Min. (B+C) students	not determined
Timetable	Yes	Repeated registration	NO
Language of instruction	Czech	Semester taught	Winter semester
Substituted course	None	Internship duration	0
Preclusive courses	N/A		
Prerequisite	N/A		
Informally recommended courses	N/A		
Courses depending on this Course	N/A		

Course objectives:

Aims

The subject explains processing of basic chemical raw materials and the large-scale productions of the most important chemical products. It covers a field of metals production, carbonization of coal, petrochemistry, basic organic chemistry, zymurgy, macromolecular compounds, and pesticides preparation.

Requirements on student

Requirements

Evaluation of oral exam at least grading "good".

Evaluation of the subject as well as the exam grading is made according to the articles No 31 - 33 in the Regulations on Study and Examinations University of Ostrava

Content

Content

1. Water treatment technology (acquiring and treatment for various applications).
2. Production of the technical gases (oxygen, nitrogen etc.)
3. Sulphur industry (sulphur acquiring and production of the most important products - sulphuric acid, carbon disulphide etc.)
4. Nitrogen industry (nitrogen acquiring and production of the most important products - ammonia, nitric acid, urea, hydrogen cyanide etc.). Acquiring and processing of sodium chloride (production of soda, hydrogen, chlorine, sodium hydroxide, hydrogen chloride and hydrochloric acid.
4. Iron production.
5. Non-ferrous metals production (Cu, Al, Zn, Pb).
6. Production of silicates (cement, glass, ceramics etc.). Production of the inorganic fertilizers.
7. Production of inorganic pigments. Electrothermic products.
8. Carbonization of coal. Petrochemistry (production of alkenes, dienes, acetylene, aromatic hydrocarbons, synthesis gases, methanol, oxo synthesis etc.). Production of basic organic compounds (acetaldehyde, acetic acid and acetic anhydride, ethanol, vinyl chloride, phenol, acetone, aniline etc.).
9. Macromolecular compounds (classification, preparation and application).
10. Tenzides (classification, examples and application). Production of cellulose and paper.
11. Pesticides (classification, examples and application of herbicides, fungicides, insecticides). Production of explosives (low

explosive, high explosives, primary explosives).

12. Technology of food and zymurgy industry (sugar, potato starch, malt, beer, ethanol, yeast, acetic acid etc.).

13. Organic dyes (structure vs. chromaticity, classification and examples of individual dyes. Production of the medicine drugs.

Prerequisites - other information about course preconditions

none

Competences acquired

Competences

The students acquire overview of basic procedures of chemical technology. They know water treatment and orientate in the problems of sulphur and nitrogen industry. They can describe production of the technical gases and the inorganic acids, they can describe the basic procedures of both ferrous and non-ferrous metals productions. They orientate in the problems of the organic technology, petrochemistry, carbonization of coal etc. They have basic idea about production of tenzides, fertilizers, explosives, dyes, pesticides etc. They are able to orientate in the adequate professional literature.

Fields of study

Guarantors and lecturers

- **Guarantors:** doc. RNDr. Roman Maršálek, Ph.D.
- **Lecturer:** doc. RNDr. Roman Maršálek, Ph.D.

Literature

- **Recommended:** Mocik,S., Mikulášek,S., Gavorník,S. *Chemická technológia, Slovenské pedagogické nakladateľstvo, Bratislava 1979..*
- **Recommended:** Greenwood N.N, Earnshaw A. *Chemie prvků (I + II), Informatorium, Praha 1993..*
- **Recommended:** Neiser,J. a kol. *Obecná chemická technologie, Státní pedagogické nakladatelství, Praha 1981.. &, &.*

Time requirements

Activities	Time requirements for activity [h]
Being present in classes	26
Self-tutoring	14
Preparation for an exam	50
Consultation of work with the teacher/tutor (incl. electronic)	10
Total:	100

assessment methods

professional knowledge

Oral examination

Written examination

teaching methods

professional knowledge

Monologic (explanation, lecture, briefing)

learning outcomes

professional knowledge - knowledge resulting from the course:

Competences

The students acquire overview of basic procedures of chemical technology. They know water treatment and orientate in the problems of sulphur and nitrogen industry. They can describe production of the technical gases and the inorganic acids, they can describe the basic procedures of both ferrous and non-ferrous metals productions. They orientate in the problems of the

organic technology, petrochemistry, carbonization of coal etc. They have basic idea about production of tensides, fertilizers, explosives, dyes, pesticides etc. They are able to orientate in the adequate professional literature.

Course is included in study programmes:

Study Programme	Type of	Form of	Branch	Stage	St. plan	v. Year	Block	Status	R.year	R.
Chemistry	Bachelor	Full-time	Chemistry	1	2012	2016	Povinně předměty	A	2	ZS
Chemistry	Bachelor	Full-time	Chemistry with Other Degree Specialization	1	2	2016	Povinně volitelné předměty	B	3	ZS
Chemistry	Bachelor	Full-time	Chemistry with Other Degree Specialization	1	2014	2016	Povinně volitelné předměty	B	3	ZS
Chemistry	Postgraduate e Master	Full-time	Teaching for Secondary Schools - Chemistry, Didactic Specializations	1	2	2016	Povinně volitelné předměty	B	2	ZS
Chemistry	Postgraduate e Master	Full-time	Teaching for Secondary Schools - Single- Specialization Chemistry	1	2	2016	Povinně volitelné předměty	B	2	ZS
Chemistry	Postgraduate e Master	Full-time	Teaching for Secondary Schools - Single- Specialization Chemistry	1	2015	2016	Povinně volitelné předměty	B	2	ZS
Physics	Bachelor	Full-time	Chemistry with Other Degree Specialization	1	2014	2016	Povinně volitelné předměty	B	3	ZS
Chemistry	Postgraduate e Master	Full-time	Učitelství chemie pro 2. stupeň základních škol a střední školy (dvouoborové)	1	2015	2016	Výběrové předměty	C		ZS