

Course description

Course abbreviation: KCH/SANAC
Course name: Seminar - Analytical Chemistry
Academic Year: 2016/2017

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Printed: 20.11.2017 03:02

Department/Unit /	KCH / SANAC	Academic Year	2016/2017
Title	Seminar - Analytical Chemistry	Type of completion	Pre-Exam Credit
Accredited/Credits	Yes, 2 Cred.	Type of completion	Oral
Number of hours	Seminář 2 [Hours/Week]	Course credit prior to	NO
Occ/max	Status A Status B Status C	Counted into average	NO
Summer semester	0 / 0 17 / - 0 / 0	Min. (B+C) students	not determined
Winter semester	0 / - 1 / - 0 / -	Repeated registration	NO
Timetable	Yes	Semester taught	Summer semester
Language of instruction	Czech	Počet dnů praxe	0
Substituted course	None		
Preclusive courses	N/A		
Prerequisite	N/A		
Informally recommended courses	N/A		
Courses depending on this Course	N/A		

Course objectives:

Aims

Practising of the theoretical topics of the subject course "Analytical chemistry" by means of the calculating exercises. It covers calculation of results of gravimetric and volumetric determination, the equilibrium systems in solutions, titration curves, and the statistical methods of the analytical methods and results evaluation.

Requirements on student

Requirements

Achieving minimum points in two written tests during semester - at least 75 % of total points (average from two tests). Otherwise achieving 75 % of points in the credit test.

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. + 2. Solutions. Formulation of the solutions composition, mixing of solution.
3. + 4. Real behaviour of the electrolytes solutions. Calculation pH -acids, bases, salts, buffers.
5. Precipitating equilibria. Calculation of precipitate solubility in the plain solvent, influencing of solubility by ions excess.
6. Calculation of result of the gravimetric determination.
7. + 8. Calculation of result of the volumetric determination.
9. Complex equilibria. Calculation of the ML complex stability, influence by the side reactions.
10. Redox equilibria. Calculation of redox potential and its influencing.
11. Calculation based on Nernst and Peters equation. Lambert-Beer law.
12. Errors of determination. Testing of results for accuracy and precision. Confidence interval.

Prerequisites - other information about course preconditions

none

Competences acquired

Competences

The students acquire ability to calculate exercises of analytical chemistry.

Studijní opory

Guarantors and lecturers

- **Guarantors:** doc. Ing. Zuzana Navrátilová, CSc.
- **Seminar lecturer:** Mgr. Martin Mucha, Ph.D.

Literature

- **Recommended:** Kotouček M. *Příklady z analytické chemie, PŘF UP, Olomouc 1987..*
- **Recommended:** Pánek P. a kol. *Základní výpočty v analytické chemii. Ostravská univerzita 1997..*

Time requirements

Activities	Time requirements for activity [h]
Being present in classes	26
Preparation for test	12
Preparation for a credit test	12
Total:	50

assessment methods

professional knowledge

Continuous analysis of student's achievements

teaching methods

professional knowledge

Dialogic (discussion, dialogue, brainstorming)

Kinetic and practical skills training

learning outcomes

professional knowledge - knowledge resulting from the course:

Competences

The students acquire ability to calculate exercises of analytical chemistry.

Course is included in study programmes:

Study Programme	Type of	Form of	Branch	Stage	St. plan v.	Year	Block	Status	R.year	R.
Applied Physics	Bachelor	Full-time	Biophysics	1	2014	2016	Povinně volitelné předměty	B	3	LS
Applied Physics	Bachelor	Full-time	Biophysics	1	2012	2016	Povinně volitelné předměty	B	3	LS
Chemistry	Bachelor	Full-time	Chemistry	1	2012	2016	Povinně volitelné předměty	B	2	LS