

# Course description

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

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

## Fields of study

## 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 a credit test	12
Preparation for test	12
<b>Total:</b>	<b>50</b>

## 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