

# Course description

<b>Course abbreviation:</b>	KCH/SAM	<b>Page:</b>	1 / 2
<b>Course name:</b>	Analytical Separation Methods		
<b>Academic Year:</b>	2016/2017	<b>Printed:</b>	22.05.2018 10:13

<b>Department/Unit /</b>	KCH / SAM	<b>Academic Year</b>	2016/2017
<b>Title</b>	Analytical Separation Methods	<b>Type of completion</b>	Exam
<b>Accredited/Credits</b>	Yes, 5 Cred.	<b>Type of completion</b>	
<b>Number of hours</b>	Lecture 2 [Hours/Week] Seminar 1 [Hours/Week]		
<b>Occ/max</b>	Status A      Status B      Status C	<b>Course credit prior to</b>	NO
<b>Summer semester</b>	0 / 0      0 / 0      0 / 0	<b>Counted into average</b>	YES
<b>Winter semester</b>	10 / -      0 / 0      0 / 1	<b>Min. (B+C) students</b>	not determined
<b>Timetable</b>	Yes	<b>Repeated registration</b>	NO
<b>Language of instruction</b>	Czech	<b>Semester taught</b>	Winter semester
<b>Substituted course</b>	None	<b>Internship duration</b>	0
<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:

Theoretical bases of separation processes, chromatographic and electromigration methods, basic principles of chiral separation

## Requirements on student

Test in the range of presented topics include written test and oral examination.

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

1. Introduction, literature. Basic principles of the analytical separations.
2. The separation methods - precipitation, extraction. membrane separations.
3. Chromatography - principles and theoretical bases (thermodynamic and kinetic theory), van Deemter equation. Techniques.
4. Chromatography - flat bed techniques.
5. Gas chromatography - principle, techniques, instrumentation. Application.
6. High performance liquid chromatography (HPLC) - principle, techniques, instrumentation. Application.
7. Ion chromatography - principle, instrumentation, application.
8. Affinity chromatography, chromatography with supercritical liquids.
9. Electromigration separation methods - flat bed and capillary. principles.
10. Electrophoresis, isotachopheresis - instrumentation, application
11. Bases and principles of chiral separations, techniques, application.
12. Mass spectrometry - principle, instrumentation, analyzers.
13. Mass spectrometry coupling with other separation methods.

Seminar trains qualitative and quantitative evaluation of chromatograms.

## Prerequisites - other information about course preconditions

none

## Competences acquired

obtaining of knowledge of separation analytical methods principles  
 orientation in the practical use of separation methods  
 obtaining of computations in the field of separation methods

## Fields of study

## Guarantors and lecturers

- **Guarantors:** doc. Ing. Zuzana Navrátilová, CSc.
- **Lecturer:** doc. Ing. Zuzana Navrátilová, CSc.
- **Seminar lecturer:** doc. Ing. Zuzana Navrátilová, CSc.

## Literature

- **Recommended:** K. Štulík a kol. *Analytické separační metody*. Karolinum UK Praha, 2004.

## Time requirements

Activities	Time requirements for activity [h]
Being present in classes	39
Scientific text studying in the Czech language	20
Self-tutoring	25
Preparation for an exam	35
Consultation of work with the teacher/tutor (incl. electronic)	6
<b>Total:</b>	<b>125</b>

## assessment methods

### professional knowledge

Oral examination

## teaching methods

### professional knowledge

Dialogic (discussion, dialogue, brainstorming)

Monologic (explanation, lecture, briefing)

## learning outcomes

### professional knowledge - knowledge resulting from the course:

obtaining of knowledge of separation analytical methods principles  
 orientation in the practical use of separation methods  
 obtaining of computations in the field of separation methods

## Course is included in study programmes:

Study Programme	Type of	Form of	Branch	Stage	St. plan v.	Year	Block	Status	R.year	R.
Chemistry	Postgraduate e Master	Full-time	Analytical Chemistry of Solid Phase	1	2013	2016	Povinné předměty	A	1	ZS