

Course description

Course abbreviation: KCH/CHEMO
Course name: Chemometry
Academic Year: 2016/2017

Page: 1 / 2

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|---|---|-------------------------------|-----------------|
| Department/Unit / | KCH / CHEMO | Academic Year | 2016/2017 |
| Title | Chemometry | Type of completion | Exam |
| Accredited/Credits | Yes, 4 Cred. | Type of completion | Combined |
| Number of hours | Přednáška 2 [Hours/Week] Cvičení 1 [Hours/Week] | Course credit prior to | NO |
| Occ/max | Status A Status B Status C | Counted into average | YES |
| Summer semester | 11 / - 0 / 0 0 / 0 | Min. (B+C) students | not determined |
| Winter semester | 0 / - 0 / - 0 / - | Repeated registration | NO |
| Timetable | Yes | Semester taught | Summer semester |
| Language of instruction | Czech | | |
| 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
The lectures give basic survey of methods used in the statistic treatment of experimental data. Explanation of theoretical bases is completed with many illustrations of particular methods used for the actual examples from chemical practice. The practical is focused on solution of the most common statistic tasks in the chemical research.

Requirements on student

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. Introduction into problems, variates
 2. One-dimensional data - point and interval estimation of parameters
 3. One-dimensional data - exploratory data analysis I
 4. One-dimensional data - exploratory data analysis II
 5. One-dimensional data - testing of hypotheses
 6. One-dimensional data - analysis of small sets
 7. Analysis variance - one-factor
 8. Analysis variance - two-factor
 9. Correlation and regression
 10. Regression diagnostics
 11. Calibration
 12. Bases of non-linear regression
 13. Introduction into multi-dimensional data analysis

Prerequisites - other information about course preconditions

none

Competences acquired

Competences

The students know methods used in the basic statistic treatment of experimental data. They can solve the basic statistic examples with use MS Excel.

Studijní opory

Guarantors and lecturers

- **Guarantors:** doc. RNDr. Václav Slovák, Ph.D.
- **Lecturer:** doc. RNDr. Václav Slovák, Ph.D.
- **Tutorial lecturer:** doc. RNDr. Václav Slovák, Ph.D.

Literature

- **Basic:** Pytela O. *Chemometrie. Skripta VŠCHT Pardubice (1993)*..
- **Recommended:** Meloun M., Militký J. *Statistické zpracování experimentálních dat. East Publishing Praha (1998)*..
- **Recommended:** Tvrdík J. *Základy statistické analýzy dat. Skripta OU (1998)*..

Time requirements

| Activities | Time requirements for activity [h] |
|--|------------------------------------|
| Being present in classes | 39 |
| Self-tutoring | 15 |
| Preparation for an exam | 36 |
| Consultation of work with the teacher/tutor (incl. electronic) | 10 |
| Total: | 100 |

assessment methods

professional knowledge

Written examination

prerequisite

professional knowledge

none

teaching methods

professional knowledge

Computer-based tutoring

Dialogic (discussion, dialogue, brainstorming)

Monologic (explanation, lecture, briefing)

learning outcomes

professional knowledge

Competences

The students know methods used in the basic statistic treatment of experimental data. They can solve the basic statistic examples with use MS Excel.

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 Master | Full-time | Analytical Chemistry of Solid Phase | 1 | 2013 | 2016 | Povinné předměty | A | 1 | LS |