

# Course description

|                             |                      |                 |                  |
|-----------------------------|----------------------|-----------------|------------------|
| <b>Course abbreviation:</b> | KCH/HISCH            | <b>Page:</b>    | 1 / 3            |
| <b>Course name:</b>         | History of Chemistry |                 |                  |
| <b>Academic Year:</b>       | 2016/2017            | <b>Printed:</b> | 23.09.2017 23:54 |

|   |   |                               |                 |
|---|---|-------------------------------|-----------------|
| <b>Department/Unit /</b>                | KCH / HISCH                                     | <b>Academic Year</b>          | 2016/2017       |
| <b>Title</b>                            | History of Chemistry                            | <b>Type of completion</b>     | Pre-Exam Credit |
| <b>Accredited/Credits</b>               | Yes, 3 Cred.                                    | <b>Type of completion</b>     | Oral            |
| <b>Number of hours</b>                  | Přednáška 1 [Hours/Week] Seminář 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 / -                     | <b>Counted into average</b>   | NO              |
| <b>Winter semester</b>                  | 0 / 0      17 / -      3 / 15                   | <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>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

Knowledge from the history of chemistry is a considerable motivation element in the chemistry education on all the types of schools. This one-term course includes the basic periods of development of the natural sciences and their main contribution from the point of view of the chemical disciplines development. An attention is played to the significant personalities credited for the chemistry development.

## 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. week - Era of the metals processing. Gold, silver, copper, iron, lead, tin.
2. week - Hellenic philosophy. Pre-Socratic era (Thales, Anaximandros, Herakleitos, Empedokles, Leukipos, and Demokritos). The top era of Greek philosophy (Socrates, Platon, Aristotle), philosophy after Aristotle's death.
3. week - Alchemy - Chinese, Greek-Egyptian, Arabian.
4. week - West European alchemy, alchemy in Bohemia.
5. week - Iatrochemistry and pneumochemistry, Paracelsus, Elmont, Boyle, Cavendish.
6. week - Phlogiston theory, Stahl, Priestley, Scheele.
7. week - The scientific based of chemistry, Lomonosov, Lavoisier, Dalton, Avogadro, Berzelius, Wohler, Liebig
8. week - Era of the periodic system formation, Dobereiner, Chancoirtois, Olding, Newlands, Mayer, Mendělejev, Brauner.
9. week - Structure of atom, radioactivity. Evolution of ideas about the atomic structure, Thompson, Rutherford, Planck, Bohr, Broglie, Heisenberg, Schrödinger. Radioactivity - Becquerel, Curie, Fermi, Hahn, Soddy.
10. week - Brief survey of the inorganic chemistry evolution, s-, p-, d- a f- elements - history of discovery, discoverers.
11. week - Brief survey of the organic chemistry evolution. Dye, indigo, vinegar, beer, alcohol, gunpowder, insecticides, caoutchouc (rubber), the synthetic macromolecular substances.
12. week - Brief survey of the biochemistry evolution. Vitamins, enzymes, narcotics, medicines, nucleic acids.
13. week - The Nobel prize winners, Nobel, van 't Hoff, Grignard, Richards, Haber, Ruzicka, Meitner, Curie - Sklodowska, Pauling, Crowfoot - Hodgkin.

**Prerequisites - other information about course preconditions**

none

**Competences acquired**

## Competences

The students know the basic historical discoveries from the field of chemistry and the related branches. They orientate in the historical development of the scientific chemical theories. They acquire skills to connect the historical discoveries with the present state. They critically work with conclusions of the historical discoveries and they interpret them suitably. They acquire bases of history in data. They can independently work with text, sort the historical data of discoveries and document the historical discoveries by presentation. They acquire the communicative competences (presentation), the learning competences (self-study), and the problem solving competences (data comparison).

**Studijní opory****Guarantors and lecturers**

- **Guarantors:** doc. RNDr. Jiří Kalina, Ph.D.
- **Lecturer:** doc. RNDr. Jiří Kalina, Ph.D.
- **Seminar lecturer:** doc. RNDr. Jiří Kalina, Ph.D.

**Literature**

- **Basic:** SOLÁROVÁ, M., LICHTEMBERG, K. *Vybrané kapitoly z historie chemie.* Brno, 2000.
- **Extending:** BUDIŠ, J. *Historie chemie slovem a obrazem.* Brno, 1995.
- **Recommended:** BANÝR, J. *Stručné dějiny chemie a chemické výroby.* Praha, 1995.

**Time requirements**

| Activities                                     | Time requirements for activity [h] |
|--|------------------------------------|
| Being present in classes                       | 26                                 |
| Self-tutoring                                  | 15                                 |
| Semestral work                                 | 15                                 |
| Scientific text studying in the Czech language | 5                                  |
| Preparation for a credit test                  | 14                                 |
| <b>Total:</b>                                  | <b>75</b>                          |

**assessment methods****professional knowledge**

- Continuous analysis of student's achievements
- Dialogue
- Written examination

**prerequisite****professional knowledge**

none

**teaching methods****professional knowledge**

- Dialogic (discussion, dialogue, brainstorming)
- Monologic (explanation, lecture, briefing)
- Projection (static, dynamic)
- Working with text (coursebook, book)

**learning outcomes****professional knowledge**

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**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 volitelné předměty | B      | 1      | ZS |
| Chemistry       | Bachelor | Full-time | Chemistry with Other Degree Specialization | 1     | 2        | 2016    | Výběrové předměty          | C      | 1      | ZS |
| Chemistry       | Bachelor | Full-time | Chemistry with Other Degree Specialization | 1     | 2014     | 2016    | Výběrové předměty          | C      | 1      | ZS |
| Physics         | Bachelor | Full-time | Chemistry with Other Degree Specialization | 1     | 2014     | 2016    | Výběrové předměty          | C      | 1      | ZS |