

Course syllabus

Inledande kemi Introductory Chemistry

KOOA20, 7,5 credits, G1 (First Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED B/K

Date of Decision: 2023-04-18

General Information

Main field: Technology.

Compulsory for: B1, K1

Language of instruction: The course will be given in Swedish

Aim

The course shall give a basic understanding of and knowledge about the structure of atoms and molecules and their interactions, as well as give a basis for continued studies in chemistry. It should also provide necessary knowledge in chemical terminology in English as well as in Swedish.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- be able to use chemical nomenclature in order to name and give formulas for inorganic and organic substances as well as to use basic chemical concepts and terminology.
- be familiar with basic models for the atom, electron configuration and the relationship between these and the periodic table as well as with atomic orbitals.
- have basic knowledge of chemical analysis

Competences and skills

For a passing grade the student must

- be able to perform basic laboratory work and to perform risk analysis in connection with this.

- be able to derive molecular geometry and from this draw conclusions about intermolecular forces and their significance for physical properties in solid and liquid substances.

Judgement and approach

For a passing grade the student must

- be able to evaluate risks with chemicals, both in the laboratory and in the environment
- be able to collect, present and evaluate results from practical experiments.

Contents

Fundamental chemical phenomena are discussed and explained using connections to everyday applications. The following topics will be covered:

- Fundamental chemical concepts and nomenclature.
- Basic experimental work
- The build up of atoms and the periodic table
- Chemical formulas, reactions and stoichiometry
- Gaseous, liquid and solid phases
- Phase transformations
- Solutions
- The chemical bond
- Molecular geometry
- Intermolecular forces (dispersion forces, hydrogen bonds, dipole-dipole, ion-dipole).
- Risks in the chemical laboratory
- Chemistry and the environment

Active work with solving problems plays an important role in the course.

The literature is in English and should be regarded as an introduction to the English language in the field of natural sciences.

Examination details

Grading scale: UG - (U,G) - (Fail, Pass)

Assessment: Continuous examination. Passed hand-in exercise is required. Passed tests, hand-in exercise, laboratory assignments and fire protection education will give the grade G. Failed continuous examination demands written final exam.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Parts

Code: 0117. **Name:** Laboratory Assignments.

Credits: 1,5. **Grading scale:** UG. **Assessment:** Active participation in the laboratory assignments. Approved reports. **Contents:** Compulsory laboratory assignments related to the course content.

Code: 0217. **Name:** Compulsory Exercises and Tests.

Credits: 6. **Grading scale:** UG. **Assessment:** Continuous examination. Passed hand-in exercise is required. Passed tests and hand-in exercise will give the grade G. Failed continuous examination demands written final exam. **Contents:** Compulsory exercises and tests.

Code: 0317. **Name:** Fire Protection Education.

Credits: 0. **Grading scale:** UG.

Admission

The number of participants is limited to: No

The course overlaps following course/s: KOOA01, KOOA05, KOO101, KOK012, KOOA10

Reading list

- Atkins, Jones, Laverman, Patterson, Young: Chemical Principles: The Quest for Insight, 8:e upplagan. Macmillan learning, 2023, ISBN: 9781319498498.
- Aylward, G & Findlay, T: SI Chemical Data, 7:e upplagan. Wiley , 2014, ISBN: 9780730302469.
- Laboratory manual.
- Ellervik, U, Kann, N och Sterner, O: Organisk kemi, 3:e upplagan. Studentlitteratur, 2014, ISBN: 978-91-44-09991-0.

Contact and other information

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Course homepage: http://www.kilu.lu.se/cas/education/undergraduate_education/