Reg No: FYGL09/20181

Faculty of Health, Science and Technology
Physics

Syllabus

Science and Technology for Primary teachers in grades 4-6, Chemistry

Course Code:	FYGL09
Course Title:	Science and Technology for Primary teachers in grades 4-6, Chemistry *Naturvetenskap och teknik för grundlärare i årskurs 4-6, kemi*
Credits:	7.5
Degree Level:	Undergraduate level
Progressive Specialisation:	First cycle, has at least 60 credits in first-cycle course/s as entry requirements (G2F)

Major Field of Study:

Course Approval
The syllabus was approved by the Faculty of Health, Science and Technology 2017-09-08, and is valid from the Spring semester 2018 at Karlstad University.

Prerequisites
At least 60 completed course credits for the primary school (1-7) teacher education programme including at least 30 credits in mathematics, or teaching in primary school without formal qualifications for at least eight years.

Learning Outcomes
The aim of the course is that students develop the knowledge and skills required to conduct, develop and evaluate teaching activities in chemistry in primary education (grades 4-6).

Upon completion of the course, students should be able to:
1. explain and identify chemical phenomena through laboratory experiments,
2. make risk assessment and carry out experiements safely according to current legislation
3. describe the structure of matter and some basic chemical reactions,
4. describe the content of food in relation to the importance of nutrition and metabolism,
5. evaluate the use and impact of some common chemicals on health and the environment
6. give an account of some natural cycles and our participation in them
7. describe the the properties and compound of air and the properties of water
8. discuss learners' understanding of science and technology on the basis of teaching methodological theories and plan and conduct science investigations and laboratory experiments and give an account of how these can contribute to pupils' learning process,
9. give an account of different fossil fuels and their differences in structure and properties and the importance of the different sources to energy consumption.

Content
Throughout the course, issues of diversity, gender, subject-specific teaching methodology and sustainable development are treated.

From the chemical perspective ancient descriptions of the structure of matter and the shift of chemistry from magic and mysticism to modern science are explained. The concept of matter and its different stages and transitional phases are treated from a particle perspective. The photosynthesis, oxidation and other basic chemical reactions are explained. Different chemicals are labelled on the basis of their properties. Solution and compound are defined and experimentally different methods are tested to separate the components. Experiments are planned, conducted and evaluated.

The chemical perspective deals with the content of food and the importance of nutritions for health. Historical and contemporary methods to prolong the sustainability of food, common chemicals in the home and society and their use and impact on health and the environment are also treated. The labelling and handling of different chemicals in the home and surroundings are described.

The cycle of matter through the refining of raw products, how these are handled as waste and returned to nature are studied. The importance of fossil fuels to energy consumption and effects on the climate are problematised. Interpretation and examination of information related to chemistry, for instance in factual texts and articles are included.

The aesthetic perspective addresses how different worldviews are processed and expressed in in various art forms.

Reading List
See separate document.

Examination
Learning outcomes 1 and 8 are assessed on the basis of laboratory sessions.
Learning outcomes 2 and 5 are assessed on the basis of oral and written group presentations.
Learning outcomes 3, 4 6, 7 and 9 are assessed on the basis of a written exam.
Learning outcome 8 is assessed on the basis of group seminar.

All examination components are mandatory. All presentations or submissions for assessment must clearly indicate individual contributions.

Grades
One of the grades Distinction (VG), Pass (G), or Fail (U) is awarded in the examination of the course.

Quality Assurance
Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate
A course certificate will be provided upon request.

Additional information
The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.