

# Course Specifications

Valid as from the academic year 2018-2019

Course size (nominal values; actual values may depend on programme)  
Credits 6.0 Study time 180 h Contact hrs 60.0 h

Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	Dutch	seminar: coached	12.0 h
		exercises	12.0 h
		practicum	12.0 h
		lecture	36.0 h

Lecturers in academic year 2018-2019

Sabbe, Maarten	TW11	lecturer-in-charge
Reyniers, Marie-Françoise	TW11	co-lecturer

Offered in the following programmes in 2018-2019

	crdts	offering
Bachelor of Science in Engineering Technology (main subject Chemical Engineering Technology)	6	A
Bachelor of Science in Engineering Technology (main subject Civil Engineering Technology)	6	A
Bachelor of Science in Engineering Technology (main subject Electromechanical Engineering Technology)	6	A
Bachelor of Science in Engineering Technology (main subject Electronics and ICT Engineering Technology)	6	A
Bachelor of Science in Engineering Technology (main subject Information Engineering Technology)	6	A
Joint Section Bachelor of Science in Engineering Technology	6	A

Teaching languages

Dutch

Keywords

stoichiometry, atomic structure, chemical bonding, states of matter, chemical equilibrium, acids and bases, electrochemistry

Position of the course

The acquisition of basic chemical knowledge from an industrial engineering point of view forms the objective of this course. Gathering insights into basic chemical concepts of matter is the main goal, with specific attention to the applicability of theoretical concepts.

Contents

- Matter
- Stoichiometry in chemical formulas and chemical equations
- Atomic structure and chemical bonding
- States of matter
- Solutions
- Chemical equilibria
- Acid-base equilibria in aqueous solutions: pH-calculations, buffer solutions
- Solubility and precipitation in aqueous solutions
- Electrochemistry
- Introduction to organic nomenclature

The content and final competences of the General Chemistry course in Gent correspond to those of the General Chemistry course in Kortrijk.

Initial competences

The course starts with the elementary issues. Knowledge of the basic principles is an

advantage. It is assumed that at least the names and symbols of most frequent chemical elements are known.

#### Final competences

- 1 Have insight into the fundamental concepts, basic principles and chemical laws concerning the structure and transformation of matter.
- 2 Critical and correct translation of the theoretical and practical insights of general chemistry in problem situations.
- 3 Report information, problems, solutions and results of experiments, related to the general chemistry.
- 4 Control general lab skills and techniques in common laboratory practice.
- 5 Learn to act safe and environmental friendly.
- 6 Be able to work in teams

#### Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

#### Conditions for exam contract

This course unit cannot be taken via an exam contract

#### Teaching methods

Lecture, practicum, seminar: coached exercises

#### Extra information on the teaching methods

The practical exercises will be given in the form of demo-practica, PC-simulation practica as recommended by ACS, and wet lab sessions.

#### Learning materials and price

- Theory and theoretical exercises: Dutch course (ap 10 €), can be achieved by the start of the academic year
- Practical exercises: Dutch course (ap 5 €), can be achieved during first exercise + material (maximum 50€)

#### References

- "Chemical principles" 6th ed, 2009, Steven S. Zumdahl; D. C. Heath & Co, (ISBN 9780648946907).
- "Chemistry- principles & reactions" 6th ed, 2008. Masterton - Hurley; Saunders College Publishing, (ISBN 0495126713).
- "Chemistry" 6th ed. 2009. J. Mc Murry and R. Fay; Prentice Hall, Upper Saddle River, New Jersey 07458, (ISBN 0321760875).

#### Course content-related study coaching

- Student counselling service
- Additional support and explanation is provided by appointment
- Supplementary explanation is possible during the theoretical and practical exercises
- The additional theoretical exercises, found after each chapter, increase the insight in chemical concepts and theory. Consequently, students can test their knowledge temporarily.

#### Evaluation methods

end-of-term evaluation and continuous assessment

#### Examination methods in case of periodic evaluation during the first examination period

Written examination with open questions, written examination with multiple choice questions

#### Examination methods in case of periodic evaluation during the second examination period

Written examination with open questions, written examination with multiple choice questions

#### Examination methods in case of permanent evaluation

Written examination with open questions, written examination with multiple choice questions, participation, report

#### Possibilities of retake in case of permanent evaluation

examination during the second examination period is not possible

#### Extra information on the examination methods

In case of permanent evaluation:

- Practical exercises: attendance is compulsory. Unauthorized absence is sanctioned.
- The assessment of the permanent evaluation is maintained in the second examination period

#### Calculation of the examination mark

First examination period:

final score =  $0.3 * \text{points of NPE (permanent evaluation)} + 0.7 * \text{points PE1 (periodic evaluation 1)}$

Second examination period:

final score = Maximum (points PE2 ;  $0.3 * \text{points NPE} + 0.7 * \text{points PE2}$ )

In other words, the NPE only counts during the second examination period, if it is at the benefit of the student.

Please note:

The finale grade is calculated via the weighted average as described above. If for the PE 7/20 or less is obtained, the final grade will not be equal to the mathematical mean if this is 10 or above, and the student will be granted a score of 9/20.