Course Specifications
Valid as from the academic year 2019-2020

Electrochemistry and Chemical Kinetics (C003983)

Course size

<table>
<thead>
<tr>
<th>Credits</th>
<th>Study time</th>
<th>Contact hrs</th>
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<tbody>
<tr>
<td>4.0</td>
<td>115 h</td>
<td>43.7999</td>
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</tbody>
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Course offerings and teaching methods in academic year 2019-2020

A (semester 1) Dutch lecture seminar: coached exercises 22.5 h 10.0 h

Lecturers in academic year 2019-2020

Strubbe, Katrien WE06 lecturer-in-charge

Offered in the following programmes in 2019-2020

Bachelor of Science in Chemistry

4 A

Teaching languages

Dutch

Keywords

Ionic solutions, electrode potential, electrochemical equilibrium, chemical kinetics, rate of reaction, rate law, reaction mechanism

Position of the course

This course contains two parts.
Part 1 discusses the basic concepts of chemical kinetics
Part 2 follows on the course “Physical chemistry I” en discusses the thermodynamics of ionic solutions and equilibrium in the case charged particles are involved.

Contents

• Empirical chemical kinetics
• Chemical kinetics and reaction mechanism,
• Theories on electrolyte solutions
• Influence of ionic strength upon equilibria in ionic solutions
• Reversible electrodes, equilibrium potential of an electrochemical cell
• Standard electrode potentials
• Corrosion: principles
• Rate of electrode reactions

Initial competences

Have seen the courses "Physical Chemistry: thermodynamics " and 'Programming".

Final competences

1. To know and be able to apply basic concepts of chemical kinetics.
2. To have insight in the factors that determine rate and mechanism of chemical reactions.
3. To know how to incorporate and evaluate experimental results concerning the rate of chemical reactions.
4. To have insight into the fundamental concepts of chemical thermodynamics of electrolyte solutions and equilibrium electrochemistry.
5. To know the theories which explain the experimental behavior of electrolyte solutions.
6. To have insight in the factors which determine the equilibrium potential at an electrode.
7. To have insight in the construction and principles of an electrochemical cell and het applications.

Conditions for credit contract

(Approved)
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, self-reliant study activities, seminar: coached exercises

Extra information on the teaching methods

Seminars: application of the learning material
Independent work: to translate a specific part of the course in a simulation

Learning materials and price

Syllabus (Dutch)
Reference book (English)
Documents on Ufora

References


Course content-related study coaching

Possibility for personal explanation by the lecturer or assistant (on appointment)
Interactive support by ELO (forum)

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, oral examination

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

Written examination with open questions, oral examination

Examination methods in case of permanent evaluation

Assignment

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Extra information on the examination methods

Theory: Oral with written preparation, testing of knowledge and insight in the subject matter (see contents)
Exercises: testing whether the concepts can be used for solving concrete problems
Independent work: translate a specific part of the course in a simulation

Calculation of the examination mark

Theory (60 %)
Exercises (30 %)
Independent work: (10%)