Electrochemistry (E070900)

Valid as from the academic year 2017-2018

Course Specifications

Course size

<table>
<thead>
<tr>
<th>Credits</th>
<th>Study time</th>
<th>Contact hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0</td>
<td>90 h</td>
<td>30.0 h</td>
</tr>
</tbody>
</table>

Course offerings in academic year 2017-2018

A (semester 2)

Lecturers in academic year 2017-2018

Strubbe, Katrien

WE06 lecturer-in-charge

Offered in the following programmes in 2017-2018

<table>
<thead>
<tr>
<th>programme</th>
<th>credits</th>
<th>offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Science in Chemical Engineering</td>
<td>3</td>
<td>A</td>
</tr>
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<td>3</td>
<td>A</td>
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</tbody>
</table>

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

This course unit cannot be taken via an exam contract.

Teaching languages

Dutch

Keywords

ionic solutions, electrochemical equilibrium, electrode kinetics, corrosion, batteries

Position of the course

To gain insight in the behaviour of electrolyte solutions, the position of chemical equilibria in which ions are involved, equilibrium potentials at electrodes.

To gain insight in the mechanism of corrosion processes and the action of batteries and fuel cells.

Contents

- Ionic solutions: Thermodynamic properties of ions in solution, Arrhenius theory, Debye-Hückel theory, Equilibria in ionic solutions
- Equilibrium electrochemistry: Reversible electrodes, Equilibrium potential of an electrochemical cell, Standard electrode potentials,
- Corrosion and corrosion protection,
- Batteries and fuel cells

Initial competences

Physical chemistry: chemical thermodynamics

Final competences

1. To have insight in the behaviour of electrolyte solutions and know the current models and theories that explain this behavior.
2. To have insight in the concepts of electrochemical equilibrium at electrodes and the factors that influence this equilibrium.
3. To have insight in principles of corrosion and the different methods for protection.
4. To have knowledge of the most common batteries and their working action.
5. To have knowledge of the principles of fuel cells, their advantages and some practical problems concerning their applications.

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, seminar

(Approved)
Learning materials and price
syllabus (Dutch) on Minerva presentations, documents on Minerva

References

Course content-related study coaching
possibility for asking questions by e-mail or after making an appointment

Evaluation methods
end-of-term evaluation

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
Oral examination

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation
not applicable

Extra information on the examination methods

Calculation of the examination mark
the points on different questions are added up

Facilities for Working Students
make an appointment before the start of the semester