Course Specifications
Valid as from the academic year 2017-2018

Advanced Polymer Chemistry (C002965)

<table>
<thead>
<tr>
<th>Course size</th>
<th>(nominal values; actual values may depend on programme)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credits</td>
<td>3.0</td>
</tr>
<tr>
<td>Study time</td>
<td>75 h</td>
</tr>
<tr>
<td>Contact hrs</td>
<td>15.0 h</td>
</tr>
</tbody>
</table>

Course offerings and teaching methods in academic year 2017-2018

A (semester 1) lecture 15.0 h

Lecturers in academic year 2017-2018

- Du Prez, Filip WE07 lecturer-in-charge
- Badi, Nezha WE07 co-lecturer

Offered in the following programmes in 2017-2018

<table>
<thead>
<tr>
<th>Programme</th>
<th>crdts</th>
<th>offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Science in Chemistry</td>
<td>3</td>
<td>A</td>
</tr>
<tr>
<td>Master of Science in Chemical Engineering</td>
<td>3</td>
<td>A</td>
</tr>
<tr>
<td>Master of Science in Sustainable Materials Engineering</td>
<td>3</td>
<td>A</td>
</tr>
<tr>
<td>Master of Science in Chemical Engineering</td>
<td>3</td>
<td>A</td>
</tr>
<tr>
<td>Exchange Programme in Chemistry (master's level)</td>
<td>3</td>
<td>A</td>
</tr>
</tbody>
</table>

Teaching languages

- English

Keywords

- Polymers, polymer chemistry, polymerisations

Position of the course

This course starts from the content of the bachelor course ‘Introduction to Polymer Science’.
The student will get acquainted with the latest developments in the area of polymer chemistry, polymer modification methods and complex polymer architectures.

Contents

- Living polymerizations; controlled radical polymerizations: ATRP, NMP and RAFT;
- dendrimers and hyperbranched polymers; copolymers (random, block and graft); (bio) degradation of polymers; most efficient chemical transformations of synthetic and natural polymers (eg. ‘click’ chemistry); polymers from renewable resources;
- determination absolute molecular weights; self-healing polymer materials; polymeric capsules; recent developments in polymer chemistry.

Initial competences

Followed with success the course ‘introduction to polymer science’ or getting acquainted with the competences that were aimed for in this course.

Final competences

1. Having critical insight in the different methods to prepare polymers.
2. Being able to discuss relationships between different polymerisation methods.
3. Knowing of parameters that control the polymerisation reactions.
4. Getting acquainted with methods to build up complex polymer architectures.
5. Being open for new scientific developments within the rapidly developing area of polymer chemistry.

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

(Approved)
Teaching methods
   Lecture

Learning materials and price
   English slides electronically available

References
   -

Course content-related study coaching
   Interactive guidance via Minerva

Evaluation methods
   end-of-term evaluation

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

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

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation
   not applicable

Calculation of the examination mark
   The evaluation counts for 100%.