# Course Specifications

Valid as from the academic year 2019-2020

## Industrial Biotechnology (I700166)

### Course Specifications

<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>90 h</td>
</tr>
<tr>
<td>Contact hrs</td>
<td>36.0 h</td>
</tr>
</tbody>
</table>

## Course offerings and teaching methods in academic year 2019-2020

<table>
<thead>
<tr>
<th>A (semester 2)</th>
<th>Dutch</th>
<th>lecture phase</th>
<th>24.0 h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>excursion</td>
<td>4.0 h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>microteaching</td>
<td>2.0 h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>self-reliant study activities</td>
<td>6.0 h</td>
</tr>
</tbody>
</table>

## Lecturers in academic year 2019-2020

- Briers, Yves
  - LA25 lecturer-in-charge

## Offered in the following programmes in 2019-2020

<table>
<thead>
<tr>
<th>Master of Science in Biochemical Engineering Technology</th>
<th>crdts</th>
<th>offering</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>A</td>
</tr>
</tbody>
</table>

## Teaching languages

- Dutch

## Keywords

- Biocatalysis, fermentation, bio-based products, bio-economy, value chains, innovative thinking

## Position of the course

Industrial biotechnology uses micro-organisms (fermentation) and enzymes (biocatalysis) to produce bio-based products (both bulk and fine chemicals). These products may have novel functionalities or function as alternatives for products that are currently derived from fossil sources (drop-in molecules). Industrial biotechnology allows to shift to a more sustainable bio-economy by producing the chemical our society needs from renewable resources.

## Contents

This course will be given from an economical and practical perspective based on the biorefinery concept that aims to valorize all biomolecules present in sources of renewable biomass. With the use of industrial biotechnology molecules with added value are created. As such, different value chains can be defined starting from first and second generation sugars, lignin sidestreams, carbon capture, oils and fats, proteins and amino acids. The lectures are based on these different value chains. The biomass ressources, different technologies and processes based on industrial biotechnology and different market segments will be discussed. There will be particular attention for the use of GMOs in the industrial biotechnology.

In addition, a creative and innovative mindset will be stimulated. By participation at workshops or lectures, or invitation of guest lecturers, the pivotal role of innovation and entrepreneurship in the life science sector will be illustrated with different successful examples in our region. In a group work small teams of students will work on a topic of innovative thinking, acting in a responsible way in terms of society and sustainability and/or ethical concepts in the industrial biotechnology.

## Initial competences

**1.** Advanced insights and knowledge about the application of industrial biotechnology for the production of bio-based products in different value chains of a bio-economy.

## Final competences

1. A good understanding of economic, societal or sustainability factors that steer business decisions in industrial biotechnology.

(Approved)
3 Insights in the necessity for innovative thinking, a responsible attitude in terms of society and ethics, and the sustainability principle.

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
   Excursion, lecture, microteaching, self-reliant study activities

Learning materials and price

References

Course content-related study coaching

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

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

Examination methods in case of permanent evaluation
   Participation, peer assessment, report

Possibilities of retake in case of permanent evaluation
   examination during the second examination period is possible in modified form

Calculation of the examination mark

(Approved)