

Branch: Chemistry and Chemical Engineering



Code: INDBIO

Option: Industrial biotechnology

Level: Master

Prerequisites:

Opportunities:

As a graduate, you will gain opportunities in the entire field of bioprocess development and optimization: from the laboratory to the technical scale. Possible fields of activity are the chemical industry, the biotechnology sector, plant and equipment construction, the pharmaceutical industry and the environmental technology sector.

Description

Producing plastics from carbon dioxide (CO₂), silk with bacteria from renewable raw materials or liquid fuels from organic waste? The IBT course focuses on the industrial production of substances using new biocatalysts and biotechnological processes.

What is the subject of this course?

Industrial biotechnology ("white biotechnology") uses micro-organisms or their components (enzymes) as biocatalysts for the production of industrial substances. Products include specialty and fine chemicals, food and food additives, agricultural and pharmaceutical precursors, auxiliary materials for the processing industry, but increasingly also high-volume chemicals and fuels. White biotechnology" therefore focuses on renewable raw materials and

attempts to selectively transform them into value-added chemicals with the help of biological systems.

As a highly interdisciplinary science, industrial biotechnology encompasses, on the one hand, life sciences (molecular biology, biochemistry, microbiology and bioinformatics) in order to achieve new biocatalysts (enzymes and production organisms). On the other hand, methods from (bio) process engineering and technical chemistry are needed, in particular to be able to exploit the technical and industrial potential of new biocatalysts and to achieve new, efficient biological production processes on an industrial scale.

A special feature of this non-consecutive Master's program in industrial biotechnology is therefore also the interdisciplinary selection of students: Graduates from both bioscience and engineering degree programs can be admitted. Additional subject-related background knowledge (process engineering for bio scientists or biosciences for engineers) is taught specifically at the beginning of the MSc program in Industrial Biotechnology.

Quality and competences:

The objective of the Master's degree in Industrial Biotechnology at UUT is to train scientists with broad methodological and relevant expertise in the field of industrial biotechnology and thus to train highly qualified specialists at the interface between life sciences and process engineering to design and implement new biological processes in industrial production processes.

Graduates have complemented and expanded their previous knowledge in the field of natural sciences and engineering and also have in-depth specialist knowledge in the following specializations: enzymatic engineering, metabolic engineering, bioprocess engineering and bio separation engineering.