UNIVERSITÄT BAYREUTH

Master of Science

Biofabrication

The master's programme.

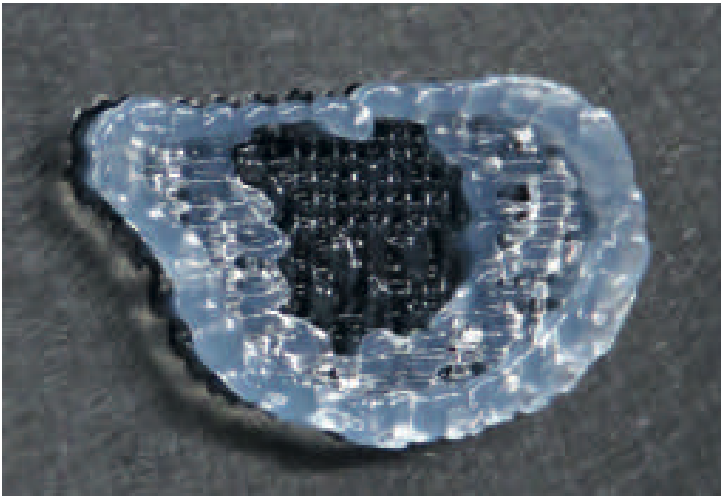




Biofabrication is a new technological field that focuses on manufacturing structures for biomedical applications.

Engineers in biomedicine.

Biofabrication is an emerging technology in the field of medical engineering. In particular, additive production processes (such as 3D printing) are expected to make important contributions to technological progress in the near term – and so is biofabrication. The internationally oriented master's programme Biofabrication is interdisciplinary in nature, representing an engineering curriculum at the intersection of technology, chemistry, materials science, biology, and medicine. We offer you the opportunity to work in a research area at the cutting edge of medical innovation. Students profit from our conveniently located key labs, including those at Bayreuth's Centre for Materials Science & Engineering (ZMW, TAO) and at the new Bavarian Polymer Institute.

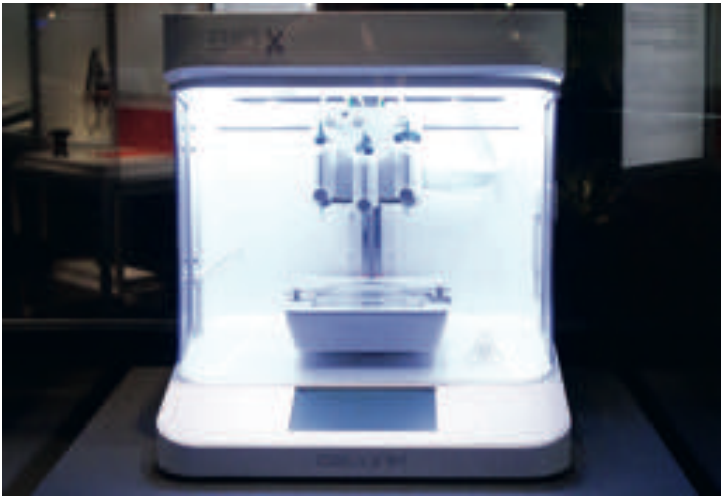


The programme offers a top-level selection of courses in English with a great deal of one-on-one supervision.

A full range of resources.

The master's programme Biofabrication is highly practice-oriented, offering you the opportunity to hone both your theoretical and practical skills. This combines with an excellent, far-reaching network of international partners in Australia, Thailand, France, the United States, the Netherlands, and Spain to give students plenty of ways to gain experience abroad.

The curriculum, the instructors, and the involvement of selected international partner universities and research institutions in the areas of biomaterial research and biofabrication all help enable a smooth transition to further postgraduate studies or a demanding scientific career.



An internationally oriented, interdisciplinary study programme at the intersection of materials science, the life sciences, and medical technology.

Help shape the future.

Biofabrication is considered a modern growth sector. There is an increasing demand for the skills addressed in the study programme in many different occupational fields:

- institutional and industrial research: fundamental research in medicine and biomedicine, especially in the area of medical engineering
- industrial development:
  developing medical implants and technical aids for diagnosis, therapy, and monitoring market approval for medical use
- clinical medical technology:
  operating complex systems, advising physicians, safety inspections

Module Overview

Biofabrication — ECTS 25

- *Biofabrication (5 ECTS)*
- *Cell Biology (5 ECTS)*
- *3 Core Elective Modules (5 ECTS points each)*

Biomaterials — ECTS 25

- *Biomaterials (5 ECTS)*
- *Medical Implant Engineering (5 ECTS)*
- *3 Core Elective Modules (2+1 rule, out of two routes, 5 ECTS each):*
  - *Route 1: Tissue Engineering*
  - *Route 2: Process Engineering*

Advanced Modules — ECTS 29

- *Summer Academy (5 ECTS)*

- *3 Advanced Modules (8 ECTS each)*

or

- *International Advanced Module (24 ECTS)*

Transferable Skills — ECTS 11

- *Scientific Working (5 ECTS)*
- *Management Training and Entrepreneurship (6 ECTS)*

Master's Thesis — ECTS 30

Total 120

Your master plan.

At the end of the four-semester, English-taught programme, the University of Bayreuth awards the degree "Master of Science", suffixed with "Biofabrication". The objective of the master's programme Biofabrication is to introduce you to interdisciplinary research topics and train you for a demanding, ethically responsible career as an engineer at the intersection of medicine and technology.



An ideal setting for academic success: top-level research and teaching, modern and practice-oriented technical facilities, and excellent supervision by the instructors.

Let's get started!

You have already earned a bachelor's degree in materials science and engineering, engineering science, or an equivalent degree with 180 ECTS points. In addition, your English is at the level of "B 2". Your German level should be basic (A1). You will also need to provide a 13-week industry internship and successfully complete the aptitude assessment process.

Once these requirements are matched, you are ready to "biofabricate".

Start of studies: summer term or winter term.

Further information regarding the admission process can be found on our website:

www.biofabrication.uni-bayreuth.de



Our modern campus with short paths and the award-winning International Office provide an ideal environment for internationally oriented degree programmes.

Reaping benefits from Bayreuth's strengths.

The University of Bayreuth is currently rated among the top young universities according to the Times Higher Education global ranking "150 under 50". This ranking focuses on the top 150 universities worldwide which were founded less than 50 years ago. As a medium-sized campus university, we put less emphasis on growth and more on ensuring the highest quality of our infrastructure. In doing so, the University of Bayreuth defines disciplinary and interdisciplinary focus areas ensuring a place among the best universities internationally. For example, while enrolled in the Biofabrication programme, we offer you a combination of comprehensive courses and research opportunities in the areas of bioengineering, biomaterials, measurement and control technology, surface technology, polymer processing and process technology that is unique in Germany.

UNIVERSITÄT BAYREUTH

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Got interested? Check also out our MOOC on Biomaterials & Biofabrication on edX:

https://www.mooc.uni-bayreuth.de/en/our-moocs/2-Biofabrication/index.html

Photos: L. Nahapetian, T. Jüngst, FMZ (ear), Deutsches Museum Nürnberg (Bioreaktor)