



UNIVERSITÄT
BAYREUTH

Master of Science

Digitalization & Sustainability in Materials Science & Engineering (DSMSE)

*Engineering Tomorrow: Where Digitalization meets
sustainable material development.*





Why DSMSE?

Materials have shaped our world and will continue to do so. At the same time, sustainability and digitalization have emerged as the most pressing issues of the 21st century. The close connection between these three areas is becoming increasingly important and will transform our future as this symbiosis can enable groundbreaking innovations for a sustainable development. Therefore, an interdisciplinary understanding of sustainability, digitalization, and materials science is crucial to successfully address the challenges of our time.

What you will learn studying DSMSE:

The program is designed to provide interconnected knowledge in the areas of materials science, digitalization and sustainability. By the end of the program, you will have gained the following key skills:

- Develop innovative materials and technologies for sustainable applications (e.g., lightweight materials for transportation or energy-efficient production lines through digital pathways)
- Apply digital methods in materials development (e.g. active learning methods in formulation development)
- Design concepts for the substitution of existing non-sustainable materials
- Evaluate existing material cycles & create circular economy concepts (e.g. closed loops for materials using digital methods)

Your job perspectives:

The Master's degree in DSMSE is your gateway to a world of possibilities! It offers an interdisciplinary education that prepares you for a broad spectrum of professional opportunities in the rapidly expanding fields of sustainability, digitalization, and advanced materials.

This program is perfect for you if you want to excel in management roles within business, industry, research, and public sector organizations. One of the key focuses of this program is on materials technology, which will help you to develop expertise that enables you to take on leadership and interface roles. You will also learn how to utilize your knowledge of digitalization and sustainability to drive innovation and progress.

Possible carrier fields in industry are in the areas of: Digital companies, raw materials industry, manufacturing industry, recycling and waste management, sustainability departments in all industries,...

Or pursue a more academic pathways including: Universities and Max Planck, Leibniz or Fraunhofer Institutes.



Structure and content of the degree program

As a student in the DSMSE Master's program..

... you will be able to bring together the three areas of materials science, digitalization, and sustainability.

- The program starts with a strong foundation in materials science, digitalization, and sustainability.
- From there, it deepens your knowledge through interdisciplinary focus areas.
- One of the key parts of the course is to apply what you've learned in a practical way. That's why there are lots of internships and research modules built into the program.
- To get a better understanding of the social, economic, and legal aspects of sustainability, you can take selected courses in these subject areas.

The degree program is designed in a way that it covers all the important subject areas, while still giving you the freedom to choose which subjects you want to focus on.

Basic Areas	ECTS
Connected Knowledge in Materials Science	7
Materials Science	15
Informatics	10
Sustainability	10
Focus Areas	25
<i>Sustainable Applications & Processes for Materials</i>	
<i>Circular Economy & Sustainable Raw Materials</i>	
<i>Digitalization in Materials Science</i>	
Research Module Area	12
Individual Knowledge Development	5
Social, Economical & Legal Aspects of Sustainability	6
Master Thesis	30
	120



Admission requirements

Qualification

A completed course of studies in the bachelor's program Materials Science and Engineering or Engineering Science at the University of Bayreuth or a degree equivalent thereto.

Equivalency

Equivalency of the completed bachelor's degree is the responsibility of the board of examiners and is not determined conclusively until the application process is under way; for this reason, no information can be provided in advance

Language Proficiency

ENGLISH: level B2 / GERMAN: level A1
(can be obtained during the first year of the program)

Application period:

1 March – 15 June (for winter semester)
1 September – 15 January (for summer semester)

Top campus university

Study conditions that achieve top marks in the rankings. The University of Bayreuth has around 12,500 students. It is characterized by its friendly campus.

Walking distances are short, and you will quickly get to know students from other disciplines. In national and international rankings, the University of Bayreuth regularly receives top ratings in terms of student support. Student life promises great variety even outside the lecture halls. You can get involved in a variety of student organisations or take advantage of the extensive range of university sports. There are also regular film screenings, art exhibitions, theatre performances, numerous music events, and the annual Uni OpenAir on campus.

In addition, the City of Bayreuth offers good housing at reasonable prices and a low overall cost of living. The leisure activities in town, in the Fichtelgebirge mountains, and the Franken Jura are also extremely attractive



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