

## Requirements and Course of Study

- Bachelor's Degree or equivalent diploma in Natural Sciences, Engineering, or a related discipline
- The degree must have been awarded with a grade (GPA) of "good" or better from a German or internationally accredited university
- German Language skills on level A2 have to be proven

This program welcomes both those who are employed full-time and wish to complete the Master's Course of Study part-time as well as those who wish to develop their career further through full-time study.

### Standard Full-Time Study

1st + 2nd Semester	Lectures, Lab Classes
3rd Semester	Master's Thesis

### Standard Part-Time Study

1st through 4th Semester	Lectures, Lab Classes
5th + 6th Semester	Master's Thesis

### Industrial Advisory Board

The course program has been developed in close consultation with industry. It is strongly supported by an Industrial Advisory Board, that includes representatives from regional companies, internationally recognized as leader. Among them are Airbus SE, ASM Assembly Systems GmbH und Co. KG, Robert Bosch GmbH, Infineon AG, Ketek GmbH, nextnano, and Texas Instruments Deutschland GmbH.

## Contact and Information

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Advisor for the Course of Study:  
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### Application

Semesterstart Oct 1st:  
May 2nd to June 15th

Semesterstart March 15th:  
November 15th to January 15th

Hochschule München University of Applied Sciences  
Office of Attendance and Registration  
Lothstr. 34, 80335 Munich, Germany  
Tel. 089 1265-5000  
[beratung@hm.edu](mailto:beratung@hm.edu)  
[hm.edu/master-bewerbung](http://hm.edu/master-bewerbung) (in German)



The HM Hochschule München University of Applied Sciences is Bavaria's largest institute of higher education in this field. Over 80 attractive and forward-looking degree courses lay the foundation for successful careers. Besides specialist skills, the university promotes sustainable and entrepreneurial mindsets and actions, as well as international and intercultural experiences, such as through stays abroad.

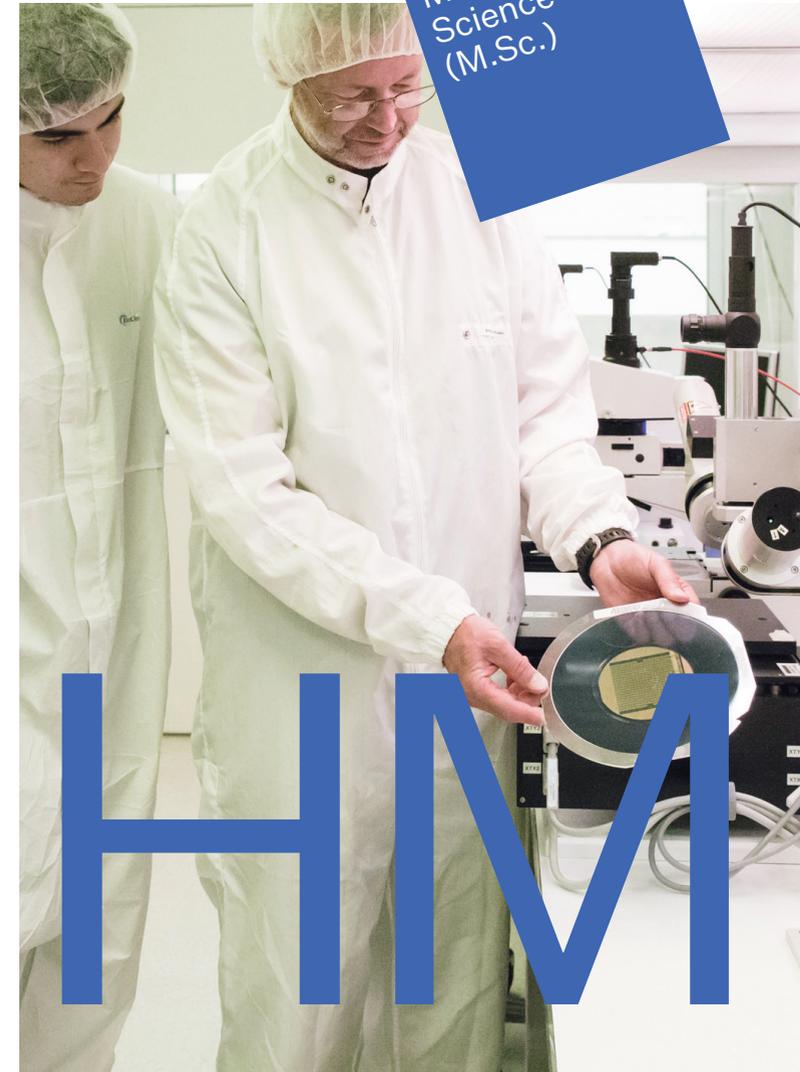
The departments imbue their students with vision, creativeness and a sense of shared responsibility as an ideal preparation for making a difference in their chosen professions and within society. Close contacts to companies at the high-tech location of Munich allow students to obtain practical experience during their studies. And last but not least: Munich's attractive cultural and leisure opportunities offer plenty of variety.

Hochschule  
München  
University of  
Applied Sciences

Fakultät für angewandte  
Naturwissenschaften  
und Mechatronik | 06

## Micro- and Nanotechnology

Master of  
Science  
(M.Sc.)



## Objectives

Micro- and Nanotechnology are part of nearly every aspect of modern life. The border between the two technologies is fluid; microelectronics has been conducted on a scale measured in nanometers for some time.

But applications and innovative products based on micro- and nanotechnologies are not limited to electronic components. Products on the market range from:

- Miniaturized electronic devices
- Dirt-shedding paints and scratch-free surface coatings
- Mechatronics systems such as the accelerometers which trigger airbags
- Cancer treatment, biochips, and microfluidic systems are essential to modern pharmaceutical research
- Smart textiles

You gain knowledge of the fabrication, research, and usage of smallest structures and systems. Further, interdisciplinary knowledge in technology and innovation management is imparted to be able to transfer research results from a highly innovative field quickly, effively, and cost-conscious into products ready for the market.

Micro- and Nanotechnology is a highly interdisciplinary academic field. The Course Catalog for this course of study reflects a huge spectrum of engineering and natural science disciplines, from the basics of quantum physics to biotechnology applications.

### Internationalisation

In order to provide our students international experiences, we offer

- Courses in English and German,
- Cooperation with partners in other European and non-European countries, e.g. Norway and Canada,
- Supporting Students to stay abroad

## Options

You are determined in developing your academic qualifications in a future-oriented discipline and are committed to furthering your knowledge of innovative micro- and nanotechnologies. This professional degree is recognized as a basis for further graduate work at institutions awarding the degree of Ph.D.

Graduates of the Course of Study Micro- and Nanotechnology are sought after in these sectors:

- Electronics, Aviation and Space Industries, Automobile Industry,
- Chemical Industry, Novel materials
- Health, Biotechnology, Pharma Industries
- Optics, Laser Technologies, Device Development
- Research and Instruction

### Certificate “Micro- and Nanotechnology“

An English program completed with a certificate in “Micro- and Nanotechnology: simulation, circuit design, and fabrication processes“ is offered extending over two semesters.

Modules	SWS	ECTS
Physical Modelling and Simulation	4	6
Design of Integrated Circuits	4	6
Micro- and Nanostructures	4	6
Lab Class	6	6
<b>Total</b>	<b>18</b>	<b>24</b>



## Courses and Modules

Required Courses	SWS	ECTS	WS	SS
Quantum Physics	10	12	x	
Micro- and Nanotechnological Devices	10	12		x
Microtechnology Lab Class	2	6	x	x
Nanotechnology Lab Class	2	6	x	x
Project Module	6	6	x	x
Colloquium	2	6	x	x
Master’s Thesis		24	x	x
<b>Elective Courses (2 are required) (MN1)</b>				
Micro- und Nanoanalytics	4	6		x
Electrochemical Storage and Converter Systems	4	6	x	
Boundary layers, Colloids, and Nanoparticles	4	6	x	
Micro- und Nanostructures	4	6	x	
Biomicro- and Bionanotechnology	4	6	x	
Micro- and Nanotechnology Materials	4	6		x
<b>Multidisciplinary Courses (A minimum of one is required) (MN2)</b>				
System Modelling and Optimiz.	4	6		x
Technology Management	4	6	x	
Knowledge Management	4	6		x
Quality Management and Applied Statistics	4	6	x	x
<b>Sector Specific Applications (At least 2 are required) (MN3)</b>				
Micro- and Fibre Optics	4	6	x	
Physical Modelling Simulation	4	6	x	
Design of Integrated Circuits	4	6		x
Quantum Sensing	4	6	x	
Applications in Medical, Chemical and Bioengineering	4	6		x
Applications in Electronics and IT	4	6		x
Photoacoustics for Material Characterization	4	6		x
Quantum Information	4	6		
<b>Total (Comprising 2 or 4 Semesters)</b>	<b>44</b>	<b>90</b>		

SWS= Semester Weekly Hours      WS= Winter Semester  
ECTS= European Credit Transfer System      SS= Summer Semester