



Master Microbiology

1. Study objectives and competence profile

Microbiology is one of the main research fields at the Institute for Chemistry and Biology of the Marine Environment (ICBM). This is reflected by the international Master program that introduces students into current research in marine and environmental Microbiology. The teaching language is English.

By benefitting from ongoing research programs in marine Science (as the DFG-funded collaborative research centre *Roseobacter*), as well as working in laboratories with state-of-the-art equipment for chemical analytics, modeling and molecular biology, the students gain deep understanding of microbial processes in marine ecosystems. Training of the students is performed in a way that enables them to critically assess scientific knowledge, and to take responsibility for their own decisions and actions. This is supported by working in international teams and by courses on scientific communication.

2. Educational objectives

The Master program comprises both basic research and applied aspects, which opens professional perspectives in science, industry and administration. The focus is set to research-oriented education of qualified microbiologists. By performing self-contained small research projects, and as a member of international teams, the students learn to handle scientific challenges. They acquire a broad range of methodical as well as social competences, which are the basis of a successful professional career.

The master's program Microbiology includes lectures, seminars, laboratory work and field trips to various institutions with microbiological orientation.

In the first year (1st and 2nd semester) all students complete two core modules, *Physiology and Diversity of Microorganisms* and *Molecular Mechanisms and Interactions*, which engross the basic knowledge acquired during the Bachelor studies. These mainly theoretical modules go along with 2- and 4-week practical courses (*Profile Modules* und *Main Modules*) including seminars. The objectives of these scholarships are the implementation of learned basics, in-depth practical skills and acquisition of detailed aspects of novel scientific approaches. By selecting five different areas from a broad range of courses the students can put early emphasis on specific research areas.

In the 3rd semester, each student independently carries out two six-week research projects. These projects cover a range of topics of current research and are offered from all working groups involved in the program. The supervision of students is done by a lecturer or by a PhD student. The students are encouraged to perform one of the two research projects at another academic institution in the country or abroad. One of the research projects is normally continued as master thesis.

The results of the main modules and research projects will be documented in written reports of scientific quality and presented in accompanying seminars. In the international Microbiological and ICBM colloquia, the students interact with external distinguished researchers.

The final phase (4th semester) is dedicated to the master thesis and its presentation and discussion. In general, the thesis is completed within in a period of 6 months. This work is presented in a public defense and discussion with the fellow students and supervisors involved. With the master's thesis and its presentation the students show that they can work on a scientific topic and communicate their work in an adequate manner.

3. Target matrix

Table: Target matrix of the Master of Microbiology program

Module acronym	Module	Acquisition of			
		Basic knowledge	Fachkompetenzen		
			Practical courses	Inter-disciplinarity	Key competences
1. Semester					
MPD	<i>Microbial Physiology and Diversity (VL+Ü+EX)</i>	++			
MM	<i>Main Module 1 (PR+SE)</i>	++	++	+	+
PM	<i>Profile Module 1 (PR+SE)</i>	++	++	+	+
2. Semester					
MMI	<i>Molecular Mechanisms and Interactions (VL+Ü+EX)</i>	++			
MM	<i>Main Module 2 (PR+SE)</i>	++	++	+	+
PM	<i>Profile Module 1 (PR+SE)</i>	++	++	+	+
3. Semester					
RP	<i>Research Project 1 (PR+SE)</i>		++	+	+
RP	<i>Research Project 2 (PR+SE)</i>		++	+	+
PM	<i>Profile Module 3 (PR+SE)</i>		++	+	+
4. Semester					
MT	<i>Master Thesis incl. Seminar (SE)</i>		++	+	++

++ Main focus of the module

+ Additional competences

Detailed aims of each module are described in the module handbook.