



## Course Plan Recommendation for the international Master of Science (M.Sc.) degree program in **Medical Informatics**

The **M.Sc.** degree program in **Medical Informatics** trains IT experts in the interdisciplinary science of the systematic acquisition, administration, storage, processing and provision of data, information and knowledge in medicine and healthcare. You will obtain skills and qualifications by applying principles, concepts and methods of computer science as well as of human medicine and natural sciences.

This **course plan** guides Master's students in Medical Informatics by providing additional explanations to the exam regulations currently in place and recommending courses in each respective semester. Course Plan Examples in this document consist of compulsory modules and related areas that can be combined freely. We encourage our students to design their own course of study that best suits their individual interests.

For **further information** regarding your studies and exams, please

- refer to the Computer Science Department's [Downloads](#) section;
- check the [FAQ Medical Informatics Master](#) site;
- review the course database (e.g. [Studies offered](#) via alma) for individual prerequisites;
- or visit our [Methods in Medical Informatics Chair's site](#).

**Admission** requirements:

- Bachelor's degree **grade 2,5** or higher in Medical Informatics (or comparable, e.g. bioinformatics, computational biology, computer science, human medical sciences);
- **English** skills: [CEFR](#) Level **B2** or equivalent
- **German** skills: [CEFR](#) Level **C1** or equivalent, except with at least a Bachelor's degree in Medical Informatics or a comparable field

This document outlines 3 possible course plans depending on the required pre-qualification (Bachelor's degree):

- [Profile A](#): for students with a Bachelor's degree in **Medical Informatics** or a comparable field
- [Profile B](#): for students with a Bachelor's degree in **Medical Sciences** or a comparable field
- [Profile C](#): for students with a Bachelor's degree in **Computer Science** or a comparable field

Overview						
M.Sc. degree program in Medical Informatics						
Module / Study Area:		Recommended Semester(s)	ECTS (Profile A)	ECTS (Profile B)	ECTS (Profile C)	Remarks
MEDZ-MEDINFO	Advanced Medical Informatics	1-3	9	9	9	
MEDZ-BIOINFO	Advanced Bioinformatics	1-3	9	9	9	Eligible between Structure and Systems Bioinformatics or Sequence Bioinformatics
MEDZ-BIOMED	Biomedical Informatics	1-3	24	15	15	Eligible courses from Medical Informatics, Bioinformatics
INFO-INFO	Computer Science	1-3	18	12	12	Eligible courses from Computer Science
MEDZ-MEDTECH	Medicine–Medical Technology	1-3	18	9	18	Eligible courses from medicine and application-focused medical technology courses
MEDZ-RES	Research Project	1-3	9	9	9	In case of insufficient instructor capacity or student's personal preference, this can be replaced by any 9 ECTS course eligible for MEDZ-BIOINFO or MEDZ-BIOMED
MEDZ-SEM	Medical Informatics Seminar	1-3	3	3	3	MSc Medical Informatics seminar, alternatively any seminar from MSc Bioinformatics, MSc Computer Science
MEDZ-INFO	Foundations of Biomedical Informatics	1-3	0	24	0	Courses for students with little/no Computer Science background
MEDZ-BASICMEDINFO	Foundations of Medicine and Bioinformatics	1-3	0	0	15	Courses for students with little/no medical/life science background
MASTER	Master's Thesis and Presentation	4	30	30	30	Thesis 27 ECTS + Presentation 3 ECTS
Total ECTS:			120	120	120	

**Course Plan Recommendation for the M.Sc. degree program in Medical Informatics  
Profile A: for students with a Bachelor’s degree in **Medical Informatics** (or comparable)**

<b>Module Overview Profile A</b>		
Module / Study Area:		ECTS
MEDZ-MEDINFO	Advanced Medical Informatics	9
MEDZ-BIOINFO	Advanced Bioinformatics	9
MEDZ-BIOMED	Biomedical Informatics	24
INFO-INFO	Computer Science	18
MEDZ-MEDTECH	Medicine–Medical Technology	18
MEDZ-RES	Research Project	9
MEDZ-SEM	Medical Informatics Seminar	3
MASTER	Master's Thesis and Presentation	30
Total ECTS:		120

<b>Course Plan Example Profile A</b>				
Semester				
1	2	3	4	
Advanced Medical Informatics (9 ECTS)	Structure-Based Drug Design (6 ECTS)	Machine Learning for Health (3 ECTS)	Master Thesis (27 ECTS)	
	Biorobotics (6 ECTS)	Machine Learning for Single Cell Biology (6 ECTS)		
Structure and Systems Bioinformatics (9 ECTS)		Sequence Bioinformatics (9 ECTS)		
	Nanoanalytics / Interfaces (3 ECTS)			
	Introduction to Cryptography (6 ECTS)	Research Project in Medical Informatics (9 ECTS)		
Machine Learning to Fight Infections (3 ECTS)				
Total: 30 ECTS	Total: 30 ECTS	Total: 30 ECTS		Master Thesis Presentation (3 ECTS)
Total: 30 ECTS	Total: 30 ECTS	Total: 30 ECTS		Total: 30 ECTS

Course Plan Recommendation for the M.Sc. degree program in Medical Informatics,  
**Profile B:** for students with a Bachelor’s degree in **Medical Sciences** (or comparable)

Module Overview Profile B		
Module / Study Area:		ECTS
MEDZ-MEDINFO	Advanced Medical Informatics	9
MEDZ-BIOINFO	Advanced Bioinformatics	9
MEDZ-BIOMED	Biomedical Informatics	15
INFO-INFO	Computer Science	12
MEDZ-MEDTECH	Medicine–Medical Technology	9
MEDZ-RES	Research Project	9
MEDZ-SEM	Medical Informatics Seminar	3
MEDZ-INFO	Foundations of Biomedical Informatics	24
MASTER	Master's Thesis and Presentation	30
Total ECTS:		120

Course Plan Example Profile B				
Semester				
1	2	3	4	
Advanced Medical Informatics (9 ECTS)	Introduction to Statistical Machine Learning for Bioinformaticians and Medical Informaticians (6 ECTS)	Research Project in Medical Informatics (9 ECTS)	Master Thesis (27 ECTS)	
	Machine Learning in Graphics, Vision, and Language (6 ECTS)			
Privacy-preserving Methods in Biomedical Studies: Data Privacy (3 ECTS)	Structure and Systems Bioinformatics (9 ECTS)	Machine Learning for Single Cell Biology (6 ECTS)		
Bioimaging (3 ECTS)		Medical Data Science (6 ECTS)		
Introduction to Data Structures and Programming for Life Scientists (9 ECTS)	Machine Learning to Fight Infections (3 ECTS)	Machine Learning for Health (3 ECTS)		
		Visualisation of Biological Data (6 ECTS)		Introduction to Cryptography (6 ECTS)
Total: 30 ECTS	Total: 30 ECTS	Total: 30 ECTS		Master Thesis Presentation (3 ECTS)
Total: 30 ECTS	Total: 30 ECTS	Total: 30 ECTS		Total: 30 ECTS

Course Plan Recommendation for the M.Sc. degree program in Medical Informatics,  
**Profile C:** for students with a Bachelor's degree in **Computer Science** (or comparable)

Module Overview Profile C		
Module / Study Area:		ECTS
MEDZ-MEDINFO	Advanced Medical Informatics	9
MEDZ-BIOINFO	Advanced Bioinformatics	9
MEDZ-BIOMED	Biomedical Informatics	15
INFO-INFO	Computer Science	12
MEDZ-MEDTECH	Medicine–Medical Technology	18
MEDZ-RES	Research Project	9
MEDZ-SEM	Medical Informatics Seminar	3
MEDZ-BASICMEDINFO	Foundations of Medicine and Bioinformatics	15
MASTER	Master's Thesis and Presentation	30
Total ECTS:		120

Course Plan Example Profile C				
Semester				
1	2	3	4	
Advanced Medical Informatics (9 ECTS)	Einführung in die Immunologie (3 ECTS)	Machine Learning for Single Cell Biology (6 ECTS)	Master Thesis (27 ECTS)	
	Biorobotics (6 ECTS)			Advanced Immunology (3 ECTS)
Nanoanalytics / Interfaces (3 ECTS)	Structure and Systems Bioinformatics (9 ECTS)	Research Project in Medical Informatics (9 ECTS)		
Medizinische Terminologie (3 ECTS)				
Bioimaging (3 ECTS)				
Humanbiologie I (6 ECTS)	Machine Learning in Graphics, Vision, and Language (6 ECTS)	Privacy-preserving Methods in Biomedical Studies: Data Privacy (3 ECTS)		
		Machine Learning for Health (3 ECTS)		
Medical Data Science (6 ECTS)	Structure-Based Drug Design (6 ECTS)	Data Literacy (6 ECTS)		Master Thesis Presentation (3 ECTS)
Total: 30 ECTS	Total: 30 ECTS	Total: 30 ECTS		Total: 30 ECTS