M.Sc. Computer Science (from winter semester 2025/26)

Course of studies: Start of studies in winter semester, full-time

Specialization: Human-Centred Computing

The following course of study shows you in which semesters which modules are offered, if you decide to specialize in Human-Centred Computing. Compulsory modules must be completed during your studies. For all other modules, you can choose which modules you would like to complete. It is recommended that you complete a total of 30 ECTS* through modules or courses per semester (totalling 120 ECTS in four semesters).

Courses are usually offered on an annual rhythm, i.e. they cannot be completed in every semester, but either annually in the winter semester or annually in the summer semester.

The course of study includes the entire range of courses and modules offered by the Master's degree programme:

- the compulsory area (incl. Master's Thesis) (at least 60 ECTS)
- the compulsory elective area "Core Computer Science" (at least 18 ECTS)
- the compulsory elective area "Specialization: Human-Centred Computing" (at least 42 ECTS)

*ECTS and credit points (CP) or in German Leistungspunkte (LP) are the same thing: a measure of the workload during your course of study. According to the European Credit Transfer System (ECTS), one ECTS/CP corresponds to 25 to 30 hours of work (course attendance, preparation and follow-up time as well as studying for exams or writing assignments or papers). Approximately 30 ECTS/CP should be completed in one semester of full-time studies - i.e. 60 ECTS/CP in one academic year of full-time studies.

1st semester: winter semester					
Module code	Module title	CHs	ECTS	Category	ECTS per semester
INF-M-ALG	Advanced Algorithms	2+2	6	compulsory	In total: 18 ECTS in the compulsory and compulsory elective area
INF-M-FREE	Free Elective		12	compulsory	
INF-M-CCS-COM	Complexity Theory	2 + 2	6	Core Computer Science	
INF-M-CCS-TOP	Topics in Theoretical Computer Science	2 + 2	6	Core Computer Science	
INF-M-CCS-MOD	Non-Standard Models of Computation	2 + 2	6	Core Computer Science	
INF-M-CSS-MATH	Lectures in Mathematics	min. 2	3 - 18	Core Computer Science	
INF-M-BINF-OPT	Optimization	2 + 2	6	Core Computer Science / Bioinformatics	
DAT-M-MLS-AXAI	Advanced Explainable AI	2 + 2	6	Core Computer Science / Information Systems	
DAT-M-MML	Modern Machine Learning	2 + 2	6	Core Computer Science	
INF-M-CCS-ACA	Advanced Computer Architecture	2 + 2	6	Core Computer Science	
DAT-M-ENG	Advanced Data Engineering	2 + 2	6	Core Computer Science	
INF-M-CCS-PQC	Post-Quantum Cryptography	2 + 2	6	Core Computer Science	
FIDS-WI-MSc-IB-M05	Neural networks: An application-oriented introduction	2 + 2	6	Core Computer Science / Information Systems	
HCAI-M02	AI Ethics	2 + 2	6	Core Computer Science / Human-Centred Computing	

INF-M-HCC-INT1	Interaction Technologies I	2 + 2	6	Human-Centred Computing	In total: 12 ECTS in Human-Centred Computing
INF-M-HCC-INT2	Interaction Technologies II	2 + 2	6	Human-Centred Computing	
HCAI-M02	AI Ethics	2 + 2	6	Core Computer Science / Human-Centred Computing	

2nd semester: summer semester					
Module code	Module title	CHs	ECTS	Category	ECTS per semester
INF-M-ASE	Advanced Software Engineering	2 + 2	6	compulsory	In total: 18 ECTS in the compulsory and compulsory elective area
INF-M-FREE	Free Elective		12	compulsory	
INF-M-CSS-MATH	Lectures in Mathematics	min. 2	3 - 18	Core Computer Science	
INF-M-CCS-ALCOM	Topics in Algorithms and Complexity Theory	2 + 2	6	Core Computer Science	
INF-M-CCS-LOG	Topics in Logic and Formal Methods	2 + 2	6	Core Computer Science	
INF-M-BINF-ALGBIO	Algorithmic Bioinformatics	2 + 2	6	Core Computer Science / Bioinformatics	
INF-M-CCS-ACN	Advanced Computer Networks	2 + 2	6	Core Computer Science	
INF-M-CCS-EMB	Embedded Systems	2 + 2	6	Core Computer Science	
DAT-M-MLS-DIPAI	Digital Image Processing - AI-based Approaches	2 + 2	6	Core Computer Science	
HCAI-M08	Advanced Information Behaviour	2 + 2	6	Core Computer Science / Human-Centred Computing	

HCAI-M09	Deep Reinforcement Learning for Human Decision Strategies	2 + 2	6	Core Computer Science / Human-Centred Computing	
INF-M-HCC-INT1	Interaction Technologies I	2 + 2	6	Human-Centred Computing	In total: 12 ECTS in Human-Centred Computing
INF-M-HCC-INT2	Interaction Technologies II	2 + 2	6	Human-Centred Computing	
INF-M-HCC-AHCI	Advanced Topics in HCI	2 + 2	6	Human-Centred Computing	
HCAI-M08	Advanced Information Behaviour	2 + 2	6	Core Computer Science / Human-Centred Computing	
HCAI-M09	Deep Reinforcement Learning for Human Decision Strategies	2 + 2	6	Core Computer Science / Human-Centred Computing	

3rd semester: winter semester					
Module code	Module title	CHs	ECTS	Category	ECTS per semester
INF-M-FREE	Free Elective		12	compulsory	In total: 12 ECTS in the compulsory and compulsory elective area
INF-M-SEM	Current Topics in Computer Science	2	6	compulsory	
INF-M-CCS-COM	Complexity Theory	2 + 2	6	Core Computer Science	
INF-M-CCS-TOP	Topics in Theoretical Computer Science	2 + 2	6	Core Computer Science	
INF-M-CCS-MOD	Non-Standard Models of Computation	2 + 2	6	Core Computer Science	
INF-M-CSS-MATH	Lectures in Mathematics	min. 2	3 - 18	Core Computer Science	
INF-M-BINF-OPT	Optimization	2 + 2	6	Core Computer Science / Bioinformatics	

DAT-M-MLS-AXAI	Advanced Explainable AI	2 + 2	6	Core Computer Science / Information Systems	
DAT-M-MML	Modern Machine Learning	2 + 2	6	Core Computer Science	
INF-M-CCS-ACA	Advanced Computer Architecture	2 + 2	6	Core Computer Science	
DAT-M-ENG	Advanced Data Engineering	2 + 2	6	Core Computer Science	
INF-M-CCS-PQC	Post-Quantum Cryptography	2 + 2	6	Core Computer Science	
FIDS-WI-MSc-IB-M05	Neural networks: An application-oriented introduction	2 + 2	6	Core Computer Science / Information Systems	
INF-M-HCC-RSRCH	Research Project in Human-Centred Computing	4	18	compulsory in Human-Centred Computing	In total: 18 ECTS in Human-Centred Computing
INF-M-HCC-INT1	Interaction Technologies I	2 + 2	6	Human-Centred Computing	
INF-M-HCC-INT2	Interaction Technologies II	2 + 2	6	Human-Cenntred Computing	
HCAI-M02	AI Ethics	2 + 2	6	Core Computer Science / Human-Centred Computing	
INF-M-HCC-CLUB	Current Developments in Human-Computer Interaction (Journal Club)	2	6	Human-Centred Computing	

4th semester: summer semester					
Module code	Module title	CHs	ECTS	Category	ECTS per semester
INF-M-THESIS	Master's Thesis	2	30	compulsory	30 ECTS Master's Thesis module