

Exclosure to Subject Specific Regulations  
 from 09.12.2020  
 for Master-Programme Computer Science  
 at TUHH  
 Programme Director: Prof. Karl-Heinz  
 Zimmermann  
 Total: 120 CP  
 Number of Specilisations to choose: 4

# Course Scheme Master Computer Science (CSMS)

Consolidated Version  
 for Study Cohort: WiSe21/22  
 en\_head\_sda  
 and Approval of Chair from:  
 11.01.2023  
 Replaces Version from: 20.04.2022  
 In Force on: 01.10.2022  
 Out of Force on: 30.09.2024

Information regarding the lectures are available in the TUHH modul manuals as well as in the course catalogue.

Re-com. Term	Module						Examination			Course Work		
	Module Name (German / English)	Language	ModuleResponsability	Institute	C/EC (1)	CM/OM (2)	CP (4)	Grade	Examination Form(3)	Compulsory	Course Work Type	Bonus (in %)
<b>Core Qualification</b> Compulsory Courses: 24 LP Optional Courses: 0 LP												
3	Forschungsprojekt Informatik / Research Project Computer Science	DE / EN	Dozenten des SD E	SD-E	C	CM	12	Y	STA			
1-3	Nichttechnische Angebote im Master / Non-technical Courses for Master	DE / EN	Richter	0-TUHH	C	OM	6	Selection out of seperatly published Catalogue				
1-3	Betrieb & Management / Business & Management	DE / EN	Prof. Meyer	W-1	C	OM	6	Selection out of seperatly published Catalogue				
<b>Specialisation I. Computer and Software Engineering</b> Compulsory Courses: 0 LP Optional Courses: 18 LP												
1	Sicherheit von Cyber-phisichen Systemen / Security of Cyber-Physical Systems	EN	Prof. Fröschle	E-15	EC	CM	6	Y	KL			
1	Software-Sicherheit / Software Security	EN	Prof. Scandariato	E-22	EC	CM	6	Y	KL			
1	Softwareverifikation / Software Verification	EN	Prof. Schupp	E-16	EC	CM	6	Y	KL	Y	ÜA	15
1	Verteilte Algorithmen / Distributed Algorithms	DE / EN	Prof. Turau	E-17	EC	CM	6	Y	MP			
2	Advanced Internet Computing / Advanced Internet Computing	EN	Prof. Schulte	E-19	EC	CM	6	Y	KL			
2	Algorithmische Spieltheorie / Algorithmic Game Theory	DE / EN	Prof. Mnich	E-11	EC	CM	6	Y	KL			
2	Ausgewählte Aspekte der Informatik / Selected Aspects in Computer Science	DE / EN	Prof. Fey	SD-E	EC	CM	6	Y	MP			
2	Autonomous Cyber-Physical Systems / Autonomous Cyber-Physical Systems	EN	Prof. Renner	E-24	EC	CM	6	Y	KL	N	TE	10
2	Betriebssystembau / Operating System Construction	DE	Prof. Dietrich	SD-E	EC	CM	6	Y	MP	N	FFST	20
2	Compiler für Eingebettete Systeme / Compilers for Embedded Systems	DE / EN	Prof. Falk	E-13	EC	CM	6	Y	MP			
2	Computer-Grafik / Computer Graphics	EN	Prof. Knopp	E-5	EC	CM	6	Y	KL			

Module							Examination			Course Work		
Re-com. Term	Module Name (German / English)	Language	ModuleResponsability	Institute	C/EC (1)	CM/OM (2)	CP (4)	Grade	Examination Form(3)	Compulsory	Course Work Type	Bonus (in %)
2	Constraint Satisfaction Problems / Constraint Satisfaction Problems	EN	Prof. Mottet	E-EXK6	EC	CM	6	Y	MP			
2	Entwicklung von sicherer Software / Secure Software Engineering	EN	Prof. Scandariato	E-22	EC	CM	6	Y	KL			
2	Entwurf von Dependable Systems / Design of Dependable Systems	DE / EN	Prof. Fey	E-13	EC	CM	6	Y	MP	Y	FFST	0
2	GPU Architectures and Programming / GPU Arcuitectures and Programming	EN	Prof. Lal	E-EXK5	EC	CM	6	Y	MP			
2	Modellprüfung - Beweiser und Algorithmen / Model Checking - Proof Engines and Algorithms	DE / EN	Prof. Fey	E-13	EC	CM	6	Y	MP	Y	FFST	0
2	Software für Eingebettete Systeme / Software for Embedded Systems	DE / EN	Prof. Renner	E-24	EC	CM	6	Y	KL	N	TE	10
2	Softwaretesten / Software Testing	EN	Prof. Schupp	E-16	EC	CM	6	Y	FFA			
3	Betriebssystemtechnik / Operating System Techniques	DE	Prof. Dietrich	E-EXK4	EC	CM	6	Y	MP			
3	Fortgeschrittener Entwurf von Chip-Systemen (Praktikum) / Advanced System-on-Chip Design (Lab)	DE / EN	Prof. Falk	E-13	EC	CM	6	Y	FFA			
3	Massiv parallele Systeme: Architektur und Programmierung / Massively Parallel Systems: Architecture and Programming	EN	Prof. Lal	E-EXK5	EC	CM	6	Y	MP	Y	FFST	20
3	Traffic Engineering / Traffic Engineering	EN	Prof. Timm-Giel	E-4	EC	CM	6	Y	MP			
<b>Specialisation II: Intelligence Engineering</b> Compulsory Courses: 0 LP Optional Courses: 18 LP												
1	Digitale Bildanalyse / Digital Image Analysis	EN	Prof. Grigat	E-2	EC	CM	6	Y	KL			
1	Intelligente Autonome Agenten und kognitive Robotik / Intelligent Autonomous Agents and Cognitive Robotics	EN	Marrone	E-16	EC	CM	6	Y	KL			
1	Prozessautomatisierungstechnik / Industrial Process Automation	EN	Prof. Schlaefer	E-1	EC	CM	6	Y	KL	N	ÜA	10
2	Maschinelles Lernen und Data Mining / Machine Learning and Data Mining	EN	NN	E-16	EC	CM	6	Y	KL			
2	Prozessbildgebung / Process Imaging	EN	Prof. Penn	V-10	EC	CM	6	Y	KL			
2	Robotik und Navigation in der Medizin / Robotics and Navigation in Medicine	EN	Prof. Schlaefer	E-1	EC	CM	6	Y	KL	Y	SA	10
										Y	RE	10
3	Angewandte Humanoide Robotik / Applied Humanoid Robotics	DE / EN	Göttsch	E-14	EC	CM	6	Y	SA			
3	Intelligente Systeme in der Medizin / Intelligent Systems in Medicine	EN	Prof. Schlaefer	E-1	EC	CM	6	Y	KL	Y	RE	10
										Y	SA	10
3	Medizinische Bildgebung / Medical Imaging	DE / EN	Prof. Knopp	E-5	EC	CM	6	Y	KL			

		Module					Examination			Course Work		
Re-com. Term	Module Name (German / English)	Language	ModuleResponsability	Institute	C/EC (1)	CM/OM (2)	CP (4)	Grade	Examination Form(3)	Compulsory	Course Work Type	Bonus (in %)
<b>Specialisation III. Mathematics</b> Compulsory Courses: 0 LP Optional Courses: 18 LP												
1	Algorithmische Algebra / Algorithmic Algebra	DE	Dr. Batra	E-19	EC	CM	6	Y	MP			
1	Hierarchische Algorithmen / Hierarchical Algorithms	DE / EN	Prof. Le Borne	E-10	EC	CM	6	Y	MP			
1	Lineare und Nichtlineare Optimierung / Linear and Nonlinear Optimization	DE / EN	Prof. Mnich	E-11	EC	CM	6	Y	MP			
2	Numerik gewöhnlicher Differentialgleichungen / Numerical Treatment of Ordinary Differential Equations	DE / EN	Prof. Ruprecht	E-10	EC	CM	6	Y	KL			
2	Numerische Mathematik II / Numerical Mathematics II	DE / EN	Prof. Le Borne	E-10	EC	CM	6	Y	MP			
2	Randomisierte Algorithmen und Zufällige Graphen / Randomised Algorithms and Random Graphs	DE / EN	Prof. Taraz	E-10	EC	CM	6	Y	MP			
2	Wahrscheinlichkeitstheorie / Probability Theory	EN	Prof. Schulte	E-10	EC	CM	6	Y	MP			
3	Fortgeschrittenes maschinelles Lernen / Advanced Machine Learning (lt. letzter PO Mathematik neuronaler Netzwerke)	DE / EN	Dr. Zemke	E-10	EC	CM	6	Y	MP			
3	Mathematische Bildverarbeitung / Mathematical Image Processing	DE / EN	Prof. Lindner	E-10	EC	CM	6	Y	MP			
3	Numerik partieller Differentialgleichungen / Numerical Methods for Partial Differential Equations	DE / EN	Prof. Ruprecht	E-10	EC	CM	6	Y	MP			
<b>Specialisation IV. Subject Specific Focus</b> Compulsory Courses: 0 LP Optional Courses: 12 LP												
1	Technischer Ergänzungskurs I für CSMS / Technical Complementary Course I for CSMS		Prof. Zimmermann	SD-E	EC	OM	6	according to Subject Specific Regulations				
2	Technischer Ergänzungskurs II für CSMS / Technical Complementary Course II for CSMS		Prof. Zimmermann	SD-E	EC	OM	6	according to Subject Specific Regulations				
3	Hauptseminare Informatik und Kommunikationstechnik / Advanced Seminars Computer Science and Communication Technology (lt. letzter PO Hauptseminare Informatik)	DE / EN	Dozenten des SD E	SD-E	EC	CM	6	Y	RE			
<b>Thesis</b> Compulsory Courses: 30 LP Optional Courses: 0 LP												
4	Masterarbeit / Master Thesis		Professoren der TUHH	0-TUHH	C	CM	30	Y	AB			

#### Explanation:

<sup>1</sup>C=Compulsory, EC=Elective Compulsory

<sup>2</sup>CM=Compulsory Defined Module, OM=Optional Defined Module

<sup>3</sup>KL=Written exam, SA=Written elaboration, FFA=Subject theoretical and practical work, FFST=Subject theoretical and practical work, MP=Oral exam, RE=Presentation, STA=Study work, ÜA=Exercises, AB=Thesis, SA It.

<sup>4</sup>CP=Credit Points

<sup>5</sup>VL=Lecture, SE=Seminar, GÜ=Recitation Section (small), PBL=Project-/problem-based Learning, PS=Project Seminar, PK=Projection Course, HÜ=Recitation Section (large)

<sup>6</sup>DE=German, EN=English, DE/EN=German and English

<sup>7</sup>SWS=Contact hours