

Please note that changes may occur. This document will be not accordingly updated. The amendments are published at the following link:
<https://tu-dresden.de/ing/informatik/studium/studienangebot/master-studiengaenge/computational-modeling-and-simulation/regulations>

Appendix 2

(Regarding Section 6, Paragraph 5)

Study Plan for the Full-Time Program

including the type and scope of courses in SWS as well as required coursework, the type, scope, and structure of which are specified in the module descriptions

Legend:

LP	Credit Points	M	Mobility window pursuant to Section 6, Paragraph 1, Sentence 3	PL	Exam(s)
V	Lecture	Ü	Seminar	S	Seminar
P	Internship	T	Tutorial	SK	Language Course
Pj	Project				

*) The topic for the master's thesis is assigned at the end of the 3rd semester.

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
Required Courses						
CMS-SOF	Soft Skills	0/0/2/0 1 PL				2
CMS-PRO	Research Assignment			12 SWS per year 1 credit		15

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Projec t	Lecture/Seminar/ Practicum/Projec t	
Elective-Required Courses						
Basic Language Training						
Choose 1 out of 74 modules.						
CMS-LN-A1-1A	Foreign Language A1 Advanced Level - Arabic		4 SWS SK 1 PL			5
CMS-LN-A1-1C	Foreign Language A1 Advanced Level - Chinese		4 SWS SK 1 PL			5
CMS-LN-A1-1D	Foreign Language A1 Advanced Level - German as a Foreign Language		4 SWS SK 1 PL			5
CMS-LN-A1-1FI	Foreign Language A1 Advanced Level - Finnish		4 SWS SK 1 PL			5
CMS-LN-A1-1FR	Foreign Language A1 Advanced Level - French		4 SWS SK 1 PL			5
CMS-LN-A1-1I	Foreign Language A1 Advanced Level - Italian		4 SWS SK 1 PL			5
CMS-LN-A1-1J	Foreign Language A1 Advanced Level - Japanese		4 SWS SK 1 PL			5
CMS-LN-A1-1PL	Foreign Language A1 Advanced Level - Polish		4 SWS SK 1 PL			5
CMS-LN-A1-1PG	Foreign Language A1 Advanced Level - Portuguese		4 SWS SK 1 PL			5
CMS-LN-A1-1RU	Foreign Language A1 Advanced Level - Russian		4 SWS SK 1 PL			5
CMS-LN-A1-1SW	Foreign Language A1 Advanced Level - Swedish		4 SWS SK 1 PL			5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-LN-A1-1SP	Foreign Language A1 Advanced Level - Spanish		4 SWS SK 1 PL			5
CMS-LN-A1-1T	Foreign Language A1 Advanced Level - Czech		4 SWS SK 1 PL			5
CMS-LN-A2-A	Foreign Language A2 - Arabic		4 SWS SK 1 PL			5
CMS-LN-A2-C	Foreign Language A2 - Chinese		4 SWS SK 1 PL			5
CMS-LN-A2-D	Foreign Language A2 - German as a Foreign Language		4 SWS SK 1 PL			5
CMS-LN-A2-FI	Foreign Language A2 - Finnish		4 SWS SK 1 PL			5
CMS-LN-A2-J	Foreign Language A2 - Japanese		4 SWS SK 1 PL			5
CMS-LN-A2-PL	Foreign Language A2 - Polish		4 SWS SK 1 PL			5
CMS-LN-A2-RU	Foreign Language A2 - Russian		4 SWS SK 1 PL			5
CMS-LN-A2-T	Foreign Language A2 - Czech		4 SWS SK 1 PL			5
CMS-LN-A2-1A	Foreign Language A2 Advanced Level - Arabic		4 SWS SK 1 PL			5
CMS-LN-A2-1D	Foreign Language A2 Advanced Level - German as a Foreign Language		4 SWS SK 1 PL			5
CMS-LN-A2-1F	Foreign Language A2 Advanced Level - French		4 SWS SK 1 PL			5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-LN-A2-1I	Foreign Language A2 Advanced Level - Italian		4 SWS SK 1 PL			5
CMS-LN-A2-1PL	Foreign Language A2 Advanced Level - Polish		4 SWS SK 1 PL			5
CMS-LN-A2-1PG	Foreign Language A2 Advanced Level - Portuguese		4 SWS SK 1 PL			5
CMS-LN-A2-1RU	Foreign Language A2 Advanced Level - Russian		4 SWS SK 1 PL			5
CMS-LN-A2-1SW	Foreign Language A2 Advanced Level - Swedish		4 SWS SK 1 PL			5
CMS-LN-A2-1SP	Foreign Language A2 Advanced Level - Spanish		4 SWS SK 1 PL			5
CMS-LN-A2-1T	Foreign Language A2 Advanced Level - Czech		4 SWS SK 1 PL			5
CMS-LN-A2-1C	Foreign Language A2 Advanced Level - Chinese		4 SWS SK 1 PL			5
CMS-LN-A2-1J	Foreign Language A2 Advanced Level - Japanese		4 SWS SK 1 PL			5
CMS-LN-B1-A	Foreign Language B1 - Arabic		4 SWS SK 1 PL			5
CMS-LN-B1-D	Foreign Language B1 - German as a Foreign Language		4 SWS SK 1 PL			5
CMS-LN-B1-F	Foreign Language B1 - French		4 SWS SK 1 PL			5
CMS-LN-B1-I	Foreign Language B1 - Italian		4 SWS SK 1 PL			5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-LN-B1-PG	Foreign Language B1 - Portuguese		4 SWS SK 1 PL			5
CMS-LN-B1-RU	Foreign Language B1 - Russian		4 SWS SK 1 PL			5
CMS-LN-B1-SP	Foreign Language B1 - Spanish		4 SWS SK 1 PL			5
CMS-LN-B1-C	Foreign Language B1 - Chinese		4 SWS SK 1 PL			5
CMS-LN-B1-J	Foreign Language B1 - Japanese		4 SWS SK 1 PL			5
CMS-LN-B1-1A	Foreign Language B1 Advanced Level - Arabic		4 SWS SK 1 PL			5
CMS-LN-B1-1D	Foreign Language B1 Advanced Level - German as a Foreign Language		4 SWS SK 1 PL			5
CMS-LN-B1-1FR	Foreign Language B1 Advanced Level - French		4 SWS SK 1 PL			5
CMS-LN-B1-1I	Foreign Language B1 Advanced Level - Italian		4 SWS SK 1 PL			5
CMS-LN-B1-1RU	Foreign Language B1 Advanced Level - Russian		4 SWS SK 1 PL			5
CMS-LN-B1-1SW	Foreign Language B1 Advanced Level - Swedish		4 SWS SK 1 PL			5
CMS-LN-B1-1SP	Foreign Language B1 Advanced Level - Spanish		4 SWS SK 1 PL			5
CMS-LN-B1-1PG	Foreign Language B1 Advanced Level - Portuguese		4 SWS SK 1 PL			5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-LN-B1-1C	Foreign Language B1 Advanced Level - Chinese		4 SWS SK 1 PL			5
CMS-LN-B1-1J	Foreign Language B1 Advanced Level - Japanese		4 SWS SK 1 PL			5
CMS-LN-B2-D	Foreign Language B2 - German as a Foreign Language		4 SWS SK 1 PL			5
CMS-LN-B2-FR	Foreign Language B2 - French		4 SWS SK 1 PL			5
CMS-LN-B2-I	Foreign Language B2 - Italian		4 SWS SK 1 PL			5
CMS-LN-B2-PG	Foreign Language B2 - Portuguese		4 SWS SK 1 PL			5
CMS-LN-B2-RU	Foreign Language B2 - Russian		4 SWS SK 1 PL			5
CMS-LN-B2-SP	Foreign Language B2 - Spanish		4 SWS SK 1 PL			5
CMS-LN-B2-SW	Foreign Language B2 - Swedish		4 SWS SK 1 PL			5
CMS-LN-B2-1D	Academic Competencies - B2 Advanced Level - German as a Foreign Language		4 SWS SK 1 PL			5
CMS-LN-B2-1F	Academic Competencies - B2 Advanced Level - French		4 SWS SK 1 PL			5
CMS-LN-B2-1RU	Academic Competencies - B2 Advanced Level - Russian		4 SWS SK 1 PL			5
CMS-LN-B2-1SP	Academic Competencies - B2 Advanced Level - Spanish		4 SWS SK 1 PL			5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-LN-B2B-D	Professional Language Competencies - B2 Advanced Level - German as a Foreign Language		4 SWS SK 1 PL			5
CMS-LN-B2B-FR	Professional Language Competencies - B2 Advanced Level - French		4 SWS SK 1 PL			5
CMS-LN-B2B-RU	Professional Language Competencies - B2 Advanced Level - Russian		4 SWS SK 1 PL			5
CMS-LN-B2B-SP	Professional Language Competencies - B2 Advanced Level - Spanish		4 SWS SK 1 PL			5
CMS-LN-C1-D	Academic Competencies C1 - German as a Foreign Language		4 SWS SK 1 PL			5
CMS-LN-C1-FR	Academic Competencies C1 - French		4 SWS SK 1 PL			5
CMS-LN-C1-RU	Academic Competencies C1 - Russian		4 SWS SK 1 PL			5
CMS-LN-C1-SP	Academic Competencies C1 - Spanish		4 SWS SK 1 PL			5
CMS-LN-C1B-D	Professional Language Competencies C1 - German as a Foreign Language		4 SWS SK 1 PL			5
CMS-LN-C1B-F	Professional Language Competencies C1 - French		4 SWS SK 1 PL			5
CMS-LN-C1B-SP	Professional Language Competencies C1 - Spanish		4 SWS SK 1 PL			5
Basic Professional Training Select 3 out of 6 modules.						
CMS-COR-HPC	High-Performance Computing	2/2/0/0 1 credit				5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-COR-ML	Machine Learning	2/2/0/0 1 PL				5
CMS-COR-NUM	Basic Numerical Methods	2/2/0/0 1 credit				5
CMS-COR-SAP	Stochastics and Probability	2/2/0/0 1 credit				5
CMS-COR-SSE	Scientific Software Engineering	2/2/0/0 1 credit				5
CMS-COR-VIZ	Data Visualization	2/2/0/0 1 PL				5
Basic Training in Scientific Methodology Select 1 out of 13 modules.						
CMS-SEM-DLAIA	Literature Studies in Deep Learning for Applied Image Analysis		0/0/2/0 1 credit			3
CMS-SEM-CE	Literature Studies in Computational Engineering		0/0/2/0 1 credit			3
CMS-SEM-CGV	Literature Studies in Computer Graphics and Visualization		0/0/2/0 1 credit			3
CMS-SEM-CIA	Literature Studies in Combinatorial Image Analysis		0/0/2/0 1 credit			3
CMS-SEM-CLS	Literature Studies in Computational Life Science		0/0/2/0 1 credit			3
CMS-SEM-CM	Literature Studies in Computational Metrology		0/0/2/0 1 credit			3
CMS-SEM-CP	Literature Studies in Computing		0/0/2/0 1 credit			3

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-SEM-CV	Literature Studies in Computer Vision		0/0/2/0 1 PL			3
CMS-SEM-KGRL	Literature Studies on Knowledge Graph Representation Learning		0/0/2/0 1 credit			3
CMS-SEM-KR	Literature Studies in Knowledge Representation and Reasoning		0/0/2/0 1 PL			3
CMS-SEM-MB	Literature Studies in Mathematical Biology		0/0/2/0 1 credit			3
CMS-SEM-ML	Literature Studies in Machine Learning		0/0/2/0 1 credit			3
CMS-SEM-SP	Literature Studies on Software Methods and Technologies for Virtual Aircraft		0/0/2/0 1 PL			3
Tracks						
Selection of 1 out of 7 tracks.						
Applied Artificial Intelligence						
Required Course						
CMS-TRK-DCD	Digital Circuit Design	2/2/0/0 1PL				5
Elective Requirement						
Selection of modules totaling 35 credit points.						
CMS-TRK-CV	Computer Vision	2/2/0/0 1PL				5
CMS-TRK-MLSP	Machine Learning in Signal Processing	2/1/0/1 2 PL				5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-TRK-APSS	Advanced Problem Solving and Search	2/2/0/0 1 credit				5
CMS-TRK-CAI	Conversational Artificial Intelligence	0/0/2/0 1 PL				5
CMS-TRK-FCG	Foundations of Computer Graphics	2/2/0/0 1 credit				5
CMS-TRK-DDA	Digitization and Data Analytics		2/2/0/0 1PL			5
CMS-TRK-AL	Adaptive Laser Systems		2/1/0/1 2 PL			5
CMS-TRK-CSD	Circuit and System Design		2/1/0/0 2 SWS Pj 1 PL			5
CMS-TRK-DNNH	Deep Neural Network Hardware		2/2/0/0 1PL			5
CMS-TRK-VR	Virtual Reality		2/0/0/0 20 hours of internship 1 PL			5
CMS-TRK-HWSWC	Hardware-Software Co-Design		2/2/0/0 1PL			5
CMS-TRK-ARCCAM	Applied Robotics and Control for Cooperative and Autonomous Mobility		2/2/0/0 1PL			5
CMS-TRK-RL	Robot Learning		2/2/0/0 1 PL			5
CMS-TRK-SciVis	Scientific Visualization		2/2/0/0 1 PL			5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-TRK-CRC	Computer- and Robot-Assisted Surgery			2/2/0/0 1 PL		5
CMS-TRK-SD	Sound Design			2/0/0/0 20 hours Pj 1 PL		5
CMS-TRK-CLS	Computational Laser Systems			3/1/0/0 1PL		5
CMS-TRK-TSP	Touch Sensing and Processing			2/2/0/0 1 PL		5
CMS-TRK-TEA-CM	Team Assignment: Computational Metrology			8 SWS Pj 1 credit		10
CMS-TRK-DLVFA	Deep Learning for Vision - Foundations and Applications			2/2/0/0 1 credit		5
Choose 1 of 2 modules.						
CMS-TRK-TEA-MLCV	Team Assignment: Machine Learning and Computer Vision		8 SWS Pj 1 PL			10
CMS-TRK-TEA-AIH	Team Assignment: AI Hardware		8 SWS Pj 1 credit			10
Computational Engineering						
Required Courses						
CMS-TRK-CFD	Computational Fluid Dynamics	2/2/0/0 1 credit				5
CMS-TRK-MA31	Finite Element Methods - Theory, Implementation, and Applications	3/1/0/0 1 credit				5
CMS-TRK-AT	Advanced Topics in Finite Element Analysis		2/2/0/0 1 credit			5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-TRK-MBD	Multi-Body Dynamics		2/2/0/0 1 PL			5
CMS-TRK-MP	Multifield Problems		2/2/0/0 1 PL			5
Elective Requirement						
Select 5 out of 18 modules.						
CMS-TRK-UI1	User Interface Engineering	2/2/0/0 2 PL				5
CMS-TRK-SysDyn	System Dynamics	2/2/0/0 1 PL				5
CMS-TRK-SysEng	Foundations of Systems Engineering	2/2/0/0 1 credit				5
CMS-TRK-APSS	Advanced Problem Solving and Search	2/2/0/0 1 PL				5
CMS-TRK-MA33	Scientific Programming – Advanced Concepts	3/1/0/0 1 PL				5
CMS-TRK-FCG	Foundations of Computer Graphics	2/2/0/0 1 credit				5
CMS-TRK-CLC	Closed-Loop Control in Networked Control Systems		2/2/0/0 1 PL			5
CMS-TRK-EMS	Electromechanical and microelectromechanical systems		2/2/0/0 2 PL			5
CMS-TRK-UI2	Advanced User Interfaces		2/0/2/0 2 PL			5
CMS-TRK-DDA	Digitization and Data Analytics		2/2/0/0 1 PL			5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-TRK-IIV	Interactive Information Visualization		2/2/0/0 1 credit			5
CMS-TRK-PM	Particle Methods		2/2/0/0 1 PL			5
CMS-TRK-SciVis	Scientific Visualization		2/2/0/0 1 credit			5
CMS-TRK-Aero	Introduction to Computational Aerodynamics			3/1/0/0 1 credit		5
CMS-TRK-Sim	Practical Aspects of Simulation			2/0/0/2 1 credit		5
CMS-TRK-TSP	Touch Sensing and Processing			2/2/0/0 1 PL		5
CMS-TRK-CRC	Computer- and Robot-Assisted Surgery			2/2/0/0 1 PL		5
CMS-TRK-CV	Computer Vision			2/2/0/0 1 credit		5
Computational Environmental Science and Engineering						
Required Area						
CMS-TRK-TEA-CES	Computational Environmental Science Team Project			180 hours of clinical practice 1 PL		10
CMS-TRK-EA	Computational Environmental Applications			0/0/4/0 1 credit		5
Elective Requirement						
Select 2 out of 7 modules.						

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-TRK-ED4	Computational Statistics	2/1/0/0 1 credit				5
CMS-TRK-ED5	Geodata infrastructures	2/2/0/0 1 PL				5
CMS-TRK-ED1	Statistical Learning for Earth System Sciences		2/1/0/0 1 credit			5
CMS-TRK-ED2	Image Analysis and Machine Learning in Environmental Remote Sensing		2/1/0/0 1 PL			5
CMS-TRK-ED6	Retrieval of Land Surface Properties from Optical and Microwave Remote Sensing		0/0/2/0 1 PL			5
CMS-TRK-ED3	Applied Remote Sensing for Environmental Research			0/0/1/0 1 PL		5
CMS-TRK-CV	Computer Vision			2/2/0/0 1 PL		5
Select 2 out of 5 modules.						
CMS-TRK-EM1	Hydrological Modeling	2/2/0/0 1 PL				5
CMS-TRK-EM5	Individual-Based Ecology and Modeling	1/3/0/0 1 credit				5
CMS-TRK-EM2	Hydrological Modeling Practice		1/3/0/0 1 PL			5
CMS-TRK-EM3	Numerical Methods in Hydrosiences			2/2/0/0 1 credit		5
CMS-TRK-EM4	Advanced model evaluation			2/2/0/0 1 SWS T 1 PL		5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
Selection of modules totaling 15 credit points.						
CMS-TRK-ES4	Environmental and Climate Remote Sensing	2/1/0/0 1 credit				5
CMS-TRK-ES7	Climatology and Hydrology	4/0/0/0 1 PL				5
CMS-TRK-ES1	Climate Change		2/0/2/0 2 PL			5
CMS-TRK-ES2	Feedbacks between land surfaces and the atmosphere		2/1/0/0 1 PL			5
CMS-TRK-ES3	Geodetic Space Techniques for Climate Research		1/1/1/0 1 credit			5
CMS-TRK-ES6	Laser scanning and 3D point cloud processing		2/2/0/0 1 SWS Pj 1 PL			10
CMS-TRK-ES5	Recent Methods of Photogrammetric Geodata Acquisition			2/1/0/0 1 PL		5
Computational Life Sciences						
Required Area						
CMS-TRK-ABI	Applied Bioinformatics		2/2/0/0 1 PL			5
CMS-TRK-MOS	Modeling and Simulation in Biology		2/2/0/0 1 credit			5
CMS-TRK-TEA-CLS	Computational Life Science Team Project		8 SWS Pj 1 credit			10
Elective-Required Area						
Select 6 out of 24 modules.						

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-TRK-UI1	User Interface Engineering	2/2/0/0 2 PL				5
CMS-TRK-CFD	Computational Fluid Dynamics	2/2/0/0 1 credit				5
CMS-TRK-FCG	Foundations of Computer Graphics	2/2/0/0 1 credit				5
CMS-TRK-DDA	Digitization and Data Analytics		2/2/0/0 1 PL			5
CMS-TRK-PM	Particle Methods		2/2/0/0 1 PL			5
CMS-TRK-ABP	Advanced Biological Physics		2/2/0/0 1 credit			5
CMS-TRK-SciVis	Scientific Visualization		2/2/0/0 1 credit			5
CMS-TRK-UI2	Advanced User Interfaces		2/0/2/0 2 PL			5
CMS-TRK-IIV	Interactive Information Visualization		2/2/0/0 1 credit			5
CMS-TRK-MP	Multifield Problems		2/2/0/0 1 PL			5
CMS-TRK-IMIR	Interactive Multimedia Information Retrieval		2/2/0/0 1 credit			5
CMS-TRK-AT	Advanced Topics in Finite Element Analysis		2/2/0/0 1 credit			5
CMS-TRK-MBD	Multi-Body Dynamics		2/2/0/0 1 PL			5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-TRK-VR	Virtual Reality		2/0/0/0 20 hours of internship 1 PL			5
CMS-TRK-RL	Robot Learning		2/2/0/0 1 PL			5
CMS-TRK-GMA	Geometric Modeling and Animation		2/2/0/0 1 credit			5
CMS-TRK-CRC	Computer- and Robot-Assisted Surgery			2/2/0/0 1 PL		5
CMS-TRK-AMH	Active Matter Hydrodynamics			2/2/0/0 1 PL		5
CMS-TRK-CV	Computer Vision			2/2/0/0 1 credit		5
CMS-TRK-Aero	Introduction to Computational Aerodynamics			3/1/0/0 1 credit		5
CMS-TRK-APSS	Advanced Problem Solving and Search			2/2/0/0 1 credit		5
CMS-TRK-FVR	Foundations of Virtual Reality			2/2/0/0 1 credit		5
CMS-TRK-PBG	Physics-Based Graphics			2/2/0/0 1 PL		5
CMS-TRK-DLVFA	Deep Learning for Vision - Foundations and Applications			2/2/0/0 1 credit		5
Computational Mathematics						
Required Courses						

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-TRK-MA31	Finite Element Methods—Theory, Implementation, and Applications	3/1/0/0 1 credit				5
CMS-TRK-MA28	Numerical Methods for Partial Differential Equations - Basic Concepts	3/1/0/0 1 credit				5
CMS-TRK-MAMS	Modeling Case Studies		0/0/4/0 6 SWS Pj 1 PL			10
CMS-TRK-MA32	Scientific Computing - Advanced Concepts		3/1/0/0 1 tablespoon			5
CMS-TRK-MA33	Scientific Programming - Advanced Concepts			3/1/0/0 1 credit		5
CMS-TRK-PRO-CMA	Computational Mathematics Research Work			0/0/2/0 2 SWS per year 1 PL		5
Elective Requirements						
Select 3 out of 8 modules.						
CMS-TRK-AMH	Active Matter Hydrodynamics	2/2/0/0 1 credit				5
CMS-TRK-CFD	Computational Fluid Dynamics	2/2/0/0 1 credit				5
CMS-TRK-IMB1	Introduction to Mathematical Biology I: Discrete Models	2/1/0/0 1 credit				5
CMS-TRK-MA29	Numerical Methods for Partial Differential Equations - Advanced Concepts		3/1/0/0 1 credit			5
CMS-TRK-MA30	Mathematical Methods in Continuum Mechanics		3/1/0/0 1 credit			5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-TRK-ABP	Advanced Biological Physics		2/2/0/0 1 credit			5
CMS-TRK-IMB2	Introduction to Mathematical Biology II: Continuum Models			2/1/0/0 1 credit		5
CMS-TRK-CV	Computer Vision			2/2/0/0 1 credit		5
Computational Modeling in Energy Economics						
Required Courses						
CMS-TRK-APSE	Applied Power System Economics	4 SWS Pj 1 credit				5
CMS-TRK-EPM	Electric Power Markets	2/2/0/0 1 PL				5
CMS-TRK-CSEE	Case Studies in Energy Economics		0/0/0.5/0 120 hours per year 2 PL			10
CMS-TRK-REEP	Resource Economics and Environmental Policy		2/2/0/0 2 SWS Pj 2 PL			10
Elective-Required Area						
Select 4 out of 8 modules.						
CMS-TRK-MA28	Numerical Methods for Partial Differential Equations - Basic Concepts	3/1/0/0 1 credit				5
CMS-TRK-LSEE	Literature Studies in Energy Economics		4 SWS per year 2 credit points			5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-TRK-MA29	Numerical Methods for Partial Differential Equations - Advanced Concepts		3/1/0/0 1 credit			5
CMS-TRK-MA32	Scientific Computing - Advanced Concepts		3/1/0/0 1 credit			5
CMS-TRK-OMEM	Optimization in Modern Electricity Markets		1/1/0/0 1 PL			5
CMS-TRK-MA31	Finite Element Methods—Theory, Implementation, and Applications			3/1/0/0 1 credit		5
CMS-TRK-APSS	Advanced Problem Solving and Search			2/2/0/0 1 credit		5
CMS-TRK-MA33	Scientific Programming - Advanced Concepts			3/1/0/0 1 credit		5
Visual Computing						
Required Courses						
CMS-TRK-TEA-VC	Visual Computing Team Project		8 SWS Pj 1 credit			10
Elective Requirements						
Select 8 out of 15 modules.						
CMS-TRK-CV	Computer Vision	2/2/0/0 1 PL				5
CMS-TRK-FCG	Foundations of Computer Graphics	2/2/0/0 1 credit				5
CMS-TRK-UI1	User Interface Engineering	2/2/0/0 2 PL				5

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
CMS-TRK-CAI	Conversational Artificial Intelligence	0/0/2/0 1 PL				5
CMS-TRK-GMA	Geometric Modeling and Animation		2/2/0/0 1 credit			5
CMS-TRK-SciVis	Scientific Visualization		2/2/0/0 1 credit			5
CMS-TRK-UI2	Advanced User Interfaces		2/0/2/0 2 PL			5
CMS-TRK-IIV	Interactive Information Visualization		2/2/0/0 1 credit			5
CMS-TRK-DDA	Digitization and Data Analytics		2/2/0/0 1 PL			5
CMS-TRK-IMIR	Interactive Multimedia Information Retrieval		2/2/0/0 1 credit			5
CMS-TRK-TSP	Touch Sensing and Processing			2/2/0/0 1 PL		5
CMS-TRK-PBG	Physics-Based Graphics			2/2/0/0 1 PL		5
CMS-TRK-FVR	Foundations of Virtual Reality			2/2/0/0 1 tablespoon		5
CMS-TRK-CRC	Computer- and Robot-Assisted Surgery			2/2/0/0 1 PL		5
CMS-TRK-DLVFA	Deep Learning for Vision - Foundations and Applications			2/2/0/0 1 credit		5
Master's Thesis*)				1 LP	28 LP	29
Colloquium					1 LP	1

Module Number	Module name	1st Semester	2nd semester	3rd Semester (M)	4th Semester	LP
		Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practical/Project	Lecture/Seminar/ Practicum/Project	Lecture/Seminar/ Practicum/Project	
LP		32	28	31	29	120