

Courses in CME as of May, 2026



	Course title	Credits	Semester	Responsible Person	Institute	Department	Type of Exam	Area
1	Fluid Mechanics of Turbulent Flows	6	SuSe	Uhlmann	IWU-NFM	BGU	Oral Exam	CEApp
2	Modeling of Turbulent Flows - RANS and LES	6	WiSe	Uhlmann	IWU-NFM	BGU	Oral Exam	CEApp
5	Basics in Finite Elements	6	WiSe	Betsch	IFM	BGU	Hausarbeit + Oral Exam	Core Competencies
6	Machine Learning and Uncertainty Quantification in Computational Mechanics	6	SuSe	Freitag	IBS	BGU	Oral Exam	Core Competencies
3	Numerical Fluid Mechanics 1	6	WiSe	Uhlmann	IWU-NFM	BGU	Written Exam	Methods
4	Advanced Computational Fluid Dynamics	6	SuSe	Uhlmann	IWU-NFM	BGU	Oral Exam	Methods
49	Multiscale and Multiphysics Modelling for Porous Building Materials		SuSe	Patel	IMB	BGU	Other: Presentation	CEApp
12	Reactor Modeling with CFD	6	SuSe	Wehinger	CVT	CIW	Other: Presentation + Essay	CEApp
21	Simulation of Fluid Separation Processes	6	WiSe	Zeiner	TVT-THV	CIW	Other: Simulationproject	CEApp
22	Computer-aided reactor design	6	WiSe	Wehinger	CVT	CIW	Other: Source code, poster und presentation	CEApp
17	Thermodynamics	6	SuSe	Enders	ITTK	CIW	Oral Exam	Core Competencies
13	Advanced Methods in Nonlinear Process Control	4	SuSe	Jerono / Meurer	MVM	CIW	Oral Exam	Methods
14	Statistical Thermodynamics	6	SuSe	Enders	ITTK	CIW	Oral Exam	Methods
15	Thermodynamics of Interface	6	SuSe	Enders	ITTK	CIW	Oral Exam	Methods
19	Control of Distributed Parameter Systems	6	SuSe	Meurer	MVM	CIW	Oral Exam	Methods
7	Estimator and Observer Design	6	WiSe	Jerono	MVM	CIW	Oral Exam	Methods, CEApp
8	Data-Based Modeling and Control	6	WiSe	Meurer	MVM	CIW	Oral Exam	Methods, CEApp

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9	Optimal and Model Predictive Control	6	SuSe	Meurer	MVM	CIW	Oral Exam	Methods, CEApp
10	Principles of Constrained Static Optimization	4	WiSe	Jerono / Meurer	MVM	CIW	Oral Exam	Methods, CEApp
11	Introduction to Numerical Simulation of Reacting Flows	8	WiSe	Stein	EBI-TFS	CIW	Course Work + Oral Exam	Methods, CEApp
16	Polymer Thermodynamics	6	WiSe	Enders	ITTK	CIW	Oral Exam	Methods, CEApp
18	Nonlinear Process Control	6	WiSe	Meurer	MVM	CIW	Oral Exam	Methods, CEApp
20	Numerical Simulation of Reacting Multiphase Flows	8	SuSe	Stein	EBI-TFS	CIW	Course work + Oral Exam	Methods, CEApp
24	Nonlinear Control Systems	6	SuSe	Kluwe / Hohmann	IRS	ETIT	Written Exam	CEApp
25	Multivariable Control Systems	6	WiSe	Kluwe / Hohmann	IRS	ETIT	Written Exam	CEApp
26	Robotics, Automation, and Systems Control Lab (RASCL)	6	WiSe	Barth / Hohmann	IRS	ETIT	Oral Exam	CEApp
27	Optimal Control	6	WiSe	Hohmann	IRS	ETIT	Written Exam	Methods
23	Cyber Physical Modeling	6	SuSe	Barth / Hohmann	IRS	ETIT	Written Exam	Methods, CEApp
30	Computational Inelasticity	6	SuSe	Böhlke	ITM-KM	MACH	Oral Exam	CEApp
38	Machine Dynamics II	4	WiSe	Proppe	ITM-TM2	MACH	Oral Exam	CEApp
41	Modeling of polymer and suspension flows for industrial manufacturing processes	4	SuSe	Wittemann	FAST-LB	MACH	Oral Exam	CEApp
42	Particle Dynamics and Atomistic Simulation	4	SuSe	Weygand	IAM-ZM	MACH	Oral Exam	CEApp
45	Computational Mechanics of Materials	6	WiSe	Böhlke	ITM-KM	MACH	Course work + Written Exam	Core Competencies

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28	Nonlinear Continuum Mechanics	6	SuSe	Böhlke	ITM-KM	MACH	Oral Exam	Methods
31	Introduction to multibody dynamics	8	SuSe	Fidlin	ITM-D	MACH	Written Exam	Methods
32	Mathematical Methods in Thermodynamics	6	SuSe	Fischlschweiger	ITT	MACH	Oral Exam	Methods
33	Mathematical Methods in Fluid Mechanics	6	WiSe	Frohnapfel/Gatti	ISTM	MACH	Written Exam	Methods
34	Data and Artificial Intelligence for Numerical Simulations	6	SuSe	Koeppel	IAM-MMS	MACH	Other	Methods
35	Phase-Field Method in Thermomechanics	4	SuSe	Prahs	IAM-MMS	MACH	Oral Exam	Methods
36	Modeling and simulation of multiphysics systems	4	SuSe	Proppe	ITM-TM2	MACH	Written Exam	Methods
37	Uncertainty Quantification	8		Proppe	ITM-TM2	MACH	Oral Exam	Methods
39	Probabilistic Measurement and Estimation	6	SuSe	Stiller	mrt	MACH	Written Exam	Methods
40	Deep Learning for Engineers	6	SuSe	Stiller	mrt	MACH	Written Exam	Methods
43	Theory of Stability	6	SuSe	Fidlin	ITM-D	MACH	Oral Exam	Methods
44	Fundamentals of Phase Field Modeling	4	SuSe	Schneider	IAM-MMS	MACH	Oral Exam	Methods
29	Computational Elasticity	6	WiSe	Böhlke	ITM-KM	MACH	Oral Exam	Methods, CEApp
48	Numerical Methods for Engineering Applications	4	SuSe	Kärger	FAST-LB	MACH	Written Exam	CEApp
46	Computational Fluid Dynamics and Simulation Lab	4	SuSe	Krause	IANM/MVM-LBRG	MATH	Other: Project report and presentation	Methods, CEApp
47	Parallel Computing	6	WiSe	Krause	IANM/MVM-LBRG	MATH	Oral Exam	Methods, CEApp