

# Course Scheme Master Mechanical Engineering and Management (IMPMEM)

- Specializations of the study course IMPMEM are divided into two sections. Students have to choose one specialization of the first section ("I Management") and one specialization of the second section ("II Materials", "II Mechatronics" or "II Product Development and Production").
- NIT students cannot choose from the first section ("I Management"), they choose instead two specializations from the second section ("II Materials", "II Mechatronics" or "II Product Development and Production").
- Students who already had the module "Vibration Theory (GES)" in their bachelor study course are not allowed to enroll for the module mentioned above.

Re com. Term	Module Name (German)	Modul Name (English)	Institute	C/EC (1)	CM/OM (2)	Grade	Examination Form(3)	CP (4)	Course Name (German)	Course Name (English)	Course Form LV(5)	Language (6)	SWS (7)	Sem. LV
<b>Core qualification</b> Compulsory Courses: 36 LP Optional Courses: 18 LP														
1	Computer Aided Design and Computation	Computer Aided Design and Computation	M-16	C	CM	Yes	KI	6						
									Computer Aided Design and Computation	Computer Aided Design and Computation	VL	EN	2	1
									Computer Aided Design and Computation	Computer Aided Design and Computation	UE	EN	2	1
1	Mehrphasige Materialien	Multiphase Materials	M-11	C	CM	Yes	KI	6						
									Angewandte Computermethoden für Materialwissenschaften	Applied Computational Methods for Material Science	POL	DE/EN	3	1
									Aufbau und Eigenschaften der Verbundwerkstoffe	Structure and Properties of Composites	VL	EN	2	1
1	Robotik	Robotics	M-24	C	CM	Yes	KI	6						
									Robotik: Modellierung und Regelung	Robotics: Modelling and Control	VL	EN	3	1
									Robotik: Modellierung und Regelung	Robotics: Modelling and Control	UE	EN	2	1
1	Marketing und Kommunikation	Marketing and Communication	W-3	EC	CM	Yes	KI	6						
									Business-to-Business Marketing	Business-to-Business Marketing	VL	EN	2	1
									Fallstudien zu Marketing und Kommunikation	Case Studies of Marketing and Communication	UE	EN	1	1
									Interkulturelles Management und Kommunikation	Intercultural Management and Communication	VL	EN	2	1
1-2	Ausgewählte Themen aus Management und Recht	Selected Topics of Management and Law	M-17	EC	OM			6						
						No	SA	2	Innovation Debates	Innovation Debates	POL	EN	2	1
						No	KI	2	Internationales Recht für Ingenieure (Vorlesung)	International Law for Engineers (lecture)	VL	EN	2	1
						No	HA	4	Rechnungswesen	Accounting	VL	EN	2	1
											HÜ	EN	2	1

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						No	KI	2	Empirische Forschungsmethoden in der Betriebswirtschaftslehre	Empirical Business Research Methods	VL	EN	2	2
						No	HA	2	Forschungsseminar für Fortgeschrittene	Advanced Research Seminar	SE	EN	2	2
						No	HA	2	Internationales Recht für Ingenieure (Seminar)	International Law for Engineers (Seminar)	SE	EN	2	2
1-2	Ausgewählte Themen der Betriebswirtschaftslehre (IPM)	Selected Topics of Business Administration (IPM)	W-9	EC	CM	No	KI	6						
									Investition und Finanzierung	Corporate Finance	VL	EN	2	1
									Methodenbasiertes Projektmanagement	Project Management Methods	VL	EN	1	2
									Personalmanagement und Organisationsentwicklung	Human Resource Management and Organization Design	VL	EN	2	2
1-2	Ausgewählte Themen der Werkstoffe, Mechatronik und Produktentwicklung und Produktion	Selected Topics of Materials, Mechatronics, and Product Development and Production	M-17	EC	OM			6						
						Yes	MdIP	3	Ermüdung und Schadenstoleranz	Fatigue & Damage Tolerance	VL	EN	2	1
						Yes	KI	3	Fügen von Polymer-Metall Leichtbaustrukturen	Joining of Polymer-Metal Lightweight Structures	VL	EN	2	1
											PR	EN	1	1
						Yes	MdIP	3	Leichtbaupraktikum	Lightweight Design Practical Course	POL	DE/EN	3	2
						Yes	KI	3	Metallische Werkstoffe für Luftfahrtanwendungen	Metallic Materials for Aircraft Applications	VL	EN	2	2
2	Industriepraktikum MEM	Internship MEM	M-17	EC	CM	No	SA lt. PrO	6						
3	Projektarbeit MEM	Research Project MEM	not defined	C	CM	Yes	PA lt. FSPO	12						
1-3	Nichttechnische Ergänzungskurse im Master	Nontechnical Elective Complementary Courses for Master	0-TUHH	C	OM			6	Selection out of Catalogue					
<b>Specialisation Management Compulsory Courses: 0 LP Optional Courses: 18 LP</b>														
1	Technologiemanagement	Technology Management	W-7	EC	CM	Yes	KI	6						
									Technologiemanagement	Technology Management	POL	EN	3	1
									Technologiemanagement Seminar	Technology Management Seminar	POL	EN	2	1
2	International Production Management and Enterprise Resource Planning: CERMEDES AG	International Production Management and Enterprise Resource Planning: CERMEDES AG	W-9	EC	CM	Yes	SA	6						
									International Production Management and Enterprise Resource Planning: CERMEDES AG	International Production Management and Enterprise Resource Planning: CERMEDES AG	SE	EN	2	2
2	Internationale Logistik und Verkehrssysteme	International Logistics and Transport Systems	W-8	EC	CM	Yes	KI	6						

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									Gütermobilität, Logistik, Verkehr	Mobility of Goods, Logistics, Traffic	VL	EN	2	2
									Internationale Logistik und Verkehrssysteme	International Logistics and Transport Systems	POL	EN	3	2
2	Marketing (Vertrieb und Services / Innovationsmarketing)	Marketing (Sales and Services / Innovation Marketing)	W-3	EC	CM	Yes	KI	6						
									Marketing (Innovation Marketing / Sales and Services)	Marketing (Innovation Marketing / Sales and Services)	POL	EN	5	2
2	Quantitative Forschungsmethoden	Quantitative Research Methods	W-9	EC	CM	Yes	PA	6						
									Quantitative Forschungsmethoden	Quantitative Research Methods	PS	EN	3	2
2	Technology Entrepreneurship	Technology Entrepreneurship	W-11	EC	CM	Yes	PA	6						
									Creation of Business Opportunities	Creation of Business Opportunities	POL	EN	3	2
									Entrepreneurship	Entrepreneurship	VL	EN	2	2
2	Volkswirtschaftslehre und Außenwirtschaftslehre	Economics	W-4	EC	CM	Yes	KI	6						
									Außenwirtschaftslehre	International Economics	VL	EN	2	2
									Konzepte der Volkswirtschaftstheorie und -politik	Main Theoretical and Political Concepts	VL	EN	2	2
3	Angewandte Statistik für Ingenieure	Applied Statistics	M-3	EC	CM	Yes	KI	6						
									Angewandte Statistik für Ingenieure	Applied Statistics	VL	DE/EN	2	3
									Angewandte Statistik für Ingenieure	Applied Statistics	UE	DE/EN	1	3
									Angewandte Statistik für Ingenieure	Applied Statistics	POL	DE/EN	2	3
3	Corporate Entrepreneurship & Growth	Corporate Entrepreneurship & Growth	W-11	EC	CM	Yes	PA	6						
									Corporate Entrepreneurship in the Digital Age	Corporate Entrepreneurship in the Digital Age	SE	EN	3	3
									Entrepreneurial Finance	Entrepreneurial Finance	SE	EN	2	3
3	Führung, Organisation und Personalmanagement	Management, Organization and Human Resource Management	W-9	EC	CM	Yes	KI	6						
									Führung, Organisation und Personalmanagement	Management, Organization and Human Resource Management	VL	EN	2	3
									Führung, Organisation und Personalmanagement	Management, Organization and Human Resource Management	SE	EN	2	3
3	Produktplanung	Product Planning	W-7	EC	CM	Yes	KI	6						
									Produktplanung	Product Planning	POL	EN	3	3
									Produktplanung Seminar	Product Planning Seminar	POL	EN	2	3
<b>Specialisation Mechatronics</b> Compulsory Courses: 0 LP Optional Courses: 18 LP														
1	Technische Schwingungslehre (GES)	Vibration Theory (GES)	M-13	EC	CM	Yes	KI	6						
									Technische Schwingungslehre (GES)	Vibration Theory (GES)	VL	EN	2	1
									Technische Schwingungslehre (GES)	Vibration Theory (GES)	HÜ	EN	1	1

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2	Nichtlineare Dynamik	Nonlinear Dynamics	M-14	EC	CM	Yes	KI	6						
									Nichtlineare Dynamik	Nonlinear Dynamics	VL	DE/EN	4	2
3	3D Computer Vision	3D Computer Vision	E-2	EC	CM	Yes	KI	6						
									3D Computer Vision	3D Computer Vision	VL	EN	2	3
									3D Computer Vision	3D Computer Vision	UE	EN	2	3
3	CMOS-Nanoelektronik mit Praktikum	CMOS Nanoelectronics with Practice	E-9	EC	CM	Yes	KI	6						
									CMOS-Nanoelektronik	CMOS Nanoelectronics	VL	EN	2	3
									CMOS-Nanoelektronik	CMOS Nanoelectronics	UE	EN	1	3
									CMOS-Nanoelektronik	CMOS Nanoelectronics	PR	EN	2	3
3	Digitale Signalverarbeitung und Digitale Filter	Digital Signal Processing and Digital Filters	E-8	EC	CM	Yes	KI	6						
									Digitale Signalverarbeitung und Digitale Filter	Digital Signal Processing and Digital Filters	VL	EN	3	3
									Digitale Signalverarbeitung und Digitale Filter	Digital Signal Processing and Digital Filters	HÜ	EN	1	3
3	Mikrosystemtechnik	Microsystem Engineering	E-7	EC	CM	Yes	KI	6						
									Mikrosystemtechnik	Microsystem Engineering	VL	EN	2	3
									Mikrosystemtechnik	Microsystem Engineering	UE	EN	1	3
									Mikrosystemtechnik	Microsystem Engineering	POL	EN	1	3
3	Prozessautomatisierungstechnik	Industrial Process Automation	E-1	EC	CM	Yes	KI	6						
									Prozessautomatisierungstechnik	Industrial Process Automation	VL	EN	2	3
									Prozessautomatisierungstechnik	Industrial Process Automation	UE	EN	2	3
3	Theorie und Entwurf regelungstechnischer Systeme	Control Systems Theory and Design	E-14	EC	CM	Yes	KI	6						
									Theorie und Entwurf regelungstechnischer Systeme	Control Systems Theory and Design	VL	EN	2	3
									Theorie und Entwurf regelungstechnischer Systeme	Control Systems Theory and Design	UE	EN	2	3
<b>Specialisation Product Development and Production</b> Compulsory Courses: 0 LP Optional Courses: 18 LP														
2	Boundary-Elemente-Methoden	Boundary Element Methods	M-16	EC	CM	Yes	KI	6						
									Boundary-Elemente-Methoden	Boundary Element Methods	VL	EN	2	2
									Boundary-Elemente-Methoden	Boundary Element Methods	HÜ	EN	2	2
2	High-Order FEM	High-Order FEM	M-10	EC	CM	Yes	KI	6						
									High-Order FEM	High-Order FEM	VL	EN	3	2
									High-Order FEM	High-Order FEM	HÜ	EN	1	2
2	Rapid Production	Rapid Production	G-2	EC	CM	Yes	KI	6						
									Rapid Production	Rapid Production	VL	EN	2	2
									Rapid Production	Rapid Production	SE	EN	2	2

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3	3D Printing Labor	3D Printing Laboratory	G-2	EC	CM	No	SA	6						
									3D Printing Labor	3D Printing Laboratory	PR	EN	3	3
3	Lasersysteme und Metallische Konstruktionswerkstoffe	Laser Systems and Metallic Materials	G-2	EC	CM	Yes	KI	6						
									Lasersystem- und -prozessstechnik	Laser Systems and Process Technologies	VL	EN	2	3
									Metallische Konstruktionswerkstoffe	Structural Metallic Materials	VL	EN	2	3
<b>Specialisation Materials</b> Compulsory Courses: 0 LP Optional Courses: 18 LP														
1	Kontinuumsmechanik	Continuum Mechanics	M-15	EC	CM	Yes	MdIP	6						
									Kontinuumsmechanik	Continuum Mechanics	VL	DE/EN	2	1
									Kontinuumsmechanik Übung	Continuum Mechanics Exercise	UE	DE/EN	2	1
2	Kunststoffverarbeitung - Vom Molekül zum Composite Bauteil	Manufacturing with Polymers and Composites - From Molecule to Part	M-11	EC	CM	Yes	SA	6						
									Verarbeitung von Kunststoffen und Verbundwerkstoffen	Manufacturing with Polymers and Composites	VL	EN	2	2
									Vom Molekül zum Composite Bauteil	From Molecule to Composites Part	POL	DE/EN	2	2
2	Mechanische Eigenschaften	Mechanical Properties	M-9	EC	CM	Yes	KI	6						
									Mechanisches Verhalten spröder Materialien	Mechanical Behaviour of Brittle Materials	VL	DE/EN	2	2
									Theorie der Versetzungsplastizität	Dislocation Theory of Plasticity	VL	DE/EN	2	2
3	Moderne Funktionsmaterialien	Advanced Functional Materials	M-22	EC	CM	Yes	KI	6						
									Moderne Funktionsmaterialien	Advanced Functional Materials	VL	DE/EN	2	3
3	Werkstoffmodellierung	Material Modeling	M-15	EC	CM	Yes	MdIP	6						
									Werkstoffmodellierung	Material Modeling	VL	DE/EN	2	3
									Werkstoffmodellierung	Material Modeling	UE	DE/EN	2	3
3-4	Grenzflächen und grenzflächenbestimmte Materialien	Interfaces and interface-dominated Materials	M-22	EC	CM	Yes	KI	6						
									Die hierarchischen Materialien der Natur	Nature's Hierarchical Materials	SE	EN	2	3
									Grenzflächen	Interfaces	VL	DE/EN	2	4
<b>Thesis</b> Compulsory Courses: 30 LP Optional Courses: 0 LP														
4	Masterarbeit	Master Thesis	not defined	C	CM	Yes	It. FSPO	30						

### Explanation:

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

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

<sup>3</sup>Re=Presentation, KI=Written exam, MdIP=Oral exam, SA=Written elaboration, KI=Written exam, HA=Homework, MdIP=Oral exam, SA It. PrO=Written elaboration (accord. to Internship Regulations), PA=Project, SA=Written elaboration, PA It. FSPO=Project (accord. to Subject Specific Regulations), It. FSPO=according to Subject Specific Regulations

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

<sup>5</sup>VL=Lecture, SE=Seminar, UE=Recitation Section (small), POL=Problem-based Learning, PR=Laboratory Course, PS=Project Seminar, HÜ=Recitation Section (large)

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

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