

Specialization in Management

One of the following seven specializations in management must be chosen.

In the specialization Innovation & Entrepreneurship a seminar of the Advanced Seminars Innovation & Entrepreneurship must be successfully completed in the scope of at least 6 credits.

Within the specialization Innovation & Entrepreneurship, further elective modules amounting to a total of 24 credits from a supplementary elective catalogue must also be successfully completed. The supplementary elective catalogue will be announced by the TUM School of Management in a suitable form and in good time before the start of lectures.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem. *	SWS	Credits	Type of examination, weighting ratio	Duration of examination	Language of instruction
	Innovation- & Entrepreneurship (IE)								
WIB18812_1	Advanced Seminar Innovation & Entrepreneurship	Elective	4 Se	3./4. Sem.	4	6 Credits	Research paper	n.a.	English
WI000816	Labor law	Elective	2 V + 2 Ü	1./3. Sem.	4	6 Credits	Written exam	120 min	German/ English
WI000116	Lead-User-Project	Elective	4 Se	3./4. Sem.	4	6 Credits	Project work	n.a.	German/ English
WI000259	Case Study Sem.: Strat. Mgmt. of Technology & Innovation.	Elective	4 Se	2./4. Sem.	4	6 Credits	Research paper	n.a.	English
WI001154	Managing Innovation: From Theory to Decision Simulation	Elective	4 Se	1.-4. Sem.	4	6 Credits	Laboratory performance	n.a.	German/ English
WI001004	Private Equity	Elective	2 V + 2 Ü	1./3. Sem.	4	6 Credits	Written exam	60 min	English
WI001166	Advanced Topics in Innovation & Entrepreneurship	Elective	4 Se	2./3./4. Sem.	4	6 Credits	Research paper	n.a.	German/ English
MW2245	Think. Make. Start.	Elective	4 Pr	1.-4. Sem.	4	6 Credits	oral examination	n.a.	English
IN4183	Master Practical Course – BioInnovation: from unmet clinical needs to solution concepts	Elective	10 Pr	1.-4. Sem.	6	10 Credits	n.a.	n.a.	English

In the specialization of Marketing, Strategy & Leadership, one of the seminars offered within the framework of the Advanced Seminars Marketing, Strategy & Leadership must be successfully completed in the amount of at least 6 credits.

Within the specialization Marketing, Strategy & Leadership, further elective modules amounting to a total of 24 credits from a supplementary elective catalogue must also be successfully completed. The supplementary elective catalogue will be announced by the TUM School of Management in an appropriate way and in good time before the start of lectures.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination, weighting ratio	Duration of examination	Language of instruction
	Marketing, Strategy & Leadership (MSL)								
WIB17003	Advanced Seminar Marketing, Strategy & Leadership -Strategy and Organization	Elective	4 Se	1.-4. Sem.	4	6 Credits	Research paper	n.a.	German/English
WIB05004	Advanced Seminar Marketing, Strategy & Leadership (Marketing)	Elective	4 Se	1.-4. Sem.	4	6 Credits	Laboratory performance	n.a.	English
WI000817	Marketing Compliance	Elective	4 V	1./3. Sem.	4	6 Credits	Written exam	120 min	German
WI001128	Strategies in MNEs	Elective	2 V + 2 Ü	3. Sem	4	6 Credits	Written exam	60 min	English
WI000816	Labor Law	Elective	2 V +2 Ü	1./3. Sem.	4	6 Credits	Written exam	120 min	German/English
WI001140	Luxury Marketing	Elective	4 V	1.-4. Sem.	4	6 Credits	Presentation	n.a.	English
WI001116	Applied Personnel Development	Elective	4 Se	2./4. Sem.	4	6 Credits	Written exam	120 min	German/English
WI000994	Negotiation Strategies	Elective	4 Se	1./3. Sem.	4	6 Credits	Research paper	n.a.	German/English
SG110500	Sponsorship-linked Marketing	Elective	2 PJ+2 Se	1.-4. Sem.	4	6 Credits	Research paper	n.a.	English

In the specialization Operations & Supply Chain Management, one of the seminars offered in the Advanced Seminars Operations & Supply Chain Management must be successfully completed with at least 6 credits.

Within the specialization Operations & Supply Chain Management, additional elective modules amounting to a total of 24 credits from a supplementary elective catalogue must also be successfully completed. The supplementary elective catalogue will be announced by the TUM School of Management in a suitable way and in good time before the start of lectures.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination, weighting ratio	Duration of examination	Language of instruction
	Operations & Supply Chain Management (OSCM)								
WIB34001	Advanced Seminar Operations & Supply Chain Management	Elective	4 Se	1.-4. Sem.	4	6 Credits	Research paper	n.a.	English
WI000979	Inventory Management	Elective	2 V + 2 Ü	2./4. Sem.	4	6 Credits	Written exam	90 min	English
WI000976	Logistics and Operations Strategy	Elective	2 V + 2 Ü	1./3. Sem.	4	6 Credits	Written exam	90 min	English
WI200541	Planning and Scheduling of Complex Operations: Models, Methods and Applications	Elective	4 V	1.-4. Sem.	4	6 Credits	Written exam + exercise performance 1:1	60 min	English
WI000977	Stochastic Modeling and Optimization	Elective	2 V + 2 Ü	1./3. Sem.	4	6 Credits	Written exam	90 min	English
WI001034	Healthcare Operations Management	Elective	2 V + 2 Ü	2./4. Sem.	4	6 Credits	Written exam + exercise performance 3:2	90 min	English
WI001118	Behavioral Operations Management	Elective	2 V + 2 Ü	1./3. Sem.	4	6 Credits	Written exam + exercise performance 1:1	45 min	English
WI000836	Advanced Planning in Supply Chains - Illustrating the Concepts Using an SAP APO Case Study	Elective	4 V	2./3./4. Sem.	4	6 Credits	Written exam	90 min.	English
WI001135	Stochastic Optimization	Elective	2 V + 2 Ü	2./4. Sem.	4	6 Credits	Written exam + exercise performance 3:2	120 min	English
WIB19823	Advanced Topics in Operations & Supply Chain Management I	Elective	4 Se	1.-4. Sem.	4	6 Credits	Written exam	120 min,	German/ English

In the Finance & Accounting specialization one of the seminars offered within the framework of the Advanced Seminars Finance & Accounting must be successfully completed in the amount of at least 6 credits.

Within the Finance & Accounting specialization further elective modules amounting to a total of 24 credits from a supplementary elective catalogue must also be successfully completed. The supplementary elective catalogue will be announced by the TUM Scholl of Management in a suitable way and in good time before the start of lectures.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination, weighting ratio	Duration of examination	Language of instruction
	Finance & Accounting (FA)								
WIB23005	Advanced Seminar Finance & Accounting	Elective	4 Se	1.-4. Sem.	4	6 Credits	Research paper	n.a.	German/ English
WI000232	Derivatives	Elective	2 Se	2./4. Sem.	2	3 Credits	Written exam	60 min	English
WI000231	Asset Management	Elective	2 V + 2 Ü	1./3. Sem.	4	6 Credits	Written exam	120 min	English
WI000092	Banking and Risk Management	Elective	V Se	1./3. Sem.	2	3 Credits	Written exam	60 min	English
WI000998	Group Accounting and IFRS	Elective	2 V+2 Ü	2./4. Sem.	4	6 Credits	Written exam	120 min	German
WI000234	Value-based Management	Elective	2 V + 2 Ü	2./4. Sem.	4	6 Credits	Written exam	120 min	English
WI000233	Management Accounting	Elective	2 V + 2 Ü	1./3. Sem.	4	6 Credits	Written exam	120 min	German/ English
WI001004	Private Equity	Elective	2 V + 2 Ü	1./3. Sem.	4	6 Credits	Written exam	60 min	English
WI000138	Tax Law	Elective	2 V	1./3. Sem.	2	3 Credits	Written exam	60 min	German/ English
WI001089	Capital Markets Law	Elective	2 V	1./3. Sem.	2	3 Credits	Written exam	60 min	German
WI000994	Negotiation Strategies	Elective	4 Se	1./3. Sem.	4	6 Credits	Research paper	n.a.	German/ English
WI000993	Incentives and Performance Measurement	Elective	4 V	1./3. Sem.	4	6 Credits	Written exam	120 min	German/ English
WIB06746	Advanced Topics in Finance & Accounting	Elective	2 V	1.-4. Sem.	2	3 Credits	Written exam	60 min	German/ English

In the Economics & Policy specialization one seminar of the Economics & Policy Advanced Seminars must be successfully completed with at least 6 credits.

Within the Economics & Policy specialization, further elective modules amounting to a total of 24 credits from a supplementary elective catalogue must also be successfully completed. The TUM School of Management will announce the supplementary elective catalogue in a suitable way and in good time before the start of lectures.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem. *	SWS	Credits	Type of examination, weighting ratio	Duration of examination	Language of instruction
	Economics & Policy (EP)								
WIV05001	Advanced Seminar in Economics and Policy	Elective	4 Se	1.-4. Sem.	4	6 Credits	Research paper	n.a.	German/English
WI000100	Economics III - Advanced Microeconomics	Elective	2 V + 2 Ü	1.-4. Sem.	4	6 Credits	Written exam	120 min	German/English
WI000104	Public Economics I - Economic Theory of the State	Elective	2 V	1.-4. Sem.	2	3 Credits	Written exam	60 min	German/English
WI000105	Public Economics II - Theory and Politics of Taxation	Elective	2 V	1.-4. Sem.	2	3 Credits	Written exam	60 min	German/English
WI000107	Public Economics III - Theory and Politics of Public Debt	Elective	2 V	1.-4. Sem.	2	3 Credits	Written exam	60 min	German/English
WI000109	Public Economics IV - Theory and Politics of Income Distribution	Elective	2 V	1.-4. Sem.	2	3 Credits	Written exam	60 min	German/English
WI001133	Advanced Seminar Managerial Economics	Elective	4 Se	1.-4. Sem.	4	6 Credits	Research paper	n.a.	English
WI001145	Energy Economics	Elective	2 V+ 2 Ü	1.-4. Sem..	4	6 Credits	Written exam	120 min	English
WI000102	Industrial Organization	Elective	2 V + 2 Ü	1.-4. Sem.	4	6 Credits	Written exam	120 min	German/English
WI001155	Environmental Economics and Environmental Management	Elective	4 V	1.-4. Sem.	4	6 Credits	Written exam	120 min	German/English
WI000202	Environmental Policy	Elective	2 V	1.-4. Sem.	2	3 Credits	Written exam	60 min	German/English
WI000658	Public Economics V – Public Choice	Elective	2 Se	1.-4. Sem.	2	3 Credits	Research paper	n.a.	German/English

In the specialization Energy Markets, a seminar of the Advanced Seminar Energy Markets must be successfully completed in the scope of at least 6 credits.

Within the Energy Markets specialization, further elective modules amounting to a total of 24 credits from a supplementary elective catalogue must also be successfully completed. The supplementary elective catalogue will be announced by the TUM School of Management in a suitable way and in good time before the start of lectures.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem. *	SWS	Credits	Type of examination, weighting ratio	Duration of examination	Language of instruction
	Energy Markets								
WIB29001	Advanced Seminar Energy Markets	Elective	4 Se	1.-4. Sem.	4	6 Credits	Research paper	n.a.	German/English
WI000992	Energy Trading	Elective	2 V + 2 Ü	2./4. Sem.	4	6 Credits	Written exam	60 min	English
WI000946	Energy Markets I	Elective	2 V + 2 Ü	2./3./4. Sem.	4	6 Credits	Written exam	60 min	English
WI001125	Energy Markets II	Elective	2 V + 2 Ü	2./3./4. Sem.	4	6 Credits	Written exam	60 min	English
WI001039	Challenges in Energy Markets I	Elective	2 V	2./4. Sem.	2	3 Credits	Written exam	60 min	German/English
WI001066	Challenges in Energy Markets II	Elective	2 V	1./3. Sem.	2	3 Credits	Written exam	60 min	German/English
WI001145	Energy Economics	Elective	2 V+ 2 Ü	1.-4. Sem.	4	6 Credits	Written exam	120 min	English
WI001135	Stochastic Optimization	Elective	2 V+ 2 Ü	2./4. Sem.	4	6 Credits	Written exam + exercise performance 3:2	120 min	English
WI001144	Advanced Topics in Energy Trading	Elective	2 V+ 2 Ü	2./4. Sem.	4	6 Credits	Laboratory performance	n.a.	English
WI001157	Advanced Seminar Energy Markets: Electricity Market Economics	Elective	4 Se	1.-4. Sem.	4	6 Credits	Research paper	n.a.	German/English

In the specialization Life Sciences & Management a seminar of the Advanced Seminars Life Sciences & Management must be successfully completed in the scope of at least 6 credits.

Within the Life Sciences & Management specialization, further elective modules amounting to a total of 24 credits from a supplementary elective catalogue must also be successfully completed. The supplementary elective catalogue will be announced by the TUM School of Management in a suitable way and in good time before the start of lectures.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination, weighting ratio	Duration of examination	Language of instruction
	Life Sciences & Management (LSM)								
WIB14002	Advanced Seminar Life Sciences & Management	Elective	4 Se	1.-4. Sem.	4	6 Credits	Written exam	180 min.	German/ English
WI000836	Advanced Planning in Supply Chains - Illustrating the Concepts Using an SAP APO Case Study	Elective	3 V + 1 Ü	2./3./4. Sem.	4	6 Credits	Written exam	90 min.	English
WIB19002	Advanced Topics in Operations & Supply chain Management	Elective	4 Se	1.-4. Sem.	4	3 Credits	Written exam	120 min.	English
WI000948	Food Economics	Elective	2 V + 2 Se	1./3. Sem.	4	6 Credits	Oral examination + research paper 1:1	20 min	English
WI100311	Analysis in Agribusiness Marketing	Elective	4 Se	2./4. Sem.	4	6 Credits	Research paper	n.a.	German/ English
WI001123	Sustainability Marketing and Consumption	Elective	4 Se	2./4. Sem.	4	5 Credits	Written exam	60 min	English
ED0027	Consumer History	Elective	4 Se	2./4. Sem.	4	6 Credits	Research paper	n.a.	English
WI000946	Energy Markets I	Elective	2 V + 2 Ü	2./3./4. Sem.	4	6 Credits	Written exam	60 min	English
WI001125	Energy Markets II	Elective	2 V + 2 Ü	2./3./4. Sem.	4	6 Credits	Written exam	60 min	English
WI000926	International Environmental Policy and Conflict Resolution	Elective	2 V + 2 Se	1./3. Sem.	4	5 Credits	Project work	n.a.	English

Specialization in Technology

Each student must choose an engineering or a natural science specialization and successfully complete modules amounting to 30 credits. Depending on the chosen engineering/scientific specialization the regulations of that subject apply.

Mechanical Engineering

Depending on their previous knowledge, students can choose basic modules or advanced modules in mechanical engineering.

Within the selected competence module catalogue, modules amounting to at least 30 credits from an elective module offer must be successfully completed. This exemplary elective module catalogue will be continuously updated, the current elective module catalogue will be announced by the TUM School of Management in a suitable way and in good time before the start of lectures.

Students who have already successfully completed their Bachelor's degree in Mechanical Engineering, can only choose the major modules in Mechanical Engineering.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem. *	SWS	Credits	Type of examination , weighting ratio	Duration of examination	Language of instruction
	Mechanical Engineering basic modules (minor)								
MW2013 MW2016	Basics of Machines Drawing and Computer Aided Design 1 & 2	Elective	2 V + 2 Ü	1./2. Sem.	4	5	exercise performances (academic performances) and a written exam	60 min	German
MW1108	Engineering Mechanics for Technology Management	Elective	2 V + 2 Ü	1. Sem.	4	6	Written exam	120 min	German
MW1694	Machine Elements – Basics, Manufacturing, Application ¹⁾	Elective	3 V + 2 Ü	3. Sem.	5	7	Written exam	120 min	German
BV350007	Materials in Mechanical Engineering	Elective	2 V + 2 Ü	2. Sem.	4	6	Written exam	90 min	German
MW2021	Fluid Mechanics I ²⁾	Elective	2 V + 2 Ü	4. Sem.	4	5	Written exam	90 min	German
MW1903	Bioprocess Engineering	Elective	2 V + 1 Ü	1./3. Sem.	3	5	Written exam	90 min	German
MW1918	Industrial Software Engineering	Elective	2 V + 1 Ü	2./4. Sem.	3	5	Written exam	90 min	German
MW1932	Basics of Casting and Metal Forming	Elective	2 V + 1 Ü	2./4. Sem.	3	5	Written exam	90 min	German
MW2015	Basics of Thermodynamics	Elective	3 V + 2 Ü	1./3. Sem.	5	6	Written exam	120 min	German
MW2156	Metal-cutting Manufacturing Processes	Elective	2 V + 1 Ü	2./4. Sem.	3	5	Written exam	90 min	German

- 1) Students who choose machine elements should already demonstrate the skills of the modules CAD and Machine Drawing as well as Materials in Mechanical Engineering.
- 2) Students who want to choose Fundamentals of Fluid Mechanics 1 should already demonstrate the competences of the module Technical Mechanics.

	Mechanical engineering advanced modules (major)								
MW1921	Material Flow and Logistics	Elective	3 V	1./3. Sem.	3	5 Credits	Written exam	90 min	German
MW1902	Industrial Automation	Elective	2 V + 1 Ü	1./3. Sem.	3	5 Credits	Written exam	90 min	German
MW0084	Assembly Technologies	Elective	2 V + 1 Ü	1./3. Sem.	3	5 Credits	Written exam	90 min	German
MW0102	Production Ergonomics	Elective	2 V + 1 Ü	1./3. Sem.	3	5 Credits	Written exam	90 min	German
MW0068	Material Flow Systems	Elective	3 V	2./4. Sem.	3	5 Credits	Written exam	90 min	German
MW0097	Layout Planning of Logistical Systems	Elective	2 V + 1 Ü	2./4. Sem.	3	5 Credits	Written exam	90 min	German
MW2129	Ergonomics	Elective	2 V + 1 Ü	1./3. Sem.	n.a.	5 Credits	Written exam	90 min	German
MW0107	Networked Production - Industry 4.0	Elective	2 V + 1 Ü	2./4. Sem.	3	5 Credits	Written exam	90 min	German
MW0036	Factory Planning	Elective	2 V + 1 Ü	2./4. Sem.	3	5 Credits	Written exam	90 min	German
MW0049	Joining Technologies	Elective	2 V + 1 Ü	2./4. Sem.	3	5 Credits	Written exam	90 min	German
MW0010	System Engineering for Vehicle Drive Lines	Elective	2 V + 1 Ü	1./3. Sem.	3	5 Credits	Written exam	90 min	German
MW1911	Basics of Motor Vehicle Construction	Elective	2 V + 1 Ü	1./3. Sem.	3	5 Credits	Written exam	90 min	German
MW1919	Lightweight Structures	Elective	2 V + 1 Ü	1./3. Sem.	3	5 Credits	Written exam	90 min	German
MW0101	Product Ergonomics	Elective	2 V + 1 Ü	2./4. Sem.	3	5 Credits	Written exam	90 min	German
MW1909	Energy Systems 1 ³⁾	Elective	2 V + 1 Ü	1./3. Sem.	3	5 Credits	Written exam	90 min	German
MW1740	Sustainable Energy Systems with Seminar	Elective	2 V + 1 Se	2./4. Sem.	3	5 Credits	Written and oral examination	60 min	German
MW2023	Heat Transfer Phenomena	Elective	2 V + 1 Ü	2./4. Sem.	3	4 Credits	Written exam	90 min	German
MW2244	Energy from Biomass and Residuals with Seminar	Elective	2 V + 1 Ü	2./4. Sem.	3	5 Credits	Oral examination	30 min	German
MW1272	Solar Engineering	Elective	2 V + 1 Ü	2./4. Sem.	3	6 Credits	Written exam	120 min	German
MW2119	Turbomachinery	Elective	2 V + 1 Ü	1./3. Sem.	3	5 Credits	Written exam	90 min	German

3) Students who choose energy systems must possess the competences of the Thermodynamics module from the Bachelor's program.

Informatics

Depending on their previous knowledge, students can choose basic modules or advanced modules in computer science.

Within the selected competence module catalog, modules amounting to at least 30 credits from an elective module offer must be successfully completed. This exemplary elective module catalog will be continuously updated, the current elective module catalog will be announced by the TUM School of Management in a suitable way and in good time before the start of lectures.

Students who have already successfully completed the engineering/scientific subject of informatics in the bachelor's program can only choose the major modules in informatics.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination, weighting ratio	Duration of examination	Language of instruction
	Informatics basic modules (minor)								
IN0001	Introduction to Informatics 1	Elective	4 V	1. Sem.	4	6 Credits	Written exam	90 - 150 min	German
IN8024	Information Management for Digital Business Models	Elective	2 V + 2 Ü	1.-4. Sem.	4	6 Credits	Written exam	90 - 150 min	German/ English
IN0004	Introduction to Computer Organization and Technology – Computer Architecture	Elective	4 V + 2 Ü	1.-4. Sem.	6	8 Credits	Written exam	120	German
IN0002	Fundamentals of Programming (Exercises & Laboratory)	Elective	3 P + 1 Ü	1. Sem.	4	6 Credits	Exercise performance	n.a.	German
IN0006	Introduction to Software Engineering	Elective	3 V + 2 Ü	1.-4. Sem.	5	6 Credits	Written exam	90 - 150 min	German
IN0009	Basic Principles: Operating Systems and System Software	Elective	3 V + 2 Ü	1.-4. Sem.	5	6 Credits	Written exam	90 - 150 min	German
IN0008	Fundamentals of Databases	Elective	3 V + 2 Ü	1.-4. Sem.	5	6 Credits	Written exam	90 - 150 min	German
IN0003	Introduction to Informatics 2	Elective	2 V + 2 Ü	1.-4. Sem.	4	5 Credits	Written exam	75 -125 min	German
IN0012	Bachelor Practical Course	Elective	6 P	1.-4. Sem.		10 Credits	Project work	n.a.	German/ English
IN2032	Electronic Publishing / Document Engineering and the World-Wide-Web	Elective	3 V + 1 Ü	1.-4. Sem.	4	5 Credits	Written exam	75 -125 min	German
IN2111	3D User Interfaces	Elective	2 V + 2 Ü	1.-4. Sem.	5	6 Credits	Written exam	90 - 150 min	English
IN2113	Programming Languages	Elective	2 V + 2 Ü	1.-4. Sem.	4	5 Credits	Written exam	75 -125 min	German/ English
IN2209	IT Security	Elective	3 V + 1 Ü	1.-4. Sem.	4	5 Credits	Written exam	75 -125 min	German
IN8009	Algorithms and Data Structures	Elective	4 V + 2 Ü	1.-4. Sem.	6	5 Credits	Written exam	75 -125 min	German

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination, weighting ratio	Duration of examination	Language of instruction
	Informatics advanced modules (major)								
IN0010	Introduction to Computer Networking and Distributed Systems	Elective	3 V + 2 Ü	1.-4. Sem.	5	6 Credits	Written exam	90 - 150 min	German
IN2003	Efficient Algorithms and Data Structures	Elective	4 V + 2 Ü	1.-4. Sem.	6	8 Credits	Written exam	120 - 180 min	English
IN2028	Business Analytics	Elective	2 V + 2 Ü	1.-4. Sem.	4	5 Credits	Written exam	75 min	English
IN2031	Application and Implementation of Database Systems	Elective	3 V + 2 Ü	1.-4. Sem.	5	6 Credits	Written exam	90 - 150 min	German
IN2040	Virtual Machines	Elective	3 V + 2 Ü	1.-4. Sem.	5	6 Credits	Written exam	90 - 150 min	English
IN2062	Techniques in Artificial Intelligence	Elective	3 V + 1 Ü	1.-4. Sem.	4	5 Credits	Written exam	75-125 min	German/ English
IN2067	Robotics	Elective	3 V + 2 Ü	1.-4. Sem.	5	6 Credits	Written exam	90 - 150 min	English
IN2076	Advanced Computer Architecture	Elective	4 V	1.-4. Sem.	4	6 Credits	Written exam	90 - 150 min	English
IN2089	Strategic IT Management	Elective	2 S	1.-4. Sem.	2	3 Credits	Written exam	60 - 75 min	German
IN2097	Advanced Computer Networking	Elective	3 V + 1 Ü	1.-4. Sem.	4	5 Credits	Written exam	75 - 125 min	English
IN2101	Network Security	Elective	3 V + 1 Ü	1.-4. Sem.	4	5 Credits	Written exam	75 - 125 min	English
IN2222	Cognitive Systemes	Elective	3 V	1.-4. Sem.	4	5 Credits	Written exam	75 - 125 min	English
IN2309	Advanced Topics of Software Engineering	Elective	3 V + 3 Ü	1.-4. Sem.	6	8 Credits	Written exam	100 - 180 min	German/ English

Chemistry

Depending on their previous knowledge, students can choose basic modules or advanced modules in chemistry.

In the competence module Catalog "Basic Modules (minor)" 18 credits in the compulsory area and at least 12 credits from the elective area must be successfully completed.

In the Competence Module Catalog Major, modules of at least 30 credits from the elective modules must be successfully completed. This exemplary elective module catalog is continuously updated, the current elective module catalog is announced by the TUM School of Management in a suitable way and in good time before the start of lectures.

Students who have already successfully completed the bachelor's degree course in engineering or natural sciences in chemistry can only choose the major modules in chemistry.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination, weighting ratio	Duration of examination	Language of instruction
	Chemistry basic modules (minor)								
CH6202	General and Inorganic Chemistry	Compulsory	2 V + 2 Ü	1. Sem.	4	6 Credits	Written exam	90 min	German
CH1090	Introduction to Organic Chemistry	Compulsory	2 V + 2 Ü	2. Sem.	4	6 Credits	Written exam	90 min	German
CH1091	Basic Principles of Physical Chemistry 1	Compulsory	2 V + 2 Ü	3. Sem.	4	6 Credits	Written exam	90 min	German
CH0106	Biology for Chemists	Elective	2 V + 1 Ü	2./4. Sem.	3	6 Credits	Written exam	90 min	German
CH1123	Chemical Engineering for TUM-BWL	Elective	4 V	2./4. Sem.	4	6 Credits	Written exam	120 min	German/ English
CH0107	Analytical Chemistry	Elective	2 V	2./4. Sem.	2	3 Credits	Written exam	90 min	German
CH0999	Chemistry Software and Databases for TUM-BWL	Elective	1 V + 1 Ü	2./4. Sem.	2	3 Credits	Written exam	60 min	German
CH5143	Construction Chemicals I	Elective	2 V	1./3. Sem.	2	4 Credits	Written exam	90 min	German
CH5104	Chemical Industry	Elective	2 V	2./4. Sem.	2	4 Credits	Written exam	90 min	German
CH0124	Toxicology and Legal Studies for Chemists	Elective	2 V	2./4. Sem.	2	3 Credits	Written exam	90 min	German
CH4107	Inorganic Solid State and Organometallic Chemistry	Elective	2 V + 2 Ü	1./3. Sem.	4	5 Credits	Written exam	90 min	German
CH4103	Molecular Inorganic Chemistry	Elective	2 V + 2 Ü	2./4. Sem.	4	5 Credits	Written exam	90 min	German
CH4117	Biochemistry	Elective	2 V + 1 Ü	1./3. Sem.	2	5 Credits	Written exam	90 min	German
CH0867	Food Chemistry 1	Elective	2 V + 1 Ü	1./3. Sem.	3	5 Credits	Written exam	90 min	German

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination	Duration of examination	Language of instruction
	Chemistry advanced modules (major)								
CH4107	Inorganic Solid State and Organometallic Chemistry	Elective	2 V+ 2 Ü	1./3. Sem.		5 Credits	Written exam	90 min	German
CH5143	Construction Chemicals I	Elective	2 V	1./3. Sem.	2	4 Credits	Written exam	90 min	German
CH4103	Molecular Inorganic Chemistry	Elective	3 V+ 1 Ü	2./4. Sem.	4	5 Credits	Written exam	90 min	German
CH1019	Laboratory Course in Chemical Engineering	Elective	3 P	2./4. Sem.	3	3 Credits	Laboratory performance	n.a.	German
CH5104	Chemical industry	Elective	2 V	2./4. Sem.	2	4 Credits	Written exam	90 min	German
CH0124	Toxicology and Legal studies for Chemists	Elective	2 V	2./4. Sem.	2	3 Credits	Written exam	90 min	German
CH4117	Biochemistry	Elective	2 V + 1 Ü	1./3. Sem.	3	4 Credits	Written exam	90 min	German
CH6204	Material Flows in Industry and Nature	Elective	2 V	2./4. Sem.	2	3 Credits	Project work	n.a.	German
CH4115	Advanced Analytical Techniques	Elective	4 V	1./3. Sem.	4	5 Credits	Written exam	90 min	German
CH5145	Silicon-organic Materials in Construction Technology	Elective	2 V	1./3. Sem.	2	4 Credits	Written exam	90 min	German
CH1062	Hydrochemistry I	Elective	2 V	1./3. Sem.	2	3 Credits	Written exam	90 min	German
CH5142	Food Chemistry II	Elective	2 V + 1 Ü	2./4. Sem.	3	5 Credits	Written exam	90 min	German
CH0233	Nano Materials	Elective	2 V	2./4. Sem.	2	4 Credits	Written exam	90 min	German
CH0236	Molecular Medicine	Elective	2 V	1./3. Sem.	2	4 Credits	Written exam	90 min	German
CH5115	Molecular Biotechnology	Elective	2 V	2./4. Sem.	2	4 Credits	Written exam	90 min	German
CH0867	Food Chemistry I	Elective	2 V + 1 Ü	1./3. Sem.	3	5 Credits	Written exam	90 min	German
CH0216	Industrial Chemical Processes II - Petrochemical Processes	Elective	2 V	2./4. Sem.	2	3 Credits	Written exam	90 min	German
CH0211	Industrial Chemical Processes I - Refining	Elective	2 V	1./3. Sem.	2	3 Credits	Written exam	90 min	German
CH0217	High Performance Polymers	Elective	2 V	2./4. Sem.	2	3 Credits	Written exam	90 min	German
CH5163	Pharmaceutical Radiochemistry I	Elective	2 V	1./3. Sem.	2	3 Credits	Written exam	90 min	German
CH5164	Pharmaceutical Radiochemistry II	Elective	2 V	2./4. Sem.	2	3 Credits	Written exam	90 min	German
CH5108	Industrial Relevant Activation of Small Molecules	Elective	2 V	1./3. Sem.	3	4 Credits	Written exam	90 min	German
CH0115	Reactivity of Organic Compounds	Elective	2 V+ 2 Ü	1./3. Sem.	4	6 Credits	Written exam	90 min	German

Electrical Engineering and Information Technology

Depending on their previous knowledge, students can choose basic modules or advanced modules in electrical engineering and information technology.

In the competence module catalog basic modules (minor) at least 10 credits from elective area 1 and at least 20 credits from elective area 2 have to be successfully completed.

One of the two specializations ("Electrical Engineering and Information Technology" or "Information Technology and Electronics") must be selected in the competence module catalogue major. In the chosen specialization, modules of at least 30 credits must be successfully completed. This exemplary catalog of elective modules will be continuously updated, the current catalog of elective modules will be announced by the TUM School of Management in a suitable way and in good time before the start of lectures.

Students who have already successfully completed the electrical engineering and information technology engineering subject in the bachelor's program can only choose the advanced modules (majors) in information technology and electronics or energy technology.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination	Duration of examination	Language of instruction
	Electrical engineering and information technology								
	Basic modules (minor)								
	Elective field 1								
EI29821	Principles of Information Engineering	Elective	2 V + 2 Ü	1./3. Sem.	3	5 Credits	Written exam	75 min	German
EI10002	Principles in Electrotechnology	Elective	3 V + 1 Ü	1./3. Sem.	4	6 Credits	Written exam	90 min	English
EI1289	Electrical Engineering (LB-BF-MT)	Elective	2 V + 1 Ü	2./4. Sem.	3	5 Credits	Written exam	90 min	German
	Elective field 2								
EI10003	Analog Electronics	Elective	2 V + 1 Ü	2./4. Sem.	3	5 Credits	Written exam	90 min	English
EI2986	Telecommunication I – Signal Representation	Elective	2 V + 1 Ü	1./3. Sem.	3	5 Credits	Written exam	75 min	German
EI0625	Communication Networks	Elective	3 V + 1 Ü	1./3. Sem.	4	5 Credits	Written exam	90 min	German/English
EI3199	Analog Electronics	Elective	4 P	1./3. Sem.	4	5 Credits	Written exam	90 min	German
EI0638	Renewable Energies	Elective	3 V + 1 Ü	2.-4.Sem.	4	5 Credits	Written exam	60 min	German/English
EI4802	Basics of High-Frequency Engineering	Elective	3 V + 1 Ü	2.-4.Sem.	4	5 Credits	Written or oral exam	60 min or 30 min	German/English
EI2988	Telecommunication II	Elective	2 V + 1 Ü	2.-4.Sem.	3	5 Credits	Written exam	40 min	German/English
EI1286	Devices and Installations in Electrical Power Systems	Elective	2 V + 1 Ü	2.-4. Sem.	3	5 Credits	Written exam	30 min	German/English
EI05551	Internetcommunication	Elective	2 V + 2 Ü	2.-4.Sem.	4	5 Credits	Oral exam	45 min	German/English
EI0644	Photovoltaic Stand Alone Systems	Elective	3 V + 1 Ü	2.-4.Sem.	4	5 Credits	Written exam	60 min	German/English
EI0602	Audio Communication	Elective	2 V + 1 Ü	2.-4.Sem.	4	5 Credits	Oral exam	30 min	German/English
EI0636	Nanoelectronics	Elective	2 V + 1 Ü + 2 P	1.-4. Sem	5	5 Credits	Written exam	60 min	English

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem. *	SWS	Credits	Type of examination	Duration of examination	Language of instruction
	EI- Information technology and Electronics Advanced modules (major)								
EI05381	Multimedia Laboratory	Elective	4 P	1./3. Sem.	4	6 Credits	Project work	30 min	German
EI4585	Project: Economic aspects of Nanotechnology	Elective	4 P	1./3. Sem.	4	5 Credits	Oral exam	30 min	German
EI0631	Media Technology	Elective	2 V + 2 Ü	1./3. Sem. ¹	4	5 Credits	Written exam	90 min	German
EI7585	Clinical Applications of Computational Medicine	Elective	2 V	2./4. Sem.	2	6 Credits	Project work	30 min	English
EI7331	Algorithm for Digital Circuit Design	Elective	2 V	2./4. Sem.	2	5 Credits	Written exam	60 min	German
EI4544	Practical Project Course on Nanoelectronics	Elective	4 P	2./4. Sem.	4	6 Credits	Project work	n.a.	German
EI7267	Nanotechnology for Energy Systems	Elective	2 V + 2 Ü	2./4. Sem.	4	5 Credits	Written exam and presentation	45 min	English
EI0622	Semiconductor Sensors	Elective	3 V + 1 Ü	2./4. Sem.	4	5 Credits	Written exam	60 min	German
EI0560	Physical Electronics	Elective	2 V + 1 Ü	2./4. Sem.	3	3 Credits	Written exam	60 min	English
EI73871	Practical Aspects of Technical Acoustics	Elective	2 V + 2 Ü	1./3. Sem.	3	6 Credits	Written exam	90 min	German
EI7355	Nanosystems	Elective	4 V	1./3. Sem.	4	5 Credits	Written exam and presentation	30 min	English
EI7624	Techno-Economic Analysis of Telecommunication Networks	Elective	2 V + 2 Ü	1./3. Sem.	4	5 Credits	Written exam and presentation	60 min	English

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination	Duration of examination	Language of instruction
	EI- Power Engineering advanced modules (major)								
EI7135	Industrial Energy Economy	Elective	2 V	1./3. Sem.	2	3 Credits	Written exam	60 min	German
EI0611	Basics of Electrical Energy Storage	Elective	2 V + 1 Ü	1./3. Sem.	3	5 Credits	Written exam	60 min	German
EI0620	Fundamentals of Electrical Machines	Elective	2 V + 2 Ü	1./3. Sem.	4	5 Credits	Written exam	90 min	German
EI7327	Electric Road Vehicles	Elective	2 V + 2 Ü	2./4. Sem.	4	5 Credits	Written exam	60 min	German
EI7513	Ecomanagement and Life Cycle Analysis	Elective	2 V	2./4. Sem.	2	3 Credits	Written exam	60 min	German
EI0610	Electrical Drives – Fundamentals and Applications	Elective	2 V + 1 Ü	2./4. Sem.	3	5 Credits	Written exam	90 min	German
EI0628	Power Electronic – Fundamentals and Applications	Elective	2 V + 1 Ü	2./4. Sem.	3	3 Credits	Written exam	90 min	German
EI7500	Railway systems and their economic operation	Elective	2 V	2./4. Sem.	2	3 Credits	Oral exam	45 min	German
EI7328	Electromagnetic Compatibility in the Field of Power Engineering	Elective	3 V + 1 Ü	2./4. Sem.	4	5 Credits	Oral exam	30 min	German
EI1291	Transmission of Electrical Energy - High Voltage Engineering	Elective	2 V + 1 Ü	3. Sem.	3	5 Credits	Written or oral exam	30 min	German
EI1287	Laboratory Course Power Transmission and High Voltage Technology	Elective	4 P	4. Sem.	4	5 Credits	Laboratory performance	n.a.	German
EI7329	Energy Application Technology	Elective	3 V + 1 Ü	1./3. Sem.	4	5 Credits	Written exam	60 min	German
EI7267	Nanotechnology for Energy Systems	Elective	2 V + 2 Ü	2./4. Sem.	4	5 Credits	Written exam	45 min	German
EI0612	Electrical Small Power Machines	Elective	2 V + 1 Ü	1./3. Sem.	3	5 Credits	Written exam	60 min	German
EI4585	Project: Economic Aspects of Nanotechnology	Elective	4 P	1./3. Sem.	4	5 Credits	Oral exam	30 min	German
EI7624	Techno-Economic Analysis of Telecommunication Networks	Elective	2 V + 2 Ü	1./3. Sem.	4	5 Credits	Written exam	60 min	English
EI8029	Energy Systems & Energy Economy	Elective	2 V + 2 Ü	1./3. Sem.	4	5 Credits	Written exam	60 min	English

Computer Engineering

Depending on their previous knowledge, students can choose basic modules or advanced modules in Computer Engineering.

Within the selected competence module catalog, modules amounting to at least 30 credits from an elective module offer must be successfully completed. This exemplary elective module catalog will be continuously updated, the current elective module catalog will be announced by the TUM School of Management in an appropriate way and in good time before the start of lectures.

Students who have already successfully completed the engineering or scientific subject of Computer Engineering in the Bachelor's program can only choose the major modules in Computer Engineering.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination	Duration of examination	Language of instruction
	Computer engineering basic modules (minor)								
IN8005	Introduction into Computer Science (for non Informatics studies)	Elective	2 V + 2 Ü	1.-4. Sem.	4	5 Credits	Written exam	90 - 150 min	English
IN8024	Information Management for Digital Business Models	Elective	2 V + 2 Ü	1.-4. Sem.	4	6 Credits	Written exam	90 - 150 min	German/ English
IN0012	Bachelor Practical Course	Elective	6 P	1.-4. Sem.	6	10 Credits	Project work	n.a.	German/ English
IN2111	3D User Interfaces	Elective	2 V + 2 Ü	1.-4. Sem.	5	6 Credits	Written exam	90 - 150 min	English
IN2113	Programming Languages	Elective	2 V + 2 Ü	1.-4. Sem.	4	5 Credits	Written exam	75 - 125 min	German/ English
EI10001	Principles of Information Engineering	Elective	2 V + 1 Ü	1.-4. Sem.	3	6 Credits	Written exam	75 min	English
EI10002	Principles in Electrotechnology	Elective	3 V + 1 Ü	1.-4. Sem.	4	6 Credits	Written exam	90 min	English
EI10003	Analog Electronics	Elective	2 V + 1 Ü	1.-4. Sem.	3	5 Credits	Written exam	90 min	English
EI5183	Control Theory (MSE)	Elective	3 V	1.-4. Sem.	3	4 Credits	Written exam	90 min	n.a.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination, weighting ratio	Duration of examination	Language of instruction
	Computer engineering advanced modules (major)								
IN2028	Business Analytics	Elective	2 V + 2 Ü	1.-4. Sem.	4	5 Credits	Written exam	75 min	English
IN2062	Techniques in Artificial Intelligence	Elective	3 V + 1 Ü	1.-4. Sem.	4	5 Credits	Written exam	75-125 min	German/ English
IN2067	Robotics	Elective	3 V + 2 Ü	1.-4. Sem.	5	6 Credits	Written exam	90 - 150 min	English
IN2222	Cognitive Systems	Elective	3 V	1.-4. Sem.	4	5 Credits	Written exam	75 - 125 min	English
IN2309	Advanced Topics of Software Engineering	Elective	3 V + 3 Ü	1.-4. Sem.	6	8 Credits	Written exam	100 - 180 min	German/ English
EI0697	Mobile Communications	Elective	2 V + 2 Ü	1.-4. Sem.	4	5 Credits	Written exam	90 min	English
EI0636	Nanoelectronics	Elective	2 V + 1 Ü + 2 P	1.-4. Sem.	5	5 Credits	Written exam	60 min	English
EI0703	<u>Programming in C++ for Socio Technical Systems</u>	Elective	2 V + 2 P	1.-4. Sem.	4	6 Credits	Written exam + Homework 7:3	120 min	English

EI04007	Real-Time and Embedded Systems 1	Elective	3 V + 2 Ü	1.-4. Sem.	4	6 Credits	Written exam	90 min	English
EI04008	Real-Time and Embedded Systems 2	Elective	3 V + 2 Ü	1.-4. Sem.	4	6 Credits	Written exam	90 min	English
EI7006	Statistical Signal Processing	Elective	3 V + 1 Ü	1.-4. Sem.	4	6 Credits	Written exam	90 min	English
EI50641	Real-Time Programming Languages	Elective	3 V + 3 Ü	1.-4. Sem.	4	6 Credits	Written exam + Homework 3:2	60 min	English
EI73141	Brain, Mind and Cognition (Seminar)	Elective	2 V	1.-4. Sem.	2	5 Credits	Mündliche Prüfung + Hausaufgaben 2:3 Oral exam + homework 2:3	n.a.	English
EI7480	Data-Driven Innovation	Elective	2 V + 1 Ü	1.-4. Sem.	3	5 Credits	Written exam, project work, homework 3:5:2	60 min	English
EI7581	Inside my iPhone – Technology Analysis of a Smart Phone	Elective	2 V + 2 Ü + 3 P	1.-4. Sem.	7	6 Credits	Research paper	n.a.	English
EI7352	Multimedia Communications	Elective	2 V + 2 Ü	1.-4. Sem.	4	5 Credits	Written exam + homework 7:3	90 min	English
EI7624	Techno-Economic Analysis of Telecommunication Networks	Elective	2 V + 2 Ü	1.-4. Sem.	4	5 Credits	Written exam + project work 3:2	60 min	English
EI7621	Topics in Multimedia Signal Processing	Elective	2 V + 2 Ü	1.-4. Sem.	4	5 Credits	Homework	n.a.	English

Industrial Engineering

Within the selected competence module catalog, modules amounting to at least 30 credits from an elective module offer must be successfully completed. This exemplary elective module catalogue will be continuously updated, the current elective module catalog will be announced by the TUM School of Management in a suitable way and in good time before the start of lectures.

Modules from the elective catalog Industrial Engineering (minor) cannot be included in the OSCM specialization at the same time.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination, weighing ratio	Duration of examination	Language of instruction
	Industrial engineering basic modules (minor)								
WI000977	Stochastic Modeling and Optimization	Elective	2 V + 2 Ü	1.-4. Sem.	4	6 Credits	Written exam	90 min	English
WI000979	Inventory Management	Elective	2 V + 2 Ü	1.-4. Sem.	4	6 Credits	Written exam	90 min	English
WI000819	Discrete Optimization	Elective	2 V + 2 Ü	1.-4. Sem.	4	6 Credits	Written exam + presentation 1:1	120 min	English
WI100967	Designing and Scheduling Lean Manufacturing Systems	Elective	2 V + 2 Ü	1.-4. Sem.	4	6 Credits	2 part exams 1:1	60 min + 60 min	English
WI200541	Planning and Scheduling of Complex Operations: Models, Methods and Applications	Elective	4 Se	1.-4. Sem.	4	6 Credits	Written exam + exercise performance 1:1	60 min	English

WIB19823	Advanced Topics in Operations & Supply Chain Management	Elective	4 Se	1.-4. Sem.	4	6 Credits	Research paper	n.a.	German/English
IN2028	Business Analytics	Elective	2 V + 2 Ü	1.-4. Sem.	4	5 Credits	Written exam	75 min	English
IN2211	Auction Theory and Market Design	Elective	2 V + 2 Ü	1.-4. Sem.	4	5 Credits	Written exam	75 min	English
MA4800	Foundations of Data Analysis	Elective	4 V + 2 Ü	1.-4. Sem.	6	8 Credits	Written exam	90 min	English
MW0124	Systems Engineering	Elective	2 V + 1 Ü	1.-4. Sem.	3	5 Credits	Written exam	90 min	German/English

Electives in Management and/or Technology

Within the framework of the electives in Management and/or Technology, students will perform examinations in the management or technological field in the amount of 24 credits. Of these, 12 credits can be earned as part of a the module "project study" in accordance with § 37a.

In the electives in Management and/or Technology, students have access to all courses of the management specializations at Master level as well as all electives in Technology modules of the Master's program Management & Technology. Instead of examination performances at the TUM, subject-related examination performances amounting to 24 credits can be performed at a foreign university within the scope of a stay abroad. The student, together with a mentor appointed by the faculty, prepares an individual semester study plan, which must be approved at least three weeks before the performance of the examination. The corresponding courses must be selected from the range offered by the foreign university.

The catalog of elective modules will be announced by the TUM School of Management in good time before the start of lectures.

Students who have already successfully completed basic modules of an engineering or natural science subject in the Bachelor's degree program are not permitted to bring these also into the Master's degree program in Management & Technology.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination	Duration of examination	Language of instruction
	Project Studies								
WI900684	Project Studies	Elective		1.-4. Sem.	8	12 Credits	Project work	n.a.	German/English

Advanced International Experience (Compulsory module)

The compulsory module Advanced International Experience requires the completion of a professionally relevant stay abroad. TUM School of Management will announce the suitable forms of stays abroad, which usually include study abroad, the completion of the project study or the Master's thesis abroad, in a timely manner before the start of lectures. The compulsory module Advanced International Experience must be successfully passed.

Module no.	Module name	Type of module	Teaching method SWS/ V Ü P	Sem.*	SWS	Credits	Type of examination	Duration of examination	Language of instruction
	International Experience								
WI001181	Advanced International Experience	Compulsory	4 V	3. Sem.	4	6 Credits	Written exam	120 min	English

Master's Thesis

	Master's Thesis								
	Master's Thesis					30 Credits			German/ English

Explanations:

Sem. = semester; SWS = Semesterwochenstunden (weekly hours per semester); V = Vorlesung (lecture); Ü = Übung (exercise); P = Praktikum (internship), Se = seminar.

For written examinations, the duration of the examination in minutes is listed in the column 'Duration of examination'.

Comments:

* Recommended semester depending on the chosen management specialization and the engineering/scientific subject.