UNIVERSITY OF APPLIED SCIENCES UPPER AUSTRIA

Course Offer

for Incoming Exchange Students

Winter Semester 2024

School of Engineering

fh-ooe.at/en/wels-campus

GENERAL INFORMATION

Choosing Courses

Exchange students may combine courses from different degree programmes (such as AT, BUT, IPM, etc.), different levels (Bachelor's/Master's) and different semesters, as long as they meet the prerequisites for each course. Please note that places in some courses may be limited.

*Please keep in mind that timetable overlaps may occur. A full workload for regular students is 30 ECTS per semester, due to timetable overlaps this is mostly not possible for exchange students. They are therefore expected to attend courses worth 25 ECTS.

Of course, exchange students who speak German fluently may also participate in courses taught in German at Wels Campus. For all others we offer German courses at various levels (free of charge).

NOTE: Students should read the course content carefully when making their course selection to see that the content matches to their study requirements.

Academic Calendar

Winter semester:	October 1st to mid- February (Semesters 1, 3, 5)
Summer semester:	March 1st to mid- July (Semesters 2, 4, 6)
Examination Period:	End of January to mid- February (winter semester) End of June to mid-July (summer semester)
Breaks:	Christmas (2 weeks), February (1 to 4 weeks), Easter (1 week), summer holidays in July/August/ September (12 weeks)

TYPES OF CLASSES

Lectures and Integrated Courses (VO, ILV, IC)

While some subjects are presented as "traditional" lectures, others are taught in the form of seminars, laboratory and practice-oriented sessions. In many cases, both lecture and practice-oriented sessions are combined in the same semester.

Seminars, Laboratory and Practice-oriented Sessions (SE, LA/LB, UE)

These are classes in which students work on special topics, then present and discuss them within a relatively small group. In laboratory and practice-oriented sessions students learn to apply their knowledge acquired in lectures and seminars.

Block Courses

In many cases – primarily in the case of seminars and laboratory classes – instruction does not take place weekly, but is instead delivered in blocks of more intensive instruction (e.g., one block every two weeks or even one block per term).

Excursions

Some courses occasionally include excursions, and attendance is generally obligatory. Any costs that arise for entrance fees, accommodation or other expenses are paid by the students.

Project

These are not theoretical projects but "real" work. Students work on problems relevant to the particular company. They work in teams of 4-10 students and are supervised and guided by a faculty member. Most of the time the teams work on their own and at the end of the semester they present their results to both their supervising faculty member and the company. The main aim of these projects is to train the students in teamwork. Teamwork and team spirit are key elements of Wels Campus philosophy – students learn to work together rather than competing with one another.

Course Packages

Automation/Electrical/Mechanical Engineering - BASIC			
Programme	Code	Course Name	ECTS
EE.B	EEN1LE	Electrical Engineering I	3
EE.B	EEN1PR	Electrical Engineering I	3
EE.B	INF1LE	Information Technology	2
EE.B	INF1PR	Information Technology	1
EE.B	SSK1SE	Communication with Intercultural Aspects	1,5
EE.B	GEN1IC	Powerplants for Electrical Power Generation	3
IPM.M	MEC1IL	Mechatronics	4
MB.M	MOM2IL	Mechanics of Materials	3
AT.B	IPR5PT	Industrial Project	4
		Total	24,5

Environmental & Chemical Engineering - BASIC			
Programme	Code	Course Name	ECTS
AET.B	MSR3VO	Instrumentation & Control Engineering	3,5
AET.B	MSR3LU	Instrumentation & Control Engineering	1,5
BUT.B	BCH3LB	Biochemistry	3
BUT.B	FER5LB	Fermentation Technology	2
BUT.B	MIB3LB	Microbiology II	3
VTP.B	CVT5VO	Chemical Engineering - Reaction Engineering	1,5
VTP.B	CVT5UE	Chemical Engineering - Reaction Engineering	1,5
VTP.B	CVT5LB	Chemical Engineering - Reaction Engineering	1,5
VTP.B	FPR5PT	Research Project	6
		Total	23,5

Engineering Management / Product Development / Innovation - BASIC			
Programme	Code	Course Name	ECTS
IPM.M	DPE1IL	Digital Product Development	2
IPM.M	EGD1IL	Design and Morphology	1
IPM.M	EGD1SE	Design and Morphology	2
IPM.M	INO1IL	Innovation Management I	2
IPM.M	INM1IL	Innovation Management II	2
IPM.M	MAK1IL	Marketing Management	1
IPM.M	MFO1IL	Market Research	2
IPM.M	MOM1IL	Mechanics of Materials - Introduction	3
IPM.M	PM1IL	Product Management	2
IPM.M	PRM1VO	Project Management	1
IPM.M	SKK1UE	Presentation	2
		Total	20

Automation/Electrical/Mechanical Engineering - ADVANCED			
Programme	code	Course	ECTS
AMM.M	VCD1IL	Vehicle Components & Driving Dynamics	4
AMM.M	SAC1IL	Sensors and Micro Actuators	3
EE.M	HEI3LE	Advanced High Voltage Engineering	4
EE.M	MES1LE	Measurement Engineering & Sensor Systems	4
LCW.B	FEM5VO	Introduction into Finite Elements Analysis	2
LCW.B	FEM5UE	Introduction into Finite Elements Analysis	2
MEWI.M	MMI1IL	Human-Computer Interaction	2
IPM.M	DIF3VO	Digital Factory / Digital Twin	2
		Total	23

Environmental & Chemical Engineering - ADVANCED			
Programme	Code	Course Name	ECTS
SES.M	BTE1LE	Basics of Thermodynamics and Electrochemistry	4
SES.M	ICC1SE	Intercultural Communication	1
SES.M	LSW3IC	Large-Scale Wind Power Plants	3
SES.M	SOL1LE	Solar Energy	2,5
SES.M	SOL1PR	Solar Energy	1,5
SES.M	WIN1LE	Wind Energy	2,5
SES.M	WIN1PR	Wind Energy	1,5
SES.M	EPD3IC	Energy Project Development	2,5
VTP.B	FPR5PT	Research Project	6
		Total	24,5

Engineering Management / Product Development / Innovation - ADVANCED			
Programme	Code	Course Name	ECTS
IPM.M	DIF3VO	Digital Factory	2
IPM.M	MRI3IL	Customer Integration in New Product Development	2
IPM.M	SIE3IL	Simultaneous Engineering	2
IPM.M	FEC3IL	R&D Controlling	1
IPM.M	IMM3IL	International Marketing & Management	2
IPM.M	SCM3IL	Supply Chain Management	1
IPM.M	MAK1IL	Marketing Management	1
AMM.M	MBE1IL	Model Based Engineering 1	5
AMM.M	PRM1IL	Production Management	3
AMM.M	LAW3VO	Business Law & Intellectual Property Rights	2
		Total	21

Course Packages

The above course packages are a new option that has been created for the relevant study fields starting from winter semester 2017. By selecting one of the above course packages (e.g., Environmental & Chemical Engineering Basic) it is highly unlikely that there will be any course overlaps. Should any additional courses be added there is no guarantee that overlaps will not occur, however students are most welcome to choose additional courses and check their timetables upon arrival.

Students may either select one of the above course packages or create their own individual course listing. By selecting individual courses, we cannot guarantee that overlaps will not occur, even though we will do our best to avoid those. Course changes upon arrival are possible if required but will most likely result in overlaps.

Bachelor's Degree Programme

Programme (department)	Course unit code	Course unit title	Course type	Semester (level)	Level	ECTS	Page
Applied Energy Engineering (Bachelor, Wels Campus)							
AET.ba	19a_EPM5UE	Energy Planning Methods	Practice-oriented session	5	Bachelor	1,5	11
AET.ba	19a_EPM5VO	Energy Planning Methods	Lecture	5	Bachelor	2,5	12
AET.ba	19a_MSR3LU	Instrumentation and Control Engineering	Laboratory session	3	Bachelor	1,5	14
AET.ba	19a_MSR3VO	Instrumentation and Control Engineering	Lecture	3	Bachelor	3,5	15
Automation Engineering (Bachelor, Wels Campus)							
AT.ba	22_IPR5PT	Industrial Project	Project	5	Bachelor	4	16
Civil Engineering (Bachelor, Wels Campus)							
BI.ba	20_SBE5SE	Sociology & Building Ethics	Seminar	5	Bachelor	1,5	17
BI.ba	20_SKK3UE	Conflict Management & Mediation	Practice-oriented session	3	Bachelor	2	18
Bio- and Environmental Technology (Bachelor, Wels Campus)							
BUT.ba	23_BCH3LB	Biochemistry	Laboratory session	3	Bachelor	3	19
BUT.ba	23_MIB3LB	Microbiology II	Laboratory session	3	Bachelor	3	20
BUT.ba	BRW5LB	Brewing Science	Laboratory session	5	Bachelor	1	21
BUT.ba	FER5LB	Fermentation Technology	Laboratory session	5	Bachelor	2	22
BUT.ba	FUP5PT	Interdisciplinary Project II	Project	5	Bachelor	3	23
Electrical Engineering (Bachelor, Wels Campus)							
EE.ba	21_BUS5LE	Business Administration	Lecture	5	Bachelor	2	24
EE.ba	21_BUS5PR	Business Administration	Practice-oriented session	5	Bachelor	2	25
EE.ba	21_CEN5LB	Control Engineering	Laboratory session	5	Bachelor	3	26
EE.ba	21_CEN5LE	Control Engineering	Lecture	5	Bachelor	4	27

Programme (department)	Course unit code	Course unit title	Course type	Semester (level)	Level	ECTS	Page
Electrical Engineering (Bachelor, Wels Campus)							
EE.ba	21_EEN1LE	Circuit Analysis	Lecture	1	Bachelor	3	29
EE.ba	21_EEN1PR	Circuit Analysis	Practice-oriented session	1	Bachelor	3	30
EE.ba	21_EEN3LE	Electromagnetic Fields	Lecture	3	Bachelor	4	31
EE.ba	21_EEN3PR	Electromagnetic Fields	Practice-oriented session	3	Bachelor	2	33
EE.ba	21_EPG5LB	Power System Analysis	Laboratory session	5	Bachelor	2	34
EE.ba	21_EPG5LE	Electrical Power Grids and Systems	Lecture	5	Bachelor	5	35
EE.ba	21_EPG5PR	Power System Analysis	Practice-oriented session	5	Bachelor	2	37
EE.ba	21_GEN1IC	Powerplants for Electrical Power Generation	Integrated course	1	Bachelor	3	38
EE.ba	21_INF1LE	Information Technology	Lecture	1	Bachelor	2	40
EE.ba	21_INF1PR	Information Technology	Practice-oriented session	1	Bachelor	1	42
EE.ba	21_MAT1LE	Mathematics 1	Lecture	1	Bachelor	5	43
EE.ba	21_MAT1PR	Mathematics 1	Practice-oriented session	1	Bachelor	2,5	45
EE.ba	21_MES3LE	Measurement Engineering for Electrical Energy Systems	Lecture	3	Bachelor	3	46
EE.ba	21_PRM3IC	Project Management	Integrated course	3	Bachelor	2	48
EE.ba	21_SSK1SE	Communication with intercultural aspects	Seminar	1	Bachelor	1,5	50
School of Engineering (Bachelor, Wels Campus)							
FWE	DAF_A1.1_UE	German Language A 1.1	Practice-oriented session	1	Bachelor	3	51
FWE	DAF_A2.1_UE	German Language A 2.1	Practice-oriented session	1	Bachelor	3	52
FWE	DAF_B1.1_UE	German Language B 1.1	Practice-oriented session	1	Bachelor	3	54

Programme (department)	Course unit code	Course unit title	Course type	Semester (level)	Level	ECTS	Page
School of Engineering (Bachelor, Wels Campus)							
FWE	DAF_B2.1_UE	German Language B 2.1	Practice-oriented session	1	Bachelor	3	56
FWE	DAF_C1.1_UE	German Language C 1.1	Practice-oriented session	1	Bachelor	3	57
FWE	DAF_C2.1_UE	German Language C2.1	Practice-oriented session	1	Bachelor	3	58
Innovation, Product & Engineering Management (Bachelor, Wels Campus)							
IPEM.ba	22_ENG3UE	English III	Practice-oriented session	3	Bachelor	2	59
IPEM.ba	22_ENG5UE	English V	Practice-oriented session	5	Bachelor	2	60
IPEM.ba	24_BWL1IL	Business Administration I	Integrated course	1	Bachelor	2	61
IPEM.ba	24_CAD1UE	CAD Basis	Practice-oriented session	1	Bachelor	2	62
IPEM.ba	24_DES1IL	Design Fundamentals I	Integrated course	1	Bachelor	1	64
IPEM.ba	24_INF1UE	Information Technology	Practice-oriented session	1	Bachelor	2	65
IPEM.ba	24_INF1VO	Information Technology	Lecture	1	Bachelor	1	66
IPEM.ba	24_MAT1UE	Mathematics I	Practice-oriented session	1	Bachelor	1,33	67
IPEM.ba	24_MAT1VO	Mathematics I	Lecture	1	Bachelor	1,78	68
IPEM.ba	24_MEC1UE	Mechanics I	Practice-oriented session	1	Bachelor	2	69
IPEM.ba	24_MEC1VO	Mechanics I	Lecture	1	Bachelor	3	70
IPEM.ba	24_MMM1IL	Market-oriented Management-case studies	Integrated course	1	Bachelor	0,5	71
IPEM.ba	24_MOM1IL	Market-oriented management	Integrated course	1	Bachelor	1,5	72
IPEM.ba	24_PEW1IL	Innovation & Product Development	Integrated course	1	Bachelor	3	73
IPEM.ba	24_SKK1SE	Social Skills: Communication	Seminar	1	Bachelor	2	75

Programme (department)	Course unit code	Course unit title	Course type	Semester (level)	Level	ECTS	Page
Innovation, Product & Engineering Management (Bachelor, Wels Campus)							
IPEM.ba	24_TEZ1IL	Technical Drawing Basis	Integrated course	1	Bachelor	2	76
Lightweight Construction and Composite Materials (Bachelor, Wels Campus)							
LCW.ba	21_BAC5PT	Bachelor Project	Project	5	Bachelor	4	78
LCW.ba	21_FEM5UE	Introduction into Finite Element Analysis	Practice-oriented session	5	Bachelor	2	79
LCW.ba	21_FEM5VO	Introduction into Finite Element Analysis	Lecture	5	Bachelor	2	80
LCW.ba	23_ENG1UE	English I	Practice-oriented session	1	Bachelor	1	81
LCW.ba	23_ENG3UE	English III	Practice-oriented session	3	Bachelor	1	83
Food Technology and Nutrition (Bachelor, Wels Campus)							
LTE.ba	23_AGP1IL_ENG	Applied physics	Integrated course	1	Bachelor	4	84
LTE.ba	23_AYC1VO_ENG	Analytical Chemistry I	Lecture	1	Bachelor	2	85
LTE.ba	23_BWL1IL_ENG	Business Administration I	Integrated course	1	Bachelor	2	86
LTE.ba	23_CHE1VO_ENG	Chemistry I	Lecture	1	Bachelor	2	87
LTE.ba	23_GBI1VO_ENG	Biology	Lecture	1	Bachelor	3	88
LTE.ba	23_LMT1IL_ENG	Food Technology and Nutrition I	Integrated course	1	Bachelor	3	89
LTE.ba	23_MAT1IL_ENG	Mathematics I	Integrated course	1	Bachelor	3	90
LTE.ba	23_STÖ1UE_ENG	Stoichiometry I	Practice-oriented session	1	Bachelor	2	91
Mechanical Engineering (Bachelor, Wels Campus)							
MB.ba	22_IPR5PT	Industrial Project Work	Project	5	Bachelor	3	92
Process Engineering and Production (Bachelor, Wels Campus)							
VTP.ba	20_CVT5LB	Chemical Engineering - Reaction Engineering	Laboratory session	5	Bachelor	1,5	93
VTP.ba	20_CVT5UE	Chemical Engineering - Reaction Engineering	Practice-oriented session	5	Bachelor	1,5	94

Programme (department)	Course unit code	Course unit title	Course type	Semester (level)	Level	ECTS	Page
Process Engineering and Production (Bachelor, Wels Campus)							
VTP.ba	20_CVT5VO	Chemical Engineering - Reaction Engineering	Lecture	5	Bachelor	1,5	95
VTP.ba	20_FPR5PT	Research Project	Project	5	Bachelor	6	96
VTP.ba	20_FPR5PT	Research Project	Project	5	Bachelor	6	96
Materials and Process Engineering (Bachelor, Wels Campus)							
WFT.ba	BAA5PT	Internship	Project	5	Bachelor	6	97
WFT.ba	ENG1UE	English I	Practice-oriented session	1	Bachelor	1	98
WFT.ba	ENG3UE	English III	Practice-oriented session	3	Bachelor	1	100
WFT.ba	PRO1PT	Project I	Project	1	Bachelor	4	101
WFT.ba	PRO3PT	Project III	Project	3	Bachelor	4	102
Product Design and Technical Communication (Bachelor - Part Time, Wels Campus)							
PDK.ba	22_ENG5UE	English IV:English for technical communicators	Practice-oriented session	5	Bachelor	1	103

Master's Degree Programme

Programme (department)	Course unit code	Course unit title	Course type	Semester (level)	Level	ECTS	Page
Plant Construction (Master, Wels Campus)							
AB.ma	24_CRL1VO_Gr. V	Contract Law	Lecture	1	Master	2,5	104
Applied Energy Engineering (Master, Wels Campus)							
AET.ma	22_GSM3LB	Building Simulation	Laboratory session	3	Master	2,5	105
AET.ma	22_GSM3VO	Building Simulation	Lecture	3	Master	1,5	106
Automotive Mechatronics and Management (Master, Wels Campus)							
AMM.ma	20_AIT1VO	Automotive IT Systems 1	Lecture	1	Master	2	107
AMM.ma	20_AIT3IL	Automotive IT Systems 3	Integrated course	3	Master	1	108
AMM.ma	20_CTM1VO	Current Topics in Mobility	Lecture	1	Master	1	109
AMM.ma	20_EBD2IL	Entrepreneurship and New Business Development	Integrated course	3	Master	3	110
AMM.ma	20_INM1IL	Innovation Management	Integrated course	1	Master	3	111
AMM.ma	20_LAW3VO	Business Law & Intellectual Property Rights	Lecture	3	Master	2	113
AMM.ma	20_MBE1IL	Model Based Engineering 1	Integrated course	1	Master	5	114
AMM.ma	20_MSV3IL	Mechatronic Systems Validation	Integrated course	3	Master	1	116
AMM.ma	20_NPD1IL	New Product Development	Integrated course	1	Master	3	117
AMM.ma	20_PRM1IL	Production Management	Integrated course	1	Master	3	118
AMM.ma	20_QMA1IL	Automotive Quality Management 1	Integrated course	1	Master	1	119
AMM.ma	20_SAC1IL	Sensors and Micro Actuators	Integrated course	1	Master	3	120
AMM.ma	20_VCD1IL	Vehicle Components and Driving Dynamics	Integrated course	1	Master	4	121

Programme (department)	Course unit code	Course unit title	Course type	Semester (level)	Level	ECTS	Page
Automation Engineering (Master, Wels Campus)							
AT.ma	APT3PT	Automation Engineering Project II	Project	3	Master	8	122
Civil Engineering (Master, Wels Campus)							
BI.ma	KFK1UE	English for civil engineers within cross-cultural communication (EN)	Practice-oriented session	1	Master	2,5	123
Electrical Engineering (Master, Wels Campus)							
EE.ma	21_EAP1LE	Energy Automation and Protection Systems	Lecture	1	Master	1	124
EE.ma	21_ECI3LE	EMC and EMI Aspects	Lecture	3	Master	3	125
EE.ma	21_EME3LE	Energy Markets and Energy Law	Lecture	3	Master	2	126
EE.ma	21_FIN3LE	Financing	Lecture	3	Master	1	127
EE.ma	21_HEI3LE	Advanced High Voltage Engineering	Lecture	3	Master	4	128
EE.ma	21_MAT1LE	Advanced Calculus	Lecture	1	Master	5	129
EE.ma	21_MES1LE	Signal Analysis and Machine Learning	Lecture	1	Master	4	130
EE.ma	21_SSK1PR	Cross-Cultural Negotiations	Practice-oriented session	1	Master	2	131
Innovation and Product Management (Master, Wels Campus)							
IPM.ma	20_BIO3IL	Bionics	Integrated course	3	Master	1	132
IPM.ma	20_BWL1IL	Business Administration/Accounting	Integrated course	1	Master	2	133
IPM.ma	20_DIF3VO	Digital Factory	Lecture	3	Master	2	134
IPM.ma	20_DIF3VO	Digital Factory	Lecture	3	Master	2	134
IPM.ma	20_DPE1IL	Digital Product Development	Lecture	1	Master	2	135
IPM.ma	20_DPT3PT	Design Project: Technical Design II	Project	3	Master	5	136
IPM.ma	20_EGD1IL	Design and Morphology	Integrated course	1	Master	1	137
IPM.ma	20_EGD1SE	Design and Morphology	Seminar	1	Master	2	138

Programme (department)	Course unit code	Course unit title	Course type	Semester (level)	Level	ECTS	Page
Innovation and Product Management (Master, Wels Campus)							
IPM.ma	20_FEC3IL	R&D Controlling	Integrated course	3	Master	1	139
IPM.ma	20_FIN3VO	Finance	Lecture	3	Master	1	140
IPM.ma	20_IMM3IL	International Marketing & Management	Integrated course	3	Master	2	141
IPM.ma	20_IND1IL	Industrial Design	Integrated course	1	Master	2	142
IPM.ma	20_INM1IL	Innovation Management II	Integrated course	1	Master	2	143
IPM.ma	20_INO1IL	Innovation Management I	Integrated course	1	Master	2	144
IPM.ma	20_KFK3UE	Leadership	Practice-oriented session	3	Master	2	145
IPM.ma	20_KZE3PT	Short-Term Design Project	Project	3	Master	2	146
IPM.ma	20_MAK1IL	Marketing Management	Integrated course	1	Master	1	147
IPM.ma	20_MAK1IL	Marketing Management	Integrated course	1	Master	1	147
IPM.ma	20_MEC1IL	Mechatronics	Integrated course	1	Master	4	148
IPM.ma	20_MFO1IL	Market Research	Integrated course	1	Master	2	149
IPM.ma	20_MOM1IL	Mechanics of Materials - Introduction	Integrated course	1	Master	3	150
IPM.ma	20_MRI3IL	Customer Integration in NPD	Integrated course	3	Master	2	151
IPM.ma	20_PM1IL	Product Management	Integrated course	1	Master	2	152
IPM.ma	20_PRM1VO	Project Management	Lecture	1	Master	1	153
IPM.ma	20_REG3IL	Reverse Engineering	Integrated course	3	Master	1,2	154
IPM.ma	20_SCM3IL	Supply Chain Management	Integrated course	3	Master	1	155
IPM.ma	20_SIE3IL	Simultaneous Engineering	Integrated course	3	Master	2	156
IPM.ma	20_SKK1UE	Presentation	Practice-oriented session	1	Master	2	157

Programme (department)	Course unit code	Course unit title	Course type	Semester (level)	Level	ECTS	Page
Innovation and Product Management (Master, Wels Campus)							
IPM.ma	20_TPW1IL	Value Analysis and FMEA	Integrated course	1	Master	2	158
IPM.ma	20_WIA1IL	Scientific Working	Integrated course	1	Master	0,5	160
IPM.ma	20_ZTA3IL	Technology Assessment	Integrated course	3	Master	1	161
Lightweight Construction and Composite Materials (Master, Wels Campus)							
LCW.ma	21_APR1PT	Project Work I	Project	1	Master	9	162
LCW.ma	21_APR3PT	Project Work III	Project	3	Master	12	163
LCW.ma	21_KMK1UE	Solid Mechanics	Practice-oriented session	1	Master	2	164
LCW.ma	21_KMK1VO	Solid Mechanics	Lecture	1	Master	4	165
LCW.ma	21_PDF1IL	Selected Chapters Digital Factory	Integrated course	1	Master	3	166
Mechanical Engineering (Master, Wels Campus)							
MB.ma	22_MFK1UE	Solid Mechanics	Practice-oriented session	1	Master	2	167
MB.ma	22_MFK1VO	Solid Mechanics	Lecture	1	Master	4	168
MB.ma	22_MKS1VO	Multibody Dynamics	Lecture	1	Master	4	169
MB.ma	22_PRO3PT	R&D Project	Project	3	Master	10	170
MB.ma	23_DYN1IL_Inc	Dynamics	Integrated course	1	Master	3	171
MB.ma	23_MOM2IL_Inc	Mechanics of Materials	Integrated course	1	Master	3	172
Sustainable Energy Systems (Master, Wels Campus)							
SES.ma	22_EPD3IC	Energy Project Development	Integrated course	3	Master	2,5	173
SES.ma	22_FIN3IC	Financing	Integrated course	3	Master	2,5	174
SES.ma	22_ICL3SE	Intercultural Leadership	Seminar	3	Master	2	175

Programme (department)	Course unit code	Course unit title	Course type	Semester (level)	Level	ECTS	Page
Sustainable Energy Systems (Master, Wels Campus)							
SES.ma	22_IPM3IC	International Project Management	Integrated course	3	Master	2	176
SES.ma	22_LSW3IC	Large-Scale Wind Power Plants	Integrated course	3	Master	3	177
SES.ma	24_AWR1SE	Academic Writing	Seminar	1	Master	1,5	178
SES.ma	24_BTE1LE	Basics of Thermodynamics and Electrochemistry	Lecture	1	Master	4	179
SES.ma	24_ICC1SE	Intercultural Communication	Seminar	1	Master	1	180
SES.ma	24_SOL1LE	Solar Energy	Lecture	1	Master	2,5	181
SES.ma	24_SOL1PR	Solar Energy	Practice-oriented session	1	Master	1,5	182
SES.ma	24_SUS1IC	Sustainable Development	Integrated course	1	Master	2,5	183
SES.ma	24_WIN1LE	Wind Energy	Lecture	1	Master	2,5	184
SES.ma	24_WIN1PR	Wind Energy	Practice-oriented session	1	Master	1,5	185
Materials and Process Engineering (Master, Wels Campus)							
WFT.ma	PRJ1PT	Project Work 1	Project	1	Master	13	186
WFT.ma	PRJ3PT	Project Work 3	Project	3	Master	13	187
Plant Construction (Master - Part Time, Wels Campus)							
AB.ma	24_CRL1VO_Gr. B	Contract Law	Lecture	1	Master	2,5	188
Mechatronics & Business Management (Master - Part Time, Wels Campus)							
MEWI.ma	23_MMI1IL	Human-Computer Interaction	Integrated course	1	Master	2	189

Lecture/Seminar profile:

Energy Planning Methods (19a_EPM5UE)

Degree course	AET.ba
Course title	Energy Planning Methods
Course code	19a_EPM5UE
Level	Bachelor
Term	WS24/25
Lecturer	Wolfgang Traunmüller
Contact hours per week	1
ECTS credits	1,5
Course type	Practice-oriented session
Examinations	written examination
Language of instruction	English
Places for international students	2

Learning objectives:
n.a.

Content:
Consolidation of the lecture material through examples/experiments

Prerequisites:
n.a.

Lecture/Seminar profile:

Energy Planning Methods (19a_EPM5VO)

Degree course	AET.ba
Course title	Energy Planning Methods
Course code	19a_EPM5VO
Level	Bachelor
Term	WS24/25
Lecturer	Wolfgang Traunmüller
Contact hours per week	2
ECTS credits	2,5
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	2

Learning objectives:
n.a.

Content:
The course focuses on the following contents:
- Special features of the electricity industry
- Investment calculation methods in the energy industry
Static investment calculation methods
Dynamic investment calculation methods
- Classical cost formula of energy conversion
- Methods for taking stochastic conditions into account
- Forecasting methods
Systematics of forecasting methods
Qualitative forecasting methods
Quantitative forecasting methods
Evaluation of forecasting methods
- Optimisation methods
Objective functions in the energy industry
Linear optimisation
Non-linear optimisation
Dynamic optimisation
- Economic energy planning methods
Economic input-output forecasting model

Prerequisites:

n.a.

Lecture/Seminar profile:

Instrumentation and Control Engineering (19a_MSR3LU)

Degree course	AET.ba
Course title	Instrumentation and Control Engineering
Course code	19a_MSR3LU
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1,5
Course type	Laboratory session
Examinations	continuous assessment
Language of instruction	English
Places for international students	6

Learning objectives:
n.a.

Content:
Basics for the acquisition of physical and chemical quantities.
Sensors, measuring circuits and computer-aided measuring systems.
The lecture material is enhanced/extended by use of examples/experiments

Prerequisites:
Electrical Engineering (6 ECTS)

Lecture/Seminar profile:

Instrumentation and Control Engineering (19a_MSR3VO)

Degree course	AET.ba
Course title	Instrumentation and Control Engineering
Course code	19a_MSR3VO
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	3
ECTS credits	3,5
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
Basics for the acquisition of physical and chemical quantities.
Sensors, measuring circuits and computer-aided measuring systems.

Prerequisites:
Electrical Engineering (6 ECTS)

Lecture/Seminar profile:

Industrial Project (22_IPR5PT)

Degree course	AT.ba
Course title	Industrial Project
Course code	22_IPR5PT
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	4
Course type	Project
Examinations	continuous assessment
Language of instruction	English
Places for international students	8

Learning objectives:
n.a.

Content:
Solving a challenging mechatronic development task, in a team. In the process, the technical and social skills acquired up to this point in lectures and exercises are to be applied in professional practice

Prerequisites:
n.a.

Lecture/Seminar profile:

Sociology & Building Ethics (20_SBE5SE)

Degree course	BI.ba
Course title	Sociology & Building Ethics
Course code	20_SBE5SE
Level	Bachelor
Term	WS24/25
Lecturer	Gerald Leindecker
Contact hours per week	1
ECTS credits	1,5
Course type	Seminar
Examinations	continuous assessment
Language of instruction	English
Places for international students	1

Learning objectives:
n.a.

Content:
The seminar is using built environment examples to analyse parameters of user acceptance in respect to sociological, ethical and design aspects. Furthermore, sustainable material use, aspects of circular economy and design decisions will be investigated.

Prerequisites:
n.a.

Lecture/Seminar profile:

Conflict Management & Mediation (20_SKK3UE)

Degree course	BI.ba
Course title	Conflict Management & Mediation
Course code	20_SKK3UE
Level	Bachelor
Term	WS24/25
Lecturer	Nora Schauer
Contact hours per week	2
ECTS credits	2
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	1

Learning objectives:
n.a.

Content:
Principles of conflict management;
Escalation levels of conflicts and intervention possibilities;
Analysis and reflection of examples of conflict situations;
How to lead a constructive conflict conversation;
Measures and strategies in conflict prevention at the individual level, team level and organizational level;
Mediative techniques (e.g. attitudes, needs, interests,..)

Prerequisites:
n.a.

Lecture/Seminar profile:

Biochemistry (23_BCH3LB)

Degree course	BUT.ba
Course title	Biochemistry
Course code	23_BCH3LB
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	3
Course type	Laboratory session
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	3

Learning objectives:
Graduates are able to deal with current issues in research-orientated or industrial biotechnology. They
can apply this knowledge to understand biochemical processes and to optimise naturally occurring metabolic reactions in biotechnological processes.

Graduates are able to extract proteins from biological samples in order to quantify them. Furthermore, they can develop, conduct and statistically correctly analyse experiments to investigate enzyme activity and specificity
analyse them statistically correctly.

Content:
- Extraction of proteins and enzymes;
- Protein purification and protein refolding;
- determination of biochemical parameters, e.g. enzyme activity and specificity;
- different protein determination methods;
- statistical data analysis (F-test, significance level, confidence interval).

Prerequisites:
Chemistry 1 and 2

Lecture/Seminar profile:

Microbiology II (23_MIB3LB)

Degree course	BUT.ba
Course title	Microbiology II
Course code	23_MIB3LB
Level	Bachelor
Term	WS24/25
Lecturer	Manuela Meindl-Milla
Contact hours per week	2
ECTS credits	3
Course type	Laboratory session
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	3

Learning objectives:
Graduates are familiar with the aspects of mycology that are specific to the profession mycology and are familiar with the working methods and laboratory procedures for deal with fungi and their metabolic products in the laboratory. They can apply this knowledge to subject-specific questions and are able to able to plan, carry out and analyse experimental tasks independently, carry out and analyse experimental tasks independently.

Content:
- Identification of bacteria and fungi;

- Biochemical detection methods;
- Mould analysis and mycotoxin analysis;

- Development of the biofilm;

- Pathogenicity detection.

Prerequisites:
Scientific basics 1 and 2

Lecture/Seminar profile:

Brewing Science (BRW5LB)

Degree course	BUT.ba
Course title	Brewing Science
Course code	BRW5LB
Level	Bachelor
Term	WS24/25
Lecturer	Alexander Jäger
Contact hours per week	1
ECTS credits	1
Course type	Laboratory session
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	12

Learning objectives:
Upon successful completion of this course, students will be able:
- to brew their own beer
- to recognise and distinguish the important international beer styles
- explain the history of beer and beer production.

Content:
Practical Course in Beer Brewing
Production of own beer, carrying out all essential steps:
Grinding of malt, mashing, lautering, wort boiling, whirlpool, yeast addition
bottling or kegging the beer
Learning of the most important basic tasting techniques: Triangle test, threshold, assignment test
Get to know the most important Austrian and international beer styles, know its history and the production methods

Prerequisites:
Interest

Lecture/Seminar profile:

Fermentation Technology (FER5LB)

Degree course	BUT.ba
Course title	Fermentation Technology
Course code	FER5LB
Level	Bachelor
Term	WS24/25
Lecturer	Viktoria Leitner
Contact hours per week	2
ECTS credits	2
Course type	Laboratory session
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	2

Learning objectives:
n.a.

Content:
Cultivation techniques, fermenters, fermenter design and
Operating mode, biotechnological process schemes (beer production,
Yeast production, penicillin production,
bioethanol production), fermentation technology (aeration systems,
mass transfer, up-scaling)
Operation and understanding of a biotechnological pilot plant.
Fermenter sterilization, inoculation, sampling,
Cultivation as batch/fed-batch/continuous culture.
Determination of division rate/generation time, maximum
Growth rate, monod kinetics.

Prerequisites:
Basics Biology/Microbiology, Microbiology 1

Lecture/Seminar profile:

Interdisciplinary Project II (FUP5PT)

Degree course	BUT.ba
Course title	Interdisciplinary Project II
Course code	FUP5PT
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	3
Course type	Project
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	12

Learning objectives:
n.a.

Content:
Practical implementation of knowledge acquired in different courses on real-life tasks of the job market; Analysis of the project tasks, preparation of a project plan, processing of the tasks, composition of a report and presentation of the results

Prerequisites:
depending on the respective projects previous knowledge

Lecture/Seminar profile:

Business Administration (21_BUS5LE)

Degree course	EE.ba
Course title	Business Administration
Course code	21_BUS5LE
Level	Bachelor
Term	WS24/25
Lecturer	Florian Wesz
Contact hours per week	2
ECTS credits	2
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	4

Learning objectives:
Students gain a general overview of business economics. They have an idea of how to read and interpret financial statements, calculate cost rates and cost estimates.
They are able to calculate contribution margins and apply the results to various business decisions (such as break-even point, product line decisions, make-or-buy decisions, ...).
They have the basic knowledge to carry out elementary cost planning and target/actual comparisons.

Content:
• Introduction to business economics
• Legal form of companies
• Formation of companies
• Bankruptcy
• Core processes of a company
• Accounting and balancing
• Fundamentals of costing (cost distribution sheet, calculation)
• Profitability calculation
• Investment calculation
• Based on examples out of the field electrical engineering, such as service costs of facilities.

Please note: Attending the lecture is only possible, if a student is also attending the skills practice

Prerequisites:
Please note: Attending the lecture is only possible, if a student is also attending the skills practice

Lecture/Seminar profile:

Business Administration (21_BUS5PR)

Degree course	EE.ba
Course title	Business Administration
Course code	21_BUS5PR
Level	Bachelor
Term	WS24/25
Lecturer	Florian Wesz
Contact hours per week	2
ECTS credits	2
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	4

Learning objectives:
See BUS5LE Lecture

Content:
See BUS5LE Lecture

Prerequisites:
Please note: Attending the lecture is only possible, if a student is also attending the skills practice

Lecture/Seminar profile:

Control Engineering (21_CEN5LB)

Degree course	EE.ba
Course title	Control Engineering
Course code	21_CEN5LB
Level	Bachelor
Term	WS24/25
Lecturer	Simon Mayr
Contact hours per week	2
ECTS credits	3
Course type	Laboratory session
Examinations	continuous assessment
Language of instruction	English
Places for international students	4

Learning objectives:
See CEN5LE Lecture

Content:
See CEN5LE Lecture

Prerequisites:
EEN 1-2, EMA 1-2, PRG, GEN, MAT 1-2, PHY, MES, CES (Prerequisites: Minimum 10 ECTS credits required in Electrical Engineering)

Lecture/Seminar profile:

Control Engineering (21_CEN5LE)

Degree course	EE.ba
Course title	Control Engineering
Course code	21_CEN5LE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	3
ECTS credits	4
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	2

Learning objectives:
Students learn fundamentals of modern control systems with special respect to electrical energy supply and drives control.
They are able to develop / dimensioning control solutions for applications mentioned above.
Students are able to choose the right controller and tune it for a stable and fast controlling behavior.
They are able to identify and model the controlled system.
Students are able to realize controls by means of data acquisition systems and scientific computer software (such as MATLAB and MATLAB SIMULINK).

Content:
Fundamental control and steering concepts
State space models
Meaning of characteristic terms such as
- control loop
- steady state deviation

Identification of the controlled system and modeling
Controller design
Stability assessment e.g.
- graphical (locus) methods
- mathematical methods

Special applications
- electrical cars and drives
- power control in energy systems (p(u), q(u))
- grid stability

Analog and digital controllers
Application of a data acquisition software

Prerequisites:

EEN 1-2, EMA 1-2, PRG, GEN, MAT 1-2, PHY, MES, CES (Prerequisites: Minimum 10 ECTS credits required in Electrical Engineering)

Lecture/Seminar profile:

Circuit Analysis (21_EEN1LE)

Degree course	EE.ba
Course title	Circuit Analysis
Course code	21_EEN1LE
Level	Bachelor
Term	WS24/25
Lecturer	Mario Jungwirth
Contact hours per week	2
ECTS credits	3
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	2

Learning objectives:
The students know the basics of electrical engineering, starting with the basic physical quantities and correlations and SI units. They master the application of calculation methods and simulation methods on practical examples of direct, alternating and three-phase current technology, as well as for electric and magnetic fields (capacitance, inductance). They are able to independently build circuits, carry out measurements of typical parameters and evaluate these in comparison with calculation and simulation results.

Content:
Representation of physical quantities, SI units, basic quantities in the electric or magnetic field (capacitance, inductance), direct current technology, resistor networks, Kirchhoff's laws, network calculation, equivalent voltage/replacement current source, time-varying quantities, types of time-varying currents and voltages, representation of time-varying quantities. Characteristics of time varying quantities, passive components, general relationships of current, voltage, energy, power on passive components with arbitrary time varying quantities. Alternating current technology, basics of complex alternating current technology, complex calculation, network calculation, reactive power compensation, oscillating circuits, three-phase current technology, floor diagram.

Prerequisites:
Physics skills on higher education entrance qualification and Mathematics basics at secondary school level

Lecture/Seminar profile:

Circuit Analysis (21_EEN1PR)

Degree course	EE.ba
Course title	Circuit Analysis
Course code	21_EEN1PR
Level	Bachelor
Term	WS24/25
Lecturer	Sako Wanesian
Contact hours per week	2
ECTS credits	3
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	2

Learning objectives:
See EEN1LE Lecture

Content:
Calculation of resistance, impedance, DC networks and AC networks. Calculation of simple electromagnetic fields and their effects.

Prerequisites:
Physics skills on higher education entrance qualification and Mathematics basics at secondary school level

Lecture/Seminar profile:

Electromagnetic Fields (21_EEN3LE)

Degree course	EE.ba
Course title	Electromagnetic Fields
Course code	21_EEN3LE
Level	Bachelor
Term	WS24/25
Lecturer	Rastko Zivanovic
Contact hours per week	3
ECTS credits	4
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	2

Learning objectives:
Load flow and system calculation with special respect to distributed systems, transient situations, unbalanced loads, unsymmetrical loads.
Fundamentals of the electromagnetic field.
Special electromagnetic fields with simple boundary conditions.
Special effects of the electromagnetic fields (e.g. skin effect, wave propagation).
Knowing and applying calculation methods for the problems listed above.

Content:
Load flow calculation with matrices
Load system feedback
Transient system transitions
• Switching processes
• Short circuit case
Unbalanced loads
• Zero sequence system
• Positive sequence system
• Negative sequence system
Electromagnetically fields for simple geometries
• Magnetically fields
  o Governing units
  o Material effects
  o Induction
  o Inductance
  o Simple computational methods
• Electrically fields

  o Governing units
  o Material effects
  o Influencing charges
  o Capacity
  o Simple computational methods
• Electrical flux fields
  o Governing units
  o Material effects
  o Influencing charges
  o Resistance
  o Simple computational methods

Special aspects of electro magnetically fields

• Skin effect
• Wave propagation
• Screening of EMC with special respect to slow and fast fields

In general: aspects of computation of force, power, and energy for electro magnetically fields

Prerequisites:

EEN 1-2, MAT 1-2

Lecture/Seminar profile:

Electromagnetic Fields (21_EEN3PR)

Degree course	EE.ba
Course title	Electromagnetic Fields
Course code	21_EEN3PR
Level	Bachelor
Term	WS24/25
Lecturer	Rastko Zivanovic
Contact hours per week	2
ECTS credits	2
Course type	Practice-oriented session
Examinations	written examination
Language of instruction	English
Places for international students	2

Learning objectives:
See EEN3LE Lecture

Content:
See EEN3LE Lecture

Prerequisites:
EEN 1-2, MAT 1-2

Lecture/Seminar profile:

Power System Analysis (21_EPG5LB)

Degree course	EE.ba
Course title	Power System Analysis
Course code	21_EPG5LB
Level	Bachelor
Term	WS24/25
Lecturer	Rastko Zivanovic
Contact hours per week	2
ECTS credits	2
Course type	Laboratory session
Examinations	continuous assessment
Language of instruction	English
Places for international students	2

Learning objectives:
See EPG5LE Lecture

Content:
See EPG5LE Lecture

Prerequisites:
CEN, EEN 1-2, EMA 1-2, PRG, GEN, MAT 1-2, MES, CES, HVE

Lecture/Seminar profile:

Electrical Power Grids and Systems (21_EPG5LE)

Degree course	EE.ba
Course title	Electrical Power Grids and Systems
Course code	21_EPG5LE
Level	Bachelor
Term	WS24/25
Lecturer	Walter Tenschert
Contact hours per week	4
ECTS credits	5
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	2

Learning objectives:
Students know the operational and maintenance aspect of modern power grids with special respect to smart grid technology.
They know about protection measures with respect to failures.
Students get a rough overview on IT security aspects.
They know how the load flow and power quality can be controlled or influenced with respect to generation, demand and specific time frames.
Students know the effect of disadvantageous impacts like unbalanced systems, harmonics and bad power factors.
They know economical effects with respect to operational strategies, safety (IT and protection), maintenance, and implementation of smart grid technology.
Energy efficiency aspects are known.

Content:
- Fundamentals of electrical power supply
- Voltage levels for electrical power supply and their purpose
- Topologies of electrical grids and parts of the grids (like substations)
- Control of the load flow and power quality in electrical grids and electrical power supply with special respect to e.g.
    - time frame
    - power factor
    - harmonics
    - switching activities
- Smart grid systems and technology
- Special operational situations e.g.
    - short circuit

- switching
- synchronization

-Special aspects neutral point connection
- Protection concepts e.g.
  - overvoltage, insulation coordination
  - earth fault current
  - short circuit
- Availability with special respect to maintenance and state dependent maintenance concepts
- Monitoring and diagnostic applications
- Safety in electrical systems and apparatus
  - electrical shock
  - vandalism
  - hacking
- Economical and ecological considerations

Please note: Attending the lecture is only possible, if a student is also attending the skills practice.

Prerequisites:
CEN, EEN 1-2, EMA 1-2, PRG, GEN, MAT 1-2, MES, CES, HVE

Lecture/Seminar profile:

Power System Analysis (21_EPG5PR)

Degree course	EE.ba
Course title	Power System Analysis
Course code	21_EPG5PR
Level	Bachelor
Term	WS24/25
Lecturer	Rastko Zivanovic
Contact hours per week	2
ECTS credits	2
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	2

Learning objectives:
See EPG5LE Lecture

Content:
See EPG5LE Lecture

Note: Attending the skills practice is only possible, if a student also attends the lecture.

Prerequisites:
CEN, EEN 1-2, EMA 1-2, PRG, GEN, MAT 1-2, MES, CES, HVE

Lecture/Seminar profile:

Powerplants for Electrical Power Generation (21_GEN1IC)

Degree course	EE.ba
Course title	Powerplants for Electrical Power Generation
Course code	21_GEN1IC
Level	Bachelor
Term	WS24/25
Lecturer	Michael Köpl
Contact hours per week	3
ECTS credits	3
Course type	Integrated course
Examinations	continuous assessment
Language of instruction	English
Places for international students	2

Learning objectives:
The students
• understand the fundamental principles of the methods to generate, distribute and store electricity on an encyclopedic level.
• are familiar with physical-, chemical-, hydraulic- and thermodynamic processes and able to estimate power and energy yield under specific conditions.
• know typical topologies of power plants.
• understand aspects like available resources, waste treatment and economy of the operation, challenges, advantages / disadvantages and risks should be considered.
• are able to communicate with experts for the design and operation of power plants and electrical power systems.
• have knowledge about the electrical energy situation and technologies used in this field in their home country and can compare it with other countries.
• are able to communicate with experts for the design and operation of power plants.

Content:
• Physical basics
  - power , energy, …
  - calculations and estimates
• Power plants / technologies / physics / applications
  - hydro
  - wind
  - solar
  - fossil
  - nuclear
  - other resources (e.g. wave energy, geothermal, …)

• Storage
  - technologies
  - areas of applications
• Usage and distribution of electrical energy
  - general technologies
  - grid technologies
• Basic economic and political considerations with respect to
  - operational conditions
  - operational planning
  - liberalized markets
• Resources
  - utilisation
  - costs
  - waste treatment
• Specific examples of electrical power systems
  - new developments
  - electrical energy situation in a specific country
  - new technologies and future possible applications

Prerequisites:
MAT 1, EEN 1, Physics skills on higher education entrance qualification

Lecture/Seminar profile:

Information Technology (21_INF1LE)

Degree course	EE.ba
Course title	Information Technology
Course code	21_INF1LE
Level	Bachelor
Term	WS24/25
Lecturer	Fabian Dopler
Contact hours per week	1
ECTS credits	2
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
The students
• know and can professionally use the essential elements of a modern computer-aided engineering workplace: workplace computer, current interfaces, operating system, network (especially Internet and WLAN).
• have an understanding of how a computer works and how tasks are prepared (structured) for computer processing (flowcharts, data models)
• have basic understanding of data and their structure as well as application of databases in companies
• learn the basic elements of programming languages of an object-oriented high-level language.
• understand the necessity of IT security in companies and on the Internet as well as the legal basis behind it.
• know standard software tools commonly used in technology as well as the basic process of software development

Content:
• History of computer science, terms of computer science
• Basics of hardware, software, networks and security
• Understanding of simple algorithms and data structures
• Programming basics - variables, control structures,
• First introduction to software engineering
• Organization of data
• Awareness of IT security and IT law
• Creation of professional documents according to scientific publication templates
• Creation of simple procedural programs
• Creation of simple calculations as well as diagrams for the visualization of data with standard

software

Prerequisites:
INF1, knowledge in the field of information technology

Lecture/Seminar profile:

Information Technology (21_INF1PR)

Degree course	EE.ba
Course title	Information Technology
Course code	21_INF1PR
Level	Bachelor
Term	WS24/25
Lecturer	Fabian Dopler
Contact hours per week	1
ECTS credits	1
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	3

Learning objectives:
See INF1LE Lecture

Content:
See INF1LE Lecture

Prerequisites:
INF1, knowledge in the field of information technology

Lecture/Seminar profile:

Mathematics 1 (21_MAT1LE)

Degree course	EE.ba
Course title	Mathematics 1
Course code	21_MAT1LE
Level	Bachelor
Term	WS24/25
Lecturer	Harald Hinterleitner
Contact hours per week	4
ECTS credits	5
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:

Students will be able to understand the mathematical content below and apply it to practical problems, with particular emphasis on the use of a computer algebra system.

Content:

Sets, statements, numbers: Set theory, propositional logic, switching algebra, real numbers, magnitude, summation signs, inequalities combinatorics, place value systems, complex numbers (introduction).

Vector calculus: vector calculus in plane and space, scalar product, orthogonal projection, vectorial product, analytic geometry (straight line, plane), applications of vector calculus in engineering.

Matrices and linear systems of equations: sum and product of matrices, inverse matrix, determinant of a matrix, solving and solution structure of linear systems of equations.

Functions and curves: bijectivity and inverse function, polynomial functions, rational functions, limits of sequences and functions, trigonometric functions, exponential and logarithmic functions, hyperbolic functions, continuity, complex numbers (exponential form, exponentiation, root extraction), parameter representation of curves, oscillations.

Differential calculus: derivative of a function, derivative rules, higher derivatives, Newton's approximation method, rule of de l'Hospital, maxima/minima/turn points, curve discussions, extreme value problems, Taylor polynomials, differential geometry.

Mathematics software: introduction to a computer algebra system and use of the program in the

above chapters.

Please note: Attending the lecture is only possible, if a student also attends the skills practice class!

Prerequisites:
Mathematics fundamentals at secondary school level

Lecture/Seminar profile:

Mathematics 1 (21_MAT1PR)

Degree course	EE.ba
Course title	Mathematics 1
Course code	21_MAT1PR
Level	Bachelor
Term	WS24/25
Lecturer	Harald Hinterleitner
Contact hours per week	2
ECTS credits	2,5
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	3

Learning objectives:
See MAT1LE Lecture

Content:
See MAT1LE Lecture

Prerequisites:
Mathematics fundamentals at secondary school level

Lecture/Seminar profile:

Measurement Engineering for Electrical Energy Systems (21_MES3LE)

Degree course	EE.ba
Course title	Measurement Engineering for Electrical Energy Systems
Course code	21_MES3LE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	3
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	2

Learning objectives:
Students know fundamentals of measurement engineering e.g.
• definition of measurement
• measurement procedures
• error types
• sensor integration concepts (like active and passive sensors, data transfer)
• data acquisition
They know the essential sensors, measuring techniques, and measuring circuits for electrical energy engineering e.g.
• electromagnetic parameter
• temperature
• force, pressure
• flow mechanics
• sound, noise
with special respect to robustness, costs, frequency response, and spatial resolution.
Students know topology and screening effects on EMC and EMI, rsp.
They are able to design EMC robust measurement circuits.

Content:
Fundamentals of measuring techniques
 definition of measurement
 measurement procedures
 measuring error
    o types of errors and measures
 data acquisition
 active passive sensor concepts

 data integration
 concepts of monitoring and diagnostics with respect to condition based maintenance
Essential sensors, measuring techniques, and measuring circuits for electrical energy engineering
e.g.
 electromagnetic parameter (with special respect to electrical energy engineering)
 temperature
 force, pressure
 flow mechanics
 sound, noise
 ...
with special respect to robustness, costs, frequency response, and resolution
Topology and screening effects with respect to EMC and EMI, rsp.
Design of EMC robust measurement circuits
Data acquisition systems and measurement system design of these systems
Applying of a data acquisition system (e.g. NI LabView)

Prerequisites:
EEN 1-3, EMA 1, PRG, GEN, MAT 1-2

Lecture/Seminar profile:

Project Management (21_PRM3IC)

Degree course	EE.ba
Course title	Project Management
Course code	21_PRM3IC
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Integrated course
Examinations	continuous assessment
Language of instruction	English
Places for international students	5

Learning objectives:
The students understand the sense of projects and the goals and tools for any efficient project management in the sense of the International Competence Baseline
They know the tools and methods for project management for project planning, project control, and project documentation
Students know team dynamic principles
They know the essential project risks and methods to minimize or to act against them
Students have basic knowledge of the function and application of software tools for any project management.

Content:
Project management as business process
• project manual
• methods to manage projects
  o methods for the project start
    - project framework and context
    - design of the project organization
    - project planning
  o project coordination
  o project controlling
  o project marketing
  o project crises
  o project end
• Survey on project based organizations
Project management software tools for the items mentioned above.

Prerequisites:
No prerequisits required

Lecture/Seminar profile:

Communication with intercultural aspects (21_SSK1SE)

Degree course	EE.ba
Course title	Communication with intercultural aspects
Course code	21_SSK1SE
Level	Bachelor
Term	WS24/25
Lecturer	Vanessa Prüller
Contact hours per week	2
ECTS credits	1,5
Course type	Seminar
Examinations	continuous assessment
Language of instruction	English
Places for international students	4

Learning objectives:
The students are able to have constructive and solution orientated conversations with different communication partners (colleagues, internal and external clients).

They are aware of their own cultural background and can reflect about cultural differences in their multi-national classroom setting.

They can successfully communicate with people from many different countries and know tools to continue developing their own intercultural competence.

Content:
Communication theory basics (e.g. Paul Watzlawick, Schulz von Thun).
Significance of perception within communication (e.g. perception filters, canals, distortion).
Basics of intercultural communication and development of intercultural key competences. Reflection of personal cultural identity, social roles and behavior patterns and expectations.
Guide lines for constructive feedback;
Development of a team spirit in the group.
Defining rules and needs for a successful collaboration in the team.

Prerequisites:
No prerequisites required

Lecture/Seminar profile:

German Language A 1.1 (DAF_A1.1_UE)

Degree course	FWE
Course title	German Language A 1.1
Course code	DAF_A1.1_UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	3
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
Topics / Grammar:
1. Introductions, greetings/verb conjugation (ich/du) and preposition aus
2. Family and Friends/personal pronouns, verb conjugation (leben, haben), preposition in, numbers 0-20
3. Eating and Drinking, food, shopping, prices, measurement units/indefinite article, negative article, plurals, verb: essen, numbers 21-100
4. My flat/apartment/domestic vocabulary, numbers 101-1,000,000, definite articles, personal pronouns, negation
5. Mein Tag/My Day: telling the time, daily activities, days of the week/separable verbs, verb position in sentence, prepositions: am, um, von…bis
6. Free time: the weather, seasons, in a restaurant, agreeing and disagreeing, hobbies/ accusative, verb conjugations: lesen, treffen, schlafen, fahren, nehmen, 'möchte'
7. Life-long Learning: expressing capabilities, intentions, describing past events and activities, learning skills/modal verbs, Perfect with to be, Perfect with to have…

Lehrbuch: Schritte International 1, Niebisch, Hueber Verlag

Prerequisites:
n.a.

Lecture/Seminar profile:

German Language A 2.1 (DAF_A2.1_UE)

Degree course	FWE
Course title	German Language A 2.1
Course code	DAF_A2.1_UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	3
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
Topics and Grammar:
1. Getting to know each other, travel experiences, family tree, talking about your family, accommodation / subordinating conjunction: weil, Perfect Tense of separable and inseparable verbs, genitive with names, von, bei.
2. At home: addresses, locations, conversations with neighbours, two-case prepositions and verbs with them, directional adverbs: rein, raus, runter…
3. Guten Appetit!: breakfast, in a restaurant, private invitations / nominative and accusative indefinite pronouns
4. The World of Work: giving advice, expressing conditions, telephone conversations at work, characteristics for different careers /Subjunctive: sollte, conjunction wenn
5. Sport: health tips, expressing feelings, telephone enquiries / reflexive verbs, verb + preposition, question-words with prepostions
6. Education and Career: describing your career path, expressing opinion, describing and discussing school systems, further and higher education, interviews / Simple Past of modal verbs, conjunction: ‚dass…
7. Celebrations and Presents: presents, vouchers, weddings, planning a celebration / Dative object, position of objects

Lehrbuch: Schritte International 3, Niebisch, Hueber Verlag

Prerequisites:

n.a.

Lecture/Seminar profile:

German Language B 1.1 (DAF_B1.1_UE)

Degree course	FWE
Course title	German Language B 1.1
Course code	DAF_B1.1_UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	3
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
Topics and Grammar:
1. Happiness in Everyday Life: reporting the past, newspaper reports / Conjunction: als, Irregular verbs past tense, Pluperfect tense.
2. Entertainment: Star Wars. Describing people and things, expressing contrast. Television. Grammar: subordinating conjunction obwohl, relative pronouns and sentences, adverbs of degree: ziemlich…
3. Keeping fit: Relaxation Exercises. Advice and Recommendations. At the Doctor. Health. Genitive, Present Passive Voice. Present Passive with Modal verb müssen
4. Languages: Subjunctive. Not understandiing something. Justification. Understanding a literary text. Conjunction wenn. Preposition wegen. Conjunctions: darum, deswegen etc.
5. Career, Job and Internship: Teamwork, Business Ideas, Written job applications, telephone applications. Infinitive with zu: Ich habe keine Lust, Ärger zu bekommen. Nicht/nur brauchen+infinitive mit zu.
6. Customer Wishes: speaking about holiday/vacation wishes and statistics. Good intentions. Holiday/vacation destinations. Dream Holiday/Vacation. Sales Conversations. Grammar: um…zu+infinitive, Conjunction: damit. statt…zu, ohne…zu…Expressions with Es…
7. Our Home: The Dream Flat/Apartment. Neijghbours. Weekend Relationships. Grammar: two-part conjunctions: nicht nur…sondern auch; entweder….oder etc. Subjunctive: Hätte ich…Verbs with prepositions (e.g. warten auf…), Preposition trotz

Lehrbuch: Schritte International, Niebisch, Hueber Verlag

Prerequisites:
n.a.

Lecture/Seminar profile:

German Language B 2.1 (DAF_B2.1_UE)

Degree course	FWE
Course title	German Language B 2.1
Course code	DAF_B2.1_UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	3
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
Topics:

Menschen/Sprache/Orte/Konsum/Zukunft

Grammar: Adjectives, verbs, the sentence, Reporting the Past and Negation, Subjunctive II

Lehrbuch: EM neu Hauptkurs Niveaustufe B2, Hueber

Prerequisites:
n.a.

Lecture/Seminar profile:

German Language C 1.1 (DAF_C1.1_UE)

Degree course	FWE
Course title	German Language C 1.1
Course code	DAF_C1.1_UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	3
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
Lehrbuch: EM neu Hauptkurs Niveaustufe C1, Hueber, 2008

1.Types of word, completing statements, curiosities, forms of indirect speech, verbs of speaking, prepositions, clauses with wie, types of text, keywords in texts, reading strategies, daily newspapers
2. The bank, cost of living, bank business, two-part conjunctions, modal particles in questions and statements, meaning of modal particles, composites, formal and informal letters
3. Adjectives, describing photos, giving a short lecture, suffixes of adjectives, constructing adjectives, correcting mistakes, adjectives of character, adjectives with pre-and suffixes, composite adjectives, word-building with adjectives, article and adjective endings, problem-solving
4. Idioms and Expressions, rules of behaviour when invited somewhere, formal letters, saying du or Sie, es as a pronoun, use of es in speech, advanced verbs, verbs of speech.
5. Vivid idioms, describing photos, prefixes ent-, miss-, zer-, genitive, listening strategies, terminology, idioms with Herz, Geist, Seele, Verstand

Prerequisites:
n.a.

Lecture/Seminar profile:

German Language C2.1 (DAF_C2.1_UE)

Degree course	FWE
Course title	German Language C2.1
Course code	DAF_C2.1_UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	3
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
n.a.

Prerequisites:
n.a.

Lecture/Seminar profile:

English III (22_ENG3UE)

Degree course	IPEM.ba
Course title	English III
Course code	22_ENG3UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Practice-oriented session
Examinations	written examination
Language of instruction	English
Places for international students	6

Learning objectives:
n.a.

Content:
The Language of Presentations.
Demanding technical and scientific texts
Deepening the technical vocabulary: Exercise to vocabulary topics materials, process engineering, robotics, industry 4.0 etc.

Prerequisites:
n.a.

Lecture/Seminar profile:

English V (22_ENG5UE)

Degree course	IPEM.ba
Course title	English V
Course code	22_ENG5UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Practice-oriented session
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Project Management:
practice of project management activities in English (e.g. discussion/negotiation of schedule, budget, sequencing of activities etc.)
Presentation/explanation by students of topics from the Semester 5 curriculum
Reading and discussion of articles on topics relevant/related to subjects of the curriculum/field of study
Reading and discussion of articles of general topical interest and/or theme-based articles
Grammar revision as required

Prerequisites:
n.a.

Lecture/Seminar profile:

Business Administration I (24_BWL1IL)

Degree course	IPEM.ba
Course title	Business Administration I
Course code	24_BWL1IL
Level	Bachelor
Term	WS24/25
Lecturer	Stefan Hofmayr
Contact hours per week	1
ECTS credits	2
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Introduction in the Business Studies
Core processes of a company
Forms of business; company formation
Introduction to the balance sheet and the profit and loss account
Fundamentals of cost accounting

Prerequisites:
n.a.

Lecture/Seminar profile:

CAD Basis (24_CAD1UE)

Degree course	IPEM.ba
Course title	CAD Basis
Course code	24_CAD1UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	2
Course type	Practice-oriented session
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Technical communication
Application of standards
Design criteria
Presentation of spatial objects in the plane
Freehand technical drawing
  Measurements
  Section presentations
  Surface marking
  Tolerances and fits
  Form and position tolerances
  Thread representation
Turning and milling constructions
Casting constructions
Welding constructions

3D model creation
 Turning and milling constructions
 Casting constructions
2D derivation
  Dimensional drawings
  Section presentations

Surface marking
Tolerances and fits
Form and position tolerances Winning the presentation
3D assembly
e.g. welding constructions

Prerequisites:

n.a.

Lecture/Seminar profile:

Design Fundamentals I (24_DES1IL)

Degree course	IPEM.ba
Course title	Design Fundamentals I
Course code	24_DES1IL
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Design as a field of expertise, implications, interfaces, people
Working methods and design processes
Product language and semantics

Prerequisites:
n.a.

Lecture/Seminar profile:

Information Technology (24_INF1UE)

Degree course	IPEM.ba
Course title	Information Technology
Course code	24_INF1UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
History of computer science, terms of computer science
Basics of hardware, software, networks and security
Understanding of simple algorithms and data structures
Programming basics - variables, control structures,
First introduction to software engineering
Organization of data
Awareness of IT Security and IT Law
Creation of professional documents according to scientific publication requirements
Creation of simple procedural programs
Creation of simple calculations as well as diagrams for the visualization of data with standard software

Prerequisites:
n.a.

Lecture/Seminar profile:

Information Technology (24_INF1VO)

Degree course	IPEM.ba
Course title	Information Technology
Course code	24_INF1VO
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
History of computer science, terms of computer science
Basics of hardware, software, networks and security
Understanding of simple algorithms and data structures
Programming basics - variables, control structures,
First introduction to software engineering
Organization of data
Awareness of IT Security and IT Law
Creation of professional documents according to scientific publication requirements
Creation of simple procedural programs
Creation of simple calculations as well as diagrams for the visualization of data with standard software

Prerequisites:
n.a.

Lecture/Seminar profile:

Mathematics I (24_MAT1UE)

Degree course	IPEM.ba
Course title	Mathematics I
Course code	24_MAT1UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	0,67
ECTS credits	1,33
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Sets, statements, numbers: Set theory, propositional logic, switching algebra, real numbers, magnitude, summation signs, inequalities combinatorics, place value systems, complex numbers (introduction).
Vector calculus: vector calculus in plane and space, scalar product, orthogonal projection, vector product, analytic geometry (straight line, plane), applications of vector calculus in engineering.
Matrices and linear systems of equations: sum and product of matrices, inverse matrix, determinant of a matrix, solution and solution structure of linear systems of equations.
Functions and curves: bijectivity and inverse function, polynomial functions, rational functions, limits of sequences and functions, trigonometric functions, exponential and logarithmic functions, hyperbolic functions, continuity, complex numbers. (exponential form, exponentiation, root extraction), parameter presentation of curves, oscillations.
Differential calculus: derivative of a function, derivative rules, higher derivatives, Newton's approximation method, de l'Hospital's rule, maxima/minima/turn points, curve discussions, extreme value problems, Taylor polynomials, differential geometry.

Prerequisites:
n.a.

Lecture/Seminar profile:

Mathematics I (24_MAT1VO)

Degree course	IPEM.ba
Course title	Mathematics I
Course code	24_MAT1VO
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	1,33
ECTS credits	1,78
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Sets, statements, numbers: Set theory, propositional logic, switching algebra, real numbers, magnitude, summation signs, inequalities combinatorics, place value systems, complex numbers (introduction).
Vector calculus: vector calculus in plane and space, scalar product, orthogonal projection, vector product, analytic geometry (straight line, plane), applications of vector calculus in engineering.
Matrices and linear systems of equations: sum and product of matrices, inverse matrix, determinant of a matrix, solution and solution structure of linear systems of equations.
Functions and curves: bijectivity and inverse function, polynomial functions, rational functions, limits of sequences and functions, trigonometric functions, exponential and logarithmic functions, hyperbolic functions, continuity, complex numbers. (exponential form, exponentiation, root extraction), parameter presentation of curves, oscillations.
Differential calculus: derivative of a function, derivative rules, higher derivatives, Newton's approximation method, de l'Hospital's rule, maxima/minima/turn points, curve discussions, extreme value problems, Taylor polynomials, differential geometry.

Prerequisites:
n.a.

Lecture/Seminar profile:

Mechanics I (24_MEC1UE)

Degree course	IPEM.ba
Course title	Mechanics I
Course code	24_MEC1UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	2
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
- Cartesian coordinate system
- Scalars and vectors
- Vector operations
- Concept of force
- Reduction of plane force systems
- Torque
- Equilibrium of a rigid body in the plane
- Free cutting of mechanical systems
- gravitational forces, frictional forces, spring forces
- Center of gravity, moment of inertia
- Internal forces on a straight beam
- Basic concepts of elastostatics, uniaxial stress state

- Calculation exercises with practical examples related to the contents of the lecture.

Prerequisites:
n.a.

Lecture/Seminar profile:

Mechanics I (24_MEC1VO)

Degree course	IPEM.ba
Course title	Mechanics I
Course code	24_MEC1VO
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	3
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Cartesian coordinate system
Scalars and Vectors
Vector operations
Concept of force
Reduction of plane force systems
Torque
Equilibrium of rigid body in the plane
Free-sliding of mechanical systems
gravitational forces, frictional forces, spring forces
center of gravity, moment of inertia
Internal forces on a straight beam
Fundamentals of elastostatics, uniaxial stress state

Calculation exercises with practical examples to the contents of the lecture.

Prerequisites:
n.a.

Lecture/Seminar profile:

Market-oriented Management-case studies (24_MMM1IL)

Degree course	IPEM.ba
Course title	Market-oriented Management-case studies
Course code	24_MMM1IL
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	0,5
ECTS credits	0,5
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Application of market-oriented management (MOM1IL) in practice using case studies.

Prerequisites:
n.a.

Lecture/Seminar profile:

Market-oriented management (24_MOM1IL)

Degree course	IPEM.ba
Course title	Market-oriented management
Course code	24_MOM1IL
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	1,5
ECTS credits	1,5
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Importance of market and customer orientation for the company's success
Holistic process of market-oriented management
Specifics of B2B, industrial goods and high-tech marketing
Analysis of the strategic situation, taking into account all relevant information (macro-/micro-environment, customers, competitors, companies)
Determination of the basic marketing strategy orientation (customer-centered and competitor-centered strategies)
Basics of communication, price, distribution, sales and product policy
Basics of relationship marketing and its importance in the context of industrial goods.

Prerequisites:
n.a.

Lecture/Seminar profile:

Innovation & Product Development (24_PEW1IL)

Degree course	IPEM.ba
Course title	Innovation & Product Development
Course code	24_PEW1IL
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	3
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Importance of technological innovations
Contents and tasks of R&D, technology and innovation management
Technology and innovation management process
Overview and structure
Initiation of ideas
Idea generation

Abstraction, specification of tasks
Establishing functional criteria
Conception of solution variants
Evaluation of developed variants, selection
Concretizing design work by drawing and calculating
Computer aided Design and construction
Virtual prototyping
Inclusion of material and manufacturing technologies
Criteria of transport and maintenance
Criteria of human and environmental protection, sustainability of the product
Application of the topics discussed in the lecture on the basis of concrete tasks and case studies

Prerequisites:
n.a.

Lecture/Seminar profile:

Social Skills: Communication (24_SKK1SE)

Degree course	IPEM.ba
Course title	Social Skills: Communication
Course code	24_SKK1SE
Level	Bachelor
Term	WS24/25
Lecturer	Walter Buchinger
Contact hours per week	2
ECTS credits	2
Course type	Seminar
Examinations	continuous assessment
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Fundamentals of communication theory
Importance of perception in communication (e.g. perception filters, distortions, channels)
Guidelines for constructive feedback
Development of a "we-feeling" in the group
Working out group rules
Time and works organization with special consideration of learning and works strategies

Prerequisites:
n.a.

Lecture/Seminar profile:

Technical Drawing Basis (24_TEZ1IL)

Degree course	IPEM.ba
Course title	Technical Drawing Basis
Course code	24_TEZ1IL
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Technical communication
Application of standards
Design criteria
Presentation of spatial objects in the plane
Freehand technical drawing
  Measurements
  Section presentations
  Surface marking
  Tolerances and fits
  Form and position tolerances
  Thread representation
Turning and milling constructions
Casting constructions
Welding constructions

3D model creation
 Turning and milling constructions
 Casting constructions
2D derivation
  Dimensional drawings
  Section presentations

Surface marking
Tolerances and fits
Form and position tolerances Winning the presentation
3D assembly
e.g. welding constructions

Prerequisites:

n.a.

Lecture/Seminar profile:

Bachelor Project (21_BAC5PT)

Degree course	LCW.ba
Course title	Bachelor Project
Course code	21_BAC5PT
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	0,4
ECTS credits	4
Course type	Project
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	7

Learning objectives:
n.a.

Content:
- Understand technical and organizational interrelationships and apply holistic approaches
- Recognize and structure problems and develop creative solution strategies for them
- develop communicative and cooperative skills as well as the ability to deal with conflicts
- Develop readiness to act and assume responsibility
- Implementing the knowledge acquired in the courses in larger interrelated practical problems
Interdisciplinary application-related project work from specialist areas of materials and processing technology, in each case in coordination with the students' specialist knowledge from previous semesters. As far as possible, great importance is attached to practical tasks originating from industry.

Prerequisites:
all preceding courses of the study programme

Lecture/Seminar profile:

Introduction into Finite Element Analysis (21_FEM5UE)

Degree course	LCW.ba
Course title	Introduction into Finite Element Analysis
Course code	21_FEM5UE
Level	Bachelor
Term	WS24/25
Lecturer	Sophia Keller
Contact hours per week	2
ECTS credits	2
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	2

Learning objectives:
n.a.

Content:
Introduction to the method of finite elements, basic idea and applications from the field of structural mechanics, shape functions, linear and non-linear problems, fatigue analysis with finite elements

Practical exercises, e.g. description of the classic FE analysis procedure (preprocessing, job management, postprocessing), handling of a common software tool

Prerequisites:
keine

Lecture/Seminar profile:

Introduction into Finite Element Analysis (21_FEM5VO)

Degree course	LCW.ba
Course title	Introduction into Finite Element Analysis
Course code	21_FEM5VO
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	2
Course type	Lecture
Examinations	written examination
Language of instruction	German/English
Places for international students	2

Learning objectives:
n.a.

Content:
Introduction to the method of finite elements, basic idea and applications from the field of structural mechanics, shape functions, linear and non-linear problems, fatigue analysis with finite elements

Practical exercises, e.g. description of the classic FE analysis procedure (preprocessing, job management, postprocessing), handling of a common software tool

Prerequisites:
keine

Lecture/Seminar profile:

English I (23_ENG1UE)

Degree course	LCW.ba
Course title	English I
Course code	23_ENG1UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1
Course type	Practice-oriented session
Examinations	written examination
Language of instruction	English
Places for international students	2

Learning objectives:
n.a.

Content:
Business travel language practice: e.g. „social English“, business introductions, small talk, hotels, telephoning etc.
Describing the economy, jobs, work routines, companies
Technical and business English: selected units from Technical Eng-lish, Vocabulary and Grammar
Explanation by students of topics from other subjects of the curriculum not taught in English
Explanation and discussion of Business Vocabulatory / Topics:
- Industries and types of companies
- Accounts and payments
- Advertising and media
- Banking and finance
- Buying and selling

Reading and discussion of articles on topics relevant/related to the other subjects of the curriculum and field of study.
Audio-visual work (listening, practice): watching relevant (=science/technology) documentary films + discussion therof and vo-cabulary-building work.
General:
Intercultural Communication and Awareness: countries, peoples and their customs.
Reading and discussion of and vocabulary work on articles of general topical interest and/or based on a theme.
Communicative grammar practice: Present and Past (biographies of famous people/engineers,

industrial revolution,..), prepositions time and place, word order

Prerequisites:
n.a.

Lecture/Seminar profile:

English III (23_ENG3UE)

Degree course	LCW.ba
Course title	English III
Course code	23_ENG3UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	2

Learning objectives:
n.a.

Content:
Recognize differences between informal instructions/formal process descriptions
describe systems/processes
express themselves about innovation and state of the art
Create "general-to-specific" texts
Use linking words correctly to improve flow
Repeat and practise rules for the passive voice

Prerequisites:
-

Lecture/Seminar profile:

Applied physics (23_AGP1IL_ENG)

Degree course	LTE.ba
Course title	Applied physics
Course code	23_AGP1IL_ENG
Level	Bachelor
Term	WS24/25
Lecturer	Viktoria Kruder-Motsch, Cordula Stroh
Contact hours per week	3
ECTS credits	4
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
-Basics: international system of units, orders of magnitude.
-Mechanics: Kinematics (velocity, acceleration, circular motion), dynamics (force, work, energy, power).

-Vibrations and waves.
-Fluid mechanics: Hydrostatics, flows, rheology.

-Electricity: charge, current, voltage, resistance, energy, power.
-Optics: wave propagation, reflection, refraction, lenses, optical instruments.

Prerequisites:
n.a.

Lecture/Seminar profile:

Analytical Chemistry I (23_AYC1VO_ENG)

Degree course	LTE.ba
Course title	Analytical Chemistry I
Course code	23_AYC1VO_ENG
Level	Bachelor
Term	WS24/25
Lecturer	Michaela Kröppl
Contact hours per week	2
ECTS credits	2
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
-Introduction to analytical chemistry: qualitative/quantitative analysis, limits of detection, limits of quantification;

-Introduction to physical measurement systems: electrochemical principles, weighing systems, volumetry;
-Computational fundamentals: density, concentration and proportion data, acids and bases, acid-base equilibria, pH, partition equilibrium;

-Methods of measurement: gravimetry, dimensional analysis/titration, qualitative ion analysis, extraction, distillation.

Prerequisites:
n.a.

Lecture/Seminar profile:

Business Administration I (23_BWL1IL_ENG)

Degree course	LTE.ba
Course title	Business Administration I
Course code	23_BWL1IL_ENG
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	2
Course type	Integrated course
Examinations	continuous assessment
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
-Introduction to Business Administration;

-Core processes of a company;
-Corporate forms and company formation;
-Introduction to the balance sheet and the profit and loss account;
-basics of cost accounting (BAB, costing, basics of contribution margin accounting);

-Financial ratios

Prerequisites:
n.a.

Lecture/Seminar profile:

Chemistry I (23_CHE1VO_ENG)

Degree course	LTE.ba
Course title	Chemistry I
Course code	23_CHE1VO_ENG
Level	Bachelor
Term	WS24/25
Lecturer	Christian Forsich
Contact hours per week	2
ECTS credits	2
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
-Chemical basics: the periodic table, substances and elements, chemical reactions and their kinetics, chemical bonds, structure of simple inorganic substances, states of aggregation of substances, law of mass action, polarity;
-Chemical Reactions: Oxidation and reduction, solutions, complex compounds, anomaly of water, acid/base reactions;

-Chemical safety (H&P, CMR, exposure concepts).

Prerequisites:
n.a.

Lecture/Seminar profile:

Biology (23_GBI1VO_ENG)

Degree course	LTE.ba
Course title	Biology
Course code	23_GBI1VO_ENG
Level	Bachelor
Term	WS24/25
Lecturer	Claudia Probst
Contact hours per week	2
ECTS credits	3
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
-The development of life on earth: characteristics of life, evolution);

-Cytology (structure and differences of cells, signal transduction, mitosis, cell differentiation).

-Systematics and anatomy of plants, insects and animals and their importance in ecosystems.

-Energy production of autotrophic and heterotrophic organisms (photosynthesis and cellular respiration).

-Basics of genetics and heredity (meiosis, Mendel).

-Tissue and organ formation in plants and animals; special chapters on animal form and function.

Prerequisites:
n.a.

Lecture/Seminar profile:

Food Technology and Nutrition I (23_LMT1IL_ENG)

Degree course	LTE.ba
Course title	Food Technology and Nutrition I
Course code	23_LMT1IL_ENG
Level	Bachelor
Term	WS24/25
Lecturer	Günther Wendlinger, Matthias Slatner
Contact hours per week	2
ECTS credits	3
Course type	Integrated course
Examinations	continuous assessment
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
-Introduction to food technology, areas and products of the food industry.
-Sample introduction to food processing technologies with emphasis on pastries, milk and beverages.

-Chemical-physical and microbiological causes of spoilage; chemical, physical methods of preservation.

-Changes in ingredients and sensory properties of foods during food production.
-Presentations and field trips to relevant plants (e.g., slaughterhouse, bakery/mill, spice manufacturer, commercial kitchen, beverage, dairy, starch plant).

Prerequisites:
n.a.

Lecture/Seminar profile:

Mathematics I (23_MAT1IL_ENG)

Degree course	LTE.ba
Course title	Mathematics I
Course code	23_MAT1IL_ENG
Level	Bachelor
Term	WS24/25
Lecturer	Karin Nachbagauer
Contact hours per week	2
ECTS credits	3
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
-Calculate with real numbers, power rules, equations, inequalities, summation signs.

-Solving systems of linear equations.

-Bijectivity and inverse functions, polynomial functions, rational functions, limits of functions, trigonometric functions, exponential and logarithmic functions.

-Derivation of a function, derivation rules, curve discussions, extreme value problems.

-Introduction to a computer algebra system and use of the program in the above areas.

Prerequisites:
n.a.

Lecture/Seminar profile:

Stoichiometry I (23_STÖ1UE_ENG)

Degree course	LTE.ba
Course title	Stoichiometry I
Course code	23_STÖ1UE_ENG
Level	Bachelor
Term	WS24/25
Lecturer	Michaela Kröppl
Contact hours per week	1
ECTS credits	2
Course type	Practice-oriented session
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
-Conversion of concentration units;

-Calculation of the amount of substance, content calculations (proportion and concentration);

-Turnover calculations of chemical reactions;

-pH value calculations of acids and bases, buffers and salts;

-Calculations of redox reactions;

-General gas equation.

Prerequisites:
n.a.

Lecture/Seminar profile:

Industrial Project Work (22_IPR5PT)

Degree course	MB.ba
Course title	Industrial Project Work
Course code	22_IPR5PT
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	3
Course type	Project
Examinations	written examination
Language of instruction	German/English
Places for international students	12

Learning objectives:
n.a.

Content:
Putting into praxis the content of the theoretical courses by solving an advanced industrial task formulation within a team.
Undergraduate level.

Prerequisites:
n.a.

Lecture/Seminar profile:

Chemical Engineering - Reaction Engineering (20_CVT5LB)

Degree course	VTP.ba
Course title	Chemical Engineering - Reaction Engineering
Course code	20_CVT5LB_Gr.V
Level	Bachelor
Term	WS24/25
Lecturer	Wilfried Preitschopf
Contact hours per week	1
ECTS credits	1,5
Course type	Laboratory session
Examinations	continuous assessment
Language of instruction	English
Places for international students	4

Learning objectives:
n.a.

Content:
Chemical thermodynamics, reaction kinetics, ideal reactors, thermal modes of operation of reactors, non-ideal flow behaviour of real reactors, heterogeneous reaction systems, combination of reaction and mass transfer; computer-aided calculation methods
Laboratory exercises for the thermal and chemical process engineering

Prerequisites:
n.a.

Lecture/Seminar profile:

Chemical Engineering - Reaction Engineering (20_CVT5UE)

Degree course	VTP.ba
Course title	Chemical Engineering - Reaction Engineering
Course code	20_CVT5UE_Gr.V
Level	Bachelor
Term	WS24/25
Lecturer	Wilfried Preitschopf
Contact hours per week	1
ECTS credits	1,5
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	4

Learning objectives:
n.a.

Content:
Chemical thermodynamics, reaction kinetics, ideal reactors, thermal modes of operation of reactors, non-ideal flow behaviour of real reactors, heterogeneous reaction systems, combination of reaction and mass transfer; computer-aided calculation methods
Laboratory exercises for the thermal and chemical process engineering

Prerequisites:
n.a.

Lecture/Seminar profile:

Chemical Engineering - Reaction Engineering (20_CVT5VO)

Degree course	VTP.ba
Course title	Chemical Engineering - Reaction Engineering
Course code	20_CVT5VO_Gr.V
Level	Bachelor
Term	WS24/25
Lecturer	Wilfried Preitschopf
Contact hours per week	1
ECTS credits	1,5
Course type	Lecture
Examinations	oral or written examination
Language of instruction	English
Places for international students	4

Learning objectives:
n.a.

Content:
Chemical thermodynamics, reaction kinetics, ideal reactors, thermal modes of operation of reactors, non-ideal flow behaviour of real reactors, heterogeneous reaction systems, combination of reaction and mass transfer; computer-aided calculation methods
Laboratory exercises for the thermal and chemical process engineering

Prerequisites:
n.a.

Lecture/Seminar profile:

Research Project (20_FPR5PT)

Degree course	VTP.ba
Course title	Research Project
Course code	20_FPR5PT_Gr.V
Level	Bachelor
Term	WS24/25
Lecturer	Albert Angerbauer, Wilfried Preitschopf
Contact hours per week	3
ECTS credits	6
Course type	Project
Examinations	continuous assessment
Language of instruction	English
Places for international students	4

Learning objectives:
n.a.

Content:
Each student has to solve a problem related to the process industry. The problem has been selected by the supervisor.
The student has to prepare comprehensive project documentation.

Prerequisites:
n.a.

Lecture/Seminar profile:

Internship (BAA5PT_20)

Degree course	WFT.ba
Course title	Internship
Course code	BAA5PT
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	0,5
ECTS credits	6
Course type	Project
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	4

Learning objectives:
n.a.

Content:
The subject of the Internship / Industrial Training is preferentially orientated on special problems out of industrial practise.
The professional practical training must have project character. The aim is to solve a problem or connected problems on an adequate quality level, corresponding with the academic level of the education.
The work is supervised by a professor from the university of applied science and eventually a tutor from the company, where the professional practical training is carried out.

Prerequisites:
all preceding courses of the study program

Lecture/Seminar profile:

English I (23_ENG1UE)

Degree course	WFT.ba
Course title	English I
Course code	ENG1UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1
Course type	Practice-oriented session
Examinations	written examination
Language of instruction	English
Places for international students	1

Learning objectives:
n.a.

Content:
Business Travel Situations:
Meeting people / Introductions
Introducing yourself
Introducing other people to each other, meeting someone at the airport, asking for and giving directions etc.
Socialising / Small talk
Telephoning
Countries / Cultural Awareness
Understanding peoples and their customs
Describing the economy
Describing jobs / companies (structure and layout / directions)
Daily (Work) Routine
Technical processes and vocabulary:
Materials (metal and plastics) properties and applications thereof
Grammar:
Question forms
Practise of Present tenses and Past tenses (Simple past / Present perfect)
Basic / Simple, short Presentations:
informative e.g. of a company
Passive for description of technical processes
Prepositions (time and place)

Prerequisites:
n.a.

Lecture/Seminar profile:

English III (23_ENG3UE)

Degree course	WFT.ba
Course title	English III
Course code	ENG3UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1
Course type	Practice-oriented session
Examinations	written examination
Language of instruction	English
Places for international students	1

Learning objectives:
n.a.

Content:
Presentations (technical and business): presenting topics from other subjects of the Semester 3 curriculum. Presenting facts, figures and describing trends through graphics (graphs and charts)
Presentation/explanation by students of topics from other subjects of the Semester 3 curriculum orally and/or in writing
Presentation of any project(s) undertaken during the semester and/or holding of meetings for such projects (e.g. Interdisciplinary Project)
Reading and discussion of articles on topics relevant/related to subjects of the curriculum
Audio-visual work (listening practice): watching relevant (=science/technology) documentary films + discussion thereof and vocabulary-building work
Reading and discussion of articles of general topical interest and/or themebased: e.g. the economy/the world of workGrammar revision as required e.g. more past tenses reinforcement, prepositions

Prerequisites:
n.a.

Lecture/Seminar profile:

Project I (23_PRO1PT)

Degree course	WFT.ba
Course title	Project I
Course code	PRO1PT
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	0,25
ECTS credits	4
Course type	Project
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	10

Learning objectives:
n.a.

Content:
Preferential objectives of this course are:
• to comprehend technical and organisational coherences and apply integral approaches
• identify and structure problems and to develop creative strategies for their solutions
• to develop co-operative and communicative competences and conflict management ability
• to develop readiness to act and to assume responsibility
• realisation of the acquired knowledge within practical problems
These objectives require that the projects are organised as team work.
The topics of these multidisciplinary and applied projects correspond with the branches of Material- and Processing Technology and are in accordance with the student's knowledge acquired in the proceeding semesters.
A high value is set on practical definition of the projects, if possible topics in cooperation with industry are chosen. As and when required the laboratory equipment of the course study is used

Prerequisites:
all preceding courses of the study program

Lecture/Seminar profile:

Project III (23_PRO3PT)

Degree course	WFT.ba
Course title	Project III
Course code	PRO3PT
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	0,25
ECTS credits	4
Course type	Project
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	10

Learning objectives:
n.a.

Content:
Preferential objectives of this course are:
• to comprehend technical and organisational coherences and apply integral approaches
• identify and structure problems and to develop creative strategies for their solutions
• to develop co-operative and communicative competences and conflict management ability
• to develop readiness to act and to assume responsibility
• realisation of the acquired knowledge within practical problems
These objectives require that the projects are organised as team work.
The topics of these multidisciplinary and applied projects correspond with the branches of Material- and Processing Technology and are in accordance with the student's knowledge acquired in the proceeding semesters.
A high value is set on practical definition of the projects, if possible topics in cooperation with industry are chosen. As and when required the laboratory equipment of the course study is used

Prerequisites:
all preceding courses of the study program

Lecture/Seminar profile:

English IV:English for technical communicators (22_ENG5UE)

Degree course	PDK.ba
Course title	English IV:English for technical communicators
Course code	22_ENG5UE
Level	Bachelor
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
Oral and written language skills, with a focus on topics for technical communicators: instructions for use, controlled natural languages, rule-based writing, etc.
Prerequisites: English language skills at university level

Prerequisites:
n.a.

Lecture/Seminar profile:

Contract Law (24_CRL1VO)

Degree course	AB.ma
Course title	Contract Law
Course code	24_CRL1VO_Gr.V
Level	Master
Term	WS24/25
Lecturer	Kurt Manzenreiter
Contact hours per week	2
ECTS credits	2,5
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
Basic knowledge of foreign legal systems
International commercial law, Uniform Law (UNIDROIT, UN Sales Convention/CISG)
Trade practices and trade terms, Incoterms
Important types of contracts (especially developer contract, construction contract, contract, investment contract, license, freight forwarding and transport contract, employment contract, cooperative agreement, contract of insurance)
Arbitration, penalties
International payments and payment security, and performance and credit protection

Prerequisites:
n.a.

Lecture/Seminar profile:

Building Simulation (22_GSM3LB)

Degree course	AET.ma
Course title	Building Simulation
Course code	22_GSM3LB
Level	Master
Term	WS24/25
Lecturer	Christoph Reichl, Renate Teppner, Philip Horn
Contact hours per week	2
ECTS credits	2,5
Course type	Laboratory session
Examinations	continuous assessment
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
The lecture material is enhanced/extended by use of examples/experiments,
Prerequisite sine qua non: Professional qualification in building construction (3 ECTS), thermal building physics (3 ECTS), building services engineering (HVAC – heating, ventilation, air conditioning) (4 ECTS)

Prerequisites:
n.a.

Lecture/Seminar profile:

Building Simulation (22_GSM3VO)

Degree course	AET.ma
Course title	Building Simulation
Course code	22_GSM3VO
Level	Master
Term	WS24/25
Lecturer	Christoph Reichl, Renate Teppner, Philip Horn
Contact hours per week	1
ECTS credits	1,5
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Simulation of building systems with dynamic simulation software (eg. TRNSYS and/or FLUENT), Comparison with static calculation models, application of knowledge about building envelope and building service systems, input parameters, options and limits of building simulation systems, optimization of the planning process of buildings by the means of examples
Prerequisite sine qua non: Professional qualification in building construction (3 ECTS), thermal building physics (3 ECTS), building services engineering (HVAC – heating, ventilation, air conditioning) (4 ECTS)

Prerequisites:
n.a.

Lecture/Seminar profile:

Automotive IT Systems 1 (20_AIT1VO)

Degree course	AMM.ma
Course title	Automotive IT Systems 1
Course code	20_AIT1VO
Level	Master
Term	WS24/25
Lecturer	Thomas Schlechter
Contact hours per week	1
ECTS credits	2
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
- Automotive processing architectures
- Real-time systems
  - Linux as RT-System
  - Windows as RT-System
- Priority considerations and the application of scheduling in RTOS
- Security leaks and their analyzation

Prerequisites:
Basic knowledge programming

Lecture/Seminar profile:

Automotive IT Systems 3 (20_AIT3IL)

Degree course	AMM.ma
Course title	Automotive IT Systems 3
Course code	20_AIT3IL
Level	Master
Term	WS24/25
Lecturer	Thomas Hatheier
Contact hours per week	1
ECTS credits	1
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
Students know
- the basics of concrete means of communication between vehicles and infrastructure
- What Cooperative Intelligent Transportation Systems are
- The technical needs for the implementation of C-ITS
- Relevant basics, properties and problems of mobile communication systems

Students can
- analyze the communication infrastructure of connected vehicles
- Derive use cases form the fact of being connected
- Derive demands and requirements for V2X ecosystem

Content:
- IT-systems in the vehicle
  - overview
  - cooperation of systems
- Car2x communication
  - Car-2-Car (C2C)
  - Car-2-Infrastructure (C2I)
  - Technical standards (802.11p and LTE respectively)
  - Car2x based services
  - opportunities and risks

Prerequisites:
Basic knowledge programming

Lecture/Seminar profile:

Current Topics in Mobility (20_CTM1VO)

Degree course	AMM.ma
Course title	Current Topics in Mobility
Course code	20_CTM1VO
Level	Master
Term	WS24/25
Lecturer	Thomas Schlechter
Contact hours per week	1
ECTS credits	1
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
- Conditions and factors influencing e-mobility
- Current trends and future topics of mobility
- Local geographical differences of politics vs. technology on future mobility
- Change of business among the Mobility Sector
- How green is Future Mobility? Under which assumptions (e.g., electricity mix)?
- Safety of BEV

Prerequisites:
Basic knowledge programming

Lecture/Seminar profile:

Entrepreneurship and New Business Development (20_EBD2IL)

Degree course	AMM.ma
Course title	Entrepreneurship and New Business Development
Course code	20_EBD2IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1,5
ECTS credits	3
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
After the course, the students should be able…
- to describe the difference between different business creation pro-cesses, select them in relation to the specific project context and choose appropriate tools and methods to be applied
- to design business models synthetizing market, technological and organizational requirements based on empirical insights
- to analyze business models and identify critical components
- to describe the elements of a business plan

Content:
- Fundamentals of new business creation and planning
- Overview on personal characteristics of entrepreneurs and suc-cess factors of entrepreneurship
- Intrapreneurship vs. entrepreneurship and start-ups as source of innovation for incumbents
- Structures to support entrepreneurs (accelerators, incubators, etc.)
- Processes of new business creation
- Fundamentals and tools of business model creation (e.g. St. Gallen Business Model Navigator, Business Model Canvas)
- Concepts that propels business models to success and specifies of digitally enabled business models (e.g. sharing economies, net-work effects)
- Business plan creation and analysis
- Financing and funding of start-ups

Prerequisites:
Innovation fundamentals

Lecture/Seminar profile:

Innovation Management (20_INM1IL)

Degree course	AMM.ma
Course title	Innovation Management
Course code	20_INM1IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	3
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
Students know
- all major dimensions of innovation management frameworks (e.g. strategy, process, culture, organization)
- systematic target planning approaches in innovation manage-ment.
- success factors for technology and innovation management
- specifics of agile / hybrid innovation methods.

Students are able to
- design innovation processes with a focus on the front end of in-novation.
- apply strategic foresight methods.
- apply various open innovation methods.
- apply specific creativity techniques and other techniques for idea generation and idea evaluation.
- apply classical and agile innovations management tools to re-duce the uncertainty of innovation projects.

Content:
- Objectives of R&D, technology management and innovation management
- Innovation management framework
- Success factors for technology and innovation management
- Stage-gate processes and hybrid stage-gate processes
- Functions and roles in technology and innovation management
- Innovation-promoting corporate organisation
- Measures for an innovation-friendly corporate culture

- Open Innovation, Customer Integration, and Innovation Networks
- Agile innovation methods and tools

Prerequisites:
According to the prerequisites for degree programme access

Lecture/Seminar profile:

Business Law & Intellectual Property Rights (20_LAW3VO)

Degree course	AMM.ma
Course title	Business Law & Intellectual Property Rights
Course code	20_LAW3VO
Level	Master
Term	WS24/25
Lecturer	Michael Stadler
Contact hours per week	2
ECTS credits	2
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
The students know essential legal issues relating to the process of product development, based on particular legal questions and con-tract types.
 Case studies are used to demonstrate the practical relevance

Content:
Intellectual property right, competition law, non-disclosure agree-ments, inventions
 Guarantee and warranty, product liability, industrial safety, trade law
 Trade marks, models and patents, homologation, ECE, FMVSS
 Licenses, general terms and conditions, exclusion of liability
 Regulations under public law, expiration of trade marks, models and patents

Prerequisites:
According to the prerequisites for degree programme access

Lecture/Seminar profile:

Model Based Engineering 1 (20_MBE1IL)

Degree course	AMM.ma
Course title	Model Based Engineering 1
Course code	20_MBE1IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	3
ECTS credits	5
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
Students know and understand
- concepts of system theory and modelling
- basics and processes of analogue control technology
- state space representation of mechatronic systems
- basics of numerical simulation
- basics of ranking problems (group decisions)
- derivation of priorities from ranking problems
- scheduling theory and real implementation

Students can
- comprehend and apply modelling processes to mechanical, electrical, hydraulic and linked systems
- calculate selected transfer functions and elements
- deduce and evaluate system characteristics of mechatronic systems
- apply selected processes of analogue control technology
- analyze and assess dynamic behavior in the state space
- design linear state regulators
- apply simulation tools to vehicle-specific mechatronic systems
- apply the theory of group decisions on real examples
- apply the findings of priority evaluation towards schedues for information processing systems

Content:

- Concepts of system theory and modelling
  - system theory
  - system concepts
  - modelling concepts
- Modelling process
- Modelling of mechatronic systems
- System characteristics
- Basics and processes of analogue control technology
- State space representation of mechatronic systems
  - analysis of the dynamic behavior in the state space
  - design and implementation of linear state regulators
  - design and implementation of linear state observers
- Simulation (i.e.. MATLAB, SIMULINK, ASCET)
- Group decision making (ranking problems)
- Scheduling theory and implementation

Laboratory
- identification of modelling parameters
- design of controllers and observers
- analysis of model behavior by means of simulation studies

Modelling drive train with concentrated components (‚meta-level')
- Examples on group decision making (ranking problems)
- Examples on scheduling theory and implementation

Prerequisites:
- Basic mathematics of control technology (Laplace) Solving differential equations in the time and frequency field

Lecture/Seminar profile:

Mechatronic Systems Validation (20_MSV3IL)

Degree course	AMM.ma
Course title	Mechatronic Systems Validation
Course code	20_MSV3IL
Level	Master
Term	WS24/25
Lecturer	Christian Ertl
Contact hours per week	1
ECTS credits	1
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
Students can
evaluate, model and simulate safety systems like ASR, differential locking systems with regard to functionality

Content:
Sensitivity for the significance of the validation and safety of mech-atronic systems
 Differentiation functional validation and long-term safety
 Methods and tools for the validation of mechatronic systems
o system tests for load, climate and electromagnetic com-patibility
o reliability and safety tests of the system
o functional validation on the HIL, test station, vehicle field test of the end product according to customer require-ments
o test statistics
 Planning, measuring and evaluation of tests of mechatronic sys-tems

Prerequisites:
n.a.

Lecture/Seminar profile:

New Product Development (20_NPD1IL)

Degree course	AMM.ma
Course title	New Product Development
Course code	20_NPD1IL
Level	Master
Term	WS24/25
Lecturer	Christoph Baumberger
Contact hours per week	2
ECTS credits	3
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
CAE in the motor vehicle industry (overview, connections, interfaces)
- Development methods for mechatronic systems „V Model“; VDI 2206:
- Requirements for Development
- Specifications
- System and Product Design
- Model Formation and Simulation (FEM, CFD, MKS, …)
- Domain-Specific Component Draft
- Prototypes
- Component Integration
- Module Test
- System Integration (Hardware)
- System Integration (Software)
- System and Product Tests
- Production and Market Tests.

Prerequisites:
Basic knowledge programming

Lecture/Seminar profile:

Production Management (20_PRM1IL)

Degree course	AMM.ma
Course title	Production Management
Course code	20_PRM1IL
Level	Master
Term	WS24/25
Lecturer	Felix Friedrich Reumann
Contact hours per week	2
ECTS credits	3
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
- Logistics and supply-chain management
- Cooperation of development, purchasing and production
- Basics of production organization
- Lean production as philosophy,
- Lean production tools
- Value-stream-analysis, value-stream-design
- Optimization of administrative processes

Prerequisites:
According to the prerequisites for degree programme access

Lecture/Seminar profile:

Automotive Quality Management 1 (20_QMA1IL)

Degree course	AMM.ma
Course title	Automotive Quality Management 1
Course code	20_QMA1IL
Level	Master
Term	WS24/25
Lecturer	Thomas Junggeburth
Contact hours per week	1
ECTS credits	1
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
- Quality management systems
- Principles of ISO9001
- Principles of IATF16949
- Organizational Structures and Processes
- Documentation and records
- Control loops within quality management
- Quality cost calculation
- Requirements for processes of an organization

Prerequisites:
According to the prerequisites for degree programme access

Lecture/Seminar profile:

Sensors and Micro Actuators (20_SAC1IL)

Degree course	AMM.ma
Course title	Sensors and Micro Actuators
Course code	20_SAC1IL
Level	Master
Term	WS24/25
Lecturer	Thomas Schlechter, Alexander Onic, Andreas Löffler
Contact hours per week	3
ECTS credits	3
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
- Basics of sensor technology
- Basics of measurement and process data acquisition and data processing
- Basics of control technology and its application
- Specific sensors in vehicles (temperature, pressure, flow, gas, LiDAR, Radar, ultra-sonic, etc.)
- Smart and Virtual sensors
- Basic principles of micro actuators (e.g., piezo and electro-static effect)

Prerequisites:
According to the prerequisites for degree programme access

Lecture/Seminar profile:

Vehicle Components and Driving Dynamics (20_VCD1IL)

Degree course	AMM.ma
Course title	Vehicle Components and Driving Dynamics
Course code	20_VCD1IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	3
ECTS credits	4
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
- Motor vehicle architecture concepts
- Motor vehicle categorisation
- Tyres
- Motor vehicle dynamics
- Chassis
- Steering systems (active and passive)
- Brakes (eg. hydraulics, automatic handbrake)
- Handling and driving dynamics

Prerequisites:
According to the prerequisites for degree programme access

Lecture/Seminar profile:

Automation Engineering Project II (APT3PT)

Degree course	AT.ma
Course title	Automation Engineering Project II
Course code	APT3PT
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	0,5
ECTS credits	8
Course type	Project
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	2

Learning objectives:
n.a.

Content:
Pre-requisites vary across different projects. Requires independent, proactive, reliable and self-contained work throughout the semester. Project tasks will be presented, student groups coordinate amongst themselves and work autonomously, guidance available if requested. 1 ECTS requires 25 hours of student work, according results are to be delivered. Project work experience recommended

Solving a challenging automation task according to functional specifications. Students are to create the entire chain, consisting of hardware, process/control and software. Regular project reviews with the supervisor shall follow the progress; corresponding documentation must be maintained.

Prerequisites:
n.a.

Lecture/Seminar profile:

English for civil engineers within cross-cultural communication (EN) (KFK1UE)

Degree course	BI.ma
Course title	English for civil engineers within cross-cultural communication (EN)
Course code	KFK1UE
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2,5
Course type	Practice-oriented session
Examinations	written examination
Language of instruction	English
Places for international students	1

Learning objectives:
n.a.

Content:
Theories and core concepts of intercultural communication Processes of intercultural adaptation (e.g. Milton Bennett's step-by-step model,...)
Cultural and mentality-based differences in international "meetings" and projects
Establishing practice in negotiating and conflict management in an intercultural context
Development of intercultural key competences
Development of specialist vocabulary in the fields of glass, wood, concrete and steel construction as well as construction technology, building services engineering, structural and civil engineering, construction management and construction industry, environmental protection and safety on the basis of current projects / project descriptions in relevant current magazines and websites.

Prerequisites:
n.a.

Lecture/Seminar profile:

Energy Automation and Protection Systems (21_EAP1LE)

Degree course	EE.ma
Course title	Energy Automation and Protection Systems
Course code	21_EAP1LE
Level	Master
Term	WS24/25
Lecturer	Herbert Grömer
Contact hours per week	1
ECTS credits	1
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	2

Learning objectives:
•Knowledge of the fundamentals and topology of a communica-tion network using Ethernet-based technology.
•Knowledge of communication protocols in the field of energy automation and protection technology
•Knowledge of the basics of protection technology / known pro-cedures and concepts
•Knowledge of the practical use of protection functions and their parameterization (for individual devices and entire protection concepts)

Content:
Basics of communication network technologies and its practical applications
Basics of network security
Standardized communication protocols for use in power engineering (IEC and IEEE)
Network traffic/protocol analysis
Basics of power system protection technology - components and topology of a protection arrangement
Basic principles in protection technology:
Overcurrent protection
Distance protection
Differential protection
Protection concepts/ Possible realization of redundant protection concepts

Prerequisites:
n.a.

Lecture/Seminar profile:

EMC and EMI Aspects (21_ECI3LE)

Degree course	EE.ma
Course title	EMC and EMI Aspects
Course code	21_ECI3LE
Level	Master
Term	WS24/25
Lecturer	Bernd Deutschmann
Contact hours per week	2
ECTS credits	3
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	2

Learning objectives:
n.a.

Content:
Physics of coupling principles (galvanic, induction of electric and magnetic fields)
EMC and EMI proof design concepts
EMC and EMI shielding
Simulation and calculation of EMC and EMI approaches
Lightning effects and lightning protection concepts
Simulation of lightning protection systems

Please note: Students enrolled in this course must also enroll in 21_ECI3LB

Prerequisites:
n.a.

Lecture/Seminar profile:

Energy Markets and Energy Law (21_EME3LE)

Degree course	EE.ma
Course title	Energy Markets and Energy Law
Course code	21_EME3LE
Level	Master
Term	WS24/25
Lecturer	Alexander Schultmeyer, Valentina Eigner, Kenneth Wallace-Mueller
Contact hours per week	2
ECTS credits	2
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
Market Concepts: History of European Electricity and Gas Markets, EU Energy Law, Regulation of Markets, EU Internal Market of Electricity, Market Rules, Guidelines and Network Codes, EU Environmental Law
Products, Commodities and Energy Services: Energy Assets Pricing, OTC Trading, Energy Exchange Spot Market, Intraday Market, Balance Energy, Capacity Markets, Renewables Support Schemes, Emissions Trading System, Green Certificates
Market Risk: Risk Management for Electricity Trading, Hedging Strategies
Systems Security: System Balancing, Reserve Capacities for Frequency Control, Auxiliary Services for TSOs, Network Capacity Allocation, Congestion Management

Prerequisites:
n.a.

Lecture/Seminar profile:

Financing (21_FIN3LE)

Degree course	EE.ma
Course title	Financing
Course code	21_FIN3LE
Level	Master
Term	WS24/25
Lecturer	Andreas Gumpetsberger
Contact hours per week	1
ECTS credits	1
Course type	Lecture
Examinations	continuous assessment
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Financial assessment of projects
Concept of levelized cost
Business plan and energy pricing
Energy pricing with respect to examples like
• Classical energy utilization
• Domestic systems
• Island systems
• Microgrid systems
Overview on marketing and market development
Contracting
Funding of projects on international degree
Financial assessment of international and national projects

Prerequisites:
n.a.

Lecture/Seminar profile:

Advanced High Voltage Engineering (21_HEI3LE)

Degree course	EE.ma
Course title	Advanced High Voltage Engineering
Course code	21_HEI3LE
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	3
ECTS credits	4
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	2

Learning objectives:
n.a.

Content:
Breakdown in solid and liquid dielectrics, advanced physics
Breakdown in liquids, advanced physics
Overvoltages, testing procedures and insulation coordination
Advanced non-destructive insulation test techniques
Testing and diagnosis at HV power equipment and condition evaluation

Prerequisites:
High Voltage Engineering I (bachelor)

Lecture/Seminar profile:

Advanced Calculus (21_MAT1LE)

Degree course	EE.ma
Course title	Advanced Calculus
Course code	21_MAT1LE
Level	Master
Term	WS24/25
Lecturer	Harald Hinterleitner
Contact hours per week	3
ECTS credits	5
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Advanced Calculus:
Vector Analysis: Vector Field, Divergence, Curl, Nabla-Operator, Volume Integrals, Line Integrals, Surface Integrals, Divergence Theorem, Stokes' Theorem
Partial Differential Equations: Separation of Variables

Prerequisites:
Mathematics for engineers at a bachelor's level

Lecture/Seminar profile:

Signal Analysis and Machine Learning (21_MES1LE)

Degree course	EE.ma
Course title	Signal Analysis and Machine Learning
Course code	21_MES1LE
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	4
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	2

Learning objectives:
n.a.

Content:
Learning objectives:
- Software-based analysis of discrete-time signals (MATLAB, Python) and application of theoretical concepts from the field of signal- and data analysis.
- Introduction to fundamental concepts in Machine Learning.

Content:
- Understanding of basic properties of measurement signals (time domain, frequency domain) and their mathematical description.
- Basic algorithms of digital signal processing: Convolution, Correlation, Fourier- and Wavelet transformation
- Supervised / Unsupervised Machine Learning Algorithms
- Classification, Regression, Clustering
- Examples in MATLAB and Python

Prerequisites:
Measurement Engineering and Sensor Systems I (bachelor)

Lecture/Seminar profile:

Cross-Cultural Negotiations (21_SSK1PR)

Degree course	EE.ma
Course title	Cross-Cultural Negotiations
Course code	21_SSK1PR
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
Theory and key principles of intercultural communication;
Harvard Negotiation concept;
Introduction to negotiation and meeting moderation;
Cultural specificity in international meetings and projects
Practicing negotiation skills and conflict resolution in a intercultural context;
Development of intercultural key competences
Efficient preparation for successful negotiations;
Creation of results which satisfy both parties (win-win situations);
Methods and tools of meeting moderation and discussion facilitation;
Role, attitude, tasks of the moderator/ discussion leader;
Interventions techniques (target-review, interviewing technique, feedback technique, technique of visual discussions);

Prerequisites:
n.a.

Lecture/Seminar profile:

Bionics (20_BIO3IL)

Degree course	IPM.ma
Course title	Bionics
Course code	20_BIO3IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
• Explanation of terms and historical background
• Subfields of bionics
• Structural bionics
• Anthropobionics (human-machine interaction)
• Engineering optimisation using nature as a model

Prerequisites:
n.a.

Lecture/Seminar profile:

Business Administration/Accounting (20_BWL1IL)

Degree course	IPM.ma
Course title	Business Administration/Accounting
Course code	20_BWL1IL
Level	Master
Term	WS24/25
Lecturer	Carolyn Morokutti
Contact hours per week	2
ECTS credits	2
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
- Basic terminology and facts of economic management
- Types of organizations and their structural organization
- Core processes of organizations
- Balance sheets, salary and accounting
- Basics of macroeconomics

Prerequisites:
n.a.

Lecture/Seminar profile:

Digital Factory (20_DIF3VO)

Degree course	IPM.ma
Course title	Digital Factory
Course code	20_DIF3VO
Level	Master
Term	WS24/25
Lecturer	Thomas Schichl
Contact hours per week	2
ECTS credits	2
Course type	Lecture
Examinations	oral or written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
- Factory and production control
- Data analyses for status reporting (dashboards)
- Predictive maintenance or production and quality optimization
- Automation of production processes and of interlinked business processes
- IT security aspects
- The collaboration of humans and machines
- Methods of digital twins
- The use of virtual and augmented reality
- The networking of machines and plants
- Advanced digitization topics

Prerequisites:
n.a.

Lecture/Seminar profile:

Digital Product Development (20_DPE1IL)

Degree course	IPM.ma
Course title	Digital Product Development
Course code	20_DPE1IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Lecture
Examinations	oral or written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
- Basics of the conceptualization and evaluation of product variants
- Computer based design and construction
- Concept-modelling technologies
- Modelling of free-form surfaces
- Technical prototype and model construction
- Virtual Prototyping and digital Mock-Ups
- Virtual and Augmented Reality

Prerequisites:
n.a.

Lecture/Seminar profile:

Design Project: Technical Design II (20_DPT3PT)

Degree course	IPM.ma
Course title	Design Project: Technical Design II
Course code	20_DPT3PT
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	3
ECTS credits	5
Course type	Project
Examinations	continuous assessment
Language of instruction	English
Places for international students	1

Learning objectives:
n.a.

Content:
Carefully selected and prepared "model examples" from professional practice are addressed either individually or in small groups, under the supervision of the lecturer. The lecturer acts as moderator and "senior expert", and provides methodological or expert assistance as required. The model examples incorporate typical concepts and methods from professional practice as "best practices". The focus here is on a systematic, problem-oriented approach toward problem solving and design development.
• Completing a design project
• Using and adapting specific design methodologies
• Overview of the design process.

Prerequisites:
n.a.

Lecture/Seminar profile:

Design and Morphology (20_EGD1IL)

Degree course	IPM.ma
Course title	Design and Morphology
Course code	20_EGD1IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
- In-depth display of alternative design processes
- Basic principles of design methods and display techniques
- Morphology (form, colour, surface, font)
- Training in perspective illustration
- Creation of renderings
- Basic principles of the software packages Photoshop and Illustrator

Prerequisites:
n.a.

Lecture/Seminar profile:

Design and Morphology (20_EGD1SE)

Degree course	IPM.ma
Course title	Design and Morphology
Course code	20_EGD1SE
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Seminar
Examinations	continuous assessment
Language of instruction	English
Places for international students	2

Learning objectives:
n.a.

Content:
- In-depth display of alternative design processes
- Basic principles of design methods and display techniques
- Morphology (form, colour, surface, font)
- Training in perspective illustration
- Creation of renderings
- Basic principles of the software packages Photoshop and Illustrator

Prerequisites:
n.a.

Lecture/Seminar profile:

R&D Controlling (20_FEC3IL)

Degree course	IPM.ma
Course title	R&D Controlling
Course code	20_FEC3IL
Level	Master
Term	WS24/25
Lecturer	Sandra Mühlböck
Contact hours per week	1
ECTS credits	1
Course type	Integrated course
Examinations	oral or written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
• Modern R&D controlling methods
• Lifecycle costing (design to cost, LCC, TCO)
• Depicting R&D costs on the balance sheet, budgeting R&D departments
• Innovation and performance measurement
• Innovation/R&D balanced scorecard
• Controlling Open Innovation
• Innovation audit.

Prerequisites:
n.a.

Lecture/Seminar profile:

Finance (20_FIN3VO)

Degree course	IPM.ma
Course title	Finance
Course code	20_FIN3VO
Level	Master
Term	WS24/25
Lecturer	Andreas Gumpetsberger
Contact hours per week	1
ECTS credits	1
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
• Forms of financing (debt and equity financing, internal and external financing)
• Cash flow calculations, financial planning
• Capital and financial markets
• Venture financing and investment financing
• Start-up financing
• Export financing
• Financing models and financial support
• special forms of financing (leasing, factoring)

Prerequisites:
n.a.

Lecture/Seminar profile:

International Marketing & Management (20_IMM3IL)

Degree course	IPM.ma
Course title	International Marketing & Management
Course code	20_IMM3IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
•International technology marketing
•Significance of internationalisation and the internationalisation process
•Situational analysis methods in international marketing
•International market research
•Strategic thrusts and competitive strategies in the international marketing of industrial goods
•International (operative) marketing of industrial goods according to business type.
•Investment business
•Systems business
•Supplier business
•Product business

Prerequisites:
Fundamentals of Marketing/Management

Lecture/Seminar profile:

Industrial Design (20_IND1IL)

Degree course	IPM.ma
Course title	Industrial Design
Course code	20_IND1IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	2
Course type	Integrated course
Examinations	oral or written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
- Professional design terms
- Product language: terms and their practical meaning
- Design professions and activities Design processes
- Design history (overview)
- Interface expertise between product development, design, engineering, production and marketing

Prerequisites:
n.a.

Lecture/Seminar profile:

Innovation Management II (20_INM1IL)

Degree course	IPM.ma
Course title	Innovation Management II
Course code	20_INM1IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Integrated course
Examinations	oral or written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
- Success factors for technology and innovation management
- Stage-gate processes and evaluation methods
- Tools and concepts of operative innovation management
(e.g. lead-user concept, target costing, KANO,
knowledge management)
- Functions and roles in technology and innovation management
- Innovation-promoting corporate organisation
Measures for an innovation-friendly corporate culture

Prerequisites:
n.a.

Lecture/Seminar profile:

Innovation Management I (20_INO1IL)

Degree course	IPM.ma
Course title	Innovation Management I
Course code	20_INO1IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	2
Course type	Integrated course
Examinations	oral or written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
- Significance of technical innovation
- Objectives of R&D, technology management and innovation management
- Technology and innovation management process
- Overview and structure
- Initiation of ideas
- Idea generation
- Creativity generation techniques

Prerequisites:
n.a.

Lecture/Seminar profile:

Leadership (20_KFK3UE)

Degree course	IPM.ma
Course title	Leadership
Course code	20_KFK3UE
Level	Master
Term	WS24/25
Lecturer	Harald Jauschnig
Contact hours per week	2
ECTS credits	2
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	6

Learning objectives:
n.a.

Content:
Leadership models, functions and duties
- Key management competencies
- Relationship between leadership and personality
- The role of management as the sum of all expectations of the person occupying the role
- Management as the multiplier of an organisation's goals and values
- Management as the developer of its own personnel
- Influences on leadership (external and internal factors)
- Cooperative leadership behavior
- Employee decision-sharing
- Dealing with power and information

Prerequisites:
n.a.

Lecture/Seminar profile:

Short-Term Design Project (20_KZE3PT)

Degree course	IPM.ma
Course title	Short-Term Design Project
Course code	20_KZE3PT
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Project
Examinations	continuous assessment
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
• Completing a short-term design project
• Applying specific design methodologies

Prerequisites:
n.a.

Lecture/Seminar profile:

Marketing Management (20_MAK1IL)

Degree course	IPM.ma
Course title	Marketing Management
Course code	20_MAK1IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1
Course type	Integrated course
Examinations	oral or written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
Strategic Marketing Management
• Basics of marketing
• Special aspects of marketing industrial goods
• Basic elements of conceptualization of marketing aspects and marketing process
• Situational analysis
• Strategic marketing of industrial goods at an organizational
level (mission statement, portfolio analysis)
• Competition strategy
• Timing strategy
• Basic internationalisation strategies
• Basic principles of product management

Prerequisites:
n.a.

Lecture/Seminar profile:

Mechatronics (20_MEC1IL)

Degree course	IPM.ma
Course title	Mechatronics
Course code	20_MEC1IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	4
Course type	Integrated course
Examinations	oral or written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Consolidating the interplay of mechanical, electrical, electronic, microelectronic and sensor/actuator system components in connection with interface and display into a whole behaviour.

Prerequisites:
n.a.

Lecture/Seminar profile:

Market Research (20_MFO1IL)

Degree course	IPM.ma
Course title	Market Research
Course code	20_MFO1IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	2
Course type	Integrated course
Examinations	oral or written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
- Basics of marketing research
- Process of marketing research
- Secondary research vs. primary research
- Qualitative research vs. Quantitative research
- Research design
- Information gathering and processing
- Selected methods of secondary research (market monitoring, competition analysis, press-, patent- and brand research, ...)
- Basic analytical processes of market research

Prerequisites:
n.a.

Lecture/Seminar profile:

Mechanics of Materials - Introduction (20_MOM1IL)

Degree course	IPM.ma
Course title	Mechanics of Materials - Introduction
Course code	20_MOM1IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	3
ECTS credits	3
Course type	Integrated course
Examinations	oral or written examination
Language of instruction	English
Places for international students	15

Learning objectives:
The students understand the basic concepts of statics (force-equilibrium etc.) as well as the concept of stresses

Content:
Basic static concepts (forces, moments, free-body-diagrams, frictional forces), Concept of Stress and Strain; Principal stresses, Mohr-Circle; Linear elastic material law; Thermal strains and stresses; Loading of trusses and beams (axial forces, bending, torsion); Deflection of beams; Energy-methods; Stability of columns.
Prerequisites: Undergraduate Mathematics (Vector- and Matrix-Calculus, differential equations; Integrational and differential calculus; Level MAT1/2)
Literature: Beer et al.: “Mechanics of Materials”, 6th Edition, McGrawHill, 2012

Prerequisites:
n.a.

Lecture/Seminar profile:

Customer Integration in NPD (20_MRI3IL)

Degree course	IPM.ma
Course title	Customer Integration in NPD
Course code	20_MRI3IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
•Understanding the Challenges at the Front End of Inno-vation
•Knowing the principles of Strategic Foresight and how to work with scenarios
•Gaining insights into Innovative Customer Integration tools for ideation and evaluation at the front end of innovation
•Learning about the usage of Open Innovation Approaches and Cross Industry Innovation at the Front End of In-novation
•Business Model innovation

Prerequisites:
n.a.

Lecture/Seminar profile:

Product Management (20_PM1IL)

Degree course	IPM.ma
Course title	Product Management
Course code	20_PM1IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
-Analyzing-instruments
-Perceptual Maps
-Product Decisions
-Innovation
-Variation
-Differentiation
-Ellimination
-Service marketing

Prerequisites:
n.a.

Lecture/Seminar profile:

Project Management (20_PRM1VO)

Degree course	IPM.ma
Course title	Project Management
Course code	20_PRM1VO
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1
Course type	Lecture
Examinations	oral or written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
- Project management as a business process
- Project manual
- Methods for the management of projects
- o Methods for starting a project
- Project limitation and project context
- Design of the project organisation
- Project planning
- o Methods for project coordination
- o Methods for project controlling
- o Methods for project marketing
- o Methods for the management of project crises
- o Methods for project completion,
- Management of project-oriented organisations (overview)

Prerequisites:
n.a.

Lecture/Seminar profile:

Reverse Engineering (20_REG3IL)

Degree course	IPM.ma
Course title	Reverse Engineering
Course code	20_REG3IL
Level	Master
Term	WS24/25
Lecturer	Christian Zehetner
Contact hours per week	1,2
ECTS credits	1,2
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
• Capturing and processing complex geometries
• Digitising systems (3D coordinate measurements, fringe projection scanners, laser scanners, computer tomography)
• CAD/prototype variance analysis
• Object reconstruction
• Design-oriented reverse engineering

Prerequisites:
n.a.

Lecture/Seminar profile:

Supply Chain Management (20_SCM3IL)

Degree course	IPM.ma
Course title	Supply Chain Management
Course code	20_SCM3IL
Level	Master
Term	WS24/25
Lecturer	Patrick Aichinger, Robert Steiner, Bianca Maria Wenigwieser
Contact hours per week	1
ECTS credits	1
Course type	Integrated course
Examinations	oral or written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
• Conceptualize supply chain designs, which are aligned with business models for manufacturing and service companies
• Configure logistics networks and assess their performance impacts on efficiency and service levels
• Manage inventory efficiently and pool inventory risks across time, products, channels, and geography.

Prerequisites:
Fundamentals of Marketing/Management

Lecture/Seminar profile:

Simultaneous Engineering (20_SIE3IL)

Degree course	IPM.ma
Course title	Simultaneous Engineering
Course code	20_SIE3IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	2
Course type	Integrated course
Examinations	oral or written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
• Planning and monitoring of project portfolios
• Reporting in multiple-projects management
• Human resource management in multiple-projects management
• Case studies or practical projects relating to selected topics of the lecture

Prerequisites:
n.a.

Lecture/Seminar profile:

Presentation (20_SKK1UE)

Degree course	IPM.ma
Course title	Presentation
Course code	20_SKK1UE
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	6

Learning objectives:
n.a.

Content:
Different types and objectives of presentations
• Advantages and disadvantages of different presentation medias
• Rules of visualization (focus on layout of transparencies with special software features)
• Significance of eye contact, gesture/facial expression/ habitus linguistic and paralinguistic aspect for the success of presentations
• (Meeting) Moderation: repertoire, rules, asking techniques, visualization
• Positive association with excitement
• Effect of circumstances on the success
• How to write handouts
• Video training

Prerequisites:
n.a.

Lecture/Seminar profile:

Value Analysis and FMEA (20_TPW1IL)

Degree course	IPM.ma
Course title	Value Analysis and FMEA
Course code	20_TPW1IL
Level	Master
Term	WS24/25
Lecturer	Werner Leitner, Peter Rohrmoser
Contact hours per week	1
ECTS credits	2
Course type	Integrated course
Examinations	oral or written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
- Function Analysis (FA):
Methods of FA, nominating and structuring of functions;
Application of FA to develop and improve products and processes;
Work on examples from the lecturer's practical experience.
Value Management (VA):
Fundamentals of value analysis and value engineering;
Value in product- and service-analysis, criteria of value, functions to describe products and service; function costs, value analysis job plan; the process of value analysis;.
Work on examples from the lecturer's practical experience
Potential Failure Mode and Effects Analysis (FMEA):
Methodology of FMEA for products and processes; structural analysis of products and processes; function block diagram; failure and risk analysis; risk priority number; improvement of design; samples and organization; work on examples from the lecturer's practical experience.
General product analysis:
Situation analysis, cause analyses according to Kepner/ Tregoe Ishikawa diagram; decision-making analyses, useful value analyses, cost-effect analyses

Prerequisites:
n.a.

Lecture/Seminar profile:

Scientific Working (20_WIA1IL)

Degree course	IPM.ma
Course title	Scientific Working
Course code	20_WIA1IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	0,5
ECTS credits	0,5
Course type	Integrated course
Examinations	oral or written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
Fundamentals of scientific research Research design: goals, questions, methods Academic writing: sources, types of texts, style Efficient use of information sources

Prerequisites:
n.a.

Lecture/Seminar profile:

Technology Assessment (20_ZTA3IL)

Degree course	IPM.ma
Course title	Technology Assessment
Course code	20_ZTA3IL
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
• Introduction to technology intelligence methods and technology assessment (TA)
• TA-related design issues

Prerequisites:
n.a.

Lecture/Seminar profile:

Project Work I (21_APR1PT)

Degree course	LCW.ma
Course title	Project Work I
Course code	21_APR1PT
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	0,5
ECTS credits	9
Course type	Project
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	2

Learning objectives:
n.a.

Content:
R&D project in the field of materials or production engineering and/or simulation or lightweight design; applied project management; literature study; in-depth and cross-disciplinary application of the acquired knowledge; methodical and scientific approach; practical implementation, analysis, interpretation of experiments or series of experiments; preparation of technical and scientific reports.

Prerequisites:
Bachelor's degree in a technical field of study

Lecture/Seminar profile:

Project Work III (21_APR3PT)

Degree course	LCW.ma
Course title	Project Work III
Course code	21_APR3PT
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	0,5
ECTS credits	12
Course type	Project
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	42

Learning objectives:
n.a.

Content:
Based on the results and/or findings of PR2, a project is defined to give students the opportunity to deepen their knowledge in the same subject area or to learn about other subject areas. Furthermore, the project definition will take into account the growing knowledge base through lectures already completed.

R&D project in the field of materials or production engineering and/or simulation or lightweight design; applied project management; literature study; in-depth and cross-disciplinary application of the acquired knowledge; methodical and scientific approach; practical implementation, analysis, interpretation of experiments or series of experiments; preparation of technical and scientific reports.

Prerequisites:
Bachelor's degree in a technical field of study

Lecture/Seminar profile:

Solid Mechanics (21_KMK1UE)

Degree course	LCW.ma
Course title	Solid Mechanics
Course code	21_KMK1UE
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Practice-oriented session
Examinations	oral or written examination
Language of instruction	German/English
Places for international students	2

Learning objectives:
n.a.

Content:
Basic concepts of linear and nonlieanr solid mechanics, continuum mechancis, deformation gradient, Euler and Lagrangian approach, stress tensors (Cauchy, Kirchhoff, etc.), strain tensors (Green, etc.), theory of linear elasticity, nonlinear material behaviour (e.g. non-linear elasticity, plasticity, viscoelasticity and visco-plasticity, etc.), damage mechanics, fatigue life calculation, fracture mechanics (LEBM, NLBM)
Exercises with practical examples

Prerequisites:
Mechanics and strength at the level of a tech. Bachelor study

Lecture/Seminar profile:

Solid Mechanics (21_KMK1VO)

Degree course	LCW.ma
Course title	Solid Mechanics
Course code	21_KMK1VO
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	4
Course type	Lecture
Examinations	written examination
Language of instruction	German/English
Places for international students	2

Learning objectives:
n.a.

Content:
Basic concepts of linear and nonlieanr solid mechanics, continuum mechancis, deformation gradient, Euler and Lagrangian approach, stress tensors (Cauchy, Kirchhoff, etc.), strain tensors (Green, etc.), theory of linear elasticity, nonlinear material behaviour (e.g. non-linear elasticity, plasticity, viscoelasticity and visco-plasticity, etc.), damage mechanics, fatigue life calculation, fracture mechanics (LEBM, NLBM)
Exercises with practical examples

Prerequisites:
Mechanics and strength at the level of a tech. Bachelor study

Lecture/Seminar profile:

Selected Chapters Digital Factory (21_PDF1IL)

Degree course	LCW.ma
Course title	Selected Chapters Digital Factory
Course code	21_PDF1IL
Level	Master
Term	WS24/25
Lecturer	Georg Hermann Richard Hackenberg
Contact hours per week	2
ECTS credits	3
Course type	Integrated course
Examinations	continuous assessment
Language of instruction	English
Places for international students	2

Learning objectives:
n.a.

Content:
Digital Factory (DF) with a focus on Digital Manufacturing
Interrelationships between ERP, MES and PLM systems
Data integration and data management
Explanation of the sub-areas of DF
Analysis of production systems
Definition of application goals
Interpretation of expected results.

Prerequisites:
n.a.

Lecture/Seminar profile:

Solid Mechanics (22_MFK1UE)

Degree course	MB.ma
Course title	Solid Mechanics
Course code	22_MFK1UE
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
Basic concepts of NL mechanics of solid bodies -
Deformation gradient, Eulerian and Lagrangian approach, stress tensors (Cauchy, Kirchhoff, etc.), strain tensors (Green, etc.), linear elasticity theory, non-linear material behavior (e.g.: non-linear elasticity, plasticity, visco-elasticity and -plasticity, etc.), damage mechanics, service life calculation, fracture mechanics (LEBM, NLBM) Rehearsal exercises with practical examples of the content

Prerequisites:
n.a.

Lecture/Seminar profile:

Solid Mechanics (22_MFK1VO)

Degree course	MB.ma
Course title	Solid Mechanics
Course code	22_MFK1VO
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	4
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
Basic concepts of NL mechanics of solid bodies -
Deformation gradient, Eulerian and Lagrangian approach, stress tensors (Cauchy, Kirchhoff, etc.), strain tensors (Green, etc.), linear elasticity theory, non-linear material behavior (e.g.: non-linear elasticity, plasticity, visco-elasticity and -plasticity, etc.), damage mechanics, service life calculation, fracture mechanics (LEBM, NLBM) Rehearsal exercises with practical examples of the content

Prerequisites:
n.a.

Lecture/Seminar profile:

Multibody Dynamics (22_MKS1VO)

Degree course	MB.ma
Course title	Multibody Dynamics
Course code	22_MKS1VO
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	4
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
Kinematics: kinematics of rigid bodies, Rotation, relative-kinematics, holonomal and non-holonimal couplings in mechanical systems. Classification of multi-body-systems, Concepts of Degree-of-freedom, couplings, open- and closed Systems.
Kinetics: Newton / Euler equations, Lagrangian equations of motion (1. and 2. kind); Hamiltonian principle;
Dynamic system equations of multi-body-systems
Linearization of dynamic equations, Numerical solution procedures for dynamical systems
Bewegungsgleichungen von Mehrkörpersystemen. Introduction in functionality of Multi-body-system software and practical application of MBS-Software.

Prerequisites:
n.a.

Lecture/Seminar profile:

R&D Project (22_PRO3PT)

Degree course	MB.ma
Course title	R&D Project
Course code	22_PRO3PT
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	10
Course type	Project
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	5

Learning objectives:
n.a.

Content:
Individual assignment dealing with an advanced (graduate level) project in the field of mechanical engineering. The tasks are connected to current R&D-Projects of in-house Research groups and external industrial or scientific partners. These projects should allow the students to apply their skills and knowledge (technical, social and projekt-management) onto a real-world problem.

Prerequisites:
n.a.

Lecture/Seminar profile:

Dynamics (23_DYN1IL_Inc)

Degree course	MB.ma
Course title	Dynamics
Course code	23_DYN1IL_Inc
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1,5
ECTS credits	3
Course type	Integrated course
Examinations	continuous assessment
Language of instruction	English
Places for international students	15

Learning objectives:
Kinematics for particles and rigid bodies.
Kinetics for particles and rigid bodies.
Work and energy methods.
Impulse and Momentum methods.

Content:
Dynamics mathematically describes the motions of bodies under the action of forces. The first part introduces kinematics which deals with the geometry of motion without considering applied forces. The second part, kinetics, relates the forces on bodies to the resulting motions.
Mathematical description of the motion of bodies. Introduction of kinematics without considering applied force.

Prerequisites:
n.a.

Lecture/Seminar profile:

Mechanics of Materials (23_MOM2IL_Inc)

Degree course	MB.ma
Course title	Mechanics of Materials
Course code	23_MOM2IL_Inc
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1,5
ECTS credits	3
Course type	Integrated course
Examinations	continuous assessment
Language of instruction	English
Places for international students	15

Learning objectives:
The students understand the basic concepts of statics (force-equilibrium etc.) as well as the concept of stresses

Content:
basic static concepts (forces, moments, free-body-diagrams, frictional forces), Concept of Stress and Strain; Principal stresses, Mohr-Circle; Linear elastic material law; Thermal strains and stresses; Loading of trusses and beams (axial forces, bending, torsion); Deflection of beams; Energy-methods; Stability of columns.
Prerequisites: Undergraduate Mathematics (Vector- and Matrix-Calculus, Diff.equations; Integrational and differential calculus; Level MAT1/2)
Literature: Beer et al.: “Mechanics of Materials”, 6th Edition, McGrawHill, 2012

Prerequisites:
n.a.

Lecture/Seminar profile:

Energy Project Development (22_EPD3IC)

Degree course	SES.ma
Course title	Energy Project Development
Course code	22_EPD3IC
Level	Master
Term	WS24/25
Lecturer	René Hörwertner
Contact hours per week	2
ECTS credits	2,5
Course type	Integrated course
Examinations	continuous assessment
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
Meaning and how to approach for the project states
Feasibility study
Due diligence
Energy Yield Assessment
Permitting

Prerequisites:
None

Lecture/Seminar profile:

Financing (22_FIN3IC)

Degree course	SES.ma
Course title	Financing
Course code	22_FIN3IC
Level	Master
Term	WS24/25
Lecturer	Andreas Gumpetsberger
Contact hours per week	2
ECTS credits	2,5
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
Contracting
Funding of projects on international degree
Financial assessment of international and national projects

Prerequisites:
None

Lecture/Seminar profile:

Intercultural Leadership (22_ICL3SE)

Degree course	SES.ma
Course title	Intercultural Leadership
Course code	22_ICL3SE
Level	Master
Term	WS24/25
Lecturer	Claudia Ender
Contact hours per week	2
ECTS credits	2
Course type	Seminar
Examinations	continuous assessment
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
Models, functions and tasks of leadership
Key competencies of executives
Connection between leadership and personality
The role of the executive as a result of all expectations towards the role owner
The executive as a multiplying factor of all targets and values in a company
The executive as a developer of the own staff

Prerequisites:
All previous modules

Lecture/Seminar profile:

International Project Management (22_IPM3IC)

Degree course	SES.ma
Course title	International Project Management
Course code	22_IPM3IC
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
The students are learning the specific characteristics of international project management and the different cultural ways of management

Intercultural decision-making and responsibility for a successful management in intercultural business situations
Getting knowledge about the own and foreign cultures Overview of different cultural ways of management Leadership in an international context
Specific characteristic in international and intercultural project management
Enhancements of intercultural key competencies

Prerequisites:
None

Lecture/Seminar profile:

Large-Scale Wind Power Plants (22_LSW3IC)

Degree course	SES.ma
Course title	Large-Scale Wind Power Plants
Course code	22_LSW3IC
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	3
Course type	Integrated course
Examinations	continuous assessment
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
Wind resource estimation (advanced level)
Advanced grid features
Wind energy project development
Planning and simulation of large-scale wind power plants using modern design and simulation tools (WindPRO or similar)
System integration
Operation and monitoring of large-scale wind power plants

Prerequisites:
Electrical Engineering, Solar and Wind Energy

Lecture/Seminar profile:

Academic Writing (24_AWR1SE)

Degree course	SES.ma
Course title	Academic Writing
Course code	24_AWR1SE
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1,5
Course type	Seminar
Examinations	continuous assessment
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
Text comprehensibility; Academic writing style (research questions; wording for reports, papers and thesis; representation of tables, diagrams and figures; working with text templates); Academic tools and ressources (citing tools, literature data base, etc)

Prerequisites:
none

Lecture/Seminar profile:

Basics of Thermodynamics and Electrochemistry (24_BTE1LE)

Degree course	SES.ma
Course title	Basics of Thermodynamics and Electrochemistry
Course code	24_BTE1LE
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	3
ECTS credits	4
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
Overview of thermodynamic cycle processes; Property method for hydrogen; General combustion theory; Comparison of hydrogen combustion with hydrocarbon combustion; Thermodynamic fundamentals of Hydrogen compression; Understanding the chemical basics of batteries

Prerequisites:
Fundamental understanding of engineering

Lecture/Seminar profile:

Intercultural Communication (24_ICC1SE)

Degree course	SES.ma
Course title	Intercultural Communication
Course code	24_ICC1SE
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1
Course type	Seminar
Examinations	continuous assessment
Language of instruction	English
Places for international students	10

Learning objectives:
n.a.

Content:
Theory and key principles of intercultural communication
Processes of intercultural adaptation (eg Stage model of Milton Bennett,…)
Cultural Specificity in international “meetings” and projects Practicing negotiations und conflict resolution in a intercultural context
Development of intercultural key competencies

Prerequisites:
none

Lecture/Seminar profile:

Solar Energy (24_SOL1LE)

Degree course	SES.ma
Course title	Solar Energy
Course code	24_SOL1LE
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2,5
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
• Technical components
• Potential of solar radiation
• Introduction to PV systems
• Solar cells types
• Production of PV cells
• Properties of solar modules and generators
• DC and AC components
• Solar batteries
• Basic design and planning of PV grid-connected and island systems
• Energy yield estimation of solar systems
• Status of the technologies
• Potential of CO2 reduction
• Environmental impact

Prerequisites:
Electrical Energy Engineering

Lecture/Seminar profile:

Solar Energy (24_SOL1PR)

Degree course	SES.ma
Course title	Solar Energy
Course code	24_SOL1PR
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1,5
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	15

Learning objectives:
n.a.

Content:
• Technical components
• Potential of solar radiation
• Introduction to PV systems
• Solar cells types
• Production of PV cells
• Properties of solar modules and generators
• DC and AC components
• Solar batteries
• Basic design and planning of PV grid-connected and island systems
• Energy yield estimation of solar systems
• Status of the technologies
• Potential of CO2 reduction
• Environmental impact

Prerequisites:
Electrical Energy Engineering

Lecture/Seminar profile:

Sustainable Development (24_SUS1IC)

Degree course	SES.ma
Course title	Sustainable Development
Course code	24_SUS1IC
Level	Master
Term	WS24/25
Lecturer	Georg Redlhammer
Contact hours per week	2
ECTS credits	2,5
Course type	Integrated course
Examinations	continuous assessment
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
Introduction to the topic of Sustainable Development, Terms and Definitions, UN Sustainable Development Goals, Implementation of the UN goals, status quo and development scenarios, projects for implementing Sustainable Development in international comparison

Prerequisites:
none

Lecture/Seminar profile:

Wind Energy (24_WIN1LE)

Degree course	SES.ma
Course title	Wind Energy
Course code	24_WIN1LE
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	2
ECTS credits	2,5
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
• Wind potential
• Wind turbine types
• Wind turbine system concepts
• Structure and technical components of wind turbines
• Basic design and planning of wind farms
• Energy yield estimation of wind farms
• Status of the technologies
• Potential of CO2 reduction
• Environmental impact

Prerequisites:
Electrical Energy Engineering

Lecture/Seminar profile:

Wind Energy (24_WIN1PR)

Degree course	SES.ma
Course title	Wind Energy
Course code	24_WIN1PR
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	1
ECTS credits	1,5
Course type	Practice-oriented session
Examinations	continuous assessment
Language of instruction	English
Places for international students	15

Learning objectives:
n.a.

Content:
• Wind potential
• Wind turbine types
• Wind turbine system concepts
• Structure and technical components of wind turbines
• Basic design and planning of wind farms
• Energy yield estimation of wind farms
• Status of the technologies
• Potential of CO2 reduction
• Environmental impact

Prerequisites:
Electrical Energy Engineering

Lecture/Seminar profile:

Project Work 1 (PRJ1PT_20)

Degree course	WFT.ma
Course title	Project Work 1
Course code	PRJ1PT
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	0,4
ECTS credits	13
Course type	Project
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	3

Learning objectives:
n.a.

Content:
Specific R&D-project in the area of material science or manufacturing technology; applied project management; literature research; detailed and interdisciplinary exercise of specific knowledge; methodical and scientific approach; planning and performing technical or scientific tests; analyzing and interpretation of test results; design and compilation of technical and scientific reports

Prerequisites:
Bachelor's degree in a technical field of study

Lecture/Seminar profile:

Project Work 3 (PRJ3PT_20)

Degree course	WFT.ma
Course title	Project Work 3
Course code	PRJ3PT
Level	Master
Term	WS24/25
Lecturer	
Contact hours per week	0,4
ECTS credits	13
Course type	Project
Examinations	continuous assessment
Language of instruction	German/English
Places for international students	2

Learning objectives:
n.a.

Content:
Specific R&D-project in the area of material science or manufacturing technology; applied project management; literature research; detailed and interdisciplinary exercise of specific knowledge; methodical and scientific approach; planning and performing technical or scientific tests; analyzing and interpretation of test results; design and compilation of technical and scientific reports

Prerequisites:
Bachelor's degree in a technical field of study

Lecture/Seminar profile:

Contract Law (24_CRL1VO)

Degree course	AB.ma
Course title	Contract Law
Course code	24_CRL1VO_Gr.B
Level	Master
Term	WS24/25
Lecturer	Kurt Manzenreiter
Contact hours per week	2
ECTS credits	2,5
Course type	Lecture
Examinations	written examination
Language of instruction	English
Places for international students	5

Learning objectives:
n.a.

Content:
Basic knowledge of foreign legal systems
International commercial law, Uniform Law (UNIDROIT, UN Sales Convention/CISG)
Trade practices and trade terms, Incoterms
Important types of contracts (especially developer contract, construction contract, contract, investment contract, license, freight forwarding and transport contract, employment contract, cooperative agreement, contract of insurance)
Arbitration, penalties
International payments and payment security, and performance and credit protection

Prerequisites:
n.a.

Lecture/Seminar profile:

Human-Computer Interaction (23_MMI1IL)

Degree course	MEWI.ma
Course title	Human-Computer Interaction
Course code	23_MMI1IL
Level	Master
Term	WS24/25
Lecturer	Jean D. Hallewell Haslwanter
Contact hours per week	1
ECTS credits	2
Course type	Integrated course
Examinations	written examination
Language of instruction	English
Places for international students	3

Learning objectives:
n.a.

Content:
- Introduction and basics of Interactive Systems design and usability.

- Learn interaction, navigation and communication with Interactive Systems through experimentation and analysis.
- Designing, evaluating and discarding as a basic principle of the development of interactive media. Sensitization to the sensible use of the technical possibilities of interactive media.

- Navigation

- Navigation models

- Interactive layouts
- active / passive coding

- Design and presentation of content hierarchies

- Usability testing
 - theory and practice of evaluation of software and hardware systems

Prerequisites:
n.a.