Study regulations of the
FH Bachelor Degree

Industrial Engineering and Management

To obtain the academic degree

Bachelor of Science,
abbreviated B.Sc.

as an appendix to the statutes of the FH Kufstein Tirol

Organizational form: Full-time
Duration: 6 Semesters
Scope: 180 ECTS
Places for beginners per academic year: 30 Full-time

Version 1
Decided by the FH Faculty Council on 11.10.2023

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1 JOB PROFILES

1.1 Occupational fields

Due to their wide-ranging technical and economic training, graduates of the Bachelor degree program in Industrial Engineering and Management have a multitude of career opportunities at the interface of technology and business.

The graduates find employment opportunities in the following regional core industries:

- Construction industry
- Chemical and pharmaceutical industry
- Electrical engineering and electronics companies
- Energy industry
- Equipment manufacturers
- Timber industry
- Production of consumer and industrial goods
- Mechanical and plant engineering
- Public sector
- Transport and traffic industry

Within these sectors, graduates can work in the following professional fields, for example:

(1) Product management

Product management tasks include market studies to identify economic and technical trends, the translation of these findings into market and customer requirements and derived technical requirements, support in product development, production, market launch, sales and after sales. In a different organizational structure in terms of functional specialization, this corresponds to the occupational fields of innovation and technology management, as well as product marketing.

(2) Production planning, production control & production logistics

Logistics and supply chain management, which have meanwhile developed into a cross-sectional discipline, as well as the close integration of logistics with production planning and control, offer industrial engineers a broad field of activity thanks to their interface competence and versatility. Tasks in this area are:

- **Production program planning**, materials management, scheduling and capacity planning, production control and order monitoring. Analysis and optimization of transport structures with regard to costs and deadlines.
- **Materials management/purchasing** with a focus on the required materials for production, auxiliary, operating and additive materials. Operational and strategic mechanisms for storage and procurement have to be applied. In this context, article requirements and cost developments must be analyzed and ongoing optimization measures must be undertaken (e.g. towards warehouse management, component standardization, procurement strategies, supplier selection).
- **Supply chain management/logistics,** in particular, the planning of the flow of goods and information with special consideration of technical and economic conditions. In addition to tasks relating to planning, simulation and control, this also includes controlling and quality management for the entire value chain.

(3) Work preparation/cost planning

The work preparation during the product development ensures economic manufacturing/production and, as an interface task, also constitutes a core competence of an industrial engineer. The tasks include the design of the workflow and the work system. The

focus is thus on the question of internal or external services, the production steps with specified times depending on the general conditions, the planning of operations, testing and costs, etc. In large companies, the cost planning role is a separate function due to its cost significance.

(4) Project management

Nowadays, interdisciplinary and international project teams are standard in all company areas. Project management with the various tasks from planning to control is one of the core tasks of industrial engineers due to their expertise in a wide range of fields and their ability to handle the technical/economic interface.

(5) Information management & IT support

The support of business processes through information management and modern IT systems is an essential aspect for business success. Industrial engineers can use their applied knowledge to identify requirements, evaluate the selection of IT tools and support the implementation ..

(6) Product marketing

Development and implementation of strategies for sales promotion via product price, customer communication and distribution channels based on customer/market analyses.

(7) Quality and process management

Planning and organization of all measures to improve products, processes and services of a company as well as management of processes during product development. This includes maintenance or requirement management for the construction of production facilities or the topic of occupational safety.

(8) Procurement

Selecting, evaluating and appointing a supplier requires a technical and economic understanding and knowledge of the product development processes. A successful decision can only be made through a global view (economic/technical). In addition to the analysis/observation of the procurement market, the tasks include the assessment of technologies/concepts, the evaluation of suppliers and the negotiation. In addition to the physical scope, this also includes the procurement of services as part of product development, e.g. development services.

(9) Product development / design

Collaboration in the development of new products and product design, from development through the transition to production to production itself. Research into components and materials for product development and design, in particular with computer-aided tools using rapid prototyping technologies.

(10) Management consultants

Management consultants offer their advice as a service. As a rule, the management of the client (or clients) is the object of the consultation. Alternatively, consulting services can also be offered for technical decisions and changes or problem solving for specific economic-technical questions.

(11) Controlling - Technical Controlling

Technical controlling is a demanding and multifaceted job that requires both technical and business knowledge. Technical controllers must be able to understand, structure and communicate complex issues. They must also have analytical skills to evaluate data and derive recommendations for action. In addition, they must be able to collaborate and cooperate with various specialist departments and stakeholders.

Entry positions for graduates of the Bachelor degree program in the above-mentioned areas are usually positions with no management responsibility (administration, project work, assistance) or trainee positions. After appropriate professional experience and depending on personal performance, there are career prospects for management tasks.

1.2 Qualification profile

The qualification goals and learning outcomes of the Bachelor degree program *Industrial Engineering and Management* correspond both to the academic and vocational requirements and to the *ISCED level 0788*[1] International Standard (Classification of Education). The contents conveyed qualify the graduates for the professional fields of activity mentioned in the previous chapters.

The qualification goals and learning outcomes of the Bachelor degree program in Industrial Engineering and Management meet both professional and academic requirements. The contents taught qualify the graduates for the above-mentioned professional fields of activity. On completion of the Bachelor degree program, the following **competences** are acquired on the basis of a cross-industry and cross-company qualification profile:

Technical competence (Scientific competence)
The graduates recognize and understand basic technical problems and can solve tasks with the existing methods and tools. They master basic approaches and methods, which are generally necessary for the accomplishment of technical problems in the area of mechanical engineering and automation based on it. In detail, the graduates are able to:

- Classify and understand basic technical contexts and technical terms.
- Classify and understand scientific fundamentals.
- Classify and understand the basic interrelationships of mechanical engineering.
- Solve technical tasks by using the knowledge from the basic subjects such as mathematics, statics and strength theory, machine elements etc.
- Identify and understand the basic technical structure of machines and plants.
- Understand and classify technical principles and laws for solving technical problems.
- Analyze technical tasks and on this basis to develop proposals for a suitable procedure (requirement, concept, draft, development) incl. suitable tools/methods, to select and implement a proposal.

The following **modules** and **courses** serve to acquire the technical competence. (Note "E" for English-language courses):

Module: "Formal Sciences" (FWW):
- Mathematics 1
- Mathematics 2
- Mathematics 3

Module: "Engineering Sciences" (ING):
- Statics and Strength Theory
- Dynamics & Hydromechanics
- Thermodynamics

Module: "Electrical Engineering" (ELT):
- Electrical Engineering (VO)
- Electrical Engineering (UE)
- Automation Technology (VO)

[1] *Example 4: A program consisting of 40% engineering (071), 30 % business (041) and 30 % languages (023) should be classified as 0788 ("Inter-disciplinary programs and qualifications involving engineering, manufacturing and construction") as no field predominates but 07 is the leading broad field. If engineering and business were equally important and greater than languages (e.g. 40 %, 40 % and 2 0%), the program would be classified as either 0788 or 0488 depending on which program, engineering (071) or business (041), is listed first in the program title (or, if not in the title, in the curriculum or syllabus).*

- Automation Technology (UE)

Module: "Mechanical engineering" (MAB):
- Technical Drawing / CAX
- Machine Elements I
- Machine Elements II
- Mechanical and plant engineering

Module: "Information Technology" (INF):
- Fundamentals of Data Management (E)
- Introduction to Programming
- Fundamentals of Information Systems (E)

Module: "Product & Production Fundamentals" (GPP)
- Digital Product Creation
- Manufacturing Technology and Materials Engineering

Module: "Semester Abroad Engineering" (ATE)
Courses from the following two areas are recommended:
- Higher engineering science (e.g. fluid mechanics, heat transfer, machine dynamics, multi-body dynamics, modelling and simulation, etc.)
- Product development (e.g. mechatronic systems, internal combustion engines, drive and control technology, thermal turbomachinery, hydraulic fluid machines, robotics, plant design, systems engineering, etc.)

Business / management competence (scientific competence)
The graduates recognize and understand basic economic problems and can solve tasks with the existing methods and tools. They master basic approaches and methods that are necessary to cope with economic challenges. In detail, the graduates are able to:
- Understand and classify economic/legal technical vocabulary
- Understand and classify basic economic relationships
- Understand and classify basic contents/principles of management
- Understand tasks, methods and procedures in the key functional areas of companies, in particular marketing, finance and accounting, human resources and organization.
- Analyze and classify corporate organizations and strategies.
- Describe and explain relevant tasks, processes and tools/instruments on a strategic and operational level.
- Identify requirements and framework conditions based on an initial situation and derive goals.
- Based on these goals, derive a suitable approach and develop, evaluate and select alternative solutions.
- Understand and explain the management cycle (objectives, planning, execution, control) in the respective area.

The following **module** and **courses** contribute to the achievement of the basic business/management competence. (Note "E" for English-language courses):

Module: "Economics" (WIR):
- Fundamentals of Economics (E)
- Investment & Financing (E)
- Introduction to Law
- Introduction to Accounting

Module: "Management" (MGM):

- Project Management (E)
- Marketing & Sales (E)
- Supply Chain Management (E)
- Innovation Management & Product Development (E)

Module: "Semester Abroad Economics/Management" (AWM)

Courses from the following four areas are recommended:

- Management (e.g. Strategic Management, Competitive Strategies, Management of Multinational Corporations, Organizational Theory, Corporate Behavior, Corporate Culture, Knowledge Management, Quality Management etc.)
- Marketing/Sales (e.g. Advanced Marketing Management, Consumer Behavior, Customer Service Excellence, Global Marketing, Sales Management, Sales Techniques etc.)
- Accounting/Finance/Controlling/Procurement (e.g. Financial Management, Portfolio Management, Options and Futures, International Finance, Global buying, Buying, E-Procurement etc.)
- Law (e.g. Patent Law, Product Identification, Product Liability etc.)

Product development competence (optional) (Scientific competence)

The graduates recognize and understand fundamental problems in the field of product development and are able to solve them on a task-specific basis. They possess the basic approaches and methods necessary to meet research and development challenges. In detail, the graduates are able to:

- Name and apply the fundamentals and methods of design in product development.
- Optimize product development processes through system support and apply modern methods.
- Analyze and evaluate product data and prepare it for transfer to production.
- Identify current trends in development and describe their impact on development.
- Recognize the current challenges of the market and implement them in product development.
- Identify the process and tools for cost management in product development.
- Define and track goals in product development using suitable key figures.
- Analyze core processes in the development area and derive measures against the background of networking and interpret their effects.

The following **modules and courses** serve to acquire the core competence "Product Development" (Note "E" for English-language courses):

Module: "Product Development" (PEE):

- Design Project - Product Development
- Information systems in product development
- R&D Management (E)
- Trends in R&D (E)

Organization and management competence (Scientific competence)

The graduates recognize and understand fundamental problems in the field of company organization of manufacturing companies and are able to solve them on a task-specific basis. They possess the basic approaches and methods necessary to overcome challenges from the areas of organization, management and leadership, and production processes and planning

In detail, the graduates are able to:

- name and differentiate the basics, structures and methods of a modern organization in the global environment.

- Identify, improve and optimize business processes through system support and apply modern methods.
- Optimize production processes through system support and apply modern methods.
- to design the digital transformation within the framework of the processes and to design implementation methods.
- take a holistic view of the development and advancement of employees - in a global environment, however, also be aware of the requirements and opportunities of the local market
- identify current trends in production and describe their impact on production
- critically reflect current trends with sustainable requirements and know and apply sustainability aspects
- recognize the current challenges of the market and implement the requirements for production and the process design process
- define and track production and company goals using appropriate metrics.
- recognize and derive new, global methods of production and business models, identify the

The following **modules and courses** serve to achieve the competence (note "E" for English-language courses):

Module: "Organization and Management" (OMT):

- Smart Factory Planning
- Digitale Produktion & E-Compentence
- Management & Leadership (E)
- Future Trends & Sustainability (E)

Practical transfer competence (Scientific competence)
The graduates are able to:

- Adapt or apply theoretical knowledge to practical tasks.
- Think in an integrated and interdisciplinary way in terms of practical theory reflection.
- Present and communicate results in a structured and appropriate way, apply formal and content-related requirements of academic work, especially when writing Bachelor theses.

The following **modules and courses ensure the acquisition of competence:**

Module: "Practical Projects" (PRA):

- Practical Project 1
- Practical Project 2

Module: "Bachelor Thesis and Bachelor Thesis Seminar" (BAS):

- Bachelor Thesis Seminar

Module: Internship (BPR) at least 12 weeks

- Internship

Competence Individual, social and methodological skills (Personal and social competence)
In addition to the subject-related core competences, a series of **individual, methodological and social skills** is taught for mastering team-related and leadership-related tasks with a view to being successful in interactive and intercultural situations. In addition, the students gain valuable practical experience through the practical application of what they have learned.

The graduates are able to:

- Communicate in confident English. (Working in English-speaking teams, reading and writing documentation).

- Recognize social conflicts, develop and implement conflict solutions and develop the ability to recognize, treat and avoid conflicts.
- Use basic mediation techniques.

The following **modules and courses ensure the acquisition of competence:**

Module: "Languages" (SPR)
- Foreign Language I-III

Module: "Individual and Social Skills" (ISK)
- Presentation Techniques and Communication
- Problem Solving in a Team
- Academic Research

Module: Semester abroad Individual and Social Skills (AIS)
The following types of courses are recommended:
- Business Communication, Negotiation and Conflict Resolution, International Business Communication, Bargaining Behavior etc.

Competence description:

Occupational field of activity	Competence description (selection)	Competence	Modules
• Construction • Information Management	• Understands basic technical contexts and technical terms • Understands academic Fundamentals • Understands the fundamental interrelationships of mechanical engineering • Can solve technical problems by using knowledge from the basic subjects • Understands the basic technical structure of machines and systems • Can analyze technical tasks and develop proposals for a suitable approach based on them	Technology	• Formal Sciences • Engineering Sciences • Electrical Engineering • Mechanical Engineering • Information Technology • Product & Production Fundamentals • Semester Abroad Technology
• Work preparation • Cost planning • Product marketing • Procurement	• Understands economic/legal technical vocabulary • Understands basic economic relationships • Understands the basic contents/principles of management	Economy & Management	• Economic • Management • Semester Abroad Economics & Management

	• Understands tasks, methods and procedures in the essential functional areas of companies. • Can identify requirements and framework conditions from an initial situation, derive goals and develop alternative solutions		
• Product Management	• Can apply design fundamentals and methods in product development • Can analyze product data and prepare it for transfer to production • Can identify current trends in development • Understands the process and tools for cost management in product development	Product development	• Product Development
• Production planning/ control • Logistics	• Can apply design fundamentals and methods in production • Can optimize production processes through system support • Can identify current trends in production • Knows new, global methods of production	Production	• Product & Production Fundamentals
	• Can apply theoretical knowledge to practical tasks • Can think in an integrated and interdisciplinary way in terms of reflection on practice and theory • Can present and communicate results in a structured and appropriate way • Can apply formal and substantive requirements of academic work in particular to the preparation of Bachelor theses	Practical Transfer	• Practical Projects • Bachelor Thesis and Bachelor Thesis Seminar • Internship
• Project Management	• Can communicate in confident English • Recognizes social conflicts	Individual, social and methodical skills	• Languages • Individual and Social Skills

	• Can develop and implement conflict solutions and develop the ability to recognize, deal with and avoid conflicts		• Semester abroad Individual and Social Skills
• Controlling	• Kennt Organisationsformen • Kennt Geschäftsprozesse und deren KPI's • Kennt die Digitalisierung der Geschäftsprozesse	Wirtschaft und Management	• Wirtschaft • Management • Organisation & Management

2 CURRICULUM

2.1 Curriculum Data

Curriculum data (Depending on how the course of studies is organized, "FT" or "PT" or "FT"+"PT" must be filled out.)			
	FT	**PT**	**Comment if applicable**
First year of study (YYY/YY$_{+1}$)	2024/25		
Standard duration of study (number of semesters)	6		
Obligatory WSH (Total number for all sem.)	81.5		In the FT program, a semester abroad with weekly semester hours of the respective partner universities takes place within the specified weekly semester hours.
Course weeks per semester (number of weeks)	15		
Obligatory LVS (Total for all sem.)	1792.5		In the full-time program, a semester abroad with contact hours of the respective partner universities takes place within the specified weekly semester hours.
Obligatory ECTS (Total for all sem.)	180		
WS start (Date, comm.: poss. CW)	CW 40		
WS end (Date, comm.: poss. CW)	CW 5		
SS start (Date, comm.: poss. CW)	CW 11		
SS end (Date, comm.: poss. CW)	CW 28		
WS weeks	15		
SS weeks	15		
Obligatory semester abroad (semester specification)	5th semester		
Course language (specify)	German/English		The percentage of English-language specialist courses is currently 21,38 %
Internship (semester information, duration in weeks per semester)	6th semester, 12 weeks		
Resulting from the merging of the study programs or from the separation from the study program (StgKz; to be specified only for merging or separation)			

2.2 Curriculum matrix

The following description of the courses does not include the work involved in supervising Bachelor theses. 0.2 weekly semester hours are planned per supervised thesis, i.e. for 30 students an additional 6 thesis weekly semester hours, which are incurred in the 6th semester. In total, an AWSH sum of 125.5 AWSH is achieved over all 6 semesters.

Modul	Modulname	LV-Bezeichnung	SWS	ECTS	Sem.
AIS	Semester abroad Individual and Social Skills	Semester abroad Individual and Social Skills	0	5	5
ATE	Semester Abroad Engineering	Semester Abroad Engineering	0	15	5
AWM	Semester Abroad Economics & Management	Semester Abroad Economics & Management	0	10	5
BAS	Bachelor Thesis and Bachelor Thesis Seminar	Bachelor Thesis and Bachelor Thesis Seminar	0.5	10	6
BRP	Internship	Internship	0	20	6
ELT	Electrical Engineering	Automation techniques	1.5	3	3
		Automation techniques	2	3	3
		Electrotechnology	1.5	3	1
		Electrotechnology	2	3	1
FWW	Formal Sciences	Mathematics 1	2	3	1
		Mathematics 2	3	4	2
		Mathematics 3	3	4	3
GPP	Product & Production Fundamentals	Digital Product Creation	2	3	4
		Manufacturing Technology and Materials Engineering	2.5	4	2
INF	Information Technology	Introduction to Programming	2	3	2
		Fundamentals of Data Management (E)	1	1.5	3
		Fundamentals of Information Systems (E)	1	1.5	4
ING	Engineering Sciences	Dynamics and Hydromechanics	2.5	4	2
		Statics and Strength Theory	4	6	1
		Thermodynamics	3	4.5	3
ISK	Individual, Social and Methodological Competence	Presentation Techniques and Communication	1.5	2	2
		Problem Solving in a Team	1.5	2	1
		Academic Research	1	1.5	2
MAB	Mechanical Engineering	Machine Elements I	1.5	2	1
		Machine Elements II	2.5	4	2
		Mechanical and plant engineering	2	3	3
		Technical Drawing / CAX	4	5	1
MGM	Management	Innovation Management & Product Development (E)	2	3	4
		Marketing and Sales (E)	1.5	2	4
		Project Management (E)	1	1.5	2
		Supply Chain Management (E)	1.5	2	4
OMT	Organization and Management	Information Systems in Production (WP)*	2	2.5	4
		Production Management (E) (WP)*	1	1.5	4
		Trends in Production (E) (WP)*	1.5	2	4
		Smart Factory Planning (WP)*	2	3	3
PEE	Product Development	Information Systems in Production (WP)*	2	2.5	4
		Design Project - Product Development (WP)*	2	3	3
		R&D Management (E) (WP)*	1.5	2	4
		Trends in R&D (E) (WP)*	1	1.5	4
PRA	Practical Projects	Practical project 1	2	4	3
		Practical project 2	2	4	4
SPR	Languages	Foreign Language I	4.5	6	1
		Foreign Language II	4.5	6	2
WIR	Economics	Introduction to Law	1	2	4
		Fundamentals to Economics (E)	4	5	4
		Basic Accounting	2.5	4	3
		Investment and Financing (E)	1	1.5	4
			81.5	**180.0**	

1. Semester

Course no.	Course title	LV-Typ	T	E	eLV	WSH	No. of groups	ASWS	ALVS	MODUL	ECTS
SPR1	Foreign Language I	ILV			15 %	4.5	2	9.0	135.0	SPR	6
vzELT1	Electrotechnology	VO	X		20 %	2	1	2	30	ELT	3
vzELT2	Electrotechnology	UE	X		20 %	1.5	2	3.0	45.0	ELT	3
vzFWW1	Mathematics 1	ILV	X		0 %	2	1	2	30	FWW	3
vzING1	Statics and Strength Theory	ILV	X		20 %	4	1	4	60	ING	6
vzISK1	Problem Solving in a Team	ILV			0 %	1.5	2	3.0	45.0	ISK	2
vzMAB1	Technical Drawing / CAX	ILV	X		15 %	4	2	8	120	MAB	5
vzMAB2	Machine Elements 1	VO	X		15 %	1.5	1	1.5	22.5	MAB	2
Total line:						21.0		32.5	487.5		30
Course hours = Total WSH x course weeks						315.0					

2. Semester

Course no.	Course title	LV-Typ	T	E	eLV	WSH	No. of groups	ASWS	ALVS	MODUL	ECTS
SPR2	Foreign Language II	ILV			15 %	4.5	2	9.0	135.0	SPR	6
vzFWW2	Mathematics 2	ILV	X		15 %	3	1	3	45	FWW	4
vzGPP1	Manufacturing Technology and Materials Engineering	ILV	X		15 %	2.5	1	2.5	37.5	GPP	4
vzINF1	Introduction to Programming	ILV	X		15 %	2	2	4	60	INF	3
vzING2	Dynamics and Hydromechanics	ILV	X		15 %	2.5	1	2.5	37.5	ING	4
vzISK2	Presentation Techniques and Communication	ILV			0 %	1.5	2	3.0	45.0	ISK	2
vzISK3	Academic Research	ILV			20 %	1	1	1	15	ISK	1.5
vzMAB3	Machine Elements II	ILV	X		20 %	2.5	2	5.0	75.0	MAB	4
vzMGM2	Project Management	ILV		X	10 %	1	1	1	15	MGM	1.5
Total line:						20.5		31.0	465.0		30.0
Course hours = Total WSH x course weeks						307.5					

3. Semester

Course no.	Course title	LV-Typ	T	E	eLV	WSH	No. of groups	ASWS	ALVS	MODUL	ECTS
FWW.3	Mathematics 3	ILV	X		15 %	3	1	3	45	FWW	4
vzELT3	Automation techniques	VO	X		20 %	2	1	2	30	ELT	3
vzELT4	Automation techniques	UE	X		20 %	1.5	3	4.5	67.5	ELT	3
vzINF2	Fundamentals of Data Management (E)	ILV	X	X	15 %	1	2	2	30	INF	1.5
vzING3	Thermodynamics	ILV	X		20 %	3	1	3	45	ING	4.5
vzMAB4	Mechanical and plant engineering	VO	X		20 %	2	1	2	30	MAB	3
vzOMT1	Smart Factory Planning (WP)*	ILV			0 %	2	1	2	30	OMT	3
vzPEE1	Design Project - Product Development (WP) (WP)*	ILV	X		0 %	2	1	2	30	PEE	3
vzPRA1	Practical Project I	PT	X		20 %	2	4	8	120	PRA	4
vzWIR2	Basic Accounting	ILV			30 %	2.5	1	2.5	37.5	WIR	4
Total line:						19.0		29.0	435.0		30.0
Course hours = Total WSH x course weeks						285.0					

*Specialization modules: one must be chosen from the 2 possible specialization modules.

4. Semester

Course no.	Course title	LV-Typ	T	E	eLV	WSH	No. of groups	ASWS	ALVS	MODUL	ECTS
vzGPP2	Digital Product Creation	VO	X		15 %	2	1	2	30	GPP	3
vzINF3	Fundamentals of Information Systems (E)	ILV	X	X	10 %	1	1	1	15	INF	1.5
vzMGM2	Marketing and Sales (E)	ILV		X	10 %	1.5	1	1.5	22.5	MGM	2
vzMGM3	Supply Chain Management (E)	ILV		X	10 %	1.5	1	1.5	22.5	MGM	2
vzMGM4	Innovation Management & Product Development (E)	ILV		X	15 %	2	1	2	30	MGM	3
vzOMT2	Information Systems in Production (WP)*	ILV			15 %	2	1	2	30	OMT	2.5
vzOMT3	Production Management (E) (WP)*	ILV		X	15 %	1.5	1	1.5	22.5	OMT	2
vzOMT4	Trends in Production (E) (WP)*	VO		X	0 %	1	1	1	15	OMT	1.5
vzPEE2	Information Systems in Product Development (WP)*	ILV	X		15 %	2	1	2	30	PEE	2.5
vzPEE3	R&D Management (E) (WP)*	ILV		X	15 %	1.5	1	1.5	22.5	PEE	2
vzPEE4	Trends in R&D (E) (WP)*	VO		X	0 %	1	1	1	15	PEE	1.5
vzPRA2	Practical Project 2	PT	X		20 %	2	4	8	120	PRA	4
vzWIR1	Fundamentals to Economics (E)	ILV		X	30 %	4	1	4	60	WIR	5
vzWIR3	Investment and Financing (E)	ILV		X	10 %	1	1	1	15	WIR	1.5
vzWIR4	Introduction to Law	VO			0 %	1	1	1	15	WIR	2
Total line:						20.5		26.5	397.5		30.0
Course hours = Total WSH x course weeks						307.5					

*Specialization modules: one must be chosen from the 2 possible specialization modules.

5. Semester

Course no.	Course title	LV-Typ	T	E	eLV	WSH	No. of groups	ASWS	ALVS	MODUL	ECTS
vzAIS	Semester Abroad: Individual and Social Skills	ILV			0 %	0	1	0	0	AIS	5
vzATE	Semester Abroad: Technology	ILV			0 %	0	1	0	0	ATE	15
vzAWM	Semester Abroad: Economics & Management	ILV			0 %	0	1	0	0	AWM	10
Total line:						0		0	0		30
Course hours = Total WSH x course weeks						0					

6. Semester

Course no.	Course title	LV-Typ	T	E	eLV	WSH	No. of groups	ASWS	ALVS	MODUL	ECTS
vzBAS1	Bachelor Thesis Seminar 2:	SE			0 %	0.5	1	0.5	7.5	BAS	10
vzBPR	Internship	PT			0 %	0	1	0	0	BRP	20
Total line:						0.5		0.5	7.5		30
Course hours = Total WSH x course weeks						7.5					

Abbreviations	
eLV	E-learning proportion of course in percent
E	Lecture in English language
ECTS	ECTS – Credit points
LV	Course
LVS	Course hour(s)
WSH	Weekly semester hour(s)
T	Lecture with technical background
WP	Elective subject

Summary curriculum data

Description	WSH	ASWS	ALVS	ECTS
Total number of courses over all semesters	81.5	119.5	1792.5	180
Total number of courses in 1st year of study	41.5	63.5	952.5	60
Total number of courses in 2nd year of study	39.5	55.5	832.5	60
Total number of courses in 3rd year of study	0.5	0.5	7.5	60
Total number of technical events over all semesters	51			78
Percentage of technical courses over all semesters based on WSH / ECTS	62.58 %			43.33 %*
Total number of courses in English over all semesters	15.5			21.5
Proportion of courses in English over all semesters based on WSH / ECTS	21.38 %			12.8 %
Proportion of eLearning units over all semesters based on WSH / ECTS	15.52 %			10.47 %

* 51,5% with consideration of the technical part in the 5th semester (abroad)

2.3 Modularization

The course program is divided into 18 coordinated modules. The following abbreviations are used for the following module descriptions. These are also included in the names of the individual courses.

Module designations	**Competence areas** (*Number of ECTS and % of total volume)	
1. Formal Sciences (FWW)		Technical competence (total 93 ECTS or 51,5 %*)
2. Engineering Sciences (ING)		
3. Electrical Engineering (ELT)		
4. Mechanical Engineering (MAB)		
5. Information Technology (INF)		
6. Product & Production Fundamentals (GPP)		
7. Semester Abroad Engineering (ATE)		
8. Economics (WIR)		Business and Management Competence (total 31 ECTS or 17%*)
9. Management (MGM)		
10. Semester Abroad Economics & Management (AWM)		
11. Product Development (PEE)		Product Development Competence (total 9 ECTS or 5%*)
12. Organization & Management (OMT)		Organization & Management in Production Competence (total 9 ECTS or 5%*)
13. Practical Projects (PRA)		Practical Transfer Competence (total 38 ECTS or 21%*)
14. Bachelor Thesis and Bachelor Thesis Seminar (BAS)		
15. Internship (BPR)		
16. Languages (SPR)		Competence in Personal and Social Skills (total 22.5 ECTS or 13%*)
17. Individual, Social and Methodological Competence (ISK)		
18. Semester abroad Individual and Social Skills (AIS)		

Module number:	**Management**	**Scope:**	
MGM		**8.5**	**ECTS**
Degree program	University of Applied Sciences Bachelor's Program Industrial Engineering & Management full-time		
Position in the curriculum	2. Semester 4. Semester		
Level	2. Semester: First cycle, Bachelor / 4. Semester: First cycle, Bachelor		
Previous knowledge	2. Semester: not applicable / 4. Semester: not applicable		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	Innovation Management & Product Development (E) /ILV / LV-Nr: vzMGM4 / 4.Semester / ECTS: 3 • Anthony, et al. (2008): The Innovator's guide to growth, Harvard Business Press • Anthony (2012): The little black book of innovation, Harvard Business School Publishing • Corsten, et al. (2006): Grundlagen des Innovationsmanagements, Vahlen Verlag München • Hauschildt, Salomo (2007): Innovationsmanagement, 4. Aufl., Vahlen Verlag München • Morgan, Liker (2006): The Toyota Product Development System: Integrating People, Process and Technology, Productivity Press • Scheer, et al. (2005): Prozessorientiertes Product Lifecycle Management, Springer Verlag Berlin • Gudehus (2012): Logistik 1: Grundlagen, Verfahren und Strategien, 4. Aufl., Springer Verlag Berlin • Gudehus (2012): Logistik 2: Netzwerke, Systeme und Lieferketten, 4. Aufl., Springer Verlag Berlin • Ehrlenspiel, Meerkamm (2013): Integrierte Produktentwicklung: Denkabläufe, Methodeneinsatz, Zusammenarbeit, 5. Aufl., Carl Hanser Verlag München • Lindemann (2009): Methodische Entwicklung technischer Produkte: Methoden flexibel und situationsgerecht anwenden, 3. Aufl., Springer Verlag Berlin • Conrad (2005): Grundlagen der Konstruktionslehre: Methoden und Beispiele für den Maschinenbau, 3. Aufl., Carl Hanser Verlag München Marketing and Sales (E) /ILV / LV-Nr: vzMGM2 / 4.Semester / ECTS: 2 • Kotler, Armstrong, Wong, Saunders (2010): Grundlagen des Marketing (Fundamentals of Marketing), 5th edition, Pearson Education • Kotler, Keller, Bliemel (2007): Marketing-Management, Strategien für wertschaf-fendes Handeln, 12th edition, Pearson Education • Homburg (2012): Marketingmanagement: Strategie-Instrumente-Umsetzung- Unternehmensführung, 4th Edition, Springer Gabler Publisher Wiesbaden • Meffert, Burmann, Kirchgeorg: Marketing, Grundlagen marktorientierter Unternehmensführung. Konzepte – Instrumente - Praxisbeispiele, 11th Edition, Springer Gabler Publisher Wiesbaden • Sander (2011): Marketing-Management: Märkte, Marktinformationen und Markt-bearbeitung, 2nd edition, UTB Stuttgart Project Management /ILV / LV-Nr: vzMGM2 / 2.Semester / ECTS: 1.5 • Gareis (2005): Happy Projects!: Project and programme management. Project portfolio management. Management of the project-oriented organization. Management in the project-oriented society, 1. Aufl., MANZ Verlag Wien • Patzak, Rattay (2014): Projektmanagement: Leitfaden zum Management von Projekten, Projektportfolios und projektorientierten Unternehmen, 6. Aufl., Linde Verlag Wien Supply Chain Management (E) /ILV / LV-Nr: vzMGM3 / 4.Semester / ECTS: 2 • Gudehus (2012): Logistics 1: Grundlagen, Verfahren und Strategien, 4th Edition, Springer Verlag Berlin • Gudehus (2012): Logistics 2: Netzwerke, Systeme und Lieferketten, 4th Edition, Springer Verlag Berlin • Cohen, Roussel (2006): Strategisches Supply Chain Management, 1st edition, Springer Verlag Berlin • Kummer, Grün, Jammernegg (2013): Grundzüge der Beschaffung, Produktion und Logistik, 3rd edition, Pearson • Pfohl (2010): Logistiksysteme: Betriebswirtschaftliche Grundlagen, 8th Edition, Springer Verlag Berlin • Erlach(2010): Wertstromdesign: Der Weg zur schlanken Fabrik, 2nd Edition, Springer Verlag Berlin		
Acquisition of skills	Innovation Management & Product Development (E) /ILV / LV-Nr: vzMGM4 / 4.Semester / ECTS: 3 The students are able to: • Determine the innovation needs of a company and develop an innovation strategy. • Structure the innovation needs and define suitable processes with methods for further processing. • Apply creativity methods. • Analyze the most important framework conditions for product development and define requirements for the product development process. • Design product development processes in line with the requirements. • Apply product development methods		

	Marketing and Sales (E) /ILV / LV-Nr: vzMGM2 / 4.Semester / ECTS: 2 The students are able to: • Identify market-oriented management. • Develop marketing concepts or a marketing plan based on an identified problem. • Apply instruments of the marketing mix. • Present basic market research methods.

Acquisition of skills	Project Management /ILV / LV-Nr: vzMGM2 / 2.Semester / ECTS: 1.5 The students are able to: • Understand the importance of project management for a company. • Describe generic project phases and project results. • Use methods to define project goals, define project scope and plan tasks, duration and resource requirements. • Identify roles and participants in a project. • Understand the importance of communication in projects. • Apply methods to manage projects. • Understand the reasons for the failure of projects and the corresponding measures. • Understand the difference between single and multi-project management.
	Supply Chain Management (E) /ILV / LV-Nr: vzMGM3 / 4.Semester / ECTS: 2 Students are able to: - identify remits and contents of logistics. - explain the meaning of processing time and stock. - identify key figures to measure the logistics performance, logistics costs and flexibility. - describe concepts, their potential use and their advantages / disadvantages and limits. - define targets based on key requirements and select adequate concepts for them. - work on basic tasks of logistics on their own.
Course contents	Innovation Management & Product Development (E) /ILV / LV-Nr: vzMGM4 / 4.Semester / ECTS: 3 • Strategic relevance of innovation (competitiveness) • Structured handling of innovations (innovation-promoting organizational forms, corporate culture, management forms) • Importance of product development for companies • Scope and integration of product development in companies • Design forms of the product development process and organizational forms • Approaches in product development with regard to concept, concept and elaboration such as functional analysis, QFD, specification, FMEA, concept evaluation (quality approaches) and production transition • Variant management and approaches for the representation of external complexity • Management of target costs
	Marketing and Sales (E) /ILV / LV-Nr: vzMGM2 / 4.Semester / ECTS: 2 • Importance and tasks of marketing in the 21st century • Fundamentals of capital goods, consumer goods and services marketing • Marketing plan • Market research • Market segmentation/positioning • Strategic marketing • Marketing mix
	Project Management /ILV / LV-Nr: vzMGM2 / 2.Semester / ECTS: 1.5 • Presentation of the specifics of the project organization and the organizational integration into, impact on, or resulting problems in companies. • Imparting basic project management methods, such as • Planning of goals, structure, time, costs and organization • Performing environment, risk and interdependency analyses or project controlling/communication in the various phases of projects (start, implementation/controlling, conclusion) on the basis of a selected project management standard. • Addressing the relevant social skills for successful project work and the mediation of successful practical projects and typical pitfalls. • Classification of the terms project management, program management and multi-project management.
	Supply Chain Management (E) /ILV / LV-Nr: vzMGM3 / 4.Semester / ECTS: 2 The course aims to introduce the subject of logistics, the scope, areas and value of which cover the globalized and networked economy on a strategic and operational level. • Goals and conflicting goals in logistics against the background of the following framework conditions • Levels of logistics (functional service function, coordination, flow rationing, supply chain) • Storage/warehousing • Demand planning • Internal and external transport • ABC/XYZ analysis • Approaches like Kanban, JIT/JIS, value stream analysis • Order picking • Types of order control • Procurement, production, distribution and disposal logistics • Supply chain management • Procurement, production, distribution and disposal logistics • Supply chain management

Teaching and learning methods	Innovation Management & Product Development (E) /ILV / LV-Nr: vzMGM4 / 4.Semester / ECTS: 3 integrated Lecture
	Marketing and Sales (E) /ILV / LV-Nr: vzMGM2 / 4.Semester / ECTS: 2 Integrated course

Teaching and learning methods	Project Management /ILV / LV-Nr: vzMGM2 / 2.Semester / ECTS: 1.5 Lecture
	Supply Chain Management (E) /ILV / LV-Nr: vzMGM3 / 4.Semester / ECTS: 2 Lecture
Evaluation Methods Criteria	Innovation Management & Product Development (E) /ILV / LV-Nr: vzMGM4 / 4.Semester / ECTS: 3 Final presentation and final exam
	Marketing and Sales (E) /ILV / LV-Nr: vzMGM2 / 4.Semester / ECTS: 2 final presentation and final written exam
	Project Management /ILV / LV-Nr: vzMGM2 / 2.Semester / ECTS: 1.5 Written exam
	Supply Chain Management (E) /ILV / LV-Nr: vzMGM3 / 4.Semester / ECTS: 2 final presentation and written exam

Module number:	**Practical Projects**	**Scope:**	
PRA		**8**	**ECTS**
Degree program	University of Applied Sciences Bachelor's Program Industrial Engineering & Management full-time		
Position in the curriculum	3. Semester		
	4. Semester		
Level	3. Semester: First cycle, Bachelor / 4. Semester: First cycle, Bachelor		
Previous knowledge	3. Semester: not applicable / 4. Semester: not applicable		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	Practical Project I /PT / LV-Nr: vzPRA1 / 3.Semester / ECTS: 4 In accordance with the specific task		
	Practical Project 2 /PT / LV-Nr: vzPRA2 / 4.Semester / ECTS: 4 In accordance with the specific task		
Acquisition of skills	Practical Project I /PT / LV-Nr: vzPRA1 / 3.Semester / ECTS: 4 The students are able to: • Carry out a project on the basis of professional project management. • Master the systematic, technically sound and on-schedule handling of projects. • Identify the specific roles within a project. • Assess the importance of project communication in all directions (conversations, documentation, descriptions, presentations) and act accordingly. • Use expertise to solve specific problems.		
	Practical Project 2 /PT / LV-Nr: vzPRA2 / 4.Semester / ECTS: 4 The students are able to: • Carry out a project on the basis of professional project management. • Master the systematic, technically sound and on-schedule handling of projects. • Identify the specific roles within a project. • Assess the importance of project communication in all directions (conversations, documentation, descriptions, presentations) and act accordingly. • Use expertise to solve specific problems.		
Course contents	Practical Project I /PT / LV-Nr: vzPRA1 / 3.Semester / ECTS: 4 To prepare the students optimally for problems in working life, practical tasks are worked on in groups, preferably on the basis of commissions from partners from industry or public institutions, or field experiences are obtained under the guidance of the course leader. The students contribute their acquired knowledge and compare it with observations and experiences in the context of the practical project. While students can deepen and improve their subject-specific competences, complementary competences such as social competence, risk management, budgeting competence and economically responsible decision-making competence are also solidified. Based on a client briefing (by the course instructor or external partners such as associations and companies), the students work on the presented projects independently, only guided by the course instructor if necessary: Planning, coordination, budgeting, control, evaluation and final reporting are in the hands of the students. The role of the course leader is focused on project coaching. Practical project I or II must process a technical topic		
	Practical Project 2 /PT / LV-Nr: vzPRA2 / 4.Semester / ECTS: 4 Building on the experience gained in the practical project I and on the further knowledge and skills acquired in specialist teaching events, the students have the opportunity to apply their acquired knowledge to real projects - above all, the competences in the area of project and quality management, as well as the subject-specific problem-solving competence, are to be consolidated and made applicable in this way. In cooperation with companies or other institutions, problems from the areas of the study course are dealt with within the framework of projects. The planning, implementation, budgeting and evaluation of the projects are carried out independently - both the formation of the project team and the implementation of quality management are carried out by the students themselves in order to promote decision-making competence and communicate real consequences. Practical project I or II must process a technical topic.		
Teaching and learning methods	Practical Project I /PT / LV-Nr: vzPRA1 / 3.Semester / ECTS: 4 Project work and presentation		
	Practical Project 2 /PT / LV-Nr: vzPRA2 / 4.Semester / ECTS: 4 Project work		
Evaluation Methods Criteria	Practical Project I /PT / LV-Nr: vzPRA1 / 3.Semester / ECTS: 4 Project report and presentation		

	Practical Project 2 /PT / LV-Nr: vzPRA2 / 4.Semester / ECTS: 4 Project documentation and presentation

Module number:	**Organisation & Management**	**Scope:**	
OMT		**9.0**	**ECTS**
Degree program	University of Applied Sciences Bachelor's Program Industrial Engineering & Management full-time		
Position in the curriculum	3. Semester		
	4. Semester		
Level	3. Semester: 3. Semester / 4. Semester: First cycle, Bachelor		
Previous knowledge	3. Semester: not applicable / 4. Semester: not applicable		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	Smart Factory Planning (WP)* /ILV / LV-Nr: vzOMT1 / 3.Semester / ECTS: 3 • Corsten, et al. (2006): Grundlagen des Innovationsmanagements, Vahlen Verlag München • Conrad (2005): Grundlagen der Konstruktionslehre: Methoden und Beispiele für den Maschinenbau, 3. Aufl., Carl Hanser Verlag München • Hauschildt, Salomo (2007): Innovationsmanagement, 4. Aufl., Vahlen Verlag München • Morgan, Liker (2006): The Toyota Product Development System: Integrating People, Process and Technology, Productivity Press • Scheer, et al. (2005): Prozessorientiertes Product Lifecycle Management, Springer Verlag Berlin • Sendler, Wawer (2007): CAD und PDM: Prozessoptimierung durch Integration, 2. Aufl., Carl Hanser Verlag München • Gassmann, O., & Sutter, P. (2016). Digitale Transformation im Unternehmen gestalten: Geschäftsmodelle, Erfolgsfaktoren, Handlungsanweisungen, Fallstudien. München: Carl Hanser Verlag. • Klasen, J. (2019). Business Transformation: Praxisorientierter Leitfaden zur erfolgreichen Neuausrichtung von Unternehmen und Geschäftsfeldern. Wiesbaden: Springer Verlag. • Tokarski, K. O., Schellinger, J., & Berchtold, P. (2019) (Hrsg.). Nachhaltige Unternehmensführung: Herausforderungen und Beispiele aus der Praxis. Wiesbaden: Springer Verlag		
	Information Systems in Production (WP) (WP)* /ILV / LV-Nr: vzOMT2 / 4.Semester / ECTS: 2.5 • Morgan, Liker (2006): The Toyota Product Development System: Integrating People, Process and Technology, Productivity Press • Scheer, et al. (2005): Prozessorientiertes Product Lifecycle Management, Springer Verlag Berlin • Sendler, Wawer (2007): CAD und PDM: Prozessoptimierung durch Integration, 2. Aufl., Carl Hanser Verlag München • • Engelharf, Magerhans (2022) Ecommerce klipp&klar, Ed.1, 2019, Springer Gabler Wiesbaden • Heinmannn (2020): B2B eCommerce Grundlagen, Geschäftsmodelle, und Best Practices, Springer, Gabler Verlag Wiesbaden • Deges (2019) Grundlagen des E-commerce, Springer Gabler Verlag Wiesbaden. • Hanlon, A. (2019). Digital marketing: Strategic planning & integration. London, UK: SAGE Publications. • Heinemann, G. (2019). Der neue Online-Handel: Geschäftsmodelle, Geschäftssysteme und Benchmarks im E-Commerce. Wiesbaden: Springer Verlag		
	Production Management (WP)(E) (WP)* /ILV / LV-Nr: vzOMT3 / 4.Semester / ECTS: 2 • Gummersbach, et al. (2012): Produktionsmanagement: Lehr- und Nachschlage-werk, 5. Aufl., Verlag Handwerk und Technik Hamburg • Schmid, et al. (2013): Produktionsorganisation: Qualitätsmanagement und Pro-duktpolitik, 8. Aufl., EUROPA Lehrmittelverlag Haan • Schuh, Schmidt (2014): Produktionsmanagement: Handbuch Produktion und Ma-nagement 5, 2. Aufl., Springer Vieweg Verlag Wiesbaden • Abele, Kluge (2010): Handbuch globale Produktion, 2. Aufl., Carl Hanser Verlag München • Brucker-Kley, Elke, (2018) Kundennutzen durch digitale Transformation- Business Model- Management Studie. Status quo und Erfolgsmuster, Cham Springer Nature • Urbach, Nils; Röglinger, Maximilian (Ed.): Digitalization Cases: How Organizations Rethink Their Business for the Digital Age. Springer (latest edition) • Heerwagen Silke et.al, (2023) Digitale Transformation wirksam gestalten, Handlungsimpulse für Strategie, Struktur, Führung und Kultur. Springer Fachmedien Wiesbaden • Maximini, D. (2022) Agile Leadership in Practice: Applying Management 3.0, Cham, Switzerland, Springer • Northhouse, P. G. (2018). Leadership: Theory and practice. Thousand Oaks, CA: SAGE Publications. Western, S. (2019). Leadership: A critical text. London, UK: SAGE Publications. Western, S., & Garcia, E.-J. (2018). Global leadership perspectives: Insights and analysis. London, UK: SAGE Publications		
	Trends in Production (WP)(E) (WP)* /VO / LV-Nr: vzOMT4 / 4.Semester / ECTS: 1.5 • depending on the trends in focus • Use of the "trend radar" instrument		
Acquisition of skills	Smart Factory Planning (WP)* /ILV / LV-Nr: vzOMT1 / 3.Semester / ECTS: 3		

	The students • Can differentiate machines and systems. • Can also design systems as a combination of machine groups, considering additional requirements such as conveyor systems and conveyor aids. • Can consider the special features of a system from the point of view of the interaction of components, service and assembly. • Can plan, clarify and design an entire plant and plant components or machine groups. Consider and document the respective work step (e.g. requirements determination, concept development, evaluation of solutions,

Acquisition of skills	design/design). Considering smart models and possibilities. • Can simulate smart factory layouts and use learning factories. • Develop a plant structured and according to standards and norms, considering collateral. • Be able to create a factory layout while optimizing routes and transport systems. • Know the basics of lean management.
	Information Systems in Production (WP) (WP)* /ILV / LV-Nr: vzOMT2 / 4.Semester / ECTS: 2.5 The students: • Able to analyze and structure business processes in production. • Identify actual data and interfaces can accommodate it. • Review best practices in production processes. • Can verify organizational forms and data in the system. • Can optimize processes through system support and apply modern methods (e.g. Lean, Kanban, ...) with system support. • Recognize interfaces internally and externally, can analyze and classify them. • Can capture data structures. • Can ensure quality requirements when introduced. • Know and analyze the necessary organizational requirements for successful e-business and the use of systems such as MES, ERP, PP. • Know sub-areas of e-business such as e-commerce, e-marketing, e-procurement
	Production Management (WP)(E) (WP)* /ILV / LV-Nr: vzOMT3 / 4.Semester / ECTS: 2 The students: • Analyze core processes in the production area and can evaluate their status. • By defining goals by means of suitable key figures and using methods/tools (QM approaches), they can track them. • Are able to derive measures against the background of the interconnectedness of the core processes and interpret their effects. • Know the difference between management and leadership with strategies and their tasks • Skills in management techniques (leadership methods and lean leadership). • Key performance indicator systems and management tools (e.g. scorecards, portfolio matrix, etc.). • The impact of digitalization on customers, competition, products and services. • Know the basics of the change in companies (structure, leadership, culture, etc.) that is triggered by digitalization. • Know the importance of the employee and tasks in HR management for manufacturing companies. • Know the essential strategic and operational measures for the analysis and implementation of entrepreneurial change processes.
	Trends in Production (WP)(E) (WP)* /VO / LV-Nr: vzOMT4 / 4.Semester / ECTS: 1.5 The students: • We know global trends in various industries and can qualify them. • Know what a trend matrix is and can evaluate it for trends. • Be able to comprehensively work out new trends and analyze their impact, e.g. on production. • Can describe actions related to trends. • Know the importance of sustainability for the entire company. • We know the possibilities of implementing sustainability in everyday life. • Can implement strategies and tools.
Course contents	Smart Factory Planning (WP)* /ILV / LV-Nr: vzOMT1 / 3.Semester / ECTS: 3 • Practical design exercises using practical examples, in particular for the design of factory units, conveyor systems, machines and systems. Elements of machine components and conveyors are particularly noteworthy for the interaction: • Business processes and their interaction (sales, purchasing, production, HR, finance, ..) and best practice processes • All elements that are also relevant for the connections and conveyor technology • Factory Optimization and layout supported by elements of digitalization and Industry 4.0. Above all, automated guided vehicles. • Agile factory methodologies and tools
	Information Systems in Production (WP) (WP)* /ILV / LV-Nr: vzOMT2 / 4.Semester / ECTS: 2.5

	• Best Practice Processes and KPIs for Production • Product Lifecycle Management • Production planning and control • Corporate Structures and Master Data Structures • Support by ERP (Enterprise Resource Planning) systems • Integration of SCM (Supply Chain Management) and CRM (Customer Relations Management) with production and MES systems • Support methods for optimizing production through information systems, including web applications and mobile devices • E-skills: e-marketing mix, e-procurement, e-commerce • Organizational requirements for digital and online processes • Analysis and optimization of processes and key figures in e-business • Use of appropriate tools and methods to gain insights and identify potential for improvement
	Production Management (WP)(E) (WP)* /ILV / LV-Nr: vzOMT3 / 4.Semester / ECTS: 2 • Core processes in the production area • Challenges in the production area against the background of existing market requirements • Levels of production management (strategic, tactical, operational) such as location decision, in-house/third-party production, order management, work system design, production planning and control (PPS), personnel management • Lean Management • Interaction between man and machine • Management of the production area with qualitative and quantitative approaches (OM approaches)

Course contents	• Definition and characteristics of leadership • Overview of Leadership Theories, Leadership: Performance; leadership success; leadership efficiency; Leadership Effectiveness • The implementation of leadership approaches in organizations will be discussed and reflected on the basis of case studies • Motivating work design (Job Rotation, Job Enlargement, Job Enrichment) • Modern working world and digitalization
	Trends in Production (WP)(E) (WP)* /VO / LV-Nr: vzOMT4 / 4.Semester / ECTS: 1.5 Current, influential trends will be presented and discussed in this course. This ensures that students have their finger on the pulse of the times with their respective specializations. • Best Practices and Impact of Global Requirements • Changes brought about by new integrated global networks, technological developments • Current organizational forms (e.g. hybrid, fluid) • New Work Models • Sustainability management • Circular economy
Teaching and learning methods	Smart Factory Planning (WP)* /ILV / LV-Nr: vzOMT1 / 3.Semester / ECTS: 3 Integrated course
	Information Systems in Production (WP) (WP)* /ILV / LV-Nr: vzOMT2 / 4.Semester / ECTS: 2.5 Integrated course
	Production Management (WP)(E) (WP)* /ILV / LV-Nr: vzOMT3 / 4.Semester / ECTS: 2 Integrated course
	Trends in Production (WP)(E) (WP)* /VO / LV-Nr: vzOMT4 / 4.Semester / ECTS: 1.5 Lecture
Evaluation Methods Criteria	Smart Factory Planning (WP)* /ILV / LV-Nr: vzOMT1 / 3.Semester / ECTS: 3 final presentation
	Information Systems in Production (WP) (WP)* /ILV / LV-Nr: vzOMT2 / 4.Semester / ECTS: 2.5 Project documentation and final presentation, final report
	Production Management (WP)(E) (WP)* /ILV / LV-Nr: vzOMT3 / 4.Semester / ECTS: 2 final presentation and written final exam
	Trends in Production (WP)(E) (WP)* /VO / LV-Nr: vzOMT4 / 4.Semester / ECTS: 1.5 final written Exam

Module number:	**Product Development**	**Scope:**	
PEE		**9.0**	**ECTS**
Degree program	University of Applied Sciences Bachelor's Program Industrial Engineering & Management full-time		
Position in the curriculum	3. Semester		
	4. Semester		
Level	3. Semester: 1. Study cycle, Bachelor / 4. Semester: 1.study cycle bachelor / 4. Semester: k.A		
Previous knowledge	3. Semester: not applicable / 4. Semester: not applicable		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	Design Project - Product Development (WP) (WP)* /ILV / LV-Nr: vzPEE1 / 3.Semester / ECTS: 3 * Corsten, et al. (2006): Grundlagen des Innovationsmanagements, Vahlen Verlag München * Conrad (2005): Grundlagen der Konstruktionslehre: Methoden und Beispiele für den Maschinenbau, 3. Aufl., Carl Hanser Verlag München * Dolmetsch (2011): Metalltechnik Fachbildung. Der Werkzeugbau, Taschenbuch, 15. Aufl., EUROPA Lehrmittelverlag Haan * Gebhardt (2007): Generative Fertigungsverfahren, 3. Aufl., Carl Hanser Verlag München * Hauschildt, Salomo (2007): Innovationsmanagement, 4. Aufl., Vahlen Verlag München * Hoenow, Meissner (2010): Entwerfen und Gestalten im Maschinenbau, Carl Han-ser Verlag München * Kief, Roschiwal (2009): CNC-Handbuch, Hanser Verlag München * Morgan, Liker (2006): The Toyota Product Development System: Integrating People, Process and Technology, Productivity Press * Scheer, et al. (2005): Prozessorientiertes Product Lifecycle Management, Springer Verlag Berlin * Sendler, Wawer (2007): CAD und PDM: Prozessoptimierung durch Integration, 2. Aufl., Carl Hanser Verlag München * Vogel, Ebel (2009): Pro/Engineer und Pro/Mechanica: Konstruieren und Berech-nen mit Wildfire 4, 5. Aufl., Carl Hanser Verlag München		
	Information Systems in Product Development (WP) (WP)* /ILV / LV-Nr: vzPEE2 / 4.Semester / ECTS: 2.5 • Sendler, Wawer (2011): Von PDM zu PLM, 3. Aufl., Carl Hanser Verlag München • Gudehus (2012): Logistik 1: Grundlagen, Verfahren und Strategien, 4. Aufl., Springer Verlag Berlin • Gudehus (2012): Logistik 2: Netzwerke, Systeme und Lieferketten, 4. Aufl., Springer Verlag Berlin • Morgan, Liker (2006): The Toyota Product Development System: Integrating People, Process and Technology, Productivity Press • Scheer, et al. (2005): Prozessorientiertes Product Lifecycle Management, Springer Verlag Berlin • Sendler, Wawer (2007): CAD und PDM: Prozessoptimierung durch Integration, 2. Aufl., Carl Hanser Verlag München • Gebhardt (2007): Generative Fertigungsverfahren, 3. Aufl., Carl Hanser Verlag München		
	R&D Management (WP)(E) (WP)* /ILV / LV-Nr: vzPEE3 / 4.Semester / ECTS: 2 - Hahn, Häusler, Große Austing (2013): Quantitatives Entwicklungsmanagement, Springer Verlag Berlin - Reinertsen (2009): The Principles of Product Development Flow: Second Generation Lean Product Development, Celeritas Publishing - Ries (2011): The Lean Startup: How Constant Innovation Creates Radically Successful Businesses, Portfolio Penguin - Brown, Tim: The Lean Startup: How Constant Innovation Creates Radically Successful Businesses - Reinertsen (1997): Managing the Design Factory, Free Press - McGrath (2004): Next Generation Product Development: How to Increase Productivity, Cut Costs, and Reduce Cycle Times, McGraw-Hill Education - Cooper (2002): Portfolio Management For New Products, 2. Aufl., Basic Books		
	Trends in R&D (WP)(E) (WP)* /VO / LV-Nr: vzPEE4 / 4.Semester / ECTS: 1.5 To determine depending on the established trend		
Acquisition of skills	Design Project - Product Development (WP) (WP)* /ILV / LV-Nr: vzPEE1 / 3.Semester / ECTS: 3		

	The students are able to: • Understand the fundamentals of the design process and be able to apply them. • Evaluate and analyze design methods. • Plan, clarify and design a product using the relevant • requirements analysis, concept development, evaluation of solutions and designs • Develop a product in a structured manner and according to standards and norms, taking safeguards into account. • Decide on and evaluate special features for individual and mass production, taking production, assembly and costs into account. • Create the complete documentation for a design (e.g. specifications, functional analysis, specifications, parts lists, technical drawing, assembly instructions, documentation).
	Information Systems in Product Development (WP) (WP)* /ILV / LV-Nr: vzPEE2 / 4.Semester / ECTS: 2.5 The students are able to: • Analyze and structure business processes of product development. • Record actual data and identify interfaces. • Check best practices. • Verify organizational forms and data in the system.

Acquisition of skills	• Optimize product development processes through system support and apply modern methods. • Evaluate and analyze product data and prepare it for transfer to production. • Classify the basic functions of production data management. • Identify interfaces to other systems (e.g. CAD, Office, assemblies, ...). • and analyze them. • Evaluate CAx (computer-aided) data. • Understand the introduction of a PDM system.
	R&D Management (WP)(E) (WP)* /ILV / LV-Nr: vzPEE3 / 4.Semester / ECTS: 2 The students are able to: • Analyze core processes in the development area and assess their status. • Define goals using suitable key figures and follow them up using methods and tools (QM approaches). • Derive measures against the background of networking core processes and interpret their effects.
	Trends in R&D (WP)(E) (WP)* /VO / LV-Nr: vzPEE4 / 4.Semester / ECTS: 1.5 The students are able to: • Identify current trends in development. • Describe the impact of these trends on development. • Recognize the current challenges of the market and implement them in product development. • Analyze current trends with regard to their impact on products and define measures. • Identify and derive new marketing opportunities for products and identify their impact on product development. • Define requirements for new products and develop concept proposals using methods learned.
Course contents	Design Project - Product Development (WP) (WP)* /ILV / LV-Nr: vzPEE1 / 3.Semester / ECTS: 3 Practical design and calculation exercises using practical examples, in particular for the design of simple connecting elements, axles and shafts, as well as sliding and rolling bearing technology, shaft-hub connections, couplings, belt drives and gear drives, elements for supporting, carrying machine components and torque transmission: • Functions and design rules as well as calculation bases for axes and shafts • Design fundamentals and calculation bases of hydrodynamic plain bearings • Bearing types, areas of application, bearing concepts and calculation bases for rolling bearings • Elements for sealing machine components • Elastic springs: Spring types, design rules and calculation bases for springs • Clutches and brakes: Design, functions, mode of operation and calculation bases of selected clutch and brake types • Belt drives: Design principles and calculation bases for flat and V-belt drives and timing belt drives • Gear drives: Gear types and design, gearing law, design and calculation bases for straight, helical, bevel and helical gears
	Information Systems in Product Development (WP) (WP)* /ILV / LV-Nr: vzPEE2 / 4.Semester / ECTS: 2.5 • Best practice processes and KPIs for product development • Authorization concept • Product lifecycle management • Product data management (PDM) - various systems • Interfaces CAD, PDM, PLM and ERP • Product development system, Windchill • Production planning and control • Support through ERP Enterprise resource planning systems • Special features of SCM Supply Chain Management during product development • Influence of customers on product development viewed under consideration of Customer Relation Management (CRM) • Effects of integration and networking on product development (smart products) • Application integration, long-term archiving
	R&D Management (WP)(E) (WP)* /ILV / LV-Nr: vzPEE3 / 4.Semester / ECTS: 2 • Core processes in the development area • Challenges in the development area against the background of existing market requirements • Levels of development management (strategic, tactical, operational) • Management of the development area with qualitative and quantitative approaches (Lean Engineering, Model Based System Engineering). QM etc.)
	Trends in R&D (WP)(E) (WP)* /VO / LV-Nr: vzPEE4 / 4.Semester / ECTS: 1.5 • Methods of structured development of products using modern tools • Product development process and effects on it through global requirements • Changes in the product development process through new integrated, global networks, technical developments (e.g. sensor technology, web, mobile devices, smart devices, ...) • State of the art methods of product development • Fundamentals of innovation in product development • Current, influential trends in product development are presented and discussed in this course. This ensures that the students have their finger on the pulse of the times with their respective specialization.
Teaching and learning methods	Design Project - Product Development (WP) (WP)* /ILV / LV-Nr: vzPEE1 / 3.Semester / ECTS: 3

	Integrated course
	Information Systems in Product Development (WP) (WP)* /ILV / LV-Nr: vzPEE2 / 4.Semester / ECTS: 2.5 integrated lecture

Teaching and learning methods	R&D Management (WP)(E) (WP)* /ILV / LV-Nr: vzPEE3 / 4.Semester / ECTS: 2 Integrated course
	Trends in R&D (WP)(E) (WP)* /VO / LV-Nr: vzPEE4 / 4.Semester / ECTS: 1.5 Lecture
Evaluation Methods Criteria	Design Project - Product Development (WP) (WP)* /ILV / LV-Nr: vzPEE1 / 3.Semester / ECTS: 3 final presentation
	Information Systems in Product Development (WP) (WP)* /ILV / LV-Nr: vzPEE2 / 4.Semester / ECTS: 2.5 Project documentation and final presentation, final report
	R&D Management (WP)(E) (WP)* /ILV / LV-Nr: vzPEE3 / 4.Semester / ECTS: 2 Final presentation and final exam
	Trends in R&D (WP)(E) (WP)* /VO / LV-Nr: vzPEE4 / 4.Semester / ECTS: 1.5 project documentation

Module number:	**Economics**	**Scope:**	
WIR		**12.5**	**ECTS**
Degree program	University of Applied Sciences Bachelor's Program Industrial Engineering & Management full-time		
Position in the curriculum	3. Semester		
	4. Semester		
Level	3. Semester: First cycle, Bachelor / 4. Semester: First cycle, Bachelor		
Previous knowledge	3. Semester: not applicable / 4. Semester: not applicable		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	Basic Accounting /ILV / LV-Nr: vzWIR2 / 3.Semester / ECTS: 4 • Coenenberg, et al. (2014): Jahresabschluss und Jahresabschlussanalyse: Aufgaben und Lösungen, 15th edition, Schäffer-Poeschel Verlag Stuttgart • Buchholz (2015): Internationale Rechnungslegung: Die wesentlichen Vorschriften nach IFRS und HGB, 12th edition, Erich Schmidt Verlag Berlin • Bähr, Fischer-Winkelmann, List (2006):Buchführung und Jahresabschluss, 9th edition, Gabler Verlag Wiesbaden • Coenenberg, et al. (2014): Jahresabschluss und Jahresabschlussanalyse: Betriebswirtschaftliche, handelsrechtliche, steuerrechtliche und internationale Grundlagen, 23rd edition, Schäffer-Poeschel Verlag Stuttgart • Döring, Buchholz (2013): Buchhaltung und Jahresabschluss, 13th edition, Erich Schmidt Verlag Berlin • German Commercial Code (HGB) in the latest version. • Küting, Weber (2015): Die Bilanzanalyse, 11th edition, Schäffer-Poeschel Verlag Stuttgart • Wöhe, Döring (2013): Einführung in die Allgemeine Betriebswirtschaftslehre, 25th edition, Vahlen Verlag Munich • Wöhe, Kußmaul (2015): Grundzüge der Buchführung und Bilanztechnik, 9th edition, Vahlen Verlag Munich		
	Fundamentals to Economics (E) /ILV / LV-Nr: vzWIR1 / 4.Semester / ECTS: 5 • Vahs, Schäfer-Kunz (2012): Einführung in die Betriebswirtschaftslehre, 6.Auflage, Schäffer-Poeschel Verlag Stuttgart • Mankiw (2012): Grundzüge der Volkswirtschaftslehre, 5. Aufl., Schäffer-Poeschel Verlag Stuttgart • Mankiw (2003): Makroökonomik, 5. Aufl., Schäffer-Poeschel Verlag Stuttgart • Blanchard (2008): Macroeconomics, 5. Aufl., Pearson Education • Pindyck, Rubinfeld (2012): Microeconomics, 8. Aufl., Pearson Education • Varian (2010): Intermediate Microeconomics, 8. Aufl., Norton & Company		
	Introduction to Law /VO / LV-Nr: vzWIR4 / 4.Semester / ECTS: 2 • Czernich, Hofstädter (2003): Vertragswissen leicht gemacht, Redline Wirtschaft Verlag München • Czernich, et al. (2011): Vertragsrecht für Unternehmen: Leitfaden zur sicheren Vertragsgestaltung, Linde Verlag Wien • Poduschka (2012): Vertragsrecht für jedermann, Verlag Österreich Wien • Mader (2014): Kapitalgesellschaften, 9. Aufl., LexisNexis Wien • Schummer (2013): Personengesellschaften, 8. Aufl., LexisNexis Wien • Haybäck (2014): Marken- und Immaterialgüterrecht, 4. Aufl., LexisNexis Wien • Borchardt (2011): Das ABC der Europäischen Union: Die Grundwerte der Europäischen Union, Dictus Publishing Saarbrücken • Internetplattformen: RIS (www.ris.bka.gv.at), EUR-Lex, gesetze-im-internet.de, internet4jurists.at, RDB (www.rdb.at)		
	Investment and Financing (E) /ILV / LV-Nr: vzWIR3 / 4.Semester / ECTS: 1.5 • Däumler, Grabe (2013).: Betriebliche Finanzwirtschaft, 10th edition, nwb Verlag Herne • Grill, Perczynski, Grill (2014): Wirtschaftslehre des Kreditwesens,Bildungsverlag Eins Troisdorf • Warnecke, et al. (1996): Wirtschaftlichkeitsrechnung für Ingenieure, 3rd Edition, Carl Hanser Publisher Munich • Däumler, Grabe (2014): Grundlagen der Investitions- und Wirtschaftlichkeitsrech-nung, nwb Verlag Herne • Kruschwitz (2011): Investitionsrechnung, 13th Edition, Oldenbourg Publishers Munich • Bestmann (2008): Kompendium der Betriebswirtschaftslehre, 11th ed., Oldenbourg Verlag Munich • Wöhe, Döring (2013): Einführung in die Allgemeine Betriebswirtschaftslehre, 25th edition, Vahlen Verlag Munich		
Acquisition of skills	Basic Accounting /ILV / LV-Nr: vzWIR2 / 3.Semester / ECTS: 4		

	The students are able to: External accounting: • Know the fundamentals of mapping business decisions in the accounting system. • Know and understand the basic concepts and subareas of accounting. • Understand the technology and internal structure of double-entry bookkeeping. • Can assess the structure of an accounting system and the characteristics of different types of accounts. • Make simple business postings to balance sheet and profit and loss accounts and create posting records. • Recognize the significant effects of business transactions on the balance sheet and income statement. Internal accounting: • Are familiar with the tasks and solutions of cost and revenue accounting with its subsystems (cost element, cost center and cost unit accounting).

Acquisition of skills	• Can differentiate between the terms payments - disbursements, income - expenses, income - expenses • Can describe the organizational structure of a cost accounting system and explain its main features. • Know the systems of cost accounting (partial and full cost accounting)
	Fundamentals to Economics (E) /ILV / LV-Nr: vzWIR1 / 4.Semester / ECTS: 5 The students are able to: Introduction to Business Administration component: • Identify the different business subareas • Understand the fundamentals of marketing • Understand the fundamentals of personnel management • Understand the structure of an enterprise and typical operational processes and they are familiar with the basic constitutive factors of an enterprise • Recognize relationships in the sense of the various relationships between the business functions • Clearly differentiate between central business terms • Identify the most important constitutional and functional corporate decisions Applied Economics component: • name the essential components of a market model and discuss the market equilibrium as an interaction of supply and demand. • identify the determinants of consumer demand and explain how they respond to external factors such as changes in income. • explain both the potentials and the limitations of market models based on real-world markets, for example the housing or labor market, and to buttress abstract models with real-life examples. • understand production decisions in companies and interpret the influences of market structures on price setting. • examine and critically evaluate current developments on the basis of models. • name the essential components and institutions of a national economy and explain how they function. • identify macroeconomic indicators such as gross domestic product or consumer price index and explain their meaning. • conduct independent research on indicators important for economic growth and inflation and to present current developments in this regard.
	Introduction to Law /VO / LV-Nr: vzWIR4 / 4.Semester / ECTS: 2 The students are able to: • Identify and classify legal problems (e.g. private, commercial, European law, etc.) in practice. • Find legal sources and research information independently. • Differentiate legal problems and be able to find a solution independently. • Analyze frequent problem cases from practice on the basis of concrete case studies. • Understand a legal topic independently and subsequently be able to explain it to others.
	Investment and Financing (E) /ILV / LV-Nr: vzWIR3 / 4.Semester / ECTS: 1.5 The students are able to: • Define the fundamentals of investment, financing and risk management and apply them in examples. • Calculate the financing requirements. • Describe the fundamentals of the lending business as well as the processing of loans and the risk limitation of credit institutions. • Assess investments from an economic point of view. • Apply the usual methods of investment calculation in everyday business.
Course contents	Basic Accounting /ILV / LV-Nr: vzWIR2 / 3.Semester / ECTS: 4 External accounting: • Structure of the accounting system • Fundamentals of operational accounting: Tasks, subareas and basic terms • Commercial accounting system: From inventory to opening balance sheet • Double-entry accounting system: Posting of business cases to balance sheet and profit and loss accounts • Organization of bookkeeping (chart of accounts, sales tax, etc.) • Principle of period specificity and accruals and deferrals Internal accounting: • Objectives and basic concepts of cost and revenue accounting • Fundamentals of cost and revenue accounting: Tasks, components and subareas • Structure of cost accounting (cost elements, cost centers, cost objects) • Contribution margin accounting
	Fundamentals to Economics (E) /ILV / LV-Nr: vzWIR1 / 4.Semester / ECTS: 5

	Introduction to Business Administration component: • Overview and context analysis of the most important subareas in business administration • Subject and fundamentals of business administration: • Operational functional areas • Business decision theory • Fundamentals of management and ethics • Fundamentals of personnel and organization • Marketing Fundamentals • Fundamentals of: • Constitutive company decisions such as legal forms, location decisions, types of mergers and acquisitions and choice of business segment. • Functional business decisions: Materials management, production management, marketing. • Fundamentals of business value creation processes and functions (value creation architecture and

Course contents	structure). • Fundamentals of market, process and strategy oriented management. Applied Economics component: • Economic thinking and marginal analysis • Efficient allocation of scarce resources • The market model and market equilibrium • Macroeconomic variables (GDP, inflation, and unemployment) and their interrelationships Selected macroeconomics issues: • Elasticity and welfare • Cost functions and optimal corporate production • Price setting and market structures • Short-term macroeconomic fluctuations: The business cycle • Money, the ECB, and inflation • Long-term economic growth • International relations and trade
	Introduction to Law /VO / LV-Nr: vzWIR4 / 4.Semester / ECTS: 2 • Fundamentals of law • History of law, significance of law, structure of the legal system, classification of law • General private law • Classification of private law, legal entities and legal objects, time, introduction to property law, legal transaction, contract law • Commercial law • Entrepreneur status, company register, forms of enterprise, establishment of an enterprise • European law • EU institutions, EU legal sources, fundamental freedoms of the internal market • Technology law • CE marking, intellectual property (IP) law • Access to legal information systems
	Investment and Financing (E) /ILV / LV-Nr: vzWIR3 / 4.Semester / ECTS: 1.5 • Introduction to financial management • Economic business processes (investment, financing and risk management) • Differences in financing needs for: Enterprises, public budgets and private budgets • Structure and legal basis of the credit business of credit institutions • Supply of credit to the credit markets • The European Central Bank • Execution and processing of credit transactions, e.g. credit types • Company assessment and analysis • Collateral, credit agreement and credit decisions • Introduction to investment calculation • Goals and tasks of a modern investment calculation • Fundamentals of business investment decisions • Static methods of investment calculation • Dynamic methods of investment calculation
Teaching and learning methods	Basic Accounting /ILV / LV-Nr: vzWIR2 / 3.Semester / ECTS: 4 Integrated course
	Fundamentals to Economics (E) /ILV / LV-Nr: vzWIR1 / 4.Semester / ECTS: 5 integrated Lecture
	Introduction to Law /VO / LV-Nr: vzWIR4 / 4.Semester / ECTS: 2 Lecture
	Investment and Financing (E) /ILV / LV-Nr: vzWIR3 / 4.Semester / ECTS: 1.5 Integrated course
Evaluation Methods Criteria	Basic Accounting /ILV / LV-Nr: vzWIR2 / 3.Semester / ECTS: 4 Final written Exam
	Fundamentals to Economics (E) /ILV / LV-Nr: vzWIR1 / 4.Semester / ECTS: 5 Final written Exam
	Introduction to Law /VO / LV-Nr: vzWIR4 / 4.Semester / ECTS: 2 Application, project work or written exam
	Investment and Financing (E) /ILV / LV-Nr: vzWIR3 / 4.Semester / ECTS: 1.5 final written Exam

Module number:	**Semester Abroad Individual and Social Skills**	**Scope:**	
AIS		**5**	**ECTS**
Degree program	University of Applied Sciences Bachelor's Program Industrial Engineering & Management full-time		
Position in the curriculum	5. Semester		
Level	5. Semester: First cycle, Bachelor		
Previous knowledge	5. Semester: not applicable		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	Semester Abroad: Individual and Social Skills /ILV / LV-Nr: vzAIS / 5.Semester / ECTS: 5 Depending on selected course		
Acquisition of skills	Semester Abroad: Individual and Social Skills /ILV / LV-Nr: vzAIS / 5.Semester / ECTS: 5 The students practice the acquisition of knowledge during the semester abroad at a partner university. They deepen their individual and social competence in a foreign language, thereby enhancing their language skills (technical vocabulary).		
Course contents	Semester Abroad: Individual and Social Skills /ILV / LV-Nr: vzAIS / 5.Semester / ECTS: 5 Consolidation through courses such as Business Communication, Negotiation and Conflict Resolution, International Business Communication, Bargaining Behavior.		
Teaching and learning methods	Semester Abroad: Individual and Social Skills /ILV / LV-Nr: vzAIS / 5.Semester / ECTS: 5 The teaching and learning methods are based on the curricula or specifications of the partner universities concerned.		
Evaluation Methods Criteria	Semester Abroad: Individual and Social Skills /ILV / LV-Nr: vzAIS / 5.Semester / ECTS: 5 The evaluation methods and evaluation criteria are based on the curricula or specifications of the partner universities concerned.		

Module number:	**Semester Abroad Engineering**	**Scope:**	
ATE		**15**	**ECTS**
Degree program	University of Applied Sciences Bachelor's Program Industrial Engineering & Management full-time		
Position in the curriculum	5. Semester		
Level	5. Semester: First cycle, Bachelor		
Previous knowledge	5. Semester: not applicable		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	Semester Abroad: Technology /ILV / LV-Nr: vzATE / 5.Semester / ECTS: 15 Depending on the subject focus of the respective elective subjects		
Acquisition of skills	Semester Abroad: Technology /ILV / LV-Nr: vzATE / 5.Semester / ECTS: 15 The students practice the acquisition of knowledge during the semester abroad at a partner university. They deepen their individual and social competence in a foreign language, thereby enhancing their language skills (technical vocabulary).		
Course contents	Semester Abroad: Technology /ILV / LV-Nr: vzATE / 5.Semester / ECTS: 15 Consolidation through courses in the following two areas: 1. Higher engineering science (e.g. fluid mechanics, heat transfer, machine dynamics, multi-body dynamics, modelling and simulation, higher strength, quality assurance, corrosion and corrosion protection, composite materials, welding, metrology, forming technology, foundry technology, joining technology, etc.) 2. Product development (e.g. mechatronic systems, internal combustion engines, drive and control technology, thermal turbomachinery, hydraulic fluid machines, robotics, plant simulation, etc.)		
Teaching and learning methods	Semester Abroad: Technology /ILV / LV-Nr: vzATE / 5.Semester / ECTS: 15 Depending on selected courses		
Evaluation Methods Criteria	Semester Abroad: Technology /ILV / LV-Nr: vzATE / 5.Semester / ECTS: 15 Depending on selected courses		

Module number:	**Semester Abroad Economics & Management**	**Scope:**	
AWM		**10**	**ECTS**
Degree program	University of Applied Sciences Bachelor's Program Industrial Engineering & Management full-time		
Position in the curriculum	5. Semester		
Level	5. Semester: First cycle, Bachelor		
Previous knowledge	5. Semester: not applicable		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	Semester Abroad: Economics & Management /ILV / LV-Nr: vzAWM / 5.Semester / ECTS: 10 Depending on selected courses		
Acquisition of skills	Semester Abroad: Economics & Management /ILV / LV-Nr: vzAWM / 5.Semester / ECTS: 10 The students practice the acquisition of knowledge during the semester abroad at a partner university. They deepen their individual and social competence in a foreign language, thereby enhancing their language skills (technical vocabulary).		
Course contents	Semester Abroad: Economics & Management /ILV / LV-Nr: vzAWM / 5.Semester / ECTS: 10 Consolidation through courses in the following three areas: 1. Management (e.g. Strategic Management, Competitive Strategies, Management of Multinational Corporations, Organizational Theory, Corporate Behavior, Corporate Culture, Knowledge Management, Management of Innovations, Business Ethics, Corporate Governance, Managerial Decision Behavior, HRM, Leadership, Quality, etc.) 2. Marketing/Sales (e.g. Advanced Marketing Management, Consumer Behavior, Customer Service Excellence, Global Marketing, Sales Management, Sales Techniques etc.) 3. Accounting/Finance/Controlling/Purchasing (e.g. Financial Management, Portfolio Management, Options and Futures, International Finance, Global buying, Buying, E-Procurement etc.) 4. Law (e.g. patent law, product labelling, product liability, etc.)		
Teaching and learning methods	Semester Abroad: Economics & Management /ILV / LV-Nr: vzAWM / 5.Semester / ECTS: 10 Depending on selected courses		
Evaluation Methods Criteria	Semester Abroad: Economics & Management /ILV / LV-Nr: vzAWM / 5.Semester / ECTS: 10 Depending on selected courses		

Module number:	**Bachelor Thesis and Bachelor Thesis Seminar**	**Scope:**	
BAS		**10**	**ECTS**
Degree program	University of Applied Sciences Bachelor's Program Industrial Engineering & Management full-time		
Position in the curriculum	6. Semester		
Level	6. Semester: First cycle, Bachelor		
Previous knowledge	6. Semester: not applicable		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	Bachelor Thesis Seminar 2: /SE / LV-Nr: vzBAS1 / 6.Semester / ECTS: 10 - Sandberg (2013): Wissenschaftliches Arbeiten von Abbildung bis Zitat, 2. Aufl., Oldenbourg Verlag München - Bänsch (2003): Wissenschaftliches Arbeiten: Seminar- und Diplomarbeiten, 8.Aufl., Oldenbourg Verlag München - Chalmers (2007): Wege der Wissenschaft: Einführung in die wissenschaftstheorie, 6. Aufl., Springer Verlag Berlin - Eco (2010): Wie man eine wissenschaftliche Abschlussarbeit schreibt, 13. Aufl., UTB Facultas Universitätsverlag Stuttgart - Karmasin, Ribing (2010): Die Gestaltung wissenschaftlicher Arbeiten, 5. Aufl., UTB Facultas Universitätsverlag Stuttgart - Leopold-Wildburger, Schütz (2010): Verfassen und Vortragen: Wissenschaftliche Arbeiten und Vorträge leicht gemacht, 2. Aufl., Springer Verlag Berlin - Rössl (Hg.) (2008): Die Diplomarbeit in der Betriebswirtschaftslehre: Ein Leitfaden zur Erstellung einer Laureatsarbeit, Bachelorarbeit, Diplomarbeit, Masterarbeit, Dissertation, 4. Auflage, Facultas WUV Universtiätsverlag Wien		
Acquisition of skills	Bachelor Thesis Seminar 2: /SE / LV-Nr: vzBAS1 / 6.Semester / ECTS: 10 The students are able to: Scientifically prepare a topic from the faculty of industrial engineering and to develop a central question independently. The students' self-organization and time management skills are encouraged. The students learn the ability to apply theoretical knowledge from their studies in the Bachelor theses. The students have analytical and academic reflection skills for company-specific problems. They also learn how to present academic papers to a research community. Self-organization		
Course contents	Bachelor Thesis Seminar 2: /SE / LV-Nr: vzBAS1 / 6.Semester / ECTS: 10 • Writing an outline for the Bachelor thesis • Setting up the structure for the Bachelor thesis • Research of relevant literature for the selected topic of the Bachelor thesis (physical and digital literature search) • Development and implementation of a research design • Writing an academically oriented Bachelor thesis		
Teaching and learning methods	Bachelor Thesis Seminar 2: /SE / LV-Nr: vzBAS1 / 6.Semester / ECTS: 10 Seminar		
Evaluation Methods Criteria	Bachelor Thesis Seminar 2: /SE / LV-Nr: vzBAS1 / 6.Semester / ECTS: 10 Bachelor thesis		

Module number:	**Internship**	**Scope:**	
BRP		**20**	**ECTS**
Degree program	University of Applied Sciences Bachelor's Program Industrial Engineering & Management full-time		
Position in the curriculum	6. Semester		
Level	6. Semester: First cycle, Bachelor		
Previous knowledge	6. Semester: not applicable		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	Internship /PT / LV-Nr: vzBPR / 6.Semester / ECTS: 20 Brenner, D. (2007): Schön, dass Sie da sind!: Karrierestart nach dem Studium, BW Verlag Nürnberg		
Acquisition of skills	Internship /PT / LV-Nr: vzBPR / 6.Semester / ECTS: 20 The students are able to: • Apply their acquired knowledge in professional practice. • Understand processes in the professional environment. • Solve problems and implement solutions within the framework of professional projects (practical competence). • Work out and further develop arguments, problem solutions and strategies independently (problem solving competence). • Deepen, further develop and profitably implement the knowledge of communication with superiors, employees and colleagues (social competence).		
Course contents	Internship /PT / LV-Nr: vzBPR / 6.Semester / ECTS: 20 • Supplementing the theoretical knowledge of the students with practical activities and questions of commercial law in practice. • At least 600 working hours at an external company with full employment. • The internship ensures that the students navigate their way into their professional life and gain confidence in the implementation of their acquired knowledge through the experience they have already gained. • Processes, workflows and situations in the professional environment should be learned and understood. • Support of the students during their internship: Reflection, discussion of problems and success stories.		
Teaching and learning methods	Internship /PT / LV-Nr: vzBPR / 6.Semester / ECTS: 20 Internship		
Evaluation Methods Criteria	Internship /PT / LV-Nr: vzBPR / 6.Semester / ECTS: 20 final report		

2.4 Internship

The students choose an internship independently. They can draw on the extensive range of internship advertisements offered by the Kufstein University of Applied Sciences. The Director of Studies checks the professional correspondence of the internship activities with the contents of the course and the qualification profiles of the course of studies. Subsequently, the Director of Studies checks whether the internship corresponds to the training objectives of the program and whether the student can be employed according to his/her level of qualification. If these requirements are met, the organizational processing is carried out by the International Relations Office (IRO). A detailed internship guide supports students in organizing their internship semester; students can also contact the IRO and the Director of Studies if they have any questions or need support.

Students must apply for the internship using the form (= job description). The form contains the central data of the student and the internship supervision as well as the goals and the tasks/activities in the company providing the internship. The internship is confirmed or approved by the signatures of the Director of Studies and the internship supervisor.

The student must reflect, document and present the experiences and findings gathered and evaluate the internship. Conversely, the internship supervisor must evaluate the students. The student must prepare an interim report, a final report and a presentation and complete an evaluation form. At the beginning of the internship, he/she will receive an internship guide which lists the points to be worked on. A key requirement is to compare the agreed objectives with the achieved ones. The documentation prepared by the student and the supervisor is evaluated by the Director of Studies. If the achievement of the goals and the adaptation to the qualification level of the student are not guaranteed, the corresponding internship position is excluded for the future. A list and reports on the internships are available to subsequent students via the Moodle teaching platform.

2.5 Semester Abroad

The students complete a "semester abroad" in the 5th semester at a partner university of the Kufstein University of Applied Sciences. A total workload of 30 ECTS must be demonstrated at the partner university in question.

In the course of preparation for their studies abroad, students of the Industrial Engineering and Management degree program are given selected institutions which are particularly suitable for the degree program. The list of institutions is based on many years of historical experience. Care is taken to ensure that the institutions offer sufficient technical subjects.

This ensures that students are given an in-depth knowledge of the relevant subjects so that the desired competences can be developed. Intercultural and linguistic competences, which are highly relevant in practice, are also developed during the studies abroad. Students are also encouraged to organize most of their stay abroad independently (e.g. search for accommodation, registration with the partner university, obtaining the necessary documents for registration and travel to the country in question, etc.).

The allocation of the study places themselves takes place in the ranking order of the grade average. First, the first preference is assigned to the student with the lowest average grade. Subsequently by the

student with the second lowest grade average etc. If the first preference of a student cannot be assigned (because it is already occupied by a student with a lower grade average), the second preference is assigned. If this preference has already been assigned, the third preference is assigned. If this is also already assigned, this student will be placed in a second round.

The International Relations Office (IRO) is available for all information, questions and concerns relating to studying abroad; agreements are made in agreement with the Director of Studies (STGL).

3 ADMISSION REQUIREMENTS

The admission requirements at the FH Kufstein Tirol are regulated according to the following terms:

1. The general admission requirements are regulated by § 4 FHG as amended; it applies to **persons with a general university entrance qualification**.

2. **Persons without a school-leaving certificate** must take a **university entrance examination** according to § 64 a UG 2002 as amended. These persons acquire the general university entrance qualification for Bachelor studies in a specialization group by passing the university entrance examination in accordance with an ordinance issued by the Rector's Office of a University. The successful completion of the university entrance examination thus entitles the holder to admission to all studies in the specialization group for which the university entrance qualification was acquired. The university entrance examination can be obtained for certain groups of subjects in accordance with an ordinance of the Rector's Office of a university, whereby the following group of subjects is relevant for the FH Kufstein:
Social and economic studies (e.g. Business Administration, Economic Education, Statistics, Sociology).

Applicants who have completed a 3-year **vocational, middle school**, a **training in the dual system** or a **subject-relevant German advanced technical college certificate** obtain the entitlement to study at the FH Kufstein Tirol through additional examinations in the subjects German, English and Mathematics. In the case of the German advanced technical college certificate, the additional examination must only be taken in those of the three subjects in which the grade is "inadequate" or worse. All additional examinations must be passed before the start of the third semester.

3. For **individuals with relevant dual training** the **apprenticeship certificate** in one of the following **special fields** according to the respectively valid announcement of the Federal Ministry of Economics, Family and Youth is valid as an admission requirement:
- Construction and building services
- Office, Administration, Organization
- Chemistry and Plastics
- Electrical Engineering, Electronics
- Trade
- Information and Communication Technology
- Metal Technology and Mechanical Engineering
- Media Design and Photography
- Paper Production, Paper Processing, Printing
- Transport and Storage

4. **Persons with a degree** from one of the relevant **vocational middle schools** listed below may also be admitted:
• Commercial, technical and arts and crafts colleges
• Vocational schools for economic professions
• Secondary school for economic professions
• Secondary school for technical professions
• Commercial schools

Newly emerging apprenticeships in similar fields must be recognized accordingly.

The **group of persons under numbers 3. and 4.** must complete **additional examinations** by the beginning of the third semester as an entry requirement and, if necessary, take appropriate preparatory courses. This is possible at the FH Kufstein.

The following additional examinations are required for this group of people:

- German
- English
- Mathematics

Below is an overview of which subject area of the German FOS/BOS is the relevant admission requirement. Here, additional examinations must be taken within the first semesters in the subjects Mathematics, German and English (if a grade of "poor" or worse was achieved in these subjects).

	WING Bvz
FOS	
- Technology	X
- Economics & Administration	X
- Social Welfare	X
- Agriculture, Biotechnology and Environmental Technology	X
- Design	X
- Health	X
- International Business Studies	X
BOS	
- Technology	X
- Economics & Administration	X
- Social Welfare	X
- Agriculture, Biotechnology and Environmental Technology	X
- Health	X
- International Business Studies	X
In the case of relevant internships (marketing, trade, administration), other disciplines can also be accepted (after consultation with the Director of Studies).	