

Study regulations of the Bachelor's course

Coding & Digital Design

To obtain the academic degree

Bachelor of Science in Engineering
abbreviated BSc

as an appendix to the statutes of the
HOK | University of Applied Sciences Kufstein Tirol

Organizational form: full-time

Duration: 6 semesters

Scope: 180 ECTS

Places for beginners per academic year: 30 full-time

Version 1

Adopted by the Faculty on May 6, 2026

Program starts WS 2027/28

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1 OCCUPATIONAL PROFILES

1.1 Career opportunities

Graduates of the Bachelor's program in Coding & Digital Design can generally work in any industry involved in the design, development, and operation of web-based and mobile software systems. However, thanks to their broad education, graduates are in particularly high demand in the following core fields:

- IT services in the field of web-based systems
- IT services in the field of mobile systems
- IT services in the field of full-stack development
- Management consulting in the context of web-based and mobile systems
- Services in the areas of web business, e-marketing, e-commerce, e-tourism, etc.

Due to the growing importance of digital products and services and the resulting increase in demand for skilled professionals, graduates can pursue careers in a wide variety of institutions and types of companies. These include both large corporations operating nationally and internationally, as well as small and medium-sized enterprises and organizations in the government and NGO sectors. Key characteristics of these professional fields include:

1. A **solid understanding of the technical foundations, methods, and tools** involved in developing web-based and mobile systems.
2. A **high degree of flexibility in applying these methods and tools** across the entire spectrum from technology to application.

Below are some examples of typical career profiles. These profiles deliberately cover a very broad spectrum to illustrate that graduates of the bachelor's program can establish themselves in very different fields depending on their specialization and prior experience. The bachelor's program itself provides a solid education tailored to the competency requirements listed below.

Job Profile: Software Architect

Software architects design applications in close collaboration with the users of these applications (e.g., end-users) and oversee the application's development process. Their scope of work ranges from analysis and design to project and requirements management. Specific tasks include:

- Documenting functional and non-functional requirements
- Modeling relationships
- Communicating with an application's stakeholders
- Taking on project management responsibilities in the development project
- Designing a data architecture

Job Description: Software Developer

Software developers create new applications in close collaboration with clients and software architects of a system. Their responsibilities range from problem analysis and design to the implementation of the system. Software developers therefore require in-depth knowledge in the areas of software engineering, application development, databases (development and administration), operating systems, distributed and networked systems, and application security. Specific tasks include:

- Front-end and back-end design and development of software applications
- Designing and implementing database architectures
- Developing security concepts for applications
- Ongoing maintenance of software applications

Job Description: Subject Matter Expert in Web/Mobile IT

Specialists within an IT department support company management in the design of new, web-based business areas. Within the IT department, these individuals are capable of leading at least subprojects in the field of web applications. Specific tasks include:

- Developing web-based business models
- Supporting operational processes through web technologies/IT
- Assisting with the selection of IT technologies to be implemented
- Providing advice on the design and implementation of web-based and mobile IT architectures
- Server management and system administration for web-based infrastructures
- IT Security Management/Auditing of IT Systems

Job Description: Web Design and Front-End Development Expert

Experts in this field focus on the planning, design, and implementation of an application's web-based or mobile interface. In doing so, they consider design aspects as well as the requirements for a good human-machine interface. The goal of their work is to develop a technologically appropriate implementation based on functional and non-functional requirements and to integrate it with the other components of the application. Specific tasks include:

- Developing web designs based on functional and non-functional requirements
- Selecting appropriate implementation technologies for web-based and mobile user interfaces
- Designing and implementing interaction with other application components
- Testing the implemented design for usability and user acceptance (usability tests)
- Integration with other aspects, such as web marketing (search engine optimization)

1.2 Qualification profile

The qualification objectives and learning outcomes of the bachelor's degree program in [Subject] correspond to both academic and professional requirements and to ISCED level 0688 (International Standard Classification of Education). The content taught qualifies graduates for the professional fields of activity mentioned in previous chapters.

Professional Fields with Corresponding Competencies

Professional Field	Task	Competency Description	Competency Mapping	Curriculum/Modules
Software Architect	Planning web-based and mobile web applications	Conducting requirements analyses Selection of technologies appropriate to the requirements of the use case Operational management of the project-oriented implementation process with regard to resources and scope	Technical and Scientific	Engineering, Data & Analytics
Software Development	Implementation of concepts for web-based and mobile web applications	Development of technical implementation concepts Implementation of concepts	Technical and Scientific	Engineering, Data & Analytics

Quality assurance and validation of the created artifacts through the application of engineering processes				
Subject matter experts within an IT department	Development of web-based business models, consulting on the design and implementation of web-based and mobile IT architectures, IT security management/auditing of IT systems	Integration of solutions into an existing IT landscape Planning and operational management of a complex web-based application	Technical and Scientific	Business & Economics,
Expert in web design and front-end development	Development of web designs based on functional and non-functional requirements; conception and implementation of interactions with other application components; testing the implemented design for usability and user acceptance; integration with other aspects, e.g., web marketing	Planning and operational management of a complex web-based application Development of the information architecture for a web application Conducting usability tests Creation and implementation of visualization forms for digital media	Technical and Scientific	Design, Engineering

2 CURRICULUM

2.1 Curriculum data

	FT	Comments (if any)
First year of study (YYYY/MM ₊₁)	2027/28	
Standard duration of study (Number of semesters)	6	
SWS (Total for all semesters)	71.5	
ASWS (Total for all semesters)	77.4	
ECTS (Total for all semesters)	180	
Winter Semester Start (Date, Note: possibly calendar week)	Calendar Week 40	
End of WS (Date, Note: possibly calendar week)	Calendar Week 5	
Start of summer semester (Date, Note: possibly calendar week)	Calendar Week 11	
End of semester (Date, Note: possibly calendar week)	Calendar Week 28	
Winter Semester Weeks	15	
SS weeks	15	
Mandatory semester abroad (Semester specification)	5th semester	
Language of Instruction (Specify)	German/ English	The percentage of specialized courses taught in English is 25,53 % of the total weekly class hours
Professional internship (Semester, duration in weeks per semester)	6th semester, 12.5 weeks	A total of 500 hours must be completed over 12.5 weeks, with 40 hours per week.

2.2 Curriculum matrix

The following overview of courses does not include the workload associated with supervising bachelor's theses. Here, 0.2 SWS is allocated per supervised thesis; that is, with 30 accredited study places, this results in an additional ASWS workload of 6 ASWS. In total, this results in an ASWS total of 83.4 ASWS across all 6 semesters, including Bachelor's thesis supervision.

The "Fundamentals of Economics" module in the third semester is offered jointly with the Bachelor's programs in Drone Engineering, Energy & Sustainability Management, Facility Management & Real Estate Management (full-time), and Industrial Engineering. The total number of accredited student slots for these programs requires a total of three parallel groups. This results in a group division factor of 0.6 for each participating program. With a course load of 4 SWS for this module, this corresponds to 2.4 ASWS.

1. Semester

Course no.	Course title	LV-Typ	T	E	WSH	No. of groups	ASWS	ALVS	MODUL	ECTS
DAT1	Data & Analytics 1: Data Engineering	ILV	X		3	1	3	45	DAT	6
DAT2	Data & Analytics 2: Mathematics for Computer Science	ILV	X		3	1	3	45	DAT	6
DES1	Design 1: Digital Design Skills (E)	ILV		X	3	1	3	45	DES	6
ENG1	Coding 1: Software development basics	ILV	X		4	1	4	60	ENG	6
ENG2	Infrastructure & Application 1: IT Fundamentals & Networks	ILV	X		4	1	4	60	ENG	6
Total line:					17		17	255		30
Course hours = Total WSH x course weeks					255					

2. Semester

Course no.	Course title	LV-Typ	T	E	WSH	No. of groups	ASWS	ALVS	MODUL	ECTS
BUS1	Business 1: IT Law	ILV			2	1	2	30	BUS	4
DAT3	Data & Analytics 3: Mathematics & Statistics	ILV	X		3	1	3	45	DAT	6
DES2	Design 2: Digital Design Tools (E)	ILV		X	3	1	3	45	DES	6
ENG3	Coding 2: Software Development Web	ILV	X		4	1	4	60	ENG	6
ENG4	Engineering 1: Software Engineering	ILV	X		4	1	4	60	ENG	6
KOMP1	Scientific work	SE			1	1	1	15	KOMP	2
Total line:					17		17	255		30
Course hours = Total WSH x course weeks					255					

3. Semester

Course no.	Course title	LV-Typ	T	E	WSH	No. of groups	ASWS	ALVS	MODUL	ECTS
BUS2	Business 2: Project management (E)	ILV		X	2	1	2	30	BUS	4
BUS3	Business 3: Fundamentals of Economics (E)	ILV		X	4	0.6	2.4	36.0	BUS	6
DES3	Design 3: Asset Creation	ILV			2	1	2	30	DES	4
ENG4	Coding 3: Software Development Server	ILV	X		4	1	4	60	ENG	6
ENG6	Infrastructure & Application 2: Practical Project 1	PT	X		2	3	6	90	ENG	4
KOMP2	Foreign language 1	ILV			4	1	4	60	KOMP	6
Total line:					18		20.4	306.0		30
Course hours = Total WSH x course weeks					270					

4. Semester

Course no.	Course title	LV-Typ	T	E	WSH	No. of groups	ASWS	ALVS	MODUL	ECTS
BUS4	Business 4: Digital Business & Digital Marketing	ILV			2	1	2	30	BUS	4
DES4	Design 4: Usability & User Experience (E)	ILV		X	2	1	2	30	DES	4
ENG5	Coding 4: Software Development Mobile	ILV	X		4	1	4	60	ENG	6
ENG7	Engineering 2: Web Security (E)	ILV	X	X	4	1	4	60	ENG	6
ENG8	Infrastructure & Application 3: Practical Project 2	PT	X		2	3	6	90	ENG	4
KOMP3	Foreign language 2	ILV			4	1	4	60	KOMP	6
Total line:					18		22	330		30
Course hours = Total WSH x course weeks					270					

5. Semester

Course no.	Course title	LV-Typ	T	E	WSH	No. of groups	ASWS	ALVS	MODUL	ECTS
AWP1	Compulsory electives abroad: Coding, Infrastructure & Application	ILV	X	X	0	0	0	0	KOMP	12
AWP2	Compulsory electives abroad: Design	ILV		X	0	0	0	0	KOMP	12
AWP3	Compulsory electives abroad: Business (E)	ILV		X	0	0	0	0	KOMP	6
Total line:					0		0	0		30
Course hours = Total WSH x course weeks					0					

6. Semester

Course no.	Course title	LV-Typ	T	E	WSH	No. of groups	ASWS	ALVS	MODUL	ECTS
KOMP5	Bachelor thesis	SE			0	1	0	0	KOMP	6
KOMP6	Work placement	BPR	X		0	0	0	0	KOMP	20
KOMP7	Bachelor thesis seminar	SE	X		0.5	2	1.0	15.0	KOMP	4
Total line:					0.5		1.0	15.0		30
Course hours = Total WSH x course weeks					7.5					

Abbreviations	
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	70.5	77.4	1161	180
Total number of courses in 1st year of study	34	34	510	60
Total number of courses in 2nd year of study	36	42.4	636	60
Total number of courses in 3rd year of study	0.5	1	15	60
Total number of technical events over all semesters	41.5			104
Percentage of technical courses over all semesters based on WSH / ECTS	58.87 %			57.78 %
Total number of specialized courses in English over all semesters	18			62
Proportion of specialized courses in English over all semesters (Calculation excluding language courses)	25.53 %			34.44 %

2.3 Modularization

Module number:	Data & Analytics	Scope:	
DAT		18	ECTS
Degree program	University of Applied Sciences Bachelor's Program Coding & Digital Design full-time		
Position in the curriculum	1. Semester		
	2. Semester		
Level	1. Semester: Bachelor's program / 2. Semester: Bachelor		
Previous knowledge	1. Semester: none / 2. Semester: none		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	<u>Data & Analytics 1: Data Engineering /ILV / LV-Nr: DAT1 / 1.Semester / ECTS: 6</u> - Watson, R. T. (2013): Data Management. Databases and Organizations. 6th edition, eGreen Press - Date, C. (2015): SQL and Relational Theory. 3rd edition, O'Reilly Media, 2015 - Kaufmann, M. and Meier, A.: SQL- & NoSQL-Datenbanken. 9th edition. Springer Vieweg 2022		
	<u>Data & Analytics 2: Mathematics for Computer Science /ILV / LV-Nr: DAT2 / 1.Semester / ECTS: 6</u> - Brill, Manfred: Mathematik für Informatiker: Einführung an praktischen Beispielen aus der Welt der Computer. 2. Auflage, München, Wien, Carl Hanser Verlag, 2005. - Nehrllich, Werner: Diskrete Mathematik: Basiswissen für Informatiker. München, Wien, Carl Hanser Verlag, 2003. - Schwarze, Jochen. Mathematik für Wirtschaftswissenschaftler: Band 1: Grundlagen. 14. Auflage, Herne, NWB Verlag, 2015. - Teschl, Gerald; Teschl, Susanne: Mathematik für Informatiker: Band 1: Diskrete Mathematik und Lineare Algebra. 4. Auflage, Berlin, Heidelberg, Springer Vieweg, 2013.		
	<u>Data & Analytics 3: Mathematics & Statistics /ILV / LV-Nr: DAT3 / 2.Semester / ECTS: 6</u> - Bourier, Günther: Beschreibende Statistik: Praxisorientierte Einführung - mit Aufgaben und Lösungen. 13. Auflage, Wiesbaden, Springer Gabler, 2018. - Bourier, Günther: Schließende Statistik: Praxisorientierte Einführung - mit Aufgaben und Lösungen. 9. Auflage, Wiesbaden, Springer Gabler, 2018. - Schwarze, Jochen. Mathematik für Wirtschaftswissenschaftler: Band 2: Differential- und Integralrechnung. 13. Auflage, Herne, NWB Verlag, 2011. - Schwarze, Jochen. Grundlagen der Statistik: Band 1: Beschreibende Verfahren. 12. Auflage, Herne, NWB Verlag, 2014. - Schwarze, Jochen. Grundlagen der Statistik: Band 2: Wahrscheinlichkeitsrechnung und induktive Statistik. 10. Auflage, Herne, NWB Verlag, 2011. - Teschl, Gerald; Teschl, Susanne: Mathematik für Informatiker: Band 2: Analysis und Statistik. 3. Auflage, Berlin, Heidelberg, Springer Vieweg, 2014.		
Acquisition of skills	<u>Data & Analytics 1: Data Engineering /ILV / LV-Nr: DAT1 / 1.Semester / ECTS: 6</u> The participants: • can explain database systems • can identify different database systems and compare them • can describe relational database systems • can design and develop data structures for a problem • can independently derive real-world situations as a data model • can apply database systems in practice • can compare database systems • can carry out database management activities with NoSQL systems		
	<u>Data & Analytics 2: Mathematics for Computer Science /ILV / LV-Nr: DAT2 / 1.Semester / ECTS: 6</u> The participants: • can describe logical operators and apply them to simple tasks • can describe set operators and apply them to simple tasks • can describe mathematical relations and apply them to simple tasks • can describe positional numeral systems (especially binary and decimal) and apply them to simple tasks • can describe O-notation and apply it to simple tasks • can describe number sequences and apply them to simple tasks		
	<u>Data & Analytics 3: Mathematics & Statistics /ILV / LV-Nr: DAT3 / 2.Semester / ECTS: 6</u> The participants: • can carry out mathematical modeling for practical problems in computer science and economics and find solutions using methods of differential and integral calculus. • can correctly record, describe, analyze, and interpret statistical data and apply basic methods of inferential statistics, in particular, elementary estimation methods and simple test methods.		

Course contents	<u>Data & Analytics 1: Data Engineering /ILV / LV-Nr: DAT1 / 1.Semester / ECTS: 6</u> - Fundamentals of database systems and data management - Data modeling (single entity, attributes, cardinality, conditionality, relationship types) - Candidate keys, superkeys, and primary keys - Normalization of data structures (at least 1, 2, 3) - Interaction with relational databases using SQL in the areas of DDL, DML, and DQL - Basic database management activities on advanced database concepts in the area of NoSQL
	<u>Data & Analytics 2: Mathematics for Computer Science /ILV / LV-Nr: DAT2 / 1.Semester / ECTS: 6</u> - Propositional logic and logical operators, predicate logic, arithmetic laws of propositional and predicate logic - Set theory: basic concepts, set operators, calculation rules for sets - Relations: basic concepts, properties of relations, equivalence and order relations - Number concepts: sets of numbers, summation and product notation, positional numeral systems, binary and hexadecimal systems

Course contents	- Sequences: concept of sequences, essential properties, convergence, O-notation - Modular arithmetic: concept and calculation rules, applications
	<u>Data & Analytics 3: Mathematics & Statistics /ILV / LV-Nr: DAT3 / 2.Semester / ECTS: 6</u> - Repetition of the concept of function and some important functions - Differential calculus and its application in one and several variables - Elementary introduction to integral calculus - Descriptive statistics: basics, location and scattering ratios, regression and correlation - Probability theory: terminology, basic properties, rules, and the concept of discrete and continuous random variables - Inductive statistics: basics, simple estimation methods, simple test methods
Teaching and learning methods	<u>Data & Analytics 1: Data Engineering /ILV / LV-Nr: DAT1 / 1.Semester / ECTS: 6</u> Lecture, group work, project work, individual assignments, presentations and discussion
	<u>Data & Analytics 2: Mathematics for Computer Science /ILV / LV-Nr: DAT2 / 1.Semester / ECTS: 6</u> Lecture, tutorials, group work
	<u>Data & Analytics 3: Mathematics & Statistics /ILV / LV-Nr: DAT3 / 2.Semester / ECTS: 6</u> Lectures, tutorials (in connection with lecture/seminar), group work
Evaluation Methods Criteria	<u>Data & Analytics 1: Data Engineering /ILV / LV-Nr: DAT1 / 1.Semester / ECTS: 6</u> Portfolio exam
	<u>Data & Analytics 2: Mathematics for Computer Science /ILV / LV-Nr: DAT2 / 1.Semester / ECTS: 6</u> Portfolio exam
	<u>Data & Analytics 3: Mathematics & Statistics /ILV / LV-Nr: DAT3 / 2.Semester / ECTS: 6</u> Portfolio review

Module number:	Engineering	Scope:	
ENG		50	ECTS
Degree program	University of Applied Sciences Bachelor's Program Coding & Digital Design full-time		
Position in the curriculum	1. Semester		
	2. Semester		
	3. Semester		
	4. Semester		
Level	1. Semester: Bachelor / 1. Semester: Bachelor's program / 2. Semester: Bachelor / 3. Semester: Bachelor / 4. Semester: Bachelor		
Previous knowledge	1. Semester: none / 1. Semester: no prerequisites / 2. Semester: none / 3. Semester: none / 4. Semester: - / 4. Semester: Coming soon / 4. Semester: none		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	<u>Coding 1: Software development basics /ILV / LV-Nr: ENG1 / 1.Semester / ECTS: 6</u> - Ackermann, P.: JavaScript: Das umfassende Handbuch. JavaScript lernen und verstehen. Inkl. objektorientierter und funktionaler Programmierung, Rheinwerk Computing, 2021 - Zakas, N.: Understanding ECMAScript6: The Definitive Guide for JavaScript Developers, No Starch Press, 2016 - Rozentals, N.: Mastering TypeScript - Fourth Edition, Packt, 2021 - Sedgewick, R.; Wayne, K.: Algorithmen: Algorithmen und Datenstrukturen - Pearson Studium - IT, 2014 - Cormen, T.; Leiserson, C.; Rivest, R.; Stein, C.; Molitor, P.: Algorithmen - Eine Einführung - De Gruyter, 2013		
	<u>Infrastructure & Application 1: IT Fundamentals & Networks /ILV / LV-Nr: ENG2 / 1.Semester / ECTS: 6</u> - Comer, Douglas E.: Computer Networks and Internets: With Internet Applications, 6th Ed. - Upper Saddle River, Pearson Education, 2015. - Stallings, W.: Operating Systems: Internals and Design Principles - Pearson, 2017. - Hoffmann, D.: Grundlagen der Technischen Informatik - Carl Hanser Verlag GmbH & Co. KG, 2016.		
	<u>Coding 2: Software Development Web /ILV / LV-Nr: ENG3 / 2.Semester / ECTS: 6</u> - Zakas, N.: Understanding ECMAScript6: The Definitive Guide for JavaScript Developers, No Starch Press, 2016 - Rozentals, N.: Mastering TypeScript - Fourth Edition, Packt, 2021 - Liebel, C.: Progressive Web Apps - Das Praxisbuch, Rheinwerk Computing, 2018 - Fain, Y.; Moiseev, A.: Angular Development with TypeScript, Manning, 2019 - Banks, A.; Porcello, E.: Learning React: Functional Web Development with React and Flux, O`Reilly, 2017		
	<u>Coding 3: Software Development Server /ILV / LV-Nr: ENG4 / 3.Semester / ECTS: 6</u> - Hauser, T.; Wenz, C.: PHP 7 und MySQL: Das umfassende Handbuch, Rheinwerk Computing, 2019 - Tilkov, S.; Eigenbrodt, M.; Schreier, S.; Wolf, O.: REST und HTTP: Entwicklung und Integration nach dem Architekturstil des Web, dpunkt.verlag, 2015 - Pollard, B.: HTTP/2 in Action, Manning, 2019 - Dippold, R.; Meier, R.; Schnider, W.; Schwinn K.: Unternehmensweites Datenmanagement, Springer, 2005		
	<u>Engineering 1: Software Engineering /ILV / LV-Nr: ENG4 / 2.Semester / ECTS: 6</u> - Sommerville, Ian: Software Engineering, Pearson Studium, 10. Auflage (2018) - Braude, Eric J.: Software Engineering - Modern Approaches, Wiley, 2. Aufl. (2016) - Oestereich, Bernd; Scheithauer, Axel: Die UML-Kurzreferenz 2.5 für die Praxis, De Gruyter-Oldenbourg Verlag (2014) - Jacobson, Ivar: Use Case 2.0: The definitive guide. - Geirhos, Matthias: Entwurfsmuster: Das umfassende Handbuch, Rheinwerk Verlag (2015) - Spillner und Linz: Praxiswissen Softwaretest, dpunkt Verlag, 4. Auflage (2014)		
	<u>Coding 4: Software Development Mobile /ILV / LV-Nr: ENG5 / 4.Semester / ECTS: 6</u> - Marburger, M.; Post, U.: Flutter und Dart: Das umfassende Handbuch für die professionelle App-Entwicklung, Rheinwerk Computing, 2025 - Temidayo, A.: Ultimate Flutter for Cross-Platform App Development: Build Seamless Cross-Platform Flutter UIs with Dart, Dynamic Widgets, Unified Codebases, and Expert Testing Techniques (English Edition), 2024 - Liebel, C.: Progressive Web Apps: Das Praxisbuch. Rheinwerk Computing 2018		
	<u>Infrastructure & Application 2: Practical Project 1 /PT / LV-Nr: ENG6 / 3.Semester / ECTS: 4</u>		

	- Rainwater, H.P.: Katzen hüten, MITP-Verlag, 2003 - Balzert, Helmut: Lehrbuch der Softwaretechnik. Basiskonzepte und Requirements Engineering.- Spektrum Akademischer Verlag, 2009. - Balzert, Helmut: Lehrbuch der Softwaretechnik. Softwaremanagement.- Spektrum Akademischer Verlag, 2008 - Balzert, Helmut: Lehrbuch der Softwaretechnik: Entwurf, Implementierung, Installation und Betrieb Gebundenes Buch, Spektrum Verlag, 2011 - Brandt-Pook, H.; Kollmeier, R.: "Softwareentwicklung kompakt und verständlich: Wie Softwaresysteme entstehen", Springer Verlag, 2016 - Post, U.: "Besser coden: So machen Sie Ihren Code (und die Welt) ein bisschen besser!", Rheinwerk-Verlag, 2017 <u>Engineering 2: Web Security (E) /ILV / LV-Nr: ENG7 / 4.Semester / ECTS: 6</u> - Comer, Douglas E.: Computer Networks and Internets: With Internet Applications, 6th Ed. - Upper Saddle River, Pearson Education, 2015. - Panko, Raymond R.; Panko, Julia A.: Business Data Networks and Security, 10th Ed. - Edinburgh, Pearson, 2015. - Rhodes-Ousley, Mark: Information Security: The Complete Reference, 2nd Ed. - New York et al., Mc Graw Hill education, 2013. - Stallings, William: Network Security Essentials: Applications and Standards, 6th Ed., Edinburgh, Pearson Education, 2017. - Tanenbaum, Andrew S.: Computer Networks, 5th Ed. - Boston, Pearson, 2011.
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Literature recommendation	<u>Infrastructure & Application 3: Practical Project 2 /PT / LV-Nr: ENG8 / 4.Semester / ECTS: 4</u> - Rainwater, H.P.: Katzen hüten, MITP-Verlag, 2003 - Balzert, Helmut: Lehrbuch der Softwaretechnik. Basiskonzepte und Requirements Engineering.- Spektrum Akademischer Verlag, 2009. - Balzert, Helmut: Lehrbuch der Softwaretechnik. Softwaremanagement.- Spektrum Akademischer Verlag, 2008 - Balzert, Helmut: Lehrbuch der Softwaretechnik: Entwurf, Implementierung, Installation und Betrieb Gebundenes Buch, Spektrum Verlag, 2011 - Brandt-Pook, H.; Kollmeier, R.: "Softwareentwicklung kompakt und verständlich: Wie Softwaresysteme entstehen", Springer Verlag, 2016 - Post, U.: "Besser coden: So machen Sie Ihren Code (und die Welt) ein bisschen besser!", Rheinwerk-Verlag, 2017
Acquisition of skills	<u>Coding 1: Software development basics /ILV / LV-Nr: ENG1 / 1.Semester / ECTS: 6</u> The participants: • can explain procedural and object-oriented programming approaches • can independently solve and analyze programming tasks • can describe the language elements of modern programming languages • can select, assemble, and use suitable development environments • can compare algorithms and data structures in terms of their complexity • can develop their own efficient algorithms and data structures
	<u>Infrastructure & Application 1: IT Fundamentals & Networks /ILV / LV-Nr: ENG2 / 1.Semester / ECTS: 6</u> The participants: • can identify and describe the structure and functioning of computer systems and their components • can describe architectural concepts and mechanisms of modern operating systems and assess their advantages and disadvantages • can describe the fundamental functioning of computer networks • can identify the components of a computer network • can explain algorithms and protocols used in computer networks • can identify drivers of energy consumption and describe them in the sense of Green IT
	<u>Coding 2: Software Development Web /ILV / LV-Nr: ENG3 / 2.Semester / ECTS: 6</u> The participants: • apply basic concepts of client-side web development • implement complex client-side web applications using suitable technologies and frameworks • evaluate common technologies and frameworks for the implementation of web applications (web technologies)
	<u>Coding 3: Software Development Server /ILV / LV-Nr: ENG4 / 3.Semester / ECTS: 6</u> The participants: • design service interfaces, check them for aspects such as security or performance, and implement them • design and evaluate software architectures of complex and distributed applications • evaluate and implement different web service technologies • assess and implement different and suitable message formats for data exchange • integrate different database systems in the back-end of an application • independently operate and administer solutions for server-side data storage
	<u>Engineering 1: Software Engineering /ILV / LV-Nr: ENG4 / 2.Semester / ECTS: 6</u> The participants: • can describe different process models with their strengths and weaknesses • can describe all phases of software development (analysis, architecture and design, implementation, and quality assurance) and apply them • can describe the differences and similarities between traditional software engineering and web engineering • can apply UML in its current version to model real-world problems using design tools in analysis, architecture, and design • can describe specific modeling concepts for web applications and apply them • can apply fundamental patterns in analysis and design • can explain the processes of quality assurance for software systems • can apply test case derivation and metrics to given problems
	<u>Coding 4: Software Development Mobile /ILV / LV-Nr: ENG5 / 4.Semester / ECTS: 6</u> The participants: • can use device-specific functions of app-centered application platforms programmatically (e.g., positioning using GPS and short-range radio systems such as RFID and Bluetooth) • can use alternative input methods such as multi-touch or sensor technology in apps • can plan and implement apps for cross-platform scenarios • know the special requirements of developing, testing, and publishing apps for different application platforms
	<u>Infrastructure & Application 2: Practical Project 1 /PT / LV-Nr: ENG6 / 3.Semester / ECTS: 4</u> The participants: • can carry out a project using professional project management • understand systematic, orderly, and timely project management • know the special roles within a project • know the importance of project communication in all directions (discussions, documentation, descriptions, presentations) and know how to behave accordingly • have specialist knowledge to solve specific problems

	<u>Engineering 2: Web Security (E) /ILV / LV-Nr: ENG7 / 4.Semester / ECTS: 6</u> The participants: • can explain the basic principles of CIA and their implications • can explain security measures against typical attacks and apply them • can explain threat scenarios and typical attacks and distinguish their impacts • can explain the tasks of security management
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Acquisition of skills	<u>Infrastructure & Application 3: Practical Project 2 /PT / LV-Nr: ENG8 / 4.Semester / ECTS: 4</u> The participants: • can carry out a project using professional project management • understand systematic, orderly, and timely project management • know the special roles within a project • know the importance of project communication in all directions (discussions, documentation, descriptions, presentations) and know how to behave accordingly • have specialist knowledge to solve specific problems
Course contents	<u>Coding 1: Software development basics /ILV / LV-Nr: ENG1 / 1.Semester / ECTS: 6</u> Introduction to programming with a focus on the web - Detailed consideration of a specific programming language, program structure, data types, operators, flow structures, modularization, object orientation - Basics of software development and the tools used, in particular, the integrated development environments (IDE) and the typical work steps from design, implementation, and debugging to the current program - Algorithms and data structures used in software development
	<u>Infrastructure & Application 1: IT Fundamentals & Networks /ILV / LV-Nr: ENG2 / 1.Semester / ECTS: 6</u> - Structure of modern computer systems (system components, peripheral devices, computer architectures, etc.) - Representation of complex types of information (positional numeral systems, computer arithmetic) - General concepts of operating systems - Differences in architectural principles, memory and process management techniques, file systems - Sustainability in IT, Green IT - Network architecture (ISO/OSI, TCP/IP) - Network components - Network protocols and algorithms
	<u>Coding 2: Software Development Web /ILV / LV-Nr: ENG3 / 2.Semester / ECTS: 6</u> In this course, the development process of a client-side web application is taught, taking into account the special characteristics of this development environment. Essential programming concepts of modern web development are explained in theory and then applied (e.g., DOM API, web components, progressive web apps) with the help of suitable development environments and tools. Furthermore, the concepts and practical application of client-side web frameworks, which are widely used in corporate settings, are taught. In addition, typical tasks that are implemented with the support of such frameworks, for example, asynchronous communication with server-side back-ends, are presented and discussed. In addition to these practice-oriented areas, various frequently encountered architecture patterns (e.g., MVC, Inversion of Control) are presented, and their use in the frameworks under consideration is demonstrated. Practical tutorials and case studies are used to put the theory taught into practice. The knowledge gained will be discussed in the group in order to generate a deep understanding of the practical implementation.
	<u>Coding 3: Software Development Server /ILV / LV-Nr: ENG4 / 3.Semester / ECTS: 6</u> Usage and implementation options for internet-based services and interfaces (APIs) - Implementation techniques for server-side applications using suitable design patterns (MVC, IoC, ORM) - Aspects of security, performance, and maintainability of server-side applications - Functionality and configuration of web servers - Server-side administration of database systems - Advanced tools in relational databases (indexes, triggers, etc.) - Database connection to applications (ORM, web service, ODBC, etc.) - Consolidation through practical tutorials and case studies - Group discussions of practical results
	<u>Engineering 1: Software Engineering /ILV / LV-Nr: ENG4 / 2.Semester / ECTS: 6</u> The course imparts knowledge in the following areas of software engineering: - Procedure models - Differences and similarities between software engineering and web engineering - Modelling with structural diagrams - Modelling with behavioural diagrams - Modelling with architecture diagrams - Modelling with interaction diagrams - Modelling of web applications - Analysis and analysis patterns - Architectural description - Design description and design samples - quality assurance
	<u>Coding 4: Software Development Mobile /ILV / LV-Nr: ENG5 / 4.Semester / ECTS: 6</u>

	- Getting to know the architecture models of app-centric application platforms - Device-specific requirements and characteristics of mobile and other IoT devices (input and output options, limited processing and storage capacities) - Development, testing, and distribution of apps (development environments, simulators, app markets) - Use of additional functionalities of mobile devices (GPS, camera, Bluetooth, multi-touch)
	<u>Infrastructure & Application 2: Practical Project 1 /PT / LV-Nr: ENG6 / 3.Semester / ECTS: 4</u> In order to optimally prepare students for problems in working life, practical tasks are worked on in groups, preferably on the basis of assignments from partners from industry or public departments, or field experience is gained under the guidance of the course instructor. Students apply the knowledge they have acquired so far and compare it with observations and experiences gained during the practical project. While the students can deepen and improve their subject-specific skills, complementary skills such as social, risk management, budgeting, and

Course contents	economically responsible decision-making skills are also consolidated. Based on a client briefing (by the course instructor or external partners such as associations and companies), the students work independently on the projects presented, only guided by the course instructor if necessary: planning, coordination, budgeting, monitoring, evaluation, and final reporting are in the hands of the students. The role of the course director focuses on project coaching.
	<u>Engineering 2: Web Security (E) /ILV / LV-Nr: ENG7 / 4.Semester / ECTS: 6</u> Contents of this course are: - Threat environment: Goals of IT security, types of attackers and attacks, planning and managing IT security - Cryptography and cryptographic system standards: symmetric and public/private key encryption, digital signatures, Hashing, authentication, digital certificates, TSL/SSL, IPSec, wireless security - Access control: passwords, biometric methods, role-based access control, identity management - Firewalls: principles, static packet filtering, stateful packet inspection, NAT, intrusion detection and - Prevention systems, firewall architectures and management - Host and Data Security: host hardening, vulnerability and exploits, vulnerability testing, data protection and backups - Application Security: Threats in Web applications, hardening applications, web server attacks, email security
	<u>Infrastructure & Application 3: Practical Project 2 /PT / LV-Nr: ENG8 / 4.Semester / ECTS: 4</u> In order to optimally prepare students for problems in working life, practical tasks are worked on in groups, preferably on the basis of assignments from partners from industry or public departments, or field experience is gained under the guidance of the course instructor. Students apply the knowledge they have acquired so far and compare it with observations and experiences gained during the practical project. While the students can deepen and improve their subject-specific skills, complementary skills such as social, risk management, budgeting, and economically responsible decision-making skills are also consolidated. Based on a client briefing (by the course instructor or external partners such as associations and companies), the students work independently on the projects presented, only guided by the course instructor if necessary: planning, coordination, budgeting, monitoring, evaluation, and final reporting are in the hands of the students. The role of the course director focuses on project coaching.
Teaching and learning methods	<u>Coding 1: Software development basics /ILV / LV-Nr: ENG1 / 1.Semester / ECTS: 6</u> Presentations, group work, presentation and discussion of tasks
	<u>Infrastructure & Application 1: IT Fundamentals & Networks /ILV / LV-Nr: ENG2 / 1.Semester / ECTS: 6</u> Lecture, group work, presentation and discussion of (practical) assignments
	<u>Coding 2: Software Development Web /ILV / LV-Nr: ENG3 / 2.Semester / ECTS: 6</u> Presentations, group work, presentation and discussion of tasks
	<u>Coding 3: Software Development Server /ILV / LV-Nr: ENG4 / 3.Semester / ECTS: 6</u> Presentation and discussion, workshop with working on case studies, working on exercises, case study
	<u>Engineering 1: Software Engineering /ILV / LV-Nr: ENG4 / 2.Semester / ECTS: 6</u> Presentations, group work, presentation and discussion of (practical) tasks
	<u>Coding 4: Software Development Mobile /ILV / LV-Nr: ENG5 / 4.Semester / ECTS: 6</u> Presentations, group work, presentation and discussion of tasks
	<u>Infrastructure & Application 2: Practical Project 1 /PT / LV-Nr: ENG6 / 3.Semester / ECTS: 4</u> Independent project work with accompanying coaching
	<u>Engineering 2: Web Security (E) /ILV / LV-Nr: ENG7 / 4.Semester / ECTS: 6</u> Lecture, group work, presentation and discussion of student tasks
	<u>Infrastructure & Application 3: Practical Project 2 /PT / LV-Nr: ENG8 / 4.Semester / ECTS: 4</u> Independent project work with accompanying coaching
Evaluation Methods Criteria	<u>Coding 1: Software development basics /ILV / LV-Nr: ENG1 / 1.Semester / ECTS: 6</u> Portfolio review
	<u>Infrastructure & Application 1: IT Fundamentals & Networks /ILV / LV-Nr: ENG2 / 1.Semester / ECTS: 6</u> Portfolio exam
	<u>Coding 2: Software Development Web /ILV / LV-Nr: ENG3 / 2.Semester / ECTS: 6</u> Portfolio review
	<u>Coding 3: Software Development Server /ILV / LV-Nr: ENG4 / 3.Semester / ECTS: 6</u>

	Portfolio review
	<u>Engineering 1: Software Engineering /ILV / LV-Nr: ENG4 / 2.Semester / ECTS: 6</u>
	Portfolio review

Evaluation Methods Criteria	<u>Coding 4: Software Development Mobile /ILV / LV-Nr: ENG5 / 4.Semester / ECTS: 6</u> Portfolio review
	<u>Infrastructure & Application 2: Practical Project 1 /PT / LV-Nr: ENG6 / 3.Semester / ECTS: 4</u> Project
	<u>Engineering 2: Web Security (E) /ILV / LV-Nr: ENG7 / 4.Semester / ECTS: 6</u> Portfolio
	<u>Infrastructure & Application 3: Practical Project 2 /PT / LV-Nr: ENG8 / 4.Semester / ECTS: 4</u> Project

Module number:	Design	Scope:	
DES		20	ECTS
Degree program	University of Applied Sciences Bachelor's Program Coding & Digital Design full-time		
Position in the curriculum	1. Semester		
	2. Semester		
	3. Semester		
	4. Semester		
Level	1. Semester: Bachelor's program / 2. Semester: Bachelor's program / 3. Semester: Bachelor / 4. Semester: Bachelor		
Previous knowledge	1. Semester: none / 2. Semester: none / 3. Semester: none / 4. Semester: none		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	<u>Design 3: Asset Creation /ILV / LV-Nr: DES3 / 3.Semester / ECTS: 4</u> - Akenine-Möller, T., Haines, E., Hoffman, N. (2018). Real-time Rendering. United Kingdom: CRC Press, Taylor & Francis Group. - Parent, R. (2012). Computer Animation: Algorithms and Techniques. Germany: Elsevier Science. - Birn, J. (2013). Digital Lighting and Rendering. United Kingdom: Pearson Education.		
	<u>Design 4: Usability & User Experience (E) /ILV / LV-Nr: DES4 / 4.Semester / ECTS: 4</u> - Krug, S.: "Don't make me think!: Web Usability: Das intuitive Web" mitp-Verlag, 2014 - Jacobsen, J.; Meyer, L.: "Praxisbuch Usability und UX: Was jeder wissen sollte, der Websites und Apps entwickelt bewährte Usability- und UX-Methoden praxisnah erklärt", Rheinwerk Verlag, 2017 - Semler, J. Tschierschke, K.: "App-Design: Das umfassende Handbuch: Alles zu Gestaltung, Usability und User Experience" Rheinwerk Verlag, 2019 - Nielson, J.; Budiu, R.: Mobile Usability: Für iPhone, iPad, Android. MITP-Verlag, 2013		
	<u>Design 1: Digital Design Skills (E) /ILV / LV-Nr: DES1 / 1.Semester / ECTS: 6</u> - Ertel, A.; Laborenz, K.: Responsive Webdesign: Konzepte, Techniken, Praxisbeispiele. Das Standardwerk in 3. Auflage!, Rheinwerk Computing, 2017 - Wolf, J.: HTML5 und CSS3 - Das umfassende Handbuch, Rheinwerk Computing, 2019 - Krug, S.: Don't make me think!: Web Usability: Das intuitive Web, mitp Business, 2014 - Grant, K.: CSS in Depth, Manning, 2018		
Acquisition of skills	<u>Design 2: Digital Design Tools (E) /ILV / LV-Nr: DES2 / 2.Semester / ECTS: 6</u> - MediaFarbe - analog und digital: Farbe In Der Medienproduktion, ISBN: 978-3642622618 - Screen Design und visuelle Kommunikation: Gestaltung interaktiver Oberflächen, ISBN: 978-3778527375 - Wahrnehmungspsychologie: Der Grundkurs, ISBN: 978-3642550737 - Die Macht der Farben: Bedeutung & Symbolik, ISBN: 9783854364337 - Adobe Photoshop: Das umfassende Standardwerk zur Bildbearbeitung, ISBN:383628619X - Adobe Illustrator: Das umfassende Handbuch: Ihr Standardwerk zum Lernen und Nachschlagen, ISBN:383627292X - Design Your first Website in Adobe Xd: How To Use Adobe's Design and Prototyping Tool, ISBN:979-8448382741 - Wireframing Essentials ISBN: 1849698546		
	<u>Design 3: Asset Creation /ILV / LV-Nr: DES3 / 3.Semester / ECTS: 4</u> The participants: • create 3D models with a common modeling program (such as Maya or Blender) • assess the quality of 3D models and optimize them with regard to geometric and topological requirements • create lighting setups, materials, and textures for 3D models and assess and optimize the associated effects with regard to their real-time capability • understand how to work collaboratively on virtual scenes and demonstrate familiarity with common exchange formats • create 3D animations that can be imported as actions into external engines		
	<u>Design 4: Usability & User Experience (E) /ILV / LV-Nr: DES4 / 4.Semester / ECTS: 4</u> The participants: • demonstrate knowledge in the areas of usability and user experience with a special focus on the web and mobile area • present content in an accessible way and focus on the needs of visitors and users • demonstrate knowledge of how websites can stand out from other sites through smooth user guidance, good findability, and a good mix of technologies and thus become a competitive advantage • demonstrate understanding of user expectations before, during, and after using a product		

	<u>Design 1: Digital Design Skills (E) /ILV / LV-Nr: DES1 / 1.Semester / ECTS: 6</u> The participants: • can describe the development process for web applications • can apply the fundamental technologies of the World Wide Web (HTML, HTTP, CSS) • can develop web applications for different device classes (responsive or adaptive web design) • can design the information architecture of a web application (sitemap, navigation structure, user guidance) • can explain web design principles with respect to color, form, typography, and multimedia • can describe web design principles and apply them to simple examples <u>Design 2: Digital Design Tools (E) /ILV / LV-Nr: DES2 / 2.Semester / ECTS: 6</u> The participants: • can design various visualization forms of digital media • can apply fundamental editing and design steps in suitable programs (e.g., Photoshop, Illustrator, or XD)
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Acquisition of skills	• can apply wireframing techniques and technologies • can design mockups using appropriate programs • can design icons and pictograms to meet specific requirements
Course contents	<u>Design 3: Asset Creation /ILV / LV-Nr: DES3 / 3.Semester / ECTS: 4</u> - Basic principles of modeling, material creation, lighting, animation, and rendering of virtual scenes - Mapping of transformations, local and global coordinate systems, as well as definition and control of the virtual camera - Overview of essential modeling tools and modifiers (e.g., included in Maya included in Maya, 3D Studio Max, and Blender) - Modeling of polygonal meshes and using parametric curves and surfaces (splines, NURBS) - Common light source types and lighting models, as well as the creation of realistic shadows for real-time applications - Material definition and physical effects such as reflection, refraction, translucency, and dispersion - Texturing of models, UV mapping, and procedural textures - Overview of advanced material and lighting techniques such as IES, HDRI, IBL, and skydomes - Keyframe animation, interpolation of transformations, gimbal lock, and path animation - Creation of animation sequences with animation curves and actions - Animation of characters using cinematic models (rigging, skinning) <u>Design 4: Usability & User Experience (E) /ILV / LV-Nr: DES4 / 4.Semester / ECTS: 4</u> Students learn to assess the benefits of websites and web applications based on usability criteria. This section also includes methods for usability evaluation and covers the basics of technical and content-related usability. <u>Design 1: Digital Design Skills (E) /ILV / LV-Nr: DES1 / 1.Semester / ECTS: 6</u> This introductory course addresses the technological foundations of the web and the key implementation technologies used in this context (HTML, CSS). Students are introduced to the complete development process of a web application (design, wireframing, implementation, testing, operation, and maintenance), with particular attention to the interface between web design and web programming. Emphasis is placed on widely used web technologies, including the HTTP protocol for client-server communication and HTML and CSS as the primary tools for client-side presentation. The course covers the fundamentals of Internet programming; page encoding with the markup language HTML; basic formatting, tables, and forms; and CSS fundamentals (structure of CSS files, selectors, basic formatting options, dynamic presentation effects). Students also learn how to create appealing websites and web applications. In addition to technological standards, the course includes foundational knowledge in layout and perception, typography (readability and typefaces), and color theory (color schemes and color effects). This course provides a solid foundation for students to further develop and successfully apply their skills in web design and product development. <u>Design 2: Digital Design Tools (E) /ILV / LV-Nr: DES2 / 2.Semester / ECTS: 6</u> Editing and design fundamentals in Adobe, for example: - General program functions and workspaces - Drawing tools - Layer techniques - Selection functions - Cropping tools - Colors and formatting - Objects - Image editing - Compositing - Texture/patterns/artboards - Distortion effects - Backgrounds - Text editing - Template creation - Rulers, guides, grids - Import/export/vectorization - Wireframing and working with wireframing technologies - Mockup design and implementation using Photoshop, Illustrator, or XD - Icon and pictogram design: dos and don'ts
Teaching and learning methods	<u>Design 3: Asset Creation /ILV / LV-Nr: DES3 / 3.Semester / ECTS: 4</u> Presentations, group work, presentation and discussion of tasks <u>Design 4: Usability & User Experience (E) /ILV / LV-Nr: DES4 / 4.Semester / ECTS: 4</u> Presentations, group work, presentation and discussion of tasks <u>Design 1: Digital Design Skills (E) /ILV / LV-Nr: DES1 / 1.Semester / ECTS: 6</u> Presentations, group work, presentation and discussion of tasks <u>Design 2: Digital Design Tools (E) /ILV / LV-Nr: DES2 / 2.Semester / ECTS: 6</u> Presentations, group work, presentation and discussion
Evaluation Methods Criteria	<u>Design 3: Asset Creation /ILV / LV-Nr: DES3 / 3.Semester / ECTS: 4</u>

	Project
	<u>Design 4: Usability & User Experience (E) /ILV / LV-Nr: DES4 / 4.Semester / ECTS: 4</u>
	Portfolio review
	<u>Design 1: Digital Design Skills (E) /ILV / LV-Nr: DES1 / 1.Semester / ECTS: 6</u>
Evaluation Methods Criteria	Portfolio exam
	<u>Design 2: Digital Design Tools (E) /ILV / LV-Nr: DES2 / 2.Semester / ECTS: 6</u>
	Portfolio

Module number:	Business & Economics	Scope:	
BUS		18	ECTS
Degree program	University of Applied Sciences Bachelor's Program Coding & Digital Design full-time		
Position in the curriculum	2. Semester		
	3. Semester		
	4. Semester		
Level	2. Semester: Bachelor / 3. Semester: Bachelor / 4. Semester: Bachelor		
Previous knowledge	2. Semester: none / 3. Semester: none / 4. Semester: none		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	<u>Business 1: IT Law /ILV / LV-Nr: BUS1 / 2.Semester / ECTS: 4</u> - Bydlinski, Peter: Grundzüge des Privatrechts (f. Österreich).- Manz, 2007 - Posch, Willibald: Bürgerliches Recht (f. Österreich), Internationales Privatrecht.- Springer, 2008 - Kodex- oder Manz Gesetzestexte - Kosmides, Timoleon: Die Bestimmung der Rechtsnatur von Access-Providing für die Bestimmung der Rechtsfolgen im Störfall, in: Taeger/Wiebe (Hrsg.): Tagungsband Herbstakademie 2008: Von AdWords bis - Social Networks – Neue Entwicklungen im Informationsrecht, Edewecht 2008, S. 119–132 - Kosmides, Timoleon: Providing-Verträge. Systematik und Methodologie der Bestimmung von Rechtsnatur und Rechtsfolgen, München 2010 - Zahrnt, Christoph: IT-Projektverträge: Rechtliche Grundlagen, dpunkt, 2008		
	<u>Business 2: Project management (E) /ILV / LV-Nr: BUS2 / 3.Semester / ECTS: 4</u> - Rainwater, H.P.: Katzen hüten, MITP-Verlag, 2003 - Balzert, Helmut: Lehrbuch der Softwaretechnik. Basiskonzepte und Requirements Engineering.- Spektrum Akademischer Verlag, 2009. - Balzert, Helmut: Lehrbuch der Softwaretechnik. Softwaremanagement.- Spektrum Akademischer Verlag, 2008 - Balzert, Helmut: Lehrbuch der Softwaretechnik: Entwurf, Implementierung, Installation und Betrieb Gebundenes Buch, Spektrum Verlag, 2011 - Brandt-Pook, H.; Kollmeier, R.: "Softwareentwicklung kompakt und verständlich: Wie Softwaresysteme entstehen", Springer Verlag, 2016 - Post, U.: "Besser coden: So machen Sie Ihren Code (und die Welt) ein bisschen besser!", Rheinwerk-Verlag, 2017		
	<u>Business 3: Fundamentals of Economics (E) /ILV / LV-Nr: BUS3 / 3.Semester / ECTS: 6</u> Atrill, P.; McLaney, E; Accounting and Finance for Non-Specialists; 2022; 12. Auflage Kotler, P.; Keller, K.L; Marketing Management; 2022; 16. Auflage Sloman, J.; Garratt, D.; Guest, J.; Economics for Business; 2023; 9.Auflage		
	<u>Business 4: Digital Business & Digital Marketing /ILV / LV-Nr: BUS4 / 4.Semester / ECTS: 4</u> - Chaffey, D. (2015): Digital Business and E-Commerce Management, 6th edition, Harlow: Pearson - Scott, D. M. (2009): Die neuen Marketing- und PR-Regeln im Web 2.0, mitp Verlag - Weller, R. (2021): Content Design: Das Handbuch für Conversion-orientierte Content Marketer, Webdesigner & Unternehmer, Carl Hanser Verlag GmbH & Co. KG - Hassler, M. (2019): Digital und Web Analytics: Metriken auswerten, Besucherverhalten verstehen, Website optimieren (mitp Business), mitp		
Acquisition of skills	<u>Business 1: IT Law /ILV / LV-Nr: BUS1 / 2.Semester / ECTS: 4</u> The participants: • present general civil and private law aspects of entrepreneurial activity • analyze common practical problems using concrete case studies • recognize common IT law issues and apply simple standard solutions		
	<u>Business 2: Project management (E) /ILV / LV-Nr: BUS2 / 3.Semester / ECTS: 4</u> The participants: • can explain key project management concepts in the field of technical projects • can explain different project management methods and the roles they involve • can actively apply project management using modern software project management tools such as Gitlab, Github, Jira, or similar		
	<u>Business 3: Fundamentals of Economics (E) /ILV / LV-Nr: BUS3 / 3.Semester / ECTS: 6</u>		

	The participants: • Define key concepts and terminology in business administration, economics, and accounting • Explain the basic structures and functions of enterprises and markets • Describe the fundamental principles of cost accounting, financial reporting, and budgeting • Apply basic economic models (supply and demand, market equilibrium) to real-world problems • Analyze business cases using management, marketing, and financial frameworks • Prepare simple financial statements and interpret balance sheets and income statements • Evaluate investment and financing alternatives using standard financial indicators (NPV, IRR) • Assess the efficiency of business processes and organizational structures • Integrate knowledge from business, economics, and accounting to support decision-making in an engineering context <u>Business 4: Digital Business & Digital Marketing /ILV / LV-Nr: BUS4 / 4.Semester / ECTS: 4</u> The participants: • can describe the fundamentals of online business, including the various e-commerce models, online marketplaces, and platforms • can describe different e-commerce business models and apply payment processing, security, and data protection
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Acquisition of skills	aspects in online commerce • can use web analytics tools such as Google Analytics to measure website traffic and conversion rates • can apply techniques to increase conversion rates, conduct A/B tests, and design the user experience on websites • can describe basic concepts of digital marketing, including SEO, SEM, content marketing, and social media marketing • can explain current trends in web business and web marketing and analyze future developments, including AI, chatbots, and voice search
Course contents	<u>Business 1: IT Law /ILV / LV-Nr: BUS1 / 2.Semester / ECTS: 4</u> Teaching basic concepts of private law based on the requirements of professional IT practice, in particular by presenting practical legal cases and jointly developing the legal principles required to solve the respective problems. The following areas are covered in detail: - Differentiation between public law and private law - Company law - General contract law - Legal capacity and capacity to act of natural and legal persons and their legal consequences - Explanations of terms from the most important areas of law - Relationships between areas of law and IT practice
	<u>Business 2: Project management (E) /ILV / LV-Nr: BUS2 / 3.Semester / ECTS: 4</u> - Practical examples that are processed with the support of modern project management software (e.g., Gitlab) - Project planning: issues, issues board, milestone tracking - Project controlling: work breakdown structures and other performance, resource, and cost planning tools - Process models: using SCRUM as an example - Documentation: IT-supported documentation with modern project management tools (e.g. Gitlab) - Models and methods for stress and resource analysis (work-life balance) - Mechanisms of gender roles, bias and structural disadvantage, as well as practical approaches for gender-inclusive design of work and learning environments
	<u>Business 3: Fundamentals of Economics (E) /ILV / LV-Nr: BUS3 / 3.Semester / ECTS: 6</u> Business Administration: - Entrepreneurial Fundamentals: Discussion of business-related topics such as legal forms, purchase contracts and regulations, and commercial registers - Financing Methods: Introduction to equity financing, restructuring financing, debt financing, and modern financing methods - Business Plan Development: Business plan development, including financial planning - Strategic Management: Planning and analysis in strategic management - Investment Calculation Methods: Calculation techniques for static and dynamic investment Economics: - Economic fundamentals: Introduction to the basics of economics - Market theory and price theory: Exploring market dynamics and pricing - Microeconomics, Macroeconomics, Network Economics: Foundational concepts in microeconomics, macroeconomics, network economics - Economic Indicators: Exploration of economic indicators like GDP, HDI, inflation, deflation, and stagflation Financing: - Fundamentals of Accounting: Introduction to the basics of accounting - Cash Accounting: Exploration of cash-based accounting methods - Cost Accounting Areas: Introduction of different areas within cost accounting, including cost concepts in decision making, cost classification and allocation, COGS, overhead application, conversion cost, and total cost formula - Cost Accounting for Pricing: Overview of procurement, differential, and sales calculations, as well as actual cost accounting
	<u>Business 4: Digital Business & Digital Marketing /ILV / LV-Nr: BUS4 / 4.Semester / ECTS: 4</u> - Introduction to Web Business: basics of online business, e-commerce models, online marketplaces and platforms - Website development and design: creating engaging and user-friendly websites, website hosting and maintenance - E-commerce strategies: e-commerce business models, payment processing, security and Data protection - Web analytics and tracking: Using tools such as Google Analytics to measure and analyze website traffic and conversions - Conversion optimization: technologies to increase conversion rates, A/B testing, and user experience optimization - Data-Driven Decision Making: web analytics supported business decisions in web business - Fundamentals of online marketing - Content strategy: planning and creating content for websites and social media, storytelling and branding - Trends in web business and web marketing: current news and future trends in the digital space, including AI, chatbots, and voice search
Teaching and learning methods	<u>Business 1: IT Law /ILV / LV-Nr: BUS1 / 2.Semester / ECTS: 4</u> Presentations, group work, presentation and discussion of tasks
	<u>Business 2: Project management (E) /ILV / LV-Nr: BUS2 / 3.Semester / ECTS: 4</u> Presentations, projects, group work, discussions

	<u>Business 3: Fundamentals of Economics (E) /ILV / LV-Nr: BUS3 / 3.Semester / ECTS: 6</u> Lectures, discussions, case studies, group work
	<u>Business 4: Digital Business & Digital Marketing /ILV / LV-Nr: BUS4 / 4.Semester / ECTS: 4</u> Presentations, group work, presentation and discussion, case studies
Evaluation Methods Criteria	<u>Business 1: IT Law /ILV / LV-Nr: BUS1 / 2.Semester / ECTS: 4</u> Exam
	<u>Business 2: Project management (E) /ILV / LV-Nr: BUS2 / 3.Semester / ECTS: 4</u> Project
	<u>Business 3: Fundamentals of Economics (E) /ILV / LV-Nr: BUS3 / 3.Semester / ECTS: 6</u> Portfolio review
	<u>Business 4: Digital Business & Digital Marketing /ILV / LV-Nr: BUS4 / 4.Semester / ECTS: 4</u> Portfolio exam

Module number:	Complementary	Scope:	
KOMP		74	ECTS
Degree program	University of Applied Sciences Bachelor's Program Coding & Digital Design full-time		
Position in the curriculum	2. Semester		
	3. Semester		
	4. Semester		
	5. Semester		
	6. Semester		
Level	2. Semester: Bachelor / 3. Semester: A1 bis C2 (GER) / 4. Semester: A1 bis C2 (GER) / 5. Semester: Bachelor's program / 6. Semester: Bachelor		
Previous knowledge	2. Semester: none / 3. Semester: Beginner Modules: - Chinese, German, Spanish at levels A1/A2 with target level A2: no prior knowledge permitted. Upper Beginner Modules: - German at levels A2/B1 with target level B1.1: solid prior knowledge at A1 level required. Advanced Modules: - Business German, Business French, Business Italian, Business Spanish at levels B1/B2 with target level B2.1: solid prior knowledge at A2 level required. - Business English for Academic and Professional Purposes at levels B2+/C1 with target level C1: prior knowledge at B2 level or completion of an English bridging/preparatory course required. - Business English for Academic and Professional Purposes at levels C1/C2 with target level C2.1: solid prior knowledge at B2.2 level required. / 4. Semester: Beginner Modules: - Chinese, German, Spanish at levels A1/A2 with target level A2: no prior knowledge permitted. Upper Beginner Modules: - German at levels A2/B1 with target level B1.1: solid prior knowledge at A1 level required. Advanced Modules: - Business German, Business French, Business Italian, Business Spanish at levels B1/B2 with target level B2.1: solid prior knowledge at A2 level required. - Business English for Academic and Professional Purposes at levels B2+/C1 with target level C1: prior knowledge at B2 level or completion of an English bridging/preparatory course required. - Business English for Academic and Professional Purposes at levels C1/C2 with target level C2.1: solid prior knowledge at B2.2 level required. / 5. Semester: none / 6. Semester: none		
Blocked	no		
Participant group	A-levels and/or corresponding previous training, beginners		
Literature recommendation	<u>Compulsory electives abroad: Business (E) /ILV / LV-Nr: AWP3 / 5.Semester / ECTS: 6</u> Keine Angabe		
	<u>Foreign language 1 /ILV / LV-Nr: KOMP2 / 3.Semester / ECTS: 6</u> Kursbuch – nach Vereinbarung; Authentische Materialien, z.B. aus englischsprachigen Zeitschriften (auch Fachzeitschriften), Zeitungen und online Medien		
	<u>Foreign language 2 /ILV / LV-Nr: KOMP3 / 4.Semester / ECTS: 6</u> Kursbuch – nach Vereinbarung; Authentische Materialien, z.B. aus englischsprachigen Zeitschriften (auch Fachzeitschriften), Zeitungen und online Medien		
	<u>Bachelor thesis /SE / LV-Nr: KOMP5 / 6.Semester / ECTS: 6</u> - Bänisch, Axel; Alewell, Dorothea: "Wissenschaftliches Arbeiten", 11. Auflage, Oldenbourg Verlag, 2013 - Eco, Umberto: "Wie man eine wissenschaftliche Abschlussarbeit schreibt", UTB Facultas Universitätsverlag, 2010 - Chalmers, Alan: Wege der Wissenschaft.- Berlin; Heidelberg: Springer, 2007 - Kipman, U. ; Leopold-Wildburger U.; Reiter T.: "Wissenschaftliches Arbeiten 4.0: Vortragen und Verfassen leicht gemacht", Verlag Springer Gabler, 3. Auflage, 2017		
	<u>Work placement /BPR / LV-Nr: KOMP6 / 6.Semester / ECTS: 20</u> - Brenner, Doris: "Karrierestart nach dem Studium", Haufe Lexware; 2015 - Faber, Manfred et al.: "Berufseinstieg und Probezeit aktiv gestalten: Wie Sie nach dem Studium die Grundsteine für Ihre Karriere legen", Verlag Springer Gabler; 2014 - Rippler Stefan et al.: "Trainee-Knigge: Der Ratgeber für den erfolgreichen Karriere-Start"; Verlag Springer Gabler; 2013		
	<u>Bachelor thesis seminar /SE / LV-Nr: KOMP7 / 6.Semester / ECTS: 4</u>		

	- Bäsch, Axel; Alewell, Dorothea: "Wissenschaftliches Arbeiten", 11. Auflage, Oldenbourg Verlag, 2013 - Eco, Umberto: "Wie man eine wissenschaftliche Abschlussarbeit schreibt", UTB Facultas Universitätsverlag, 2010 - Chalmers, Alan: Wege der Wissenschaft.- Berlin; Heidelberg: Springer, 2007 - Kipman, U. ; Leopold-Wildburger U.; Reiter T.: "Wissenschaftliches Arbeiten 4.0: Vortragen und Verfassen leicht gemacht" Verlag Springer Gabler 3. Auflage 2017 <u>Compulsory electives abroad: Coding, Infrastructure & Application /ILV / LV-Nr: AWP1 / 5.Semester / ECTS: 12</u> werden von der jeweiligen Partnerhochschule festgelegt
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Literature recommendation	<u>Compulsory electives abroad: Design /ILV / LV-Nr: AWP2 / 5.Semester / ECTS: 12</u> Werden von der jeweiligen Partnerhochschule festgelegt
	<u>Scientific work /SE / LV-Nr: KOMP1 / 2.Semester / ECTS: 2</u> - Bänisch, Axel: Wissenschaftliches Arbeiten: Seminar- und Diplomarbeiten. - München [u.a.]: Oldenbourg, 2009 - Chalmers, Alan: Wege der Wissenschaft. - Berlin; Heidelberg: Springer, 2007 - Eco, Umberto: Wie man eine wissenschaftliche Abschlussarbeit schreibt. - UTB Facultas Universitätsverlag, 2010 - Karmasin, Matthias; Ribing, Rainer. Die Gestaltung wissenschaftlicher Arbeiten. 6. Auflage, facultas.wuv / UTB, Wien, 2011. - Leopold-Wildburger, Ulrika; Schütze, Jörg. Verfassen und Vortragen: Wissenschaftliche Arbeiten und Vorträge leicht gemacht. Springer, Berlin et al., 2002
Acquisition of skills	<u>Compulsory electives abroad: Business (E) /ILV / LV-Nr: AWP3 / 5.Semester / ECTS: 6</u> The participants: • are able to describe and apply basic concepts and methods from business administration • are able to describe and apply in-depth concepts and contexts from business administration • are able to critically evaluate and question methods and concepts of business administration • are able to apply and analyze methods and concepts of business administration to issues in the field of information technology and the web
	<u>Foreign language 1 /ILV / LV-Nr: KOMP2 / 3.Semester / ECTS: 6</u> The participants: • (A1 – Beginner) Can understand and use familiar, everyday expressions and very simple sentences aimed at satisfying concrete needs. • (A1 – Beginner) Can introduce themselves and others, ask people questions about personal details – e.g., where they live, people they know, and things they have – and can respond to such questions. • (A1 – Beginner) Can communicate in a simple way if the interlocutor speaks slowly and clearly and is willing to help. • (A2 – Elementary) Can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g., personal and family information, shopping, work, local area) • (A2 – Elementary) Can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters. • (A2 – Elementary) Can describe in simple terms aspects of their background, immediate environment, and matters in areas of immediate need. • (B1 – Intermediate) Can understand the main points of clear standard speech on familiar matters regularly encountered in work, school, leisure, etc. • (B1 – Intermediate) Can deal with most situations likely to arise while travelling in an area where the language is spoken and can produce simple connected text on topics that are familiar or of personal interest. • (B1 – Intermediate) Can describe experiences and events, dreams, hopes, and ambitions and briefly give reasons and explanations for opinions and plans. • (B2 – Upper Intermediate) Can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in their field of specialization. Can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options. • (C1 – Advanced) Can understand a wide range of demanding, longer texts, and recognize implicit meaning. • (C1 – Advanced) Can express themselves fluently and spontaneously without much obvious searching for expressions and can use the language flexibly and effectively for social, academic, and professional purposes • (C1 – Advanced) Can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors, and cohesive devices. • (C2 – Near-native proficiency) Can understand with ease virtually everything heard or read. • (C2 – Near-native proficiency) Can summarize information from different spoken and written sources, reconstructing arguments and accounts in a coherent presentation. • (C2 – Near-native proficiency) Can express themselves spontaneously, very fluently, and precisely, differentiating finer shades of meaning even in more complex situations.
	<u>Foreign language 2 /ILV / LV-Nr: KOMP3 / 4.Semester / ECTS: 6</u>

	The participants: • (A1 – Beginner) Can understand and use familiar, everyday expressions and very simple sentences aimed at satisfying concrete needs. • (A1 – Beginner) Can introduce themselves and others, ask people questions about personal details – e.g., where they live, people they know, and things they have – and can respond to such questions. • (A1 – Beginner) Can communicate in a simple way if the interlocutor speaks slowly and clearly and is willing to help. • (A2 – Elementary) Can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g., personal and family information, shopping, work, local area) • (A2 – Elementary) Can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters. • (A2 – Elementary) Can describe in simple terms aspects of their background, immediate environment, and matters in areas of immediate need. • (B1 – Intermediate) Can understand the main points of clear standard speech on familiar matters regularly encountered in work, school, leisure, etc. • (B1 – Intermediate) Can deal with most situations likely to arise while travelling in an area where the language is spoken and can produce simple connected text on topics that are familiar or of personal interest. • (B1 – Intermediate) Can describe experiences and events, dreams, hopes, and ambitions and briefly give reasons and explanations for opinions and plans. • (B2 – Upper Intermediate) Can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in their field of specialization. Can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options. • (C1 – Advanced) Can understand a wide range of demanding, longer texts, and recognize implicit meaning. • (C1 – Advanced) Can express themselves fluently and spontaneously without much obvious searching for
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Acquisition of skills	expressions and can use the language flexibly and effectively for social, academic, and professional purposes • (C1 – Advanced) Can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors, and cohesive devices. • (C2 – Near-native proficiency) Can understand with ease virtually everything heard or read. • (C2 – Near-native proficiency) Can summarize information from different spoken and written sources, reconstructing arguments and accounts in a coherent presentation. • (C2 – Near-native proficiency) Can express themselves spontaneously, very fluently, and precisely, differentiating finer shades of meaning even in more complex situations.
	<u>Bachelor thesis /SE / LV-Nr: KOMP5 / 6.Semester / ECTS: 6</u> The participants: • write an academic bachelor's thesis according to the standards of academic writing and apply formal requirements of the relevant guidelines (improvement of expressiveness)
	<u>Work placement /BPR / LV-Nr: KOMP6 / 6.Semester / ECTS: 20</u> The participants: • apply the knowledge they have acquired during their studies to their appointments • understand processes in the professional environment • solve problems and implement solutions in the context of project ending dates (practical competence) • develop and refine arguments, solutions, and strategies independently (problem-solving skills)
	<u>Bachelor thesis seminar /SE / LV-Nr: KOMP7 / 6.Semester / ECTS: 4</u> The participants: • formulate a task into a project and solve it using scientific methods and practice-oriented tools in the project period, as well as work through this process independently in a scientific paper • independently narrow down a topic from the field of web-based technologies, web business, or related areas, prepare it scientifically, and independently develop a self-formulated research question • carry out the process of scientific work independently and in a self-organized manner • present and discuss the results of their work in the seminar • use the available resources appropriately and purposefully (in particular time management and research skills)
	<u>Compulsory electives abroad: Coding, Infrastructure & Application /ILV / LV-Nr: AWP1 / 5.Semester / ECTS: 12</u> The participants: Students are able to follow information technology courses taught in a foreign language at university level and to work through the content in that language. They deepen the knowledge they have already acquired in IT-related subjects or complement it with areas or technologies that are complementary to their previous studies (e.g., multimedia technologies, gaming, business-related enterprise systems).
	<u>Compulsory electives abroad: Design /ILV / LV-Nr: AWP2 / 5.Semester / ECTS: 12</u> The participants: • are able to describe and apply basic concepts and methods from the field of design • are able to describe and apply in-depth concepts and contexts from the field of design • are able to critically evaluate and scrutinize design methods and concepts • are able to apply and analyze methods and concepts of digital design to issues in the field of information technology and the web
Course contents	<u>Scientific work /SE / LV-Nr: KOMP1 / 2.Semester / ECTS: 2</u> The participants: • are able to formulate research questions appropriately • are able to plan methodical procedures to answer research questions • are able to research, evaluate, and cite specialist literature • are able to carry out and write a scientific paper of medium complexity and manageable scope
	<u>Compulsory electives abroad: Business (E) /ILV / LV-Nr: AWP3 / 5.Semester / ECTS: 6</u> A generally valid module description for the semester abroad cannot and should not be defined due to the large number of partner universities and the choices offered there within the economically oriented sciences in order to ensure freedom for the students. The content of teaching is based on the fundamentals and specializations of the individual disciplines in the economic subject areas of the degree program. The national credits are converted individually into ECTS points in accordance with the achievements demonstrated. Students are subject to the respective examination modalities at the partner university.
	<u>Foreign language 1 /ILV / LV-Nr: KOMP2 / 3.Semester / ECTS: 6</u>

	A1 – Beginner Understand and use familiar, everyday expressions and very simple sentences aimed at satisfying concrete needs. Introduce themselves and others, ask people questions about personal details – e.g., where they live, the people they know, or the things they have – and respond to such questions. Communicate in a simple way if the conversation partners speak slowly and clearly and are prepared to help. A2 – Elementary Knowledge Understand sentences and frequently used expressions related to areas of most immediate relevance (e.g., personal and family information, shopping, work, local environment). Communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters. Describe in simple terms their background, education, immediate environment, and matters in areas of immediate need. B1 – Intermediate Language Use Use clear standard language in academic and business contexts and communicate about familiar topics related to work, school, leisure, etc., applying relevant conversational skills. Express themselves simply and coherently on familiar topics and areas of personal interest. Report on experiences and events, describe dreams, hopes, and ambitions, and briefly give reasons and explanations for opinions and plans. B2 – Independent Language Use Express themselves on the main ideas of complex texts on both concrete and abstract topics in academic and business contexts and participate in technical discussions in their own field of specialization. Communicate with such a degree of fluency and spontaneity that normal conversation with native speakers is quite possible without strain for either party. Express themselves clearly and in detail on a wide range of subjects, explain a viewpoint on a
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Course contents	topical issue, and outline the advantages and disadvantages of various options. C1 – Advanced Language Proficiency Understand a wide range of demanding, longer texts and recognize implicit meanings. Use the language effectively and flexibly in academic and business contexts and express themselves fluently and spontaneously without much obvious searching for words. Produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors, and cohesive devices. C2 – Near-Native Proficiency Communicate effortlessly in all language situations. Summarize information from various written and spoken sources and reconstruct arguments and accounts in a coherent presentation. Express themselves spontaneously, very fluently, and precisely, differentiating finer shades of meaning even in more complex situations.
	<u>Foreign language 2 /ILV / LV-Nr: KOMP3 / 4.Semester / ECTS: 6</u> A1 – Beginner Understand and use familiar, everyday expressions and very simple sentences aimed at satisfying concrete needs. Introduce themselves and others, ask people questions about personal details – e.g., where they live, the people they know, or the things they have – and respond to such questions. Communicate in a simple way if the conversation partners speak slowly and clearly and are prepared to help. A2 – Elementary Knowledge Understand sentences and frequently used expressions related to areas of most immediate relevance (e.g., personal and family information, shopping, work, local environment). Communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters. Describe in simple terms their background, education, immediate environment, and matters in areas of immediate need. B1 – Intermediate Language Use Use clear standard language in academic and business contexts and communicate about familiar topics related to work, school, leisure, etc., applying relevant conversational skills. Express themselves simply and coherently on familiar topics and areas of personal interest. Report on experiences and events, describe dreams, hopes, and ambitions, and briefly give reasons and explanations for opinions and plans. B2 – Independent Language Use Express themselves on the main ideas of complex texts on both concrete and abstract topics in academic and business contexts and participate in technical discussions in their own field of specialization. Communicate with such a degree of fluency and spontaneity that normal conversation with native speakers is quite possible without strain for either party. Express themselves clearly and in detail on a wide range of subjects, explain a viewpoint on a topical issue, and outline the advantages and disadvantages of various options. C1 – Advanced Language Proficiency Understand a wide range of demanding, longer texts and recognize implicit meanings. Use the language effectively and flexibly in academic and business contexts and express themselves fluently and spontaneously without much obvious searching for words. Produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors, and cohesive devices. C2 – Near-Native Proficiency Communicate effortlessly in all language situations. Summarize information from various written and spoken sources and reconstruct arguments and accounts in a coherent presentation. Express themselves spontaneously, very fluently, and precisely, differentiating finer shades of meaning even in more complex situations.
	<u>Bachelor thesis /SE / LV-Nr: KOMP5 / 6.Semester / ECTS: 6</u> In this course, students independently write their bachelor's thesis. Students work independently on a clearly defined question using appropriate scientific methods, systematically evaluate the findings, and document the results in the form of a scientific paper in accordance with the formal and content-related standards of the degree program.
	<u>Work placement /BPR / LV-Nr: KOMP6 / 6.Semester / ECTS: 20</u> Supplementing the students' theoretical knowledge with practical activities and business law issues in practice. At least 500 hours of full-time employment at an external company (12.5 weeks, i.e., approximately three months with an assumed working week of 40 hours/week). The work placement ensures that students find their feet when entering the world of work and gain confidence in applying the knowledge they have acquired through the experience they have already gained. Processes, workflows, and situations in the professional environment should be familiarized with and understood. Support for students during their work placement: reflection, discussion of problems, and experience reports.
	<u>Bachelor thesis seminar /SE / LV-Nr: KOMP7 / 6.Semester / ECTS: 4</u>

	The students report regularly on the progress of their bachelor's thesis during the working process in consultation with the supervisor. In seminar form, they present their current work status in small groups in the form of short presentations and discuss the results of their work in the group. The students receive instructions and templates for writing the bachelor's thesis and, thus, appropriate accompanying academic supervision. In this course, students write their final bachelor's thesis. They are individually supervised by a lecturer with regard to individual questions. Within a given period of time, students are required to scientifically address an issue relevant to their studies and training as part of a bachelor's thesis. The topic should be worked on and discussed independently using scientific methods. The bachelor's thesis can be written with a practical reference from the internship and thus deal with a current and concrete problem scientifically and practically.
	<u>Compulsory electives abroad: Coding, Infrastructure & Application /ILV / LV-Nr: AWP1 / 5.Semester / ECTS: 12</u> A generally valid module description for the semester abroad cannot and should not be defined due to the large number of partner universities and the choices offered there within the information technology-oriented sciences (computer science, business informatics, information management, and related disciplines) in order to ensure freedom for students. The national credits are converted individually into ECTS points in accordance with the achievements demonstrated. The students are subject to the respective examination modalities at the partner university..
Course contents	<u>Compulsory electives abroad: Design /ILV / LV-Nr: AWP2 / 5.Semester / ECTS: 12</u> A generally valid module description for the semester abroad cannot and should not be defined due to the large number of partner universities and the options offered there within the design-oriented sciences in order to ensure freedom for students. The content of teaching is based on the fundamentals and specializations of the individual disciplines in the economic subject areas of the degree program. The national credits are converted individually into ECTS points in accordance with the achievements demonstrated. Students are subject to the respective examination modalities at the partner university.
	<u>Scientific work /SE / LV-Nr: KOMP1 / 2.Semester / ECTS: 2</u> The main aim of the introductory course on scientific work is to familiarize students with the special features, rules, and basic principles of science and scientific work. The focus here is on learning and understanding deductive and inductive methods and the empirical procedures for gaining knowledge. Students are prepared to write seminar papers independently and in accordance with the usual standards of scientific work. This preparation includes a focus on dealing with literature as well as discussions regarding the quality of academic co-workers - the concepts of intellectual honesty and intersubjective comprehensibility are of particular importance here.
Teaching and learning methods	<u>Compulsory electives abroad: Business (E) /ILV / LV-Nr: AWP3 / 5.Semester / ECTS: 6</u> Determined by the respective partner university <u>Foreign language 1 /ILV / LV-Nr: KOMP2 / 3.Semester / ECTS: 6</u> Blended Learning <u>Foreign language 2 /ILV / LV-Nr: KOMP3 / 4.Semester / ECTS: 6</u> Blended Learning <u>Bachelor thesis /SE / LV-Nr: KOMP5 / 6.Semester / ECTS: 6</u> Individual coaching and work in small groups <u>Work placement /BPR / LV-Nr: KOMP6 / 6.Semester / ECTS: 20</u> Application of the content from the courses of the first five semesters on the basis of practical problems at the internship provider <u>Bachelor thesis seminar /SE / LV-Nr: KOMP7 / 6.Semester / ECTS: 4</u> Presentation and discussion, work in small groups, individual supervised scientific work <u>Compulsory electives abroad: Coding, Infrastructure & Application /ILV / LV-Nr: AWP1 / 5.Semester / ECTS: 12</u> Determined by the respective partner university <u>Compulsory electives abroad: Design /ILV / LV-Nr: AWP2 / 5.Semester / ECTS: 12</u> Determined by the respective partner university <u>Scientific work /SE / LV-Nr: KOMP1 / 2.Semester / ECTS: 2</u> Lecture with discussion and examples
Evaluation Methods Criteria	<u>Compulsory electives abroad: Business (E) /ILV / LV-Nr: AWP3 / 5.Semester / ECTS: 6</u> determined by the respective partner university

	<u>Foreign language 1 /ILV / LV-Nr: KOMP2 / 3.Semester / ECTS: 6</u> Portfolio exam
	<u>Foreign language 2 /ILV / LV-Nr: KOMP3 / 4.Semester / ECTS: 6</u> Portfolio exam
	<u>Bachelor thesis /SE / LV-Nr: KOMP5 / 6.Semester / ECTS: 6</u> Bachelor's thesis
	<u>Work placement /BPR / LV-Nr: KOMP6 / 6.Semester / ECTS: 20</u> Report
	<u>Bachelor thesis seminar /SE / LV-Nr: KOMP7 / 6.Semester / ECTS: 4</u> Portfolio
	<u>Compulsory electives abroad: Coding, Infrastructure & Application /ILV / LV-Nr: AWP1 / 5.Semester / ECTS: 12</u> determined by the respective partner university
	<u>Compulsory electives abroad: Design /ILV / LV-Nr: AWP2 / 5.Semester / ECTS: 12</u> determined by the respective partner university
	<u>Scientific work /SE / LV-Nr: KOMP1 / 2.Semester / ECTS: 2</u> Seminar paper

2.4 Internship

Students independently select an internship position. In doing so, they can draw on the extensive range of internship listings provided by Kufstein University of Applied Sciences in Tyrol. The program director verifies that the internship activities align with the program's curriculum and qualification profiles. Subsequently, the program administration assesses whether the professional internship aligns with the program's educational objectives and whether the student can be assigned tasks appropriate to his or her level of qualification. A detailed internship guide assists students with organizing their practical semester; the IRO and program administration are also available to students for questions and support.

Students must apply for the professional internship using a form (= job description). The form includes key information about the student and the internship supervisor, as well as the objectives and tasks/activities at the internship company. The internship is confirmed or approved by the signatures of the program administration and the internship supervisor.

The student must reflect on, document, and present the experiences and insights gained, as well as evaluate the internship site. Conversely, the internship supervisor must evaluate the student. The student must prepare an interim report, a final report, and a presentation, as well as complete an evaluation form. At the beginning of the internship, the student receives an internship guide listing the tasks to be completed. A key requirement is to compare the agreed-upon objectives with the actual outcomes. The documentation prepared by the student and the supervisor is evaluated by the program director. If the achievement of the objectives and alignment with the student's skill level are not ensured, the respective internship site will be excluded from future placements. A list of internship sites and the corresponding reports are available to subsequent students via the Moodle learning platform.

2.5 Semester abroad

During the mandatory semester abroad, students in the Coding & Digital Design program have the opportunity to apply the knowledge they have acquired during the first four semesters of their studies in the areas of:

- Coding, Infrastructure & Application (worth 12 ECTS),
- Design (worth 12 ECTS), and
- Business (worth 6 ECTS)

to delve deeper into specific areas or expand their knowledge with complementary subjects. To this end, students can choose from the portfolio of approximately 250 partner universities and colleges of Kufstein University of Applied Sciences, Tyrol—subject to the availability of study spots—and take courses at these institutions. Depending on the institution, Coding & Digital Design students have access to a variety of courses in different areas of specialization. This allows students to delve deeper into subject areas that are not currently offered at the bachelor's level at Kufstein University of Applied Sciences in Tyrol (e.g., game development, VR/AR development, machine learning, etc.). The allocation of study spots abroad is handled uniformly by the university, taking into account each student's academic performance to date, in cases where more students are interested in a study spot than the partner institution can offer. Over the past few years, students have been offered significantly more study abroad spots than were actually needed, ensuring that Kufstein University of Applied Sciences in Tyrol has consistently been able to provide opportunities for studying abroad. The program also offers counseling, as needed, regarding the most appropriate academic focus for the semester abroad.

3 ADMISSION REQUIREMENTS

The admission requirements at Kufstein University of Applied Sciences in Tyrol are governed by the following provisions:

1. The general admission requirements are governed by § 4 FHG, as amended; this applies to **individuals with a general university entrance qualification**.

2. **Individuals without a high school diploma** must take an **entrance qualification examination** in accordance with § 64a of the University Act (UG) of 2002, as amended. In accordance with a regulation issued by the rectorate of a university, these individuals obtain general university entrance qualifications for bachelor's programs within a field of study group by passing the entrance qualification examination. Successful completion of the university entrance qualification examination thus entitles the student to admission to all degree programs within the field of study group for which the qualification was obtained.

The university entrance qualification exam may be taken for specific fields of study in accordance with a regulation issued by a university's rectorate; for Kufstein University of Applied Sciences in Tyrol, the relevant field of study is: Social and Economic Sciences (e.g., Business Administration, Business Education, Statistics, Sociology).

Applicants who have completed a 3-year **vocational secondary school program**, completed an **apprenticeship in the dual system**, or obtained a **subject-specific German Fachhochschulreife** qualify to study at Kufstein University of Applied Sciences, Tyrol, by passing supplementary exams in German, English, and mathematics. In the case of the German Fachhochschulreife, the supplementary exam must be taken only in those of the three subjects in which the grade on the transcript is "Unsatisfactory" or lower. All supplementary exams must be successfully completed before the start of the third semester.

3. For **individuals with relevant dual vocational training, completion of an apprenticeship** in one of the following **fields**—as specified in the current announcement by the Federal Ministry of Economy, Family, and Youth—is a prerequisite for admission:

- Construction and Building Services
- Office, Administration, Organization
- Chemistry and Plastics
- Electrical Engineering, Electronics
- Retail
- Information and Communication Technology
- Metalworking and Mechanical Engineering
- Media Design and Photography
- Paper Production, Paper Processing, Printing
- Transportation and Warehousing

4. **Individuals who have graduated** from one of the following relevant **vocational secondary schools** with a program of at least three years may also be admitted:

- Hotel Management School, Tourism School, Hospitality School
- Business schools
- Vocational, technical, and arts and crafts schools
- Higher Vocational School for Economic Professions

- Higher Vocational School for Technical Professions
- Vocational Schools for Tourism Professions
- Vocational Schools for Business Professions
- School of Business
- Technical Schools for Agricultural and Forestry Professions
- Business Schools

5. If foreign diplomas are not deemed equivalent to an Austrian high school diploma in terms of content and requirements, supplementary exams in English and mathematics must be taken before the start of studies. These exams can be taken either through external providers or at the Kufstein University of Applied Sciences Tyrol International Business School for a fee

Newly emerging apprenticeship programs in similar fields must be recognized accordingly.

The **individuals described in sections 3 and 4** must complete **supplementary exams** as an admission requirement by the start of the third semester and, if necessary, take corresponding preparatory courses. This is possible at the International Business School of Kufstein University of Applied Sciences Tyrol.

The following supplementary exams are required for this group:

- German
- English
- Mathematics

The following is an overview of which specialization within the German FOS/BOS program is considered a relevant prerequisite for admission. Students must take additional exams in mathematics, German, and English during their first semesters (if they received a "Mangelhafter" or a lower grade in these subjects).

Overview of German FOS/BOS specializations with admission requirements

	Coding & Digital Design, ft
FOS	
- Technology	Yes
- Business & Administration	Yes
- Social Services	Yes
- Agriculture, Organic and Environmental Technology	Yes
- Design	Yes
- Health	Yes
- International Business	Yes
BOS	
- Technology	Yes
- Business & Administration	Yes
- Social Services	Yes
- Agriculture, Organic and Environmental Technology	Yes
- Health	Yes
- International Business	Yes
For internships in relevant fields (marketing, business, administration), other fields of study may also be accepted (upon consultation with the program director).	Yes