



UNIVERSITY
OF APPLIED SCIENCES
UPPER AUSTRIA

Course Offer

for Incoming Exchange
Students



A photograph showing two students in a library. A young man with dark hair, wearing a light grey t-shirt, is seated at a wooden table, looking down at an open book. To his right, a young woman with blonde hair, wearing a white t-shirt, is looking at a laptop screen. They are surrounded by bookshelves filled with books. The background is slightly blurred, focusing on the students.

Summer Semester 2026

School of Informatics,
Communications and Media

fh-ooe.at/en/hagenberg-campus

Bachelor's Degree Programme

| Programme (department) | Course unit code | Course unit title | Course type | Semester (level) | Level | ECTS | Page |
|---|------------------|--------------------------------------|---------------------------|------------------|----------|------|------|
| Automotive Computing (Bachelor, Hagenberg Campus) | | | | | | | |
| AC.ba | DAB4 U | Database Design | Practice-oriented session | 4 | Bachelor | 3 | 6 |
| AC.ba | DAB4 V | Database Design | Lecture | 4 | Bachelor | 2 | 7 |
| AC.ba | WDP4 U | Web Development | Practice-oriented session | 4 | Bachelor | 3 | 8 |
| AC.ba | WDP4 V | Web Development | Lecture | 4 | Bachelor | 2 | 9 |
| Artificial Intelligence Solutions (Bachelor, Hagenberg Campus) | | | | | | | |
| AIS.ba | CVI4IL | Computer Vision | Integrated course | 4 | Bachelor | 5 | 10 |
| AIS.ba | DDW2UE | Databases and Data Warehouses | Practice-oriented session | 2 | Bachelor | 3 | 11 |
| AIS.ba | DDW2VO | Databases and Data Warehouses | Lecture | 2 | Bachelor | 2 | 12 |
| AIS.ba | DIV2IL | Data and Information Visualization | Integrated course | 2 | Bachelor | 2,5 | 13 |
| AIS.ba | DQP2IL | Data Quality and Data Preprocessing | Integrated course | 2 | Bachelor | 2,5 | 14 |
| AIS.ba | EAI4IL | Embedded AI | Integrated course | 4 | Bachelor | 5 | 15 |
| AIS.ba | GAI4UE | Generative AI | Practice-oriented session | 4 | Bachelor | 3 | 16 |
| AIS.ba | GAI4VO | Generative AI | Lecture | 4 | Bachelor | 2 | 17 |
| AIS.ba | MLS2UE | Supervised Machine Learning | Practice-oriented session | 2 | Bachelor | 3 | 18 |
| AIS.ba | MLS2VO | Supervised Machine Learning | Lecture | 2 | Bachelor | 2 | 19 |
| AIS.ba | PST2UE | Basics of Probability and Statistics | Practice-oriented session | 2 | Bachelor | 3 | 20 |
| AIS.ba | PST2VO | Basics of Probability and Statistics | Lecture | 2 | Bachelor | 2 | 21 |
| AIS.ba | SYM2UE | Logic and Symbolic AI | Practice-oriented session | 2 | Bachelor | 3 | 22 |

| Programme (department) | Course unit code | Course unit title | Course type | Semester (level) | Level | ECTS | Page |
|---|------------------|---|---------------------------|------------------|----------|------|------|
| Artificial Intelligence Solutions (Bachelor, Hagenberg Campus) | | | | | | | |
| AIS.ba | SYM2VO | Logic and Symbolic AI | Lecture | 2 | Bachelor | 2 | 23 |
| Design of Digital Products (Bachelor, Hagenberg Campus) | | | | | | | |
| DDP.ba | 23_MRE2VO | Market Research | Lecture | 2 | Bachelor | 2 | 24 |
| DDP.ba | 26_BEM4IL | Business English & Green Marketing | Integrated course | 4 | Bachelor | 3 | 25 |
| School of Informatics, Communications and Media (Bachelor, Hagenberg Campus) | | | | | | | |
| FHHGB | AIC1IL_INT | AI in Creativity | Integrated course | 2 | Bachelor | 5 | 26 |
| FHHGB | DEU1IL_INT | German for Beginners | Integrated course | 2 | Bachelor | 2 | 28 |
| FHHGB | DEU2IL_INT | German for Beginners with Prior Knowledge | Integrated course | 2 | Bachelor | 2 | 29 |
| FHHGB | SEM1PR_INT2PT | Semester project | Project | 2 | Bachelor | 10 | 30 |
| Hardware-Software-Design (Bachelor, Hagenberg Campus) | | | | | | | |
| HSD.ba | ENG2-17ILV | English II | Integrated course | 2 | Bachelor | 2 | 31 |
| Communication and Knowledge Media (Bachelor, Hagenberg Campus) | | | | | | | |
| KWM.ba | AUP6VO | Adaptivity and Personalization | Lecture | 6 | Bachelor | 3 | 32 |
| KWM.ba | SCR2IL | Client-Side Scripting | Integrated course | 2 | Bachelor | 3,5 | 34 |
| KWM.ba | STE2UE | Scientific and Technical English | Practice-oriented session | 2 | Bachelor | 1 | 35 |
| KWM.ba | WAC2IL | Web Accessibility | Integrated course | 2 | Bachelor | 1 | 36 |
| Medical and Bioinformatics (Bachelor, Hagenberg Campus) | | | | | | | |
| MBI.ba | 09_PHS2UE | Man: Physiology | Practice-oriented session | 2 | Bachelor | 1,86 | 38 |
| MBI.ba | 21_KEN2UE | English 2 | Practice-oriented session | 2 | Bachelor | 2 | 39 |
| MBI.ba | 21_TEN4UE | Technical English 2 | Practice-oriented session | 4 | Bachelor | 1 | 40 |
| Media Technology and Design (Bachelor, Hagenberg Campus) | | | | | | | |
| MTD.ba | 05_DVC4IL | Digital Imaging / Visual Computing | Integrated course | 4 | Bachelor | 5 | 41 |

| Programme (department) | Course unit code | Course unit title | Course type | Semester (level) | Level | ECTS | Page |
|--|---------------------|---|---------------------------|---------------------|----------|------|------|
| Media Technology and Design (Bachelor, Hagenberg Campus) | | | | | | | |
| MTD.ba | 05_IGP4IL | Interaction and Game Programming | Integrated course | 4 | Bachelor | 5 | 42 |
| MTD.ba | 05_MIR4IL | Mixed Reality | Integrated course | 4 | Bachelor | 5 | 43 |
| MTD.ba | 05_S3D4IL | Special Topic 3D | Integrated course | 4 | Bachelor | 5 | 44 |
| Secure Information Systems (Bachelor, Hagenberg Campus) | | | | | | | |
| SIB.ba | HIS4IL | Human Aspects of Information Security | Integrated course | 4 | Bachelor | 2 | 45 |
| SIB.ba | SEN2IL | Social Engineering | Integrated course | 2 | Bachelor | 2 | 46 |
| Software Engineering (Bachelor - Part Time, Hagenberg Campus) | | | | | | | |
| SE.ba | 09_VPS5VO | Distributed and Parallel Software Systems | Lecture | 6 | Bachelor | 1 | 47 |
| SE.ba | 14_VPS5UE | Distributed and Parallel Software Systems | Practice-oriented session | 6 | Bachelor | 1,5 | 48 |

Master's Degree Programme

| Programme (department) | Course unit code | Course unit title | Course type | Semester (level) | Level | ECTS | Page |
|---|------------------|--|---------------------------|------------------|--------|------|------|
| Data Science and Engineering (Master, Hagenberg Campus) | | | | | | | |
| DSE.ma | 0_2CO2U | Computational Intelligence II | Practice-oriented session | 2 | Master | 2 | 49 |
| DSE.ma | 0_2CO2V | Computational Intelligence II | Lecture | 2 | Master | 2 | 50 |
| DSE.ma | 0_MOS2U | Modelling and Simulation | Practice-oriented session | 2 | Master | 2 | 52 |
| DSE.ma | 0_MOS2V | Modelling and Simulation | Lecture | 2 | Master | 3 | 53 |
| Interactive Media (Master, Hagenberg Campus) | | | | | | | |
| IM.ma | BIG4IL | Big Data | Integrated course | 4 | Master | 5 | 54 |
| IM.ma | HMF2IL | Hypermedia Frameworks | Integrated course | 2 | Master | 5 | 55 |
| IM.ma | IVI2IL | Information Visualization | Integrated course | 2 | Master | 5 | 56 |
| IM.ma | RTE2IL | Real Time Engineering | Integrated course | 2 | Master | 5 | 57 |
| IM.ma | SDM2IL | Software Design Methods | Integrated course | 2 | Master | 5 | 58 |
| IM.ma | UIN3IL | User Interfaces | Integrated course | 4 | Master | 5 | 59 |
| IM.ma | VCO2IL | Visual Computing | Integrated course | 2 | Master | 5 | 60 |
| Communication and Knowledge Media (Master, Hagenberg Campus) | | | | | | | |
| KWM.ma | DIC2IL | Diversity Management and Intercultural Collaboration | Integrated course | 2 | Master | 5 | 61 |
| Software Engineering (Master, Hagenberg Campus) | | | | | | | |
| SE.ma | 25_AIN2IL | Artificial Intelligence | Integrated course | 2 | Master | 5 | 62 |
| SE.ma | 25_DML2IL | Data Mining and Machine Learning | Integrated course | 2 | Master | 5 | 63 |
| SE.ma | 25_FLC2UE | Formal Languages and Compilers | Practice-oriented session | 2 | Master | 2 | 64 |
| SE.ma | 25_FLC2VO | Formal Languages and Compilers | Lecture | 2 | Master | 3 | 65 |

| Programme (department) | Course unit code | Course unit title | Course type | Semester (level) | Level | ECTS | Page |
|---|---------------------|---------------------------------------|-------------------|---------------------|--------|------|------|
| Human-Centered Computing (Master - Part Time, Hagenberg Campus) | | | | | | | |
| HCC.ma | 17_DVA2I | Data Preprocessing and Analytics | Integrated course | 2 | Master | 3 | 66 |
| Information Security Management (Master - Part Time, Hagenberg Campus) | | | | | | | |
| ISM.ma | CCC2ILV | Cross Cultural Business Communication | Integrated course | 2 | Master | 3 | 67 |

Lecture/Seminar profile:**Database Design (DAB4 U)**

| | |
|-----------------------------------|---------------------------|
| Degree course | AC.ba |
| Course title | Database Design |
| Course code | DAB4 U |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Andreas Müller |
| Contact hours per week | 2,4 |
| ECTS credits | 3 |
| Course type | Practice-oriented session |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

In this course we will discuss fundamental concepts of databases (relational and non-relational). Topics include Entity Relationship Diagrams, Relational Models & SQL, Stored Procedures, Triggers, Indexes, Concurrency, NoSQL, APIs & ORM and Security.

Prerequisites:

According to the prerequisites for degree program access

Lecture/Seminar profile:**Database Design (DAB4 V)**

| | |
|--|-----------------------------|
| Degree course | AC.ba |
| Course title | Database Design |
| Course code | DAB4 V |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Andreas Müller |
| Contact hours per week | 1,6 |
| ECTS credits | 2 |
| Course type | Lecture |
| Examinations | oral or written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

In this course we will discuss fundamental concepts of databases (relational and non-relational). Topics include Entity Relationship Diagrams, Relational Models & SQL, Stored Procedures, Triggers, Indexes, Concurrency, NoSQL, APIs & ORM and Security.

Prerequisites:

According to the prerequisites for degree program access

Lecture/Seminar profile:**Web Development (WDP4 U)**

| | |
|--|---------------------------|
| Degree course | AC.ba |
| Course title | Web Development |
| Course code | WDP4 U |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Andreas Müller |
| Contact hours per week | 2,4 |
| ECTS credits | 3 |
| Course type | Practice-oriented session |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

In this course we will discuss fundamental concepts and technologies from the field of Web Development. Topics include HTML, CSS, JavaScript, Client-side Frameworks and Backends.

Prerequisites:

According to the prerequisites for degree program access

Lecture/Seminar profile:**Web Development (WDP4 V)**

| | |
|-----------------------------------|-----------------------------|
| Degree course | AC.ba |
| Course title | Web Development |
| Course code | WDP4 V |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Andreas Müller |
| Contact hours per week | 1,6 |
| ECTS credits | 2 |
| Course type | Lecture |
| Examinations | oral or written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

In this course we will discuss fundamental concepts and technologies from the field of Web Development. Topics include HTML, CSS, JavaScript, Client-side Frameworks and Backends.

Prerequisites:

According to the prerequisites for degree program access

Lecture/Seminar profile:**Computer Vision (CVI4IL)**

| | |
|-----------------------------------|-----------------------|
| Degree course | AIS.ba |
| Course title | Computer Vision |
| Course code | CVI4IL |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | |
| Contact hours per week | 4 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

Fundamentals of digital image processing and computer vision: human perception, images and their representations, color models, image statistics, linear filters and their applications. Theoretical and practical aspects when working with digital images. Techniques and datasets for image classification, segmentation, object and keypoint detection. Training, transfer-learning and usage of pre-trained models such as neural networks, convolutional neural networks (CNNs) and transformers. Data preparation and image augmentation techniques. Current trends in computer vision. Extensive practical exercises to deepen the understanding of the topics covered.

Prerequisites:

IAI1, ALG1, PRO1, DAM2, DAP2, MAT1, MAT2, MAL2, MAL3, NDL3

Lecture/Seminar profile:**Databases and Data Warehouses (DDW2UE)**

| | |
|--|-------------------------------|
| Degree course | AIS.ba |
| Course title | Databases and Data Warehouses |
| Course code | DDW2UE |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | |
| Contact hours per week | 2 |
| ECTS credits | 3 |
| Course type | Practice-oriented session |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

Introduction to databases and advantages of using database systems, basic concepts (data model, scheme, instances) and components of database systems, architectures of database systems and data independence, basics of modeling (model concept, techniques and methods), database models; entity-relationship model, relational model and relational query models (relational algebra, query and tuple calculus), phases of database design (conceptual, logical, physical design), relational database design (functional dependencies, normal forms, transformation properties), basics of database definition and database queries with SQL. Analytical vs. transactional data processing – different architectures for different requirements, data warehouse (DWH) as a unified source of record for analytical data, application examples for data warehouse systems and DWH architectures. Conceptual modeling: dimensional fact model according to Gofarelli. Implementation of dimensional data models on RDBMS: star schema & snowflake schema. Data integration: data vault schema. Extract-Transform-Load process (ETL). Technological concepts for data warehousing: bitmap index, column store, compression, in-memory.

Prerequisites:

FCS1, ALG1, PRO1

Basics of computer science, algorithms & data structures, and programming

Lecture/Seminar profile:**Databases and Data Warehouses (DDW2VO)**

| | |
|--|-------------------------------|
| Degree course | AIS.ba |
| Course title | Databases and Data Warehouses |
| Course code | DDW2VO |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Gabriel Kronberger |
| Contact hours per week | 2 |
| ECTS credits | 2 |
| Course type | Lecture |
| Examinations | oral or written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Introduction to databases and advantages of using database systems, basic concepts (data model, scheme, instances) and components of database systems, architectures of database systems and data independence, basics of modeling (model concept, techniques and methods), database models; entity-relationship model, relational model and relational query models (relational algebra, query and tuple calculus), phases of database design (conceptual, logical, physical design), relational database design (functional dependencies, normal forms, transformation properties), basics of database definition and database queries with SQL. Analytical vs. transactional data processing – different architectures for different requirements, data warehouse (DWH) as a unified source of record for analytical data, application examples for data warehouse systems and DWH architectures. Conceptual modeling: dimensional fact model according to Gofarelli. Implementation of dimensional data models on RDBMS: star schema & snowflake schema. Data integration: data vault schema. Extract-Transform-Load process (ETL). Technological concepts for data warehousing: bitmap index, column store, compression, in-memory.

Prerequisites:

FCS1, ALG1, PRO1

Basics of computer science, algorithms & data structures, and programming

Lecture/Seminar profile:**Data and Information Visualization (DIV2IL)**

| | |
|--|------------------------------------|
| Degree course | AIS.ba |
| Course title | Data and Information Visualization |
| Course code | DIV2IL |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | |
| Contact hours per week | 2 |
| ECTS credits | 2,5 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

Graduates are aware of the importance of visualization for understanding and interpreting data, they can classify data sources and types, and know appropriate types of visualization. They can design visualizations so that they correspond to human visual perception. Graduates can further apply the most important models and steps for the process of information visualization to their own tasks. They are able to create relevant visualizations for a selected data set using visualization tools in order to identify characteristic patterns, outliers or trends.

Content:

The course introduces the essential contents of interactive information visualization. It is explained, 1.) where the added value of information visualization lies, 2.) to what extent visualizations can exploit human perception to make patterns, trends, and outliers in abstract data visible, 3.) how visualizations help memory and cognition, 4.) which cognitive and perceptual limits information visualization has, and 5.) which central role interaction plays in information visualization. This theoretical content is applied in practice and deepened in the practical part of the course by interactively visualizing a wide variety of data sets with Python visualization libraries (e.g., Seaborn, Altair) and the visualization tools (e.g. Tableau and Microsoft Power BI) in order to identify interesting patterns or trends in them. The technological implementation and the user-friendly design of the visualizations are evaluated.

Prerequisites:

IAI1, FCS1, ALG1, PRO1, MAT1

Basics of computer science, algorithms & data structures, Python programming, and linear algebra

Lecture/Seminar profile:**Data Quality and Data Preprocessing (DQP2IL)**

| | |
|--|-------------------------------------|
| Degree course | AIS.ba |
| Course title | Data Quality and Data Preprocessing |
| Course code | DQP2IL |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | |
| Contact hours per week | 2 |
| ECTS credits | 2,5 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

Graduates know the essential methods for preprocessing data for advanced machine learning, in particular, scaling and transformation, as well as treatment and imputation of missing values. They can implement these in Python using the 'pandas' package to solve practical tasks.

Content:

Introduction to data: basic introduction and concepts; taxonomy of data; data representation; summarization and exploratory analysis; distance and similarity; example: central limit theorem. Data preprocessing: the data engineering pipeline; wrangling, cleaning, preprocessing; data quality; descriptive data summarization: basic statistics, skewness, dispersion, outliers; the box plot; missing values: sources (missing at random, missing not at random, not missing at random), mitigation strategies, missing values imputation; noise and noise removal; binning and scaling; basics of principal component analysis and linear discriminant analysis. All concepts and methods will be practiced in the exercise part of the course based on Python and the 'pandas' library.

Prerequisites:

IAI1, FCS1, ALG1, PRO1, MAT1

Basics of computer science, algorithms & data structures, Python programming, and linear algebra

Lecture/Seminar profile:**Embedded AI (EAI4IL)**

| | |
|--|-----------------------|
| Degree course | AIS.ba |
| Course title | Embedded AI |
| Course code | EAI4IL |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | |
| Contact hours per week | 4 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

n.a.

Prerequisites:

IAI1, FCS1, PRO1, DAM2, DAP2, PRO2, SWA3

Blocked partially: RQE5VO will be held in blocks at the beginning of the 5th semester

Lecture/Seminar profile:**Generative AI (GAI4UE)**

| | |
|-----------------------------------|---------------------------|
| Degree course | AIS.ba |
| Course title | Generative AI |
| Course code | GAI4UE |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | |
| Contact hours per week | 2 |
| ECTS credits | 3 |
| Course type | Practice-oriented session |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

Principles of generative modeling in detail and how to perform generative modeling with deep learning. Autoencoders, variational autoencoders.

Generative Adversarial Networks: architectures, training, technical issues.

Transformers: architectures and training, sequence-to-sequence learning, applications to natural language processing, vision transformers. Stable diffusion networks, Contrastive Language-Image Pre-training.

Extensive practical exercises deepen the subjects through practical examples.

Prerequisites:

IAI1, ALG1, PRO1, DAT2, MAT1, MAT2, MAL2, MAL3, NDL3

Lecture/Seminar profile:**Generative AI (GAI4VO)**

| | |
|-----------------------------------|-----------------------------|
| Degree course | AIS.ba |
| Course title | Generative AI |
| Course code | GAI4VO |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | |
| Contact hours per week | 2 |
| ECTS credits | 2 |
| Course type | Lecture |
| Examinations | oral or written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Principles of generative modeling in detail and how to perform generative modeling with deep learning. Autoencoders, variational autoencoders.

Generative Adversarial Networks: architectures, training, technical issues.

Transformers: architectures and training, sequence-to-sequence learning, applications to natural language processing, vision transformers. Stable diffusion networks, Contrastive Language-Image Pre-training.

Extensive practical exercises deepen the subjects through practical examples.

Prerequisites:

IAI1, ALG1, PRO1, DAT2, MAT1, MAT2, MAL2, MAL3, NDL3

Lecture/Seminar profile:**Supervised Machine Learning (MLS2UE)**

| | |
|--|-----------------------------|
| Degree course | AIS.ba |
| Course title | Supervised Machine Learning |
| Course code | MLS2UE |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | |
| Contact hours per week | 2 |
| ECTS credits | 3 |
| Course type | Practice-oriented session |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

Introduction to supervised machine learning, classification, and regression; joint distribution of inputs and outputs, generalization error; estimation of generalization error using training and test sets; cross validation; confusion tables and evaluation measures derived from them; evaluation measures for unbalanced classification tasks; receiver-operator characteristics curve; evaluation measures for regression; underfitting and overfitting; hyperparameter optimization; supervised machine learning methods: k-nearest neighbor, linear regression, support vector machines, decision trees, tree ensembles: bagging (random forests) and boosting. Extensive practical exercises deepen the subjects of the lecture through practical examples.

Prerequisites:

IAI1, ALG1, PRO1, MAT1

Basics of AI, algorithms & data structures, Python programming, linear algebra, and calculus

Lecture/Seminar profile:**Supervised Machine Learning (MLS2VO)**

| | |
|--|-----------------------------|
| Degree course | AIS.ba |
| Course title | Supervised Machine Learning |
| Course code | MLS2VO |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Ulrich Bodenhofer |
| Contact hours per week | 2 |
| ECTS credits | 2 |
| Course type | Lecture |
| Examinations | oral or written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Introduction to supervised machine learning, classification, and regression; joint distribution of inputs and outputs, generalization error; estimation of generalization error using training and test sets; cross validation; confusion tables and evaluation measures derived from them; evaluation measures for unbalanced classification tasks; receiver-operator characteristics curve; evaluation measures for regression; underfitting and overfitting; hyperparameter optimization; supervised machine learning methods: k-nearest neighbor, linear regression, support vector machines, decision trees, tree ensembles: bagging (random forests) and boosting. Extensive practical exercises deepen the subjects of the lecture through practical examples.

Prerequisites:

IAI1, ALG1, PRO1, MAT1

Basics of AI, algorithms & data structures, Python programming, linear algebra, and calculus

Lecture/Seminar profile:**Basics of Probability and Statistics (PST2UE)**

| | |
|-----------------------------------|--------------------------------------|
| Degree course | AIS.ba |
| Course title | Basics of Probability and Statistics |
| Course code | PST2UE |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | |
| Contact hours per week | 2 |
| ECTS credits | 3 |
| Course type | Practice-oriented session |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

Probability theory: random experiments and probability, combinatorics, conditional probability and Bayes rule, random variables, expectation and variance, discrete distributions, joint distributions, (conditional) independence, continuous distributions, normal distribution and the central limit theorem. Basics of descriptive statistics

Inferential statistics: estimators and their properties, confidence intervals, basic concepts of hypothesis testing with binomial test and t-tests as examples. Exercises deepen the subjects of the lecture through practical examples.

Prerequisites:

MAT1

Basics of linear algebra and calculus

Lecture/Seminar profile:**Basics of Probability and Statistics (PST2VO)**

| | |
|-----------------------------------|--------------------------------------|
| Degree course | AIS.ba |
| Course title | Basics of Probability and Statistics |
| Course code | PST2VO |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Stephan Dreiseitl |
| Contact hours per week | 2 |
| ECTS credits | 2 |
| Course type | Lecture |
| Examinations | oral or written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Probability theory: random experiments and probability, combinatorics, conditional probability and Bayes rule, random variables, expectation and variance, discrete distributions, joint distributions, (conditional) independence, continuous distributions, normal distribution and the central limit theorem. Basics of descriptive statistics

Inferential statistics: estimators and their properties, confidence intervals, basic concepts of hypothesis testing with binomial test and t-tests as examples. Exercises deepen the subjects of the lecture through practical examples.

Prerequisites:

MAT1

Basics of linear algebra and calculus

Lecture/Seminar profile:**Logic and Symbolic AI (SYM2UE)**

| | |
|--|---------------------------|
| Degree course | AIS.ba |
| Course title | Logic and Symbolic AI |
| Course code | SYM2UE |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | |
| Contact hours per week | 2 |
| ECTS credits | 3 |
| Course type | Practice-oriented session |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

Logic as the language of science: propositional and predicate logic, knowledge representation, entailment vs. inference, soundness and completeness. Elementary AI algorithms: search (including informed search, game search and constraint satisfaction) and planning. Symbolic representation of uncertainty: Joint distributions of random variables, Bayesian networks, hidden Markov models to Markov reward and Markov decision processes and foundations of reinforcement learning. Exercises deepen the subjects of the lecture through practical examples.

Prerequisites:

IAI1, ALG1, PRO1, MAT1

Basics of AI, algorithms & data structures, Python programming, linear algebra, and calculus

Lecture/Seminar profile:**Logic and Symbolic AI (SYM2VO)**

| | |
|--|-----------------------------|
| Degree course | AIS.ba |
| Course title | Logic and Symbolic AI |
| Course code | SYM2VO |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Stephan Dreiseitl |
| Contact hours per week | 2 |
| ECTS credits | 2 |
| Course type | Lecture |
| Examinations | oral or written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Logic as the language of science: propositional and predicate logic, knowledge representation, entailment vs. inference, soundness and completeness. Elementary AI algorithms: search (including informed search, game search and constraint satisfaction) and planning. Symbolic representation of uncertainty: Joint distributions of random variables, Bayesian networks, hidden Markov models to Markov reward and Markov decision processes and foundations of reinforcement learning. Exercises deepen the subjects of the lecture through practical examples.

Prerequisites:

IAI1, ALG1, PRO1, MAT1

Basics of AI, algorithms & data structures, Python programming, linear algebra, and calculus

Lecture/Seminar profile:**Market Research (23_MRE2VO)**

| | |
|--|-----------------------|
| Degree course | DDP.ba |
| Course title | Market Research |
| Course code | 23_MRE2VO |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Robert Schenkenfelder |
| Contact hours per week | 2 |
| ECTS credits | 2 |
| Course type | Lecture |
| Examinations | written examination |
| Language of instruction | German/English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Introduction to the basics of the market (market definition and assessment of market potential, etc.), the key figures of market analysis (market potential, market volume, market exploitation, etc.) and methods of market analysis (primary and secondary research, SWOT analysis, strengths/weaknesses analysis, competitor analysis, customer/target group analysis, etc.). Definition of objectives, market segments and target groups in the course of market, competition and industry analysis.

Translated with DeepL.com (free version)

Prerequisites:

A sound knowledge of English, a minimum of B2-level

Lecture/Seminar profile:**Business English & Green Marketing (26_BEM4IL)**

| | |
|-----------------------------------|------------------------------------|
| Degree course | DDP.ba |
| Course title | Business English & Green Marketing |
| Course code | 26_BEM4IL |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Jordanka Kretzschmar |
| Contact hours per week | 2 |
| ECTS credits | 3 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

Development of functional technical vocabulary in the field of business English, reception and production of written technical texts (e.g. commercial correspondence), basic job-related presentations and technical discourse at B2+ level.

Prerequisites:

n.a.

Lecture/Seminar profile:

AI in Creativity (AIC1IL_INT)

| | |
|-----------------------------------|-----------------------|
| Degree course | FHHGB |
| Course title | AI in Creativity |
| Course code | AIC1IL_INT |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Alexander Schurr |
| Contact hours per week | 3 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 10 |

Learning objectives:

Participants will be able to:

- Understand the fundamentals of creativity and its different dimensions, including artistic, scientific, and technological perspectives.
- Acquire a solid foundation in artificial intelligence and its key applications within creative domains such as generative art, music composition, storytelling, video generation, image generation, multimedia content creation small process automations.
- Develop a critical understanding of the ethical, social, and cultural implications of using AI in creative production, with particular attention to the role of technology in shaping creativity.
- Analyse case studies and real-world examples of AI-generated and AI-supported creative works and business relevant use cases, evaluating their aesthetic, technical, emotional, and commercial qualities.
- Build practical, hands-on skills in applying AI tools and techniques through prompt engineering and low-code or no-code automation platforms to generate creative and business-relevant output.

Content:

Introduction to Creativity and AI

- The concept of creativity and its various dimensions
- What is AI? Core concepts, types of AI, and applications across different domains
- The intersection of creativity and AI: historical developments, current practices, and future trends

AI in Creative and Business Fields

- Prompt-Building and writing – the way to communicate with AI
- Generative art: algorithms, models, and tools for creating visual content with AI
- Music composition and sound design: using AI to generate music, audio assets, and explore new genres
- Video & image generation for different purpose (Gaming, Social Media and more)

- Storytelling and content creation: AI tools for narratives, plot development, characters, marketing copy, and brand storytelling
 - Practical use cases and insights for the business world, including marketing, communication, and innovation processes
 - Automation of administrative, marketing, and operational tasks using AI-driven workflows
 - The role of AI in jobs, personal life, and evolving skill requirements
- Ethical and Social Implications**
- Bias in AI systems and its impact on creative and business outputs
 - Ownership, copyright, and intellectual property of AI-generated content
 - How AI changes creative processes, professional roles, and the definition of “art” and “value creation”
- Collaboration and Co-Creation**
- Human-AI interaction in creative and professional workflows
 - Integrating AI-generated output with human creativity, expertise, and decision-making
 - Case studies of successful AI-human collaboration and co-creation projects in creative industries and business environments
- Hands-on Practice**
- Practical experimentation with AI tools and techniques for creative, administrative, and business-oriented output
 - Project-based learning: developing AI-supported projects, including art, music, storytelling, images, videos, marketing assets, administrative workflows, and small business automation projects
 - Feedback, reflection, and critique sessions to evaluate outcomes and improve practical skills
- The Future of AI and Creativity**
- The impact of AI on creative industries, business models, and professional roles
 - Emerging and potential new forms of creative and economic expression enabled by AI
 - Ethical, social, and regulatory considerations shaping the future use of AI in creativity and business

Prerequisites:

None

Lecture/Seminar profile:**German for Beginners (DEU1IL_INT)**

| | |
|-----------------------------------|-----------------------|
| Degree course | FHHGB |
| Course title | German for Beginners |
| Course code | DEU1IL_INT |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Gabriele Hofmüller |
| Contact hours per week | 1,6 |
| ECTS credits | 2 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 10 |

Learning objectives:

n.a.

Content:

n.a.

Prerequisites:

none

Lecture/Seminar profile:**German for Beginners with Prior Knowledge (DEU2IL_INT)**

| | |
|-----------------------------------|---|
| Degree course | FHHGB |
| Course title | German for Beginners with Prior Knowledge |
| Course code | DEU2IL_INT |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Gabriele Hofmüller |
| Contact hours per week | 1,6 |
| ECTS credits | 2 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 10 |

Learning objectives:

n.a.

Content:

n.a.

Prerequisites:

Basic knowledge in german

Lecture/Seminar profile:**Semester project (SEM1PR_INT2PT)**

| | |
|-----------------------------------|---|
| Degree course | FHHGB |
| Course title | Semester project |
| Course code | SEM1PR_INT2PT |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Johannes Schönböck, Mirjam Augstein, Thomas Neumayr |
| Contact hours per week | 1 |
| ECTS credits | 10 |
| Course type | Project |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 10 |

Learning objectives:

Working in a team on a specific topic, where you fulfill most of the prerequisites of the project.

Content:

Define Milestones and a final goal of the project. Write a project report at the end including your defined milestones. Report problems and argue why you have chosen which technology and how you solved upcoming problems.

The Semester Project is designed in such a way that we provide current problems and topics from our research projects. The topics are quite broad, but more or less revolve around the focus on (hybrid) collaboration, recommendation systems and the practical use of AI tools to solve problems in our research work. The project is carried out as a group. This means that at the beginning of the semester, we will present you with specific topics and you as a group will decide which topic you would like to work on.

Prerequisites:

The Prerequisites depend on the project you have chosen. For a web project for example HTML, CSS, javascript, PHP and MySQL.

Lecture/Seminar profile:**English II (ENG2-17ILV)**

| | |
|-----------------------------------|-----------------------|
| Degree course | HSD.ba |
| Course title | English II |
| Course code | ENG2-17ILV |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Yan Philip Templier |
| Contact hours per week | 2 |
| ECTS credits | 2 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

n.a.

Prerequisites:

n.a.

Lecture/Seminar profile:**Adaptivity and Personalization (AUP6VO)**

| | |
|--|--------------------------------|
| Degree course | KWM.ba |
| Course title | Adaptivity and Personalization |
| Course code | AUP6VO |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Mirjam Augstein |
| Contact hours per week | 2 |
| ECTS credits | 3 |
| Course type | Lecture |
| Examinations | written examination |
| Language of instruction | English |
| Places for international students | 10 |

Learning objectives:

After completing the course, students should be able to design adaptive systems and know and apply methods for the acquisition, analysis and interpretation of data that serve as a basis for adaptivity. Furthermore, students should be able to evaluate adaptive systems in terms of usability and added value compared to non-adaptive variants.

Content:

Adaptivity is a way of making systems personalized to users - in many ways. For example, adaptivity can affect the graphical user interface of a system, which then automatically adapts to the user, but also the type and amount of content presented. The latter means a way out of the so-called "information dilemma" which has become a growing problem since the early days of the Internet. The rapidly increasing amount of available information as well as the increasing diversity of users pose new challenges to the designers and developers of the systems. A single representation is often no longer sufficient. This course deals with the basics of personalization and adaptive systems. Different aspects of adaptive systems are covered, starting with the goals of adaptivity, user modeling techniques, security aspects, and evaluation of adaptive systems. The goal of the course is to provide a holistic overview of the topic. Technical aspects as well as the user perspective will be considered. After completing the course, students should be able to design adaptive systems and know and apply methods for the acquisition, analysis and interpretation of data that serve as a basis for adaptivity. Furthermore, students should be able to evaluate adaptive systems in terms of usability and added value compared to non-adaptive variants.

Assessment: The course will be assessed by a combination of 1) a written exam at the end of the semester which contributes 66,7% to the overall result and 2) a reading assignment of topically relevant publications with the students will summarize and present in an oral exam (contributing

33,3% to the overall result). Students need to achieve at least 50% of the obtainable points in order to complete the course positively.

Prerequisites:

Students participating in the course should have basic (web) programming skills and be familiar with the basics of human-centered design (both is no strict prerequisite but recommended).

Lecture/Seminar profile:**Client-Side Scripting (SCR2IL)**

| | |
|--|-----------------------|
| Degree course | KWM.ba |
| Course title | Client-Side Scripting |
| Course code | SCR2IL |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Johannes Schönböck |
| Contact hours per week | 3 |
| ECTS credits | 3,5 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

Graduates have basic knowledge in the conception, design and implementation of hypermedia applications, taking into account usability, standards compliance and progressive enhancement. The implementation is based on modern languages and tools. The focus of the course is on client-side web development with JavaScript. Students will gain a detailed insight into the basic concepts and technologies of the web, with current design trends and frameworks being scrutinized and explored using practical examples. The course consists of a lecture part and a practical part.

Content:

Introduction into Client Side Scripting

- JavaScript basics
- Document Object Model (DOM)
- Object-oriented programming in JavaScript

In the course, the theoretical contents are applied to concrete examples.

Prerequisites:

basic knowledge of programming

Lecture/Seminar profile:**Scientific and Technical English (STE2UE)**

| | |
|-----------------------------------|----------------------------------|
| Degree course | KWM.ba |
| Course title | Scientific and Technical English |
| Course code | STE2UE |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Annamaria Mähr |
| Contact hours per week | 1 |
| ECTS credits | 1 |
| Course type | Practice-oriented session |
| Examinations | written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

In this course you will learn how to effectively deliver elevator pitches and how to talk shop proficiently. In addition, a number of grammar-related topics are covered (gerund, conditionals, adjectives).

Content:

Prepare, review and read materials for class. Carry out verbal and written assignments. Complete oral and written classroom assignments. Engage in group-, pair- and roleplay activities. Participate in discussions & give feedback when called upon. Grammar reviews. Leading a discussion. Final grammar examination.

Prerequisites:

A sound knowledge of English, a minimum of B2-level.

Lecture/Seminar profile:

Web Accessibility (WAC2IL)

| | |
|-----------------------------------|---------------------------------|
| Degree course | KWM.ba |
| Course title | Web Accessibility |
| Course code | WAC2IL |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Reinhard Koutny, Peter Heumader |
| Contact hours per week | 1 |
| ECTS credits | 1 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

Accessibility of web and software systems is of crucial importance for the inclusion and participation of people with disabilities and older people (approx. 20% of the total population) in the information and knowledge society. The way web and software interfaces are designed, determines whether independent and self-directed interaction and access for people with disabilities is possible. In the information society, disability is no longer just an attribute of the individual but a quality criterion for the design of the information and communication technology (ICT)-based living environment. This requirement for the design, implementation and use of technical systems is reflected in political directives, laws and increasingly also in social and economic requirements. In addition, accessibility of web and software systems is an essential contribution to increasing usability and user experience for all people, regardless of age and/or any disabilities.

Graduates of this lecture:

- gain broad awareness of the problems and needs of people with disabilities and older people when interacting with standard hardware and websites or software systems,
- have basic knowledge about assistive technology that standard hardware and software already provide today and about specialized assistive technology (AT) that these people (can) use at the human-computer interface (HCI),
- recognize the potential of accessible user interfaces to mitigate the effects of disabilities and to improve inclusion, care, and support of people with disabilities,
- develop awareness and understanding of the need for accessibility as a basic condition for realizing this potential in inclusion and participation in all areas of life,
- gain in-depth knowledge of technical standards for accessible web and software development
- learn to use different methods, techniques and tools in the implementation of the standards,
- acquire knowledge of how these standards are implemented with different development

- environments on different platforms,
- learn methods and use tools for evaluating accessibility,
 - are able to independently carry out exemplary practical examples in design and programming,
 - develop competencies to realize accessibility at the current state of the art, but also in the future,
 - understand accessibility as an integral part of web/software engineering

Content:

1. Introduction:
 - o Objectives and overview of the lecture
 - o What is accessibility and why is accessibility important.
 - o Overview of guidelines
 - o Assistive technologies and their types of interaction with user interfaces of web/software systems
 - o Self-experience: browsing and using ICT without screen, mouse, and keyboard; target audience.
2. Accessibility guidelines, their exemplary implementation and application examples
 - o Principle 1: Perceivability: equivalent alternatives, adaptation of content, ...
 - 3. accessibility guidelines, their exemplary implementation and application examples
 - o Principle 2: Operability: keyboard interface, navigation, time, ...
 - 4. accessibility guidelines, their exemplary implementation and application examples
 - o Principle 3: Understandability: readability, user guidance, error prevention, ...
 - o Principle 4: Robustness: Compatibility with AT and other user agents, ...
 - o WCAG 2.1
5. Accessible dynamic web and software systems: Accessible Rich Internet Applications (WAI-ARIA)
 - o HTML 5 Accessibility
 - o What is WAI-ARIA?
 - o ARIA elements and methods
 - o ARIA Examples

Prerequisites:

basic knowledge of programming

Lecture/Seminar profile:**Man: Physiology (09_PHS2UE)**

| | |
|-----------------------------------|---------------------------|
| Degree course | MBI.ba |
| Course title | Man: Physiology |
| Course code | 09_PHS2UE |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Julia Vetter |
| Contact hours per week | 1,86 |
| ECTS credits | 1,86 |
| Course type | Practice-oriented session |
| Examinations | continuous assessment |
| Language of instruction | German/English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Ongoing training for the lecture, practical application of the knowledge imparted in the lecture.

Prerequisites:

n.a.

Lecture/Seminar profile:**English 2 (21_KEN2UE)**

| | |
|-----------------------------------|----------------------------------|
| Degree course | MBI.ba |
| Course title | English 2 |
| Course code | 21_KEN2UE |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Sandra Zwirchmayr, Alastair Long |
| Contact hours per week | 2 |
| ECTS credits | 2 |
| Course type | Practice-oriented session |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

Primarily—but not exclusively—by means of simulations, role plays, group work, pair work, presentations, research, debates, as well as video and audio work important elements of grammar will be reviewed, technical and general vocabulary skills will be expanded, and idiomatic expressions will be introduced in order to improve each student's written and oral communication skills. Some of the areas of topicality include conflict situations, rhetorical expression, computer ethics, as well as issues in bioinformatics.

Prerequisites:

n.a.

Lecture/Seminar profile:**Technical English 2 (21_TEN4UE)**

| | |
|--|----------------------------------|
| Degree course | MBI.ba |
| Course title | Technical English 2 |
| Course code | 21_TEN4UE |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Sandra Zwirchmayr, Alastair Long |
| Contact hours per week | 1 |
| ECTS credits | 1 |
| Course type | Practice-oriented session |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

The skills acquired in the module English for Communication will be combined with those from the module Technical English to improve each student's written and oral communication skills. Each student will choose a topic from the realm of bioinformatics, create a PowerPoint presentation for it, and deliver it; this will be followed by a group discussion of the content as well as feedback for the speaker. In addition, each student will critique one presentation in writing, and the instructor will do all of them via audio or video analysis. The areas of topicality include a short review of presentation techniques, rhetorical expression, pitfalls during a presentation, and critique writing.

Prerequisites:

n.a.

Lecture/Seminar profile:**Digital Imaging / Visual Computing (05_DVC4IL)**

| | |
|--|------------------------------------|
| Degree course | MTD.ba |
| Course title | Digital Imaging / Visual Computing |
| Course code | 05_DVC4IL |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | David Christian Schedl |
| Contact hours per week | 3 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | German/English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Students learn basic processes and techniques from digital image processing and computer vision. In addition to the theoretical understanding, students also acquire practical skills in implementing and applying algorithms and software that are used, for example, in deep learning, robotics, medicine, biology, astronomy, and media production.

Requirements

General interest in image processing and a basic math understanding.

Prerequisites:

Basic Knowledge in HTML, CSS, JavaScript

Lecture/Seminar profile:**Interaction and Game Programming (05_IGP4IL)**

| | |
|--|----------------------------------|
| Degree course | MTD.ba |
| Course title | Interaction and Game Programming |
| Course code | 05_IGP4IL |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Andreas Ernst Riegler |
| Contact hours per week | 3 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | German/English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

In this course, we will discuss and apply the following three principles:

Exertion: Inclusion of body movement (i.e., gestures, activities, sequences) into games, play, and simulation. How can we create experiences that make our users exhausting themselves with joy?

Integration: Waiving the boundaries between users and technology. How can we create experiences that make people believe being an entity with technological artifacts?

AI and machine learning in games: How can we make our game actors self-learn and optimize behavior? For this part, there is no fundamental knowledge of AI and math needed.

Grading: In group projects, we will develop experiences that foster on at least one of the above mentioned areas.

Requirements

General interest into gameful experiences or simulation beyond classical games. Basic knowledge of Unity and/or Unreal assumed.

Prerequisites:

Basic Knowledge in HTML, CSS, JavaScript

Lecture/Seminar profile:**Mixed Reality (05_MIR4IL)**

| | |
|-----------------------------------|--|
| Degree course | MTD.ba |
| Course title | Mixed Reality |
| Course code | 05_MIR4IL |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Dominik Hackl, Georgi Yordanov Kostov, Jeremiah Diephuis |
| Contact hours per week | 3 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | German/English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

Introduction to technologies and production processes for mixed reality applications. Fusion of the acquired knowledge from the courses "Game Programming" and "3D Design" with special attention to possibilities of performance optimization. Insight into the use of MR technologies for motion capture and other purposes. Design and prototype development of an interactive MR application (game, installation, etc.).

Prerequisites:

Basic Knowledge in HTML, CSS, JavaScript

Lecture/Seminar profile:**Special Topic 3D (05_S3D4IL)**

| | |
|-----------------------------------|-----------------------|
| Degree course | MTD.ba |
| Course title | Special Topic 3D |
| Course code | 05_S3D4IL |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Marius David Oelsch |
| Contact hours per week | 3 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | German/English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

Rigging is the foundation of all kind of manually animated sequences, from pretty simple rigs to quite complex full creature rigs. This course discusses different types of rigging for animation in Blender. Other than a bit of theory up front the course will mostly be in practical examples and exercises.

Prerequisites:

Basic Knowledge in HTML, CSS, JavaScript

Lecture/Seminar profile:**Human Aspects of Information Security (HIS4IL)**

| | |
|--|---------------------------------------|
| Degree course | SIB.ba |
| Course title | Human Aspects of Information Security |
| Course code | HIS4IL |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Marcus Nohlberg |
| Contact hours per week | 2 |
| ECTS credits | 2 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

The students will learn:

Foundations of:

- Information Security Awareness
- How to create Security Awareness materials
- How to create Security Awareness campaigns
- How to present security materials
- Basics of research within the human

Content:

Basics of human behaviour in the context of information security, subjective assessment of risks and threats, effectiveness of policies and regulations, overt and covert avoidance behaviour, basic concepts and examples of security awareness training.

Prerequisites:

n.a.

Lecture/Seminar profile:**Social Engineering (SEN2IL)**

| | |
|-----------------------------------|-----------------------|
| Degree course | SIB.ba |
| Course title | Social Engineering |
| Course code | SEN2IL |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Marcus Nohlberg |
| Contact hours per week | 2 |
| ECTS credits | 2 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

The students will learn:

Foundations of:

- Social Engineering
- The Human Element of Security
- Socio-psychological aspects related to Information Security
- Gow to structure work on preventing Social Engineering
- The fundamentals of research within the human element

Content:

Psychological basics of manipulation and influence, mechanisms and basic patterns of social engineering attacks and scams, possibilities of recognising and avoiding such attacks.

Prerequisites:

n.a.

Lecture/Seminar profile:**Distributed and Parallel Software Systems (09_VPS5VO)**

| | |
|--|---|
| Degree course | SE.ba |
| Course title | Distributed and Parallel Software Systems |
| Course code | 09_VPS5VO |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Johannes Alexander Karder |
| Contact hours per week | 1 |
| ECTS credits | 1 |
| Course type | Lecture |
| Examinations | written examination |
| Language of instruction | German / English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Einführung in die Entwicklung paralleler und verteilter Programme (Motivation, Anwendungsgebiete, Moore's Gesetz, TOP500 Liste), Theoretische Grundlagen (Speed Up, Effizienz, Amdahls Gesetz, Gustafsons Gesetz, Konsequenzen), Überblick über parallele Hardwarearchitekturen (Flynn's Taxonomy, Pipelining, Shared Memory Systeme, Distributed Memory Systeme), Herausforderungen beim Erstellen nebenläufiger Programme (Deadlocks, Livelocks, Race Conditions, Overhead, Synchronisation), Entwicklung nebenläufiger bzw. paralleler Applikationen für .NET, OpenMP

Prerequisites:

WEB2

Lecture/Seminar profile:**Distributed and Parallel Software Systems (14_VPS5UE)**

| | |
|--|--|
| Degree course | SE.ba |
| Course title | Distributed and Parallel Software Systems |
| Course code | 14_VPS5UE |
| Level | Bachelor |
| Term | SS26 |
| Lecturer | Johannes Alexander Karder, Philipp Neuhauser |
| Contact hours per week | 1 |
| ECTS credits | 1,5 |
| Course type | Practice-oriented session |
| Examinations | continuous assessment |
| Language of instruction | German / English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

Übungen vertiefen den Stoff der Vorlesung durch praktische Beispiele.

Prerequisites:

WEB2

Lecture/Seminar profile:**Computational Intelligence II (0_2CO2U)**

| | |
|--|------------------------------------|
| Degree course | DSE.ma |
| Course title | Computational Intelligence II |
| Course code | 0_2CO2U |
| Level | Master |
| Term | SS26 |
| Lecturer | Stephan Winkler, Ulrich Bodenhofer |
| Contact hours per week | 0,67 |
| ECTS credits | 2 |
| Course type | Practice-oriented session |
| Examinations | continuous assessment |
| Language of instruction | German / English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Concurrent exercises, practical applications of the theoretical lecture contents.

Prerequisites:

According to admission requirements for the study program

Lecture/Seminar profile:**Computational Intelligence II (0_2CO2V)**

| | |
|--|------------------------------------|
| Degree course | DSE.ma |
| Course title | Computational Intelligence II |
| Course code | 0_2CO2V |
| Level | Master |
| Term | SS26 |
| Lecturer | Stephan Winkler, Ulrich Bodenhofer |
| Contact hours per week | 1,33 |
| ECTS credits | 2 |
| Course type | Lecture |
| Examinations | oral or written examination |
| Language of instruction | German / English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Theoretical part:

- Differentiation between numerical and heuristic optimization
- Taxonomy of heuristic optimization methods
- Examples of combinatorial optimization problems and complexity theory
- Solution space behavior and P and NP problems
- Heuristic methods (overview): Problem-specific methods vs. metaheuristics
- Construction vs. improvement heuristics
- Proximity and distance of solutions
- Local search
- Genetic Algorithms (GA)
- Evolution strategies
- Genetic Programming (GP)
- Symbolic regression and symbolic classification
- Basics of support vector machines: linear SVM, soft-margin SVM, non-linear SVMs and the kernel trick
- SVMs for classification of biological sequences
- Multi-class SVM and support vector regression
- History and basics of neural networks
- The backpropagation algorithm
- Tips and tricks for the practical use of neural networks
- Deep learning fundamentals: vanishing gradients, pre-training, alternative activation functions,

drop-out

- Convolutional neural networks: basics, transfer learning with the help of pre-trained networks, object recognition
- Recurrent neural networks and Long Short-Term Memory (LSTM) and their application in sequence and language processing
- Basic idea of Generative Adversarial Networks (GANs), Neural Style Transfer
- Deep fakes

Practical part:

- Development and use of evolutionary algorithms to solve different problems
- Implementation of evolutionary algorithms to solve different problems
- Use of data processing pipelines: data cleaning, feature definition & extraction, model selection, tuning, results analysis
- Use of regression and classification algorithms to solve different data mining tasks
- Use of different methods to find a solution and combination of methods (data preprocessing, clustering, classification / regression)
- Use of existing frameworks (HeuristicLab, MATLAB, Python packages) and implementation of own preprocessing methods
- Involvement of students in research projects of the research groups Heuristic and Evolutionary Algorithms (HEAL) and Bioinformatics (BIN)
- Use of linear and non-linear support vector machines for classification and regression
- Hyperparameter selection for SVMs using grid Search
- Use of classic neural networks for the classification of vectorial data
- Hyperparameter selection for neural networks using random search
- Use of convolutional neural networks for image classification
- Use of pre-trained convolutional neural networks for image classification
- Use of a simple GAN architecture to generate image data

Prerequisites:

According to admission requirements for the study program

Lecture/Seminar profile:**Modelling and Simulation (0_MOS2U)**

| | |
|--|--|
| Degree course | DSE.ma |
| Course title | Modelling and Simulation |
| Course code | 0_MOS2U |
| Level | Master |
| Term | SS26 |
| Lecturer | Stephan Winkler, Elisabeth Maria Mayrhuber |
| Contact hours per week | 1 |
| ECTS credits | 2 |
| Course type | Practice-oriented session |
| Examinations | continuous assessment |
| Language of instruction | German / English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

In the practical part of this course the contents presented in the lectures are implemented using software frameworks MATLAB/Simulink and AnyLogic.

Prerequisites:

According to admission requirements for the study program

Lecture/Seminar profile:**Modelling and Simulation (0_MOS2V)**

| | |
|--|--|
| Degree course | DSE.ma |
| Course title | Modelling and Simulation |
| Course code | 0_MOS2V |
| Level | Master |
| Term | SS26 |
| Lecturer | Stephan Winkler, Elisabeth Maria Mayrhuber |
| Contact hours per week | 2 |
| ECTS credits | 3 |
| Course type | Lecture |
| Examinations | oral or written examination |
| Language of instruction | German / English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

The following topics are addressed in the lectures: Basics of modeling, linear and nonlinear systems, continuous and discrete modeling and simulation, modeling of biological systems and processes; deterministic simulations and stochastic simulations; Monte Carlo methods; population dynamics; predator prey models; models for the progress of epidemical diseases; compartment models: pharmakokinetiks, one-compartment-models, two-compartment-models, kinetiks of insulin; analysis of biosystems: haemodynamics, cardiovascular systems simulations; controlled systems; gas exchange models in lungs; classification of models and computer simulations.

Prerequisites:

According to admission requirements for the study program

Lecture/Seminar profile:**Big Data (BIG4IL)**

| | |
|--|-----------------------------|
| Degree course | IM.ma |
| Course title | Big Data |
| Course code | BIG4IL |
| Level | Master |
| Term | SS26 |
| Lecturer | Oliver Krauss |
| Contact hours per week | 2,4 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | oral or written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

The students know the process in Big Data pipelines and know important techniques that are necessary for the implementation of the individual phases. They can correctly assess important techniques that are necessary for scaling and processing large data volumes and make a suitable technology selection (e.g. SQL vs. NoSQL database) or define the decision criteria for this. Students will be able to choose appropriate visualizations of the Big Data pipeline results.

Content:

Scaling horizontal vs vertical, Shards, ReplicaSets vs Partitions, Transactions ACID vs BASE, CoherenPaaS, Open Schema vs strict Schema, Document Oriented Databases, Map Reduce vs GROUP BY, HAVING, ROLLUP, CUBE , Indexes, Hashes, Vector Clocks, Paxos, RAFT In-Memory, Caching, CDN, Analytics + (AI), Statistics, Algorithms (NOT: NLP, Text Analytics and AI Basics), Graph Databases (e.g. Neo4J), CQL vs SQL recursive with, MongoDB, OpenSchema, vs JSON, Key Value Stores (e.g. Redis), Large RDBMS installations (e.g. Prostgres CITUS or Greenplum, Oracle Exadata), Polyglot Data Model. Big Data pipelines (e.g. ELK stack, Databricks), visualizations (e.g. with Kibana, Grafana, Phyton).

Prerequisites:

Basic Knowledge in HTML, CSS, JavaScript and object oriented programming (eg Java) in general.

Lecture/Seminar profile:**Hypermedia Frameworks (HMF2IL)**

| | |
|--|-----------------------------|
| Degree course | IM.ma |
| Course title | Hypermedia Frameworks |
| Course code | HMF2IL |
| Level | Master |
| Term | SS26 |
| Lecturer | Rimbert Rudisch-Sommer |
| Contact hours per week | 2,4 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | oral or written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

Students have gained an understanding of the principles of modern hypermedia application architectures with a focus on server-side application layers with different platforms. The students are able to select the most suitable tools for the respective application purpose from the multitude of existing and emerging tools and to use them correctly.

Content:

Architectures of Hypermedia Applications, Server-Side Frameworks (e.g. Spring Framework, Ruby on Rails, Play Framework), Rapid Application Development, Reactive Programming, Web Services, REST, Persistence Libraries.

Prerequisites:

Basic Knowledge in HTML, CSS, JavaScript and object oriented programming (eg Java) in general.

Lecture/Seminar profile:**Information Visualization (IVI2IL)**

| | |
|--|---------------------------|
| Degree course | IM.ma |
| Course title | Information Visualization |
| Course code | IVI2IL |
| Level | Master |
| Term | SS26 |
| Lecturer | Mandy Keck, Holger Stitz |
| Contact hours per week | 2,4 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

The course consists of a theoretical and a practical part. While the theoretical part serves as a basic introduction to information visualization, a practical project offers the opportunity to apply and deepen this knowledge.

Theory: Definition of information visualization, role of visualization in data analysis, reference model of visualization, data types and structures, visual perception and visual variables, visualization and interaction techniques, narrative visualizations (storytelling), presentation of common visualization libraries.

Prerequisites:

Basic Knowledge in HTML, CSS, JavaScript

Lecture/Seminar profile:**Real Time Engineering (RTE2IL)**

| | |
|--|-----------------------------|
| Degree course | IM.ma |
| Course title | Real Time Engineering |
| Course code | RTE2IL |
| Level | Master |
| Term | SS26 |
| Lecturer | Andreas Ernst Riegler |
| Contact hours per week | 2,4 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | oral or written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

Graduates have knowledge of software and architecture patterns in the context of interactive real-time applications. They have an overview of the internal processes and mechanisms of current game and physics engines, as well as a theoretical and practical understanding of real-time physics simulation and its requirements and limitations. You have practical knowledge regarding the implementation of domain-specific problems using classical and visual programming methods.

Content:

Fundamentals of interactive real-time applications. Requirements and solutions for delay-free processing of user input, adaptation of the data model and visual and auditory output (data structures, software design patterns, architecture patterns). Fundamentals of real-time physical simulations. Implementation and integration with visual programming techniques (visual scripting).

Prerequisites:

Basic Knowledge in HTML, CSS, JavaScript and object oriented programming (eg Java) in general.

Lecture/Seminar profile:**Software Design Methods (SDM2IL)**

| | |
|-----------------------------------|-----------------------------|
| Degree course | IM.ma |
| Course title | Software Design Methods |
| Course code | SDM2IL |
| Level | Master |
| Term | SS26 |
| Lecturer | Hans Prüller |
| Contact hours per week | 2,4 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | oral or written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Modern Software Architectures and Methods of System Design, Modeling- and Design-Patterns, Development Environments, Test-cases, Use-cases, Performance vs. Elegance.

Prerequisites:

Basic experience in conducting Software Projects, object oriented programming (eg Java) in general.

Lecture/Seminar profile:**User Interfaces (UIN3IL)**

| | |
|--|-----------------------|
| Degree course | IM.ma |
| Course title | User Interfaces |
| Course code | UIN3IL |
| Level | Master |
| Term | SS26 |
| Lecturer | Kathrin Probst |
| Contact hours per week | 2,4 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

Graduates possess detailed knowledge of the conception and design of user interfaces, taking into account various input and output modalities, interaction forms and interaction patterns. They are able to create responsive designs that ensure an optimized presentation of and interaction with content on displays of different sizes. In addition, they are able to design user interfaces that use new forms of interaction (e.g. gestures, tangibles, proxemics, speech). Students master useful techniques for realizing and testing user interface designs with the help of digital or physical prototypes (e.g. usability testing, Wizard-of-Oz experiment).

Content:

User interface design guidelines; mobile-first and responsive design of graphical user interfaces, creation of clickable prototypes, component-based UI design systems; planning, implementation and evaluation of methods for the evaluation of graphical user interfaces (e.g. usability study, heuristic evaluation); application of techniques for the design and evaluation of embodied user interfaces (e.g. elicitation study, wizard-of-oz experiment).

Prerequisites:

Basic Knowledge in HTML, CSS, JavaScript and object oriented programming (eg Java) in general.

Lecture/Seminar profile:**Visual Computing (VCO2IL)**

| | |
|--|-----------------------------|
| Degree course | IM.ma |
| Course title | Visual Computing |
| Course code | VCO2IL |
| Level | Master |
| Term | SS26 |
| Lecturer | David Christian Schedl |
| Contact hours per week | 2,4 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | oral or written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

Graduates are familiar with advanced methods and techniques from the field of machine vision. In addition to mathematical and theoretical understanding, students also acquire practical skills in the implementation and application of algorithms and software that are used, for example, in robotics, medicine, biology, astronomy and media technology.

Content:

Fundamentals of digital image processing and machine vision; visual perception; colours; cameras; linear and non-linear filters; spectral methods; geometric operations; interpolation methods; multi-perspective methods; artificial intelligence; algorithms and software.

Prerequisites:

Basic Knowledge in HTML, CSS, JavaScript and object oriented programming (eg Java) in general.

Lecture/Seminar profile:**Diversity Management and Intercultural Collaboration (DIC2IL)**

| | |
|--|--|
| Degree course | KWM.ma |
| Course title | Diversity Management and Intercultural Collaboration |
| Course code | DIC2IL |
| Level | Master |
| Term | SS26 |
| Lecturer | Martina Gaisch |
| Contact hours per week | 3 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | continuous assessment |
| Language of instruction | English |
| Places for international students | 5 |

Learning objectives:

n.a.

Content:

This course teaches theories and key concepts of intercultural communication processes and supplements them with reflective practice. Students benefit from practical examples and specific fields of application, as well as exercises for further developing important key competencies. Case studies are used to train and thoroughly analyze intercultural negotiation and dialogue skills. Students acquire in-depth knowledge of the dynamics in local and distributed teams and learn to use media appropriately in different communication contexts.

In addition, students gain knowledge, attitudes, and skills that enable them to act effectively and sensitively in intercultural, interdisciplinary, and diverse social contexts (e.g., perspective change, reflective ability, intersectionality, and the “Big 8” of diversity dimensions). They learn about essential tools of diversity management, including the HEAD Wheel (Higher Education Awareness for Diversity) and the DIVE-Too (Diversity & Inclusion Value Enabler). These instruments cover five dimensions of diversity - demographic, cognitive, disciplinary, functional, and institutional diversity - and provide essential frameworks for specifically promoting diversity and successfully integrating it into the organizational context.

Prerequisites:

According to the prerequisites for degree program access.

Lecture/Seminar profile:**Artificial Intelligence (25_AIN2IL)**

| | |
|--|--------------------------------|
| Degree course | SE.ma |
| Course title | Artificial Intelligence |
| Course code | 25_AIN2IL |
| Level | Master |
| Term | SS26 |
| Lecturer | Stephan Dreiseitl, Erik Pitzer |
| Contact hours per week | 3 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | oral or written examination |
| Language of instruction | German/English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Structure of intelligent systems, search algorithms, heuristics, constraint satisfaction problems, propositional logic and predicate logic as languages of knowledge representation and inference, planning algorithms, knowledge representation and inference in stochastic systems using Bayesian networks and Markov chains, optimal action selection in deterministic and stochastic environments through reinforcement learning.

Prerequisites:

Entsprechend den Zugangsvoraussetzungen des Studiengangs

Lecture/Seminar profile:**Data Mining and Machine Learning (25_DML2IL)**

| | |
|--|----------------------------------|
| Degree course | SE.ma |
| Course title | Data Mining and Machine Learning |
| Course code | 25_DML2IL |
| Level | Master |
| Term | SS26 |
| Lecturer | Michael Affenzeller |
| Contact hours per week | 3 |
| ECTS credits | 5 |
| Course type | Integrated course |
| Examinations | oral or written examination |
| Language of instruction | German / English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Overview of characteristic data mining problems, categorization of problems, complexity of hypothesis spaces, overfitting, underfitting, use of training validation and test data, cross-validation
Find-S and Candidate Elimination algorithms, Decision Trees, Case-based Learning, Rule-Based learning, ensemble techniques.

Genetic Programming, symbolic regression, symbolic classification.

Exercise part: Use of the different machine learning algorithms on the basis of data sets from practice as well as benchmark data sets; training in the use of the Data Mining functionalities of HeuristicLab.

Prerequisites:

Entsprechend den Zugangsvoraussetzungen des Studiengangs

Lecture/Seminar profile:**Formal Languages and Compilers (25_FLC2UE)**

| | |
|--|---|
| Degree course | SE.ma |
| Course title | Formal Languages and Compilers |
| Course code | 25_FLC2UE |
| Level | Master |
| Term | SS26 |
| Lecturer | Johannes Alexander Karder, Gabriel Kronberger |
| Contact hours per week | 1 |
| ECTS credits | 2 |
| Course type | Practice-oriented session |
| Examinations | continuous assessment |
| Language of instruction | German/English |
| Places for international students | 4 |

Learning objectives:

n.a.

Content:

In the exercises, the theoretical aspects of formal languages are practiced with theoretical tasks, the aspects of compiler and tool construction are practiced using compiler generators and by the complete implementation of a real compiler for a simple example language that generates bytecode (CIL) for the .NET virtual machine (CLR).

Prerequisites:

Entsprechend den Zugangsvoraussetzungen des Studiengangs

Lecture/Seminar profile:**Formal Languages and Compilers (25_FLC2VO)**

| | |
|--|--------------------------------|
| Degree course | SE.ma |
| Course title | Formal Languages and Compilers |
| Course code | 25_FLC2VO |
| Level | Master |
| Term | SS26 |
| Lecturer | Gabriel Kronberger |
| Contact hours per week | 2 |
| ECTS credits | 3 |
| Course type | Lecture |
| Examinations | written examination |
| Language of instruction | German/English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Formal languages: Terms and definitions (e.g., symbol, rule, grammar, language, derivation, reduction), overview of the Chomsky hierarchy, regular languages, regular expressions and finite automata, context-free languages and pushdown automata, in particular deterministic recognition, LL(k) and LR(k). Compiler and tool construction: Compiler topology (frontend, backend, data flow), lexical analysis, syntax analysis, error detection and handling, formal description of translation processes (attributed grammars) and implementation of these translation processes using compiler generators. Intermediate languages, methods from optimization and code generation.

Prerequisites:

Entsprechend den Zugangsvoraussetzungen des Studiengangs

Lecture/Seminar profile:**Data Preprocessing and Analytics (17_DVA2I)**

| | |
|--|----------------------------------|
| Degree course | HCC.ma |
| Course title | Data Preprocessing and Analytics |
| Course code | 17_DVA2I |
| Level | Master |
| Term | SS26 |
| Lecturer | Philipp Fleck |
| Contact hours per week | 2 |
| ECTS credits | 3 |
| Course type | Integrated course |
| Examinations | oral or written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

- develop a conceptual understanding of the basic tools in data science
- learn how to summarize data, how to prepare data
- learn about the data science pipeline within the bigger context of Machine Learning
- learn about algorithms used in data science (e.g., clustering, dimensionality reduction)
- learn about statistical analysis (significance, confidence intervals)

Content:

- Introduction to data
- Descriptive data summarization
- Cluster analysis
- Dimensionality reduction
- Feature selection and feature extraction
- Statistical inference

Prerequisites:

Prior knowledge:

- basic math and statistics concepts
- linear algebra
- basic understanding of algorithms

Lecture/Seminar profile:**Cross Cultural Business Communication (CCC2ILV)**

| | |
|--|---------------------------------------|
| Degree course | ISM.ma |
| Course title | Cross Cultural Business Communication |
| Course code | CCC2ILV |
| Level | Master |
| Term | SS26 |
| Lecturer | Martina Gaisch |
| Contact hours per week | 2 |
| ECTS credits | 3 |
| Course type | Integrated course |
| Examinations | written examination |
| Language of instruction | English |
| Places for international students | 2 |

Learning objectives:

n.a.

Content:

Theories and core concepts of intercultural communication processes, intercultural negotiation with accompanying reflection,

Examples and experiences from practical application areas, exercises for the further development of generic key competences. Intercultural negotiation and dialogue skills are practised and analysed on the basis of several case studies.

Prerequisites:

n.a.