

ENGLISH COURSES

SUMMER SEMESTER 2019

UNIVERSITY OF APPLIED SCIENCES UPPER AUSTRIA

HAGENBERG CAMPUS



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Language Course

German Courses

German 1

Course Unit Code	Type of Course Unit	ECTS- Credits
DEU1	Integrated Course	2
Name of Lecturer	Assessment Methods and Criteria	Mode of Delivery
Bettina Preßlauer	Written Exam, home-work, attendance	Face to Face

Prerequisites

-

Course contents

acquisition of basic German for everyday life (greeting, introducing oneself and getting into contact with others, shopping,...); development of communication skills and intercultural competence

interactive learning methods, team- and group activities

basic knowledge of the German language and the Austrian culture; ability to use German in simple everyday situations

Recommended or required reading

dictionary

German 2

Course Unit Code DEU2	Type of Course Unit Integrated Course	ECTS- Credits 1,5
Name of Lecturer Bettina Preßlauer	Assessment Methods and Criteria Written Exam, home-work, attendance	Mode of Delivery Face to Face

Prerequisites

basic German: level A1 or higher for DEU2

Course contents

use of German in different situations of everyday life and work; development of communication skills in the target language and intercultural competence

interactive learning methods, team- and group activities

knowledge of the German language in everyday life and the Austrian culture

Recommended or required reading

dictionary

German 3

Course Unit Code

DEU3

Type of Course Unit

Integrated Course

ECTS- Credits

1,5

Name of Lecturer

Bettina Preßlauer

**Assessment
Methods and Criteria**
Written Exam, home-
work, attendance
Mode of Delivery

Face to Face

Prerequisites

level B1 or higher

Course contents

use of German in different situations of everyday life and work; development of communication skills in the target language and intercultural competence

interactive learning methods, team- and group activities

knowledge of the German language in everyday life and the Austrian culture

Recommended or required reading

dictionary



Communication and Knowledge Media

KWM

<https://www.fh-ooe.at/en/hagenberg-campus/studiengaenge/bachelor/communication-and-knowledge-media/>

The Internet offers endless possibilities for communication, networking and collaboration – anywhere, anytime, whether for personal or professional purposes. The big challenge facing companies – as well as individual users – is choosing which of the huge range of technologies and platforms suits the user best. Our full-time, interdisciplinary degree programme focuses on the technical and creative imperatives for the most efficient exploitation of new media. Students will be equipped with the technical and creative skills, including knowledge of the social sciences, to act as experts on digital communications). Graduates with such expertise are highly sought after in a wide range of areas, including corporate communications, online marketing, media and web design, web programming, further education and e-learning.

Course Unit Code KWM132/KWM133	Type of Course Unit lecture/exercise course	ECTS- Credits 1/1
Name of Lecturer Andreas Böhler	Assessment Methods and Criteria written examination/ continuous assess- ment	Mode of Delivery Face to Face

Prerequisites

Basic knowledge of operating systems, computer hardware/software and networking. No special prerequi

Course contents

The lecture and exercises start with an introduction into the operating system “GNU/Linux” and then detail the installation and administration of a secure system. Focus is shifted towards IT security at the end of the term.

Recommended or required reading

As we focus on a free operating system, the documentation is freely available on the Internet. Links will be presented, wherever appropriate, during the lecture.

Course Unit Code

KWM183

Type of Course Unit

Integrated Course

ECTS- Credits

1

Name of Lecturer

Annamaria Mähr

**Assessment
Methods and Criteria**continuous assess-
ment and mid-term
revision**Mode of Delivery**

Face to Face

Prerequisites

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

Course contents

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).

Recommended or required reading

Swan, M. (2005). Practical English Usage (Vol. 95). Oxford: Oxford University Press.; Murphy, R. (2012). English Grammar in Use-Fourth Edition. Ernst Klett Sprachen.



Media Technology and Design

MTD

<https://www.fh-ooe.at/en/hagenberg-campus/studiengaenge/bachelor/media-technology-and-design/>

Exploiting the unlimited opportunities in the field of digital media requires mastery of creative design, smart contents, and fluency with the latest technology. This unique, full-time degree programme provides you with the technical expertise as well as the design and communication skills to take on any challenge in your chosen area – be it on the Web, in multimedia, 3D modelling, animation, computer games, audio & video production, or cross-publishing. You will acquire a solid grounding in the theory and practice of digital media. Hands-on experience with professional equipment will provide you with the technical and creative skills for implementing innovative and exciting media projects.

Course Unit Code MTD172	Type of Course Unit Integrated Course	ECTS- Credits 2
Name of Lecturer Jeremiah Diephuis	Assessment Methods and Criteria Continuous Assessment	Mode of Delivery Face to Face

Prerequisites

A former student says: I liked this course a lot, it was not very technical. The main technologies used in this course were how to construct and analyse a story. You do not need any special knowledge, just read many books.

Course contents

The course focuses on writing and presenting for different contexts in the media industry. Story analysis and development, screenplays, Interactive Storytelling, Game Design and an overview of careers in the media industry are addressed.

Recommended or required reading

Course Unit Code MTD252	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer Jürgen Hagler	Assessment Methods and Criteria Oral or Written Examination	Mode of Delivery Face to Face

Prerequisites

- Basics in animation
- Knowledge of the software „Maya“
- Portfolio with 3D animations (please send renderings (images) and movies in a PDF, no sourcefiles (.blend). Thank you!)

Course contents

Technical and design basics of 3D animation and character animation—character animation, rigging and facial animation. Technical basics: IK, FK, rigging, skinning, limited rigs, flexible rigs, dynamic / parametric rigs & facial animation; Character animation, Motion Analysis, Introduction: Facial Animation, 3D Animation Principles for character animation; Introduction to Particles and Dynamics; Critical Review of Dynamics “Animation vs. Simulation” (flag, hair, clothing, etc.); Character animation with simple rigs; Low Budget Motion Capture (Kinect and similar); Technical animation (Scientific-Visualization: process sequences with limited degrees of freedom, Parametric Arrays, Geodata to 3D Landscape).

Recommended or required reading

Interaction and Game Programming

Bachelor

MTD

Course Unit Code MTD260	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer Roman Divotkey	Assessment Methods and Criteria Oral or Written Examination	Mode of Delivery Face to Face

Prerequisites

A transcript must be provided to select courses in this area. The professor will review and decide whether to approve participation in the course.

Course contents

Development of concurrent and distributed algorithms, synchronization of threads, network programming (sockets, multiplexed IO, asynchronous IO). Basics of game programming, architecture of games and interactive applications, introduction to game physics and artificial intelligence for games.

Recommended or required reading

Computer Graphics 2

Bachelor

MTD

Course Unit Code	Type of Course Unit	ECTS- Credits
MTD262 CGR2	Integrated Course	4,5
Name of Lecturer	Assessment Methods and Criteria	Mode of Delivery
Michael Haller	Oral or Written Examination	Face to Face

Prerequisites

Computer Graphics 1

Course contents

Real-time graphics, particle systems, real-time animation, curves (Bezier, B-splines, Catmull-Rom, NURBS), collision detection (Bounding Spheres, AABB, OBB), shadow (shadow volumes, shadow maps), stencil buffer, reflections, Culling, BSP tree, face culling, portal culling, detail culling, advanced texturing (bump mapping, cubemaps, lightmaps), mixed reality.

Recommended or required reading

Recommendations by former exchange students: I liked this course, it was not too technical. We mainly used OpenGL and Visual Studio. A presentation has to be prepared by the students.

Course Unit Code MTD272	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer Leo Lass	Assessment Methods and Criteria Oral or Written Examination	Mode of Delivery Face to Face

Prerequisites

Course contents

Use of algorithmic / procedural techniques for the synthesis of audio-visual objects. Dealing with current data flow programming environments that gradually introduce basic objects and their functionality using specially developed tutorial patches, implementation of MIDI controllers, synthesizers and real-time audio effects, interaction of audio and video in terms of complex media installations, use of creative input devices such as game controllers for controlling audio / video applications.

Commentary from a past student:

“The course gives a general introduction to generative art... The class ... chose to do a larger project. For this project, it is open to the student to choose which software/technologies he/she uses... Generative Art itself is basically programming, but in a much more fun way... It's creative programming, so there is always a direct outcome to see/hear.” ... The students projects included: a room with invisible walls and if you touch them, sound is generated, different kinds of music/ sound visualisation, live projection mapping, a synthesizer that is controlled with your face expressions, procedural trees.

... I really really really liked it (it was one of my favourite classes). It was a nice opportunity for me to dive into this world, where programming and design/art are mixed together.”

Recommended or required reading

Course Unit Code MTD280	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer Rimbert Rudisch-Sommer	Assessment Methods and Criteria Oral or Written Examination	Mode of Delivery Face to Face

Prerequisites

Sound knowledge of CSS, jQuery, HTML and JavaScript

Course contents

Advanced JavaScript Concepts, like

- prototypal inheritance
- closures
- JavaScript Event Loop
- Promises
- ES2015 and later standard

Features and APIs of HTML-5, like:

- Native Audio/Video Integration
- Canvas / 2D
- Data Storage
- Offline Web Applications (Caching)
- Geolocation
- Messaging/Workers
- RealTime (WebSockets)
- Web Components

Frontend Frameworks for Single Page Applications, like Backbone.js

Recommended or required reading

Usability & Interaction Design

Bachelor

MTD

Course Unit Code MTD282	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer Michael Lankes	Assessment Methods and Criteria Oral or Written Examination	Mode of Delivery Face to Face

Prerequisites

A transcript must be provided to this course

Course contents

The course “Usability & Interaction Design” deals with the design, creation and evaluation of interface concepts. It has a strong focus on visual interface design strategies and practices. Students will create sketches, mock-ups, and low-fi prototypes that aim at specific user groups. Topics such as HCI (human-computer interaction) basics, user experience design, prototyping and other special aspects in HCI will be covered.

Recommended or required reading

Norman, D. A. (2013). Design of Everyday Things: Revised and Expanded. MIT Press.
Jenifer Tidwell (2005) Designing Interfaces: Patterns for Effective Interaction Design. O’Reilly Media.
Alan Cooper. About Face 3: The Essentials of Interaction Design. Wiley.
Steven Krug (2014) Don’t Make Me Think: A Common Sense Approach to Web Usability, 2nd Edition



Medical and Bioinformatics

MBI

<https://www.fh-ooe.at/en/hagenberg-campus/studiengaenge/bachelor/medical-and-bioinformatics/>

Information technology today covers all aspects of the best healthcare provision. It has a crucial role in identifying the causes of illness, developing new drugs, and improving medical interventions. Graduates of our full-time degree programme will be equipped to develop and deploy software medical doctors and molecular biologists need to fulfill highly complex tasks. Expertise in informatics, data science, life sciences etc. is highly sought after worldwide, not only in the health sector, the pharmaceutical industry and molecular-biological research, but also across the IT sector. After their first year, students choose to specialise in either medical informatics or bioinformatics.

English 2

Bachelor
MBI

Course Unit Code

Type of Course Unit

ECTS- Credits

Integrated Course

Name of Lecturer

**Assessment
Methods and Criteria**

Mode of Delivery

Gregory Curtis

Prerequisites

Course contents

Recommended or required reading



Mobile Computing

MC

<https://www.fh-ooe.at/en/hagenberg-campus/studiengaenge/bachelor/mobile-computing/>

Smartphones, smartwatches, tablets and apps are an integral part of our daily lives. They make countless routines easier and also more entertaining. Mobile computing is the technology of future and will change the way we use technological devices. Voice and gesture control systems are today in common use, just like social media. This is just the beginning of a sea change, in which mobile devices, communications and apps are set to play a key role alongside new business models. Our full-time Mobile Computing degree programme will enable you to play an active part in this revolution. Students will acquire in-depth knowledge of communications technology, informatics and application development for mobile devices. You'll be equipped to devise innovative services and apps and professionally manage projects in the field.

Course Unit Code 4_SEA	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer Jens Krösche	Assessment Methods and Criteria Oral or Written Examination	Mode of Delivery Face to Face

Prerequisites

Students attending this course must have -- at least -- basic knowledge of object oriented programming using Java.

Course contents

Based on a sound Java knowledge, this course will deal with the development of applications for mobile devices. As the main Java-based mobile platform Google's Android will be the target platform for the lecture. Students will learn what aspects are needed and what tools are used to create Android applications. On this behalf multiple topics like application components, UI aspects, persistency, connectivity, localization/sensors, and distribution are discussed and trained in different examples. The lecture is evaluated based on a small prototype that needs to be designed and programmed by the students at the end of the lecture.

Taking into account the current Android version, the development of smartphone applications is discussed based on the following topics:

Activity 1, Resources, View/Layout/Interaction, Context, Sensors, Manifest, Intent, Notification, Inter-Component Communication, Activity 2, Fragments, ActionBar 1, Multimedia 1, Receiver, MultiTasking, Location 1, Service 1, AppWidgets, Animation

Recommended or required reading

Please note that all Software Development Courses take place at the same time.

Software Development Using iOS/Swift

Bachelor

MC

Course Unit Code 4_SEI	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer	Assessment Methods and Criteria Oral or Written Examination	Mode of Delivery Face to Face

Prerequisites

Course contents

- Introduction to iOS Platform, Swift
- UIKit & Data
- Concurrency and Network
- Animations
- ObjectiveC
- UICollectionView
- Notifications and Localization
- Location and MapKit
- App Store Submission and Tools

Recommended or required reading

Please note that all Software Development Courses take place at the same time.

Course Unit Code	Type of Course Unit	ECTS- Credits
	Integrated Course	5
Name of Lecturer	Assessment Methods and Criteria	Mode of Delivery
	Oral or Written Examination	Face to Face

Prerequisites

Course contents

- Web-Technology
- Wireless Communication (WLAN, BT, BLE)
- Persistenz (Datenbanken, Cloud, ...)
- Security
- Testing
- Ausrollen
- Monetarisierung
- NDK
- OpenGL ES/Vulkan
- Google Play services (Location, Fit, SSO, ...)
- Android Devices: Wear, Auto, Things, TV
- Android Jetpack-

Recommended or required reading

Course Unit Code	Type of Course Unit	ECTS- Credits
	Integrated Course	5
Name of Lecturer	Assessment Methods and Criteria	Mode of Delivery
	Oral or Written Examination	Face to Face

Prerequisites

Course contents

- Profiling with Instruments
- Energy Debugging
- Testing Frameworks, Testflight
- Mobile Advertisements
- Monetization and In-App-Purchase
- Metal and Accelerate
- SpriteKit and SceneKit
- ARKit
- SiriKit
- Machine Learning on iOS
- Vision and Natural Language on iOS
- Privacy and Security

Recommended or required reading

Project 1/3/5

Bachelor
MC

Course Unit Code PRO 1/3/5	Type of Course Unit Elective Course	ECTS- Credits 6
Name of Lecturer Coordinator: Stephan Selinger	Assessment Methods and Criteria	Mode of Delivery Face to Face

Prerequisites

Course contents

A modern and practical education is very important for us. Not only that enterprises value this fact, but also students often found a company themselves after or even already while their studies. Projects are therefore a good place to implement their own ideas as well as carry out interesting R&D projects and cooperations with companies.

In "Project 1" students do first steps in planning and implementing projects. This is the reason why not only the realization of the project, but also techniques of project management for a smooth working process in the team as well as tools for a flawless technical implementation are taught and learned.

Recommended or required reading



Software Engineering

SE

<https://www.fh-ooe.at/en/hagenberg-campus/studiengaenge/bachelor/software-engineering/>

Software is at the heart of information technology (IT), and all applications – whether for mobile phones, PCs or even modern cars – depend on instructions based on specially written programmes. This Bachelor's degree programme provides a thorough grounding in the theory and practice of sophisticated software development, including relevant tools, methodologies, and teamwork and networking skills. Graduates will be equipped to not only develop but also implement, evaluate and adapt software at the cutting edge of all areas of application. After their first year, full-time students can choose between two key areas in which to specialise: Business Software or Web Engineering. Part-time students specialise in Web Engineering.

Course Unit Code 4_SEI	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer Jan Legerský	Assessment Methods and Criteria Written Examination	Mode of Delivery lectures and small exercises

Prerequisites

High school math and basics of programming

Course contents

Basic concepts of graph theory including examples of special graph types, substructures, weighting, adjacency matrices, paths, Euler, Hamilton, isomorphism, etc. Elementary graph algorithms (Dijkstra, A*, Kruskal) incl. examples and justification. Further applications of graph theory. Modelling the WWW and Google Page Rank. P vs. NP with examples (SAT, graph coloring) and basic terms of theoretical computer science.

Recommended or required reading



Data Science and Engineering

DSE

<https://www.fh-ooe.at/campus-hagenberg/studiengaenge/master/data-science-und-engineering/>

Dedicated software is a key component in many health-related areas, such as DNA analysis, cancer research, virtual surgery and data mining in health databases. Applications in these areas require expertise in biomedical informatics, especially large-scale software architectures. Our full-time Master's degree programme majors on biomedical know-how and software development while also expanding methodological and scientific skills. It equips students with this unique combination of skills, qualifying them to take on lead positions in the healthcare sector, molecular-biological and pharmaceutical research, and IT in general. Students can choose to specialise further in medical informatics or bioinformatics by selecting from a range of elective modules.

Modelling and Simulation

Course Unit Code MOS2VO MOS2UE	Type of Course Unit Lecture with Skills Practice	ECTS- Credits 5
Name of Lecturer Stephan Winkler	Assessment Methods and Criteria	Mode of Delivery Face to Face

Prerequisites

Secondary school certificate in Mathematics (A-levels), programming knowledge

Course contents

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.

Recommended or required reading

Note: This course can also be chosen from Bachelor students if they mee the prerequisites.

Course Unit Code KNE	Type of Course Unit Integrated Course	ECTS- Credits
Name of Lecturer Thomas Kern Viktoria Dorfer	Assessment Methods and Criteria	Mode of Delivery Face to Face

Prerequisites

Course contents

This course introduces relevant concepts and trends for knowledge representation and integration in biology and medicine, such as ontologies, data dictionaries and knowledge-based systems. The curriculum revolves around the following key topics: Fundamentals, frameworks, requirements and core benefits of knowledge engineering in biomedical applications; Knowledge acquisition, modeling and representation; Ontology engineering in medicine and bio-chemistry; Knowledge processing and automated reasoning; Biomedical text mining and information extraction strategies; Enabling technologies for the Semantic Web.

Recommended or required reading

Selected Topics Systembiology

Course Unit Code

VBK

Type of Course Unit

Integrated Course

ECTS- Credits

Name of Lecturer

Gerald Webersinke
Thomas Schwarzl
Henryk Maciejewski
Viktoria Dorfer

Assessment Methods and Criteria

Mode of Delivery

Face to Face

Prerequisites

Course contents

Recent publications in system biology will be covered, presented and discussed in a lecture. An elaboration of the publication must also be prepared.

Recommended or required reading

The courses in the Master's Programme of Biomedical Informatics are in general held in German, but upon request they can be held in English. Please send your Transcript of Records together with your Learning Agreement to check whether you have the necessary prerequisites to be able to participate in a course of our Master's Programme "Biomedical Informatics".

Machine Learning/LVA-Leiter: Witold Jacak/Karin Pröll

Introduction to Technology Trends (Embedded Processors, Miniaturized Sensors, Wireless Communication and New Materials) and Ubiquitous Computing Characteristics and Systems, Sensor Fundamentals (e.g. Conditioning, Filtering and ADC/DAC), Sensor Characteristics (e.g. Sensitivity, Offset, Accuracy, Dynamic Range, Linearity and Noise), Sensor Types (e.g. Active vs. Passive Sensors, Resistive and Capacitive Sensors, Thermocouples, Piezoelectric, Hall Effect and CCD Sensors), Spatial Sensors and Applications (Accelerometers, Tilt Sensing and Dead Reckoning with Accelerometers, Gyroscopes, Digital Compass and Tilt-Compensated Compass, Orientation Sensors, Wireless Indoor Positioning Techniques and Technologies), Mobile Ad-Hoc Networks and Routing Protocols (e.g. Flooding, Distance Vector Routing, DSDV Routing, DSR and Zone Routing), Wireless Communication Technologies (e.g. WLAN/IEEE 802.11, Bluetooth/IEEE 802.15.1, ZigBee/IEEE 802.15.4, RFID and NFC), Wireless Sensor Networks (e.g. Communication Architecture, Sensor Nodes, Applications, Design Characteristics, Power Scavenging, Time Synchronization, Distributed Localization and Simulation Environments).

5 ECTS.

Software Entwicklung: Service Engineering/LVA-Leiter: Peter Obermüller

Architecture of distributed software systems, O/R mapping (basic concepts, Hibernate, JPA), light-weight containers (Spring), message queues (JMS), web services (SOAP, JAX-WS), Enterprise JavaBeans 3.0 (programming model, JPA, MDB, JCA, web services), introduction to SOA (WS-* protocols, BPEL, SCA, SDO, interoperability with the .NET platform).

5 ECTS.

Elective Specialization: Ambient Assisted Living/LVA-Leiter: Werner Kurschl/Sebastian Pimminger

Concepts of mobile systems and examples of mobile applications in the medical environment, like mobile information systems (electronic patient record, monitoring), mobile knowledge management, mobile control and planning systems, mobile telemedicine, mobile tele-homecare systems, context and context-sensitive systems (like context models, context distribution and context processing (context toolkit, aware home, media cup etc.)), design and implementation aspects (wireless communication, mobility, portability etc.), mobile software technologies (e.g. Java for mobile devices – J2ME, Microsoft .NET Compact Framework, Google Android), wireless communication technologies (Bluetooth, ZigBee, WLAN, GSM, UMTS, HSDPA, etc.), concepts and technologies for the localization of objects and people (e.g. GPS, radio frequency identification (RFID), triangulation and trilateration using WLAN, GSM, infrared transmitters, Bluetooth or ultrasonic beacons). Concepts of pervasive computing, smart dust and wireless sensing networks, security and safety aspects of mobile systems.
5 ECTS.

Elective Specialization: Artificial Intelligence/LVA-Leiter: Stephan Dreiseitl

Architectures for intelligent systems, layers and components; deductive method for the design of intelligent systems, search algorithms, constraint satisfaction problem, propositional and predicate logic as language for representation and inference; methods for knowledge representation, planning algorithms, insecure reasoning with Bayesian lattices and Markov chains, statistical decision theory and learning algorithms.
5 ECTS.



Communication and Knowledge Media

KWM

<https://www.fh-ooe.at/en/hagenberg-campus/studiengaenge/master/communication-and-knowledge-media/>

Online media is now central to corporate communication strategies and life-long learning, and keeping abreast of Internet development is of crucial importance. Meeting the challenge of web technological innovation is essential for command of the global knowledge society, and demands not only intercultural competence but also expertise in knowledge management. Our full-time, interdisciplinary Master's degree programme equips students with exactly that mix of skills, combining social sciences, media studies, web design and web programming. A wide range of elective modules allows further specialisation in the following areas: communications, web, learning and/or organisations.

Course Unit Code KWM510	Type of Course Unit Integrated Course	ECTS- Credits 2
Name of Lecturer Martina Gaisch	Assessment Methods and Criteria	Mode of Delivery Face to Face

Prerequisites

a minimum English level of B2

Course contents

ethnocentric reflection, implicit bias, intercultural theories, cross-cultural comparison

Recommended or required reading

- Clutterbuck, D., Megginson, D. (2010). Making Coaching Work. Cipld Books.
- Fletcher, C. (2007). Appraisal and Feedback. Taylor & Francis.
- Gannon, M. J. (2004). Understanding global cultures: Metaphorical journeys through 28 nations, clusters of nations, and continents. Sage.
- Hall, E. (1990) Understanding Cultural Differences. Intercultural Press .
- Hampden-Turner, C. M. & Trompenaars, F. (2000). Building cross-cultural competence: How to create wealth from conflicting values. John Wiley & Sons, LTD.
- Hofstede, G. (2003): Culture's Consequences Comparing Values, Behaviors, Institutions, and Organizations Across Nations. Sage Publication.
- Lewis, R. D. (2006). When cultures collide: Leading across cultures. Nicholas Brealey Publishing.
- Nesbitt, R. (2003). The Geography of Thought: How Asians and Westerners Think Differently and Why. Free Press
- Schneider, S. C., & Barsoux, J. L. (2003). Managing across cultures. Pearson Education.
- Schroll-Machl, S. (2013). Doing business with Germans: Their perception, our perception. Vandenhoeck & Ruprecht.
- Thomas, A., Schroll-Machl, S., Kammhuber, S., & Kinast, E. U. (Eds.). (2009). Handbuch Interkulturelle Kommunikation und Kooperation: Band 1 und 2 zusammen (Vol. 1). Vandenhoeck & Ruprecht.
- Trompenaars, F., & Woolliams, P. (2004). Business across cultures. John Wiley & Sons.

Course Unit Code

KWM511

Type of Course Unit

Integrated Course

ECTS- Credits

2,0

Name of Lecturer

Martina Gaisch

**Assessment
Methods and Criteria**

continuous assess-
ment and final test

Mode of Delivery

classroom teaching

Prerequisites

English level of B2

Course contents

opportunities and challenges of virtual team work, including a hands-on example of virtual collaboration

Recommended or required reading

Note: This course can also be chosen from Bachelor students.

Community Building and Management

Master
KWM

Course Unit Code

KWM512

Type of Course Unit

Integrated Course

ECTS- Credits

1,0

Name of Lecturer

Martina Gaisch

**Assessment
Methods and Criteria**

final reflection paper

Mode of Delivery

classroom teaching

Prerequisites

English level of B2

Course contents

mechanisms, concepts and critical factors of community building.

Recommended or required reading

Note: This course can also be chosen from Bachelor students.



Energy Informatics

ENI

<https://www.fh-ooe.at/en/hagenberg-campus/studiengaenge/master/energy-informatics/>

Energy is the underlying heartbeat of the global economy – a critical factor in the production of nearly all goods and services in the modern world. Clearly, given the critical role of energy, the driving imperatives in any economy are ensuring security of supply, maintaining competitiveness and overseeing the transition to a low-carbon future.

Key requirements in this respect are the strategic management of supply and improving its overall generation and distribution. Impacting on these challenging goals will be a variety of factors, including advances in renewables, e-mobility and green technologies, to name only a few. Managing this changing environment is no easy task. That will require intelligent IT solutions and therefore well-educated IT experts able to design and/or operate future smart grids, smart city infrastructures and enhanced energy supply systems.

Energy Informatics (ENI) is the application of information technologies to this highly demanding field and the focus of this English-taught Master's degree programme.

Energy Generation, Distribution & Storage

Course Unit Code	Type of Course Unit	ECTS- Credits
ENI405	Integrated Course	5
Name of Lecturer	Assessment Methods and Criteria	Mode of Delivery
Lauss Bernhard Anta Adolfo	Oral or Written Examination	Face to Face

Prerequisites

Course contents

- Power generation: Fossil, nuclear and renewables; harmonics and load system feedback; economic aspects of operation; plant deployment planning; maintenance and monitoring energy demand; forecasts; load fluctuations energy transmission and distribution; concepts and technologies; components; high voltage DC systems grid stability and load flow control; smart grid - a critical infrastructure; primary, secondary and tertiary control (e.g. PV and wind systems impact); load flow control; grid control (voltage, active / reactive power; frequency); protection and failure prevention and interruption; settling up after black out energy storage; hydro; batteries; hydrogen; flywheels; power to gas.
- Centralized versus distributed concepts
- Smart grid aspects: Idea; safety and emergency operation features.

Recommended or required reading

Smart Grid Field Components

Course Unit Code	Type of Course Unit	ECTS- Credits
ENI502	Integrated Course	5
Name of Lecturer	Assessment Methods and Criteria	Mode of Delivery
Wolfgang Hribernik Stephan Hutterer	Oral or Written Examination	Face to Face

Prerequisites

Course contents

- Electricity meters (single phase, poly phase, CT), gas meters, water meters, cooling/heating meters: measuring principles, smart meter architectures, smart meter protocols (M-Bus, OMS, DLMS/COSEM, OSGP, meters and more, ...), homologation and verification.
- Load management components (ripple control)
- Gateways
- Power quality measurement components (EN 50160, ...)
- Switchgears, protection devices, automation devices, relevant standards (IEC 61850, ...)
- Charging stations and protocols (open charge point protocol, ...)

Recommended or required reading

Course Unit Code	Type of Course Unit	ECTS- Credits
ENI503	Integrated Course	5
Name of Lecturer	Assessment Methods and Criteria	Mode of Delivery
Robert Kolmhofer Peter Burgstaller Alexander Leitner	Oral or Written Examination	Face to Face

Prerequisites

Course contents

Terms and definitions in IT security, introduction into network security and cryptography and security aspects of Industrial Control Systems as well as an introduction into Smart Grid Security. Protection targets and security objectives, trends in it security, cyber threads and trend analysis, introduction in to it risk management methods (topics, methods and standards like ISO 31000 and NIST SP300-80). An introduction into information security management (topics, methods and Security Standards like ISO 2700x family and BSI Grundschutz) and business continuity management. Additionally relevant international frameworks and models, like:

- Austrian Cyber-Security-Strategy (in German) (ÖSCS, 2013, BKA, BM.I, BMLVS)
- Cyber-Security Risk Analysis (in German) (KSÖ, BM.I, 2011)
- Austrian Programme for Critical Infrastructure Protection (AP-CIP, 2008, BM.I)
- European Programme for Critical Infrastructure Protection (EP-CIP, 2006)
- NIST Cyber-Security Framework (NIST-Guidelines for Smart Grid Cyber Security)
- NIST Guideline to Intrusion Detection and Prevention Systems
- NESCOR Guide to Penetration Testing for Electrical Utilities
- Schweizer IKT-Risikoanalyse

will be discussed.

Recommended or required reading

Course Unit Code ENI504	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer Veichtlbauer	Assessment Methods and Criteria Oral or Written Examination	Mode of Delivery Face to Face

Prerequisites

Course contents

Functionality of Operation Support, Business Support and Customer Information Systems: Headend systems (HES), grid management system (GMS), meter data management (MDM), energy data management (EDM), geographic information system (GIS), enterprise resource planning system (ERP), customer information systems (CIS).

- Principles of scalable architectures
- Common Information Model (CIM)
- Ongoing Standardization

Recommended or required reading

Course Unit Code ENI505	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer Christoph Dopplinger	Assessment Methods and Criteria Oral or Written Examination	Mode of Delivery Face to Face

Prerequisites

Course contents

Intercultural competences:

Global awareness, cultural dimensions and standards, negotiation styles and insights into cultural communication practices, management of multicultural projects based on case studies and critical incidents.

- Leadership skills:
Leadership theory, leading with cultural intelligence, common traits in leaders, change management and decision making processes, conflict resolution.
- International project management:
Characteristics of international projects, pitfalls and success factors, project concept creation, force field analysis.

Recommended or required reading

Course Unit Code ENI510	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer Andreas Reinhardt	Assessment Methods and Criteria Oral or Written Examination	Mode of Delivery Face to Face

Prerequisites

Course contents

Types of electrical cars: Full electric vehicles, hybrid systems.

- Basic topologies
- Comparison of electric and combustion engine concepts
- Dominant energy consumption effects
- Environmental impact

Influence on carbon dioxide balance with respect to power generation and life cycle, nitric oxide impact, noise aspects.

- Electrical drives

Basic drive concepts (motor types, wheel hub concepts), energy efficiency aspects.

- Battery systems

Operational behaviour, lifetime aspects, range aspects, future technologies.

- Auxiliary consumers in cars and aspects of consumption decreasing

Air condition, defroster, lighting, etc.

- Safety aspects

Electrical arcs, battery safety.

- Charging aspects

Normal charging, quick charging, load feedback and harmonics problems, smart grid integration concepts.

Recommended or required reading



Human-Centered Computing

HCC

<https://www.fh-ooe.at/campus-hagenberg/studiengaenge/master/human-centered-computing/>

IT systems of the future will need to instinctively respond to user needs and competencies. This cutting-edge, part-time degree programme gives graduates of information technology studies the chance to refine their skills in developing more accessible and user-friendly technologies. The interdisciplinary curriculum draws primarily on social sciences and IT, including areas such as interaction design, natural-user interface development, image processing, as well as prototyping. Graduates will learn problemsolving and full-spectrum consultancy skills that are key to the conceptualisation and deployment of practical applications in this dynamic field.

Note for applicants: The main language of tuition on this study programme is German, although some modules may be offered in English.

Course Unit Code	Type of Course Unit	ECTS- Credits
	Integrated Course	5,5
Name of Lecturer	Assessment Methods and Criteria	Mode of Delivery
Christoph Anthes	Project and oral exam	Face to Face tutorials

Prerequisites

Programming skills are recommended but not required

Course contents

Augmented Reality describes the enhancement of the real environment with virtual computer generated content. The real world has to be observed and measured to determine the position and orientation of the display. Basics of computer vision and computer graphics provide the basis for AR applications. Additional requirements are appropriate interaction techniques as well as the adaptation of the virtual content on the real world.

The course consists of two parts – the fundamentals, algorithms and applications will be presented in the theoretical part. Additionally a practical part will focus on topics like Unity development, usage of AR hardware and programming with an AR software package. The practical components are important for the final project, which has to be handed in after the completion of the course.

The goal is to teach the interested student the technology and the creation of successful AR applications. The students should be able to develop AR applications for mobile devices and the HoloLens on their own.

Recommended or required reading

Schmalstieg, D. & Hollerer, T., Augmented Reality: Principles and Practice, Addison-Wesley Professional, 2015

Grubert, J. & Grasset, R., Augmented Reality for Android Application Development, Packt Publishing, 2013

Craig, A. B., Understanding Augmented Reality: Concepts and Applications, Morgan Kaufmann, 2012

Kipper, G. & Rampolla, J., Augmented Reality: An Emerging Technologies Guide to AR, Syngress, 2012

Hainich, R. R. & Bimber, O., Displays - Fundamentals and Applications, CRC Press, 2011

Bimber, O. & Raskar, R., Spatial Augmented Reality -- Merging Real and Virtual Worlds, A K Peters LTD, 2005

IEEE Transactions on Visualization and Computer Graphics/ Proceedings of IEEE/ACM ISMAR (International Symposium on Mixed and Augmented Reality)



Information Engineering and Management

IEM

<https://www.fh-ooe.at/en/hagenberg-campus/studiengaenge/master/information-engineering-and-management/>

The increasing complexity of information technology is making unceasing demands on data control and co-ordination. Planning, developing and implementing sophisticated systems to meet company targets is a serious challenge for IT managers. Access to data anywhere, anytime, common usage of information and user-friendliness are prime objectives. This requires experts with software development, business intelligence and analytical IT skills as well as know-how in management, law and team leadership. This part-time Master's degree programme equips students with exactly these skills and is particularly suitable for people with a first degree in information technology, who aim at taking up management positions in the IT business.

Course Unit Code

SWE2 V

Type of Course Unit

Integrated Course

ECTS- Credits

1,5

Name of Lecturer

Harry Sneed

**Assessment
Methods and Criteria****Mode of Delivery**

Face to Face

Prerequisites**Course contents**

This lecture focuses on both the maintenance of software life-cycles and the laws of software evolution. The main areas of emphasis are as follows: differences between maintenance and development projects, role of release managers, change management, reverse and re-engineering, re-factoring, change patterns and software evolution. A particular stress is to be laid on an integrated approach to software maintenance by also addressing non-technical aspects such as organization and management. Best practices of software maintenance and its maintainability are conveyed.

Recommended or required reading



Interactive Media

IM

<https://www.fh-ooe.at/en/hagenberg-campus/studiengaenge/master/interactive-media/>

The English-taught Master in Interactive Media offers a wide range of subjects focusing on the technology and engineering behind interactive media, computer games and cutting-edge online media. Graduates acquire the essential knowledge and professional skills necessary to take on innovative and complex projects in the media industry.

The programme features both a substantial project component and an extensive selection of specialized courses that couple theoretical concepts with practical experience at the highest level.

In addition to providing an industry-oriented education, the programme aims to develop graduates' communication skills and refine their systematic approaches to problem solving.

Course Unit Code IM500	Type of Course Unit Integrated Course	ECTS- Credits 4,5
Name of Lecturer Stephan Dreiseitl	Assessment Methods and Criteria Written exam, exercise sheets	Mode of Delivery Face to Face

Prerequisites

Course contents

Architectures for intelligent systems, layers and components; deductive method for the design of intelligent systems, search algorithms, constraint satisfaction problem, propositional and predicate logic as language for representation and inference; methods for knowledge representation, planning algorithms, insecure reasoning with Bayesian lattices and Markov chains, statistical decision theory and learning algorithms.

Recommended or required reading

Course Unit Code

IM510

Type of Course Unit

Integrated Course

ECTS- Credits

4,5

Name of Lecturer

Volker Christian

**Assessment
Methods and Criteria**

Oral or Written Examination

Mode of Delivery

Face to Face

Prerequisites

Profound Programming Knowledge (C++ / Java)

Course contents

Tasks, Threads, Thread-Synchronization, Interprocess-Communication, Signals, Pipes, FIFO, Message-Queues, Shared-Memory, OSI-Model, ICMP, TCP, UDP, Sockets, Server-Client Architectures, Multiplexed-IO, Asynchronous-IO, SUN-RPC, SUN-RMI, Object Serialization.

Recommended or required reading

Course Unit Code IM520	Type of Course Unit Integrated Course	ECTS- Credits 6
Name of Lecturer Wilhelm Burger	Assessment Methods and Criteria Final Report and Written Exam	Mode of Delivery Face to Face

Prerequisites

Introductory course in digital image processing. Fundamentals of digital image processing, programming experience in Java.

Course contents

Introduction to fundamental techniques in computer vision. Localization and classification of 2D objects, shape descriptions, image matching, colour and texture analysis, segmentation, invariant features, curve fitting, dynamic contours, feature detection and tracking, 3D geometry, camera calibration, scene and object reconstruction, self-localization, object recognition.

Recommended or required reading

Course Unit Code IM530	Type of Course Unit Integrated Course	ECTS- Credits 6
Name of Lecturer Rimbert Rudisch-Sommer	Assessment Methods and Criteria Assignments and Written Exam	Mode of Delivery Face to Face

Prerequisites

- Sound object oriented programming experience, and
- Some database know-how (relational and nosql), as well as
- Some web development skills (html, css, javascript and the principles of AJAX calls and DOM manipulation).
- Experience with any kind of web framework (symphony, laravell, zend, ... or jee) would be helpful.

Course contents

WebApps & REST-APIs with (RAD-)frameworks like Ruby on Rails, Spring Boot
Reactive WebApps with Scala & Play Framework.

Recommended or required reading

Course Unit Code IM531	Type of Course Unit Integrated Course	ECTS- Credits 6
Name of Lecturer Niebrzydowski & Wieser	Assessment Methods and Criteria Projects	Mode of Delivery Face to Face

Prerequisites

- Good foundation in HTML & CSS (Experience with grid systems like Bootstrap) and JavaScript (experience with DOM manipulation, jQuery)
- Basic handling of the terminal / command prompt (navigating directories, calling programs and scripts, setting the system path, ...)
- Git basics

Course contents

Web-frontend development workflow (gulp, scss, ...), ES2015, Vue.js, Telegram bots
React.js, WebRTC, WebVR, using Chrome Dev Tools / Lighthouse, JavaScript outside of the web: Electron, Johnny five

Recommended or required reading

Course Unit Code IM540	Type of Course Unit Integrated Course	ECTS- Credits 6
Name of Lecturer Roman Divotkey	Assessment Methods and Criteria Project work and oral presentation	Mode of Delivery Face to Face

Prerequisites

Good skills in computer languages (C/C++, Java) and network programming. Basic knowledge in architectures for games and computer graphics.

Course contents

In “Game Production”, a game project is carried out by a larger team of students from the initial planning phases to the final implementation. Usually, the team project is a 3D multi-user network game.

Project planning and management, teamwork, 3D games, network architecture, resource management.

Recommended or required reading

Project 2

Master
IM

Course Unit Code

IM590

Type of Course Unit

Integrated Course

ECTS- Credits**Name of Lecturer**

Roman Divotkey

**Assessment
Methods and Criteria****Mode of Delivery**

Face to Face

Prerequisites

Course contents

Guided project work on topics provided by faculty members or proposed by the student. Working in teams (of size 2–4) is encouraged to foster project management and team collaboration skills. Each project is coached by at least one faculty member.

Recommended or required reading



Mobile Computing

MC

<https://www.fh-ooe.at/en/hagenberg-campus/studiengaenge/master/mobile-computing/>

Students of our international, English-taught Master in Mobile Computing will get a more in-depth insight of the almost limitless possibilities of a truly global, all-pervasive, mobile computing connectivity. The challenge is adapting ever newer technological applications and environmentally sensitive automated systems across the full spectrum of everyday activities – including sport, medicine and care of the elderly – to create ever more powerful and user-friendly synergies. Taste the future here, now!

Course Unit Code

MC501

Type of Course Unit

Integrated Course

ECTS- Credits

5

Name of Lecturer

Stephan Dreiseitl

**Assessment
Methods and Criteria**

Oral or Written
Examination

Mode of Delivery

Face to Face

Prerequisites**Course contents**

Architectures for intelligent systems; search algorithms, constraint satisfaction problem, search in game playing, propositional and predicate logic as language for representation and inference; methods for knowledge representation, planning algorithms, uncertain reasoning with Bayesian networks and Hidden Markov models.

Recommended or required reading

Course Unit Code MC505	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer Wilhelm Burger	Assessment Methods and Criteria Final Report and Written Exam	Mode of Delivery Face to Face

Prerequisites

Introductory course in digital image processing. Fundamentals of digital image processing, programming experience in Java.

Course contents

Introduction to fundamental techniques in computer vision. Localization and classification of 2D objects, shape descriptions, image matching, colour and texture analysis, segmentation, invariant features, curve fitting, dynamic contours, feature detection and tracking, 3D geometry, camera calibration, scene and object reconstruction, self-localization, object recognition.

Recommended or required reading

Course Unit Code MC507	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer Matthias Steinbauer	Assessment Methods and Criteria Oral or Written Examination	Mode of Delivery Face to Face

Prerequisites

Course contents

This course focuses on technical aspects (architecture, design, patterns in cross development frameworks) as well as the applicability of such frameworks in an industrial context (usability, look-and-feel, deployment) and gives an overview about commonly used crossplatform frameworks, including:

- Native cross-platform frameworks: Rhodes and RhoSync, PhoneGap, Titanium Mobile, QuickConnect-Family, Bedrock, Corona, MoSync SDK, Qt Mobility, Adobe Flash Lite, Adobe AIR, Unity, ...
- HTML/HTML5/CSS/Javascript frameworks: Sencha Touch, JQTouch, iWebKit, iUI, xUI, Magic Framework, Dashcode, CiUI, Safire, iphone

Recommended or required reading

1. S. Allen, V. Graupera, L. Lundrigan: Pro Smartphone Cross-Plattform Development. iPhone, BlackBerry, Windows Mobile, and Android Development and Distribution. Apress, 2010.
2. S. Logan: Cross-Platform Development in C++. Building Mac OS X, Linux, and Windows Applications. Addison-Welsley, 2008.
3. J. Bishop, N. Horspool: Cross-Platform Development: Software that Lasts. IEEE Computer, 39(10):26-35, 2006.
4. <http://rhomobile.com>
5. <http://www.phonegap.com>
6. <http://www.appcelerator.com>

Home and Building Automation

Course Unit Code	Type of Course Unit	ECTS- Credits
MC509	Integrated Course	5
Name of Lecturer	Assessment Methods and Criteria	Mode of Delivery
Ulrich Norbistrath	Oral or Written Examination	Face to Face

Prerequisites

- technical bachelor
- programming knowledge
- git
- agile team-based programming
- Linux basics

Course contents

Home and building automation has been around for a long while. It is a viable solution for equipping of and controlling industrial buildings with lighting, HVAC, security, audio/video, and computer networks. There are also plenty of solutions starting to become viable for the consumer.

In this class, we will learn to critically reflect, assess, and employ the solutions available. We will also focus on the integration of building automation technology and develop our own creative solutions.

The class has 5 ECTS. This means that you should budget on average an amount of 180 hours of effort for this class. This is in contrast to 30 hours presence in class. It means that only a sixth of the expected hours is class time. Therefore, expect to work outside of the class approximately 5-6 hours extra for each classroom hour.

Recommended or required reading

1. Sauter T., Dietrich D., Kastner W.: EIB Installation Bus System, Publicis Corporate Publishing, 2001.
2. Jeronimo M, Weast Jack: UPnP* Design by Example: A Software Designer's Guide to Universal Plug and Play, Intel Press, 2003
3. Zahariadis T.B.: Home Networking Technologies and Standards, Artech House Publishers, 2003.

Course Unit Code	Type of Course Unit	ECTS- Credits
MC510	Integrated Course	5
Name of Lecturer	Assessment Methods and Criteria	Mode of Delivery
Clemens Holzmann	Oral or Written Examination	Face to Face

Prerequisites

Students attending this course must have basic procedural programming skills

Course contents

Introduction to (mobile) human-computer interaction and historical context; The human factor (e.g. sensors and responders, human perception and cognitive abilities, human performance); Interaction elements (e.g. input technologies, predictive text input, mental models and metaphors, modes); Designing interactive systems (e.g. user-centered design process, ideation techniques, sketching and storyboarding); Evaluation of interface designs (e.g. paper prototyping, design guidelines and principles, heuristic evaluation); Empirical research methods (e.g. designing HCI experiments, hypothesis testing, t-test); Interaction modeling (e.g. predictive models, linear prediction equation, Fitts' law, Keystroke-Level Model).

Recommended or required reading

1. D. Benyon: Designing Interactive Systems – A Comprehensive Guide to HCI and Interaction Design, 2nd Edition, Addison Wesley, 2010.
2. A. Dix, J. Finlay, G.D. Abowd, R. Beale: Human-Computer Interaction, 3rd Edition, Pearson Education Limited, 2004.
3. B. Shneiderman, C. Plaisant: Designing the User Interface – Strategies for Effective Human-Computer Interaction, 5th Edition, Pearson Higher Education, 2010.
4. A. Cooper, R. Reimann, D. Cronin: About Face 3 – The Essentials of Interaction Design, Wiley Publishing Inc, 2007.
5. Y. Rogers, J. Preece, H. Sharp: Interaction Design – Beyond Human-Computer Interaction, 2nd Edition, John Wiley & Sons Ltd, 2009.
6. J. Krumm: Ubiquitous Computing Fundamentals, Chapman and Hall/CRC, 2009.

Course Unit Code MC516	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer Stephan Selinger	Assessment Methods and Criteria Oral or Written Examination	Mode of Delivery Face to Face

Prerequisites

Course contents

Introduction to real-time systems (classification of real-time systems, worst-case execution time, scheduling, resources, real-time operating systems), modeling and simulation of real-time systems in UML, SPT profile, MARTE profile, faulttolerant systems, modeling reliability and availability in UML, architecture and design patterns for mobile and real-time systems.

Graduates possess advanced knowledge in the area of UML Modeling and in the area of Domain- Specific Languages (DSLs) with a special focus on secure, mobile and embedded systems. The knowledge of software metrics, as well as the methodical testing of software systems, completes this know-how.

Recommended or required reading

1. J. W. S. Liu: Real-Time Systems. Prentice Hall, 2000.
2. J. Cooling: Software Engineering for Real-Time Systems. Addison-Wesley, 2003.
3. B. P. Douglass. Real-Time UML Third Edition. Advances in The UML for Real-Time Systems, Addison-Wesley 2004.
4. Object Management Group (OMG): UML Profile for Schedulability Performance, and Time, Version 1.1, January 2005.
5. Object Management Group (OMG): UML Profile for Modeling and Analysis of Real-time and Embedded Systems (MARTE), Version 1.0, 2009.
6. I. Koren, C. M. Krishna: Fault-Tolerant Systems. Morgan Kaufmann, 09
7. Q. Li, C. Yao. Real-Time Concepts for Embedded Systems. CMP Books, 2003.

Mobile Business and Marketing

Course Unit Code	Type of Course Unit	ECTS- Credits
MC605	Integrated Course	5
Name of Lecturer	Assessment Methods and Criteria	Mode of Delivery
Daniel Cronin	Oral or Written Examination	Face to Face

Prerequisites

Course contents

Mobile Business is based on the assumption that the increasing power, functionality and pervasiveness of mobile computing devices leads to new opportunities for businesses. These opportunities include an improvement of customer service, a reduction of costs, a mobilization of the sales force, an increase of productivity in the field service, the emergence of new business models and new ways of gaining strategic competitive advantage in the marketplace. The purpose of this module is to introduce participants to the fundamental concepts, strategies and technologies associated with the implementation of mobile computing. Students will gain the ability to play an active role in the development of mobile business opportunities in the organizations in which they work. Although the emphasis is on commercial enterprises, many of the topics of this module can be applied to government agencies and non-profit organizations as well, as they also need mobile computing solutions to improve customer service, reduce costs and increase the productivity of their employees.

In order to tackle the challenges coming along with Mobile Business and to create value in the future, the following issues will have to be considered:

(i) Infrastructure remains the key driver of the business, as the marked increase in data traffic demands ever faster networks and exceeds the long-term price decline;

(ii) Next generation networks and consistently standardized IT are crucial for efficiency and success;

(iii) The mobile internet and online services present considerable opportunities for growth

(iv) Customers expect secure and universal access to all services from all devices;

(v) Cloud computing and dynamic computing offer major potential for growth;

(vi) Intelligent networks support the transformation process in industries such as energy, healthcare, media and transportation;

Recommended or required reading

1. P. Sugai, M. Koeder, L. Ciferri: The Six Immutable Laws of Mobile Business, 1st Edition, Wiley-Interscience, 2010.
2. E. Tiwari, S. Buse: The Mobile Commerce Prospects: A Strategic Analysis of Opportunities in the Banking Sector, Hamburg University Press, 2007.
3. M. Austin: Mobile Business: Creating a Successful Mobile Strategy for Your Business, Kogan Page, 2011.
4. M. Reuver, H. Bouwman, T. Haaker: Mobile business models: organizational and financial design issues that matter, Electronic Markets, vol. 19, no. 1, 2009.
5. H. H. Bauer, T. Dirks, M. Bryant: Erfolgsfaktoren des Mobile Marketing, 1st Edition, Springer, 2008.
6. H. Bouwman, H. Vos, T. Haaker: Mobile Service Innovation and Business Models, 1st Edition, Springer, 2010.
7. M. Head, E. Y. Li: Mobile and Ubiquitous Commerce: Advanced E-business Methods, 1st Edition, Information Science Reference, 2009.
8. U. Koivukoski, V. Räisänen: Managing Mobile Services: Technologies and Business Practices, 1st Edition, Wiley, 2005.
9. A. Kornak, J. Teutloff, M. Welin-Berger: Enterprise Guide to gaining Business Value from Mobile Technologies, Wiley, 2004.

Mobile Business and Marketing (cont)

Course Unit Code	Type of Course Unit	ECTS- Credits
MC605	Integrated Course	5
Name of Lecturer	Assessment Methods and Criteria	Mode of Delivery
Daniel Cronin	Oral or Written Examination	Face to Face

Prerequisites

Course contents

(vii) Strong positions in national competition are important to drive profitable business. According to these issues, the outline of the module is as follows:

- Maturing markets
- Saturation of mobile penetration in European markets
- Keep customers as the main challenge for MNOs
- New and more competitors Area of competition has broadened
- Facebook, Google, Microsoft and Apple are partners and competitors at the same time, in areas like:
 - o Mobile operating systems
 - o Search
 - o Payment
 - o Mobile advertisement
- Broadband for Gigabit society
- Increase of bandwidth demand
- Mobile Internet
- Growth of mobile internet business
- Digital life and work
- Online storage
- Cloud computing
- Sharing
- Digital social life
- Mobile workplace

Recommended or required reading



Secure Information Systems

SIM

<https://www.fh-ooe.at/en/hagenberg-campus/studiengaenge/master/secure-information-systems/>

Trust and security are the key components of the Information Society. Security experts with up-to-date know-how across IT, management, and law are in great demand. Especially in view of the need for enhanced security as rapid technical advances pose greater threats to the safety of data transfer, storage, and archiving. Our full-time degree programme majors on in-depth study and specialisation across IT security. Topics include information management, digital identities, secure software engineering, network security, law, and ethics. The main focus of this degree programme is on practical training as well as independent and systematic work with an emphasis on the development of communication skills.

Course Unit Code

Type of Course Unit

ECTS- Credits

Integrated Course

Name of Lecturer

**Assessment
Methods and Criteria**

Mode of Delivery

Face to Face

Prerequisites

Course contents

Recommended or required reading



Software Engineering

SE

<https://www.fh-ooe.at/en/hagenberg-campus/studiengaenge/master/software-engineering/>

Most devices that shape our everyday lives – from computers and smartphones to coffeemakers and jet planes – depend on a guiding software code. This full-time degree programme takes graduates in practical and applied informatics to the next level. You will expand expertise in developing, implementing and evaluating highperformance software to meet the demand for an ever-expanding range of applications. Creation of high-end software is akin to building a house: you need both the skills of a craftsman and the inspiration of an architect. This symbiotic combination is what defines the software architect. Our Master's degree programme will empower students to become exactly that.

Course Unit Code KI2	Type of Course Unit Integrated Course	ECTS- Credits 5
Name of Lecturer Stephan Dreiseitl	Assessment Methods and Criteria Written exam, exercise sheets	Mode of Delivery Face to Face

Prerequisites

Course contents

Architectures for intelligent systems; search algorithms, constraint satisfaction problem, search in game playing, propositional and predicate logic as language for representation and inference; methods for knowledge representation, planning algorithms, uncertain reasoning with Bayesian networks and Hidden Markov models.

Recommended or required reading

Bachelor and Master students of all programmes can join the course if places are left.

Abstract State Machines

Master
SE

Course Unit Code

ASM

Type of Course Unit

Integrated Course

ECTS- Credits

3

Name of Lecturer

Egon Börger

Assessment Methods and Criteria

Mode of Delivery

Face to Face

Prerequisites

Course contents

The method built around the notion of Abstract State Machine (ASM) has been proved to be a scientifically well founded and an industrially viable method for the design and analysis of complex systems, which has been applied successfully to programming languages, protocols, embedded systems, architectures, requirements engineering, etc. The analysis covers both verification and validation, using mathematical reasoning (possibly theorem-prover-verified or model-checked) or experimental simulation (by running the executable models).

Recommended or required reading

Bachelor and Master students of all programmes can join the course if places are left.

Course Unit Code

Type of Course Unit

ECTS- Credits

Integrated Course

Name of Lecturer

**Assessment
Methods and Criteria**

Mode of Delivery

Gregory Curtis

Prerequisites

Course contents

Recommended or required reading

Data Mining and Machine Learning

Master
SE

Course Unit Code

Type of Course Unit

ECTS- Credits

Integrated Course

Name of Lecturer

**Assessment
Methods and Criteria**

Mode of Delivery

Affenzeller

Prerequisites

Date Warehousing

Course contents

Recommended or required reading

This course can only be chosen by Master students.