

**International Programme
Spring semester 2017
FH JOANNEUM, Campus Kapfenberg**

Study your dream



International Programme

FH JOANNEUM, Campus Kapfenberg

Summer Semester 2017 (27.02. – 02.07.2017)

Kapfenberg is the right place for you ...

The four degree programmes offered at the Kapfenberg Campus of the University of Applied Sciences JOANNEUM have joined forces to create and offer you a programme in English.

ITM (Internet Technology, Bachelor) – **IMS** (IT & Mobile Security, Master) – **IRM** (IT Law & Management, Master)
EVU (Energy Transport and Environmental Management, Bachelor) – **MET** (Energy and Transport Management, Master)
AEE (Advanced Electronic Engineering, Master)
IWI (Industrial Management, Bachelor) – **IIM** (International Industrial Management, Master)

Please note: IMS, IRM and AEE are part time programmes. This means that the courses may also take place in the evenings and on Saturdays. Courses of the programmes IMS and IRM are partly conducted online via eLearning.

MET and AEE are taught almost entirely in English. Should applicants fulfil the course requirements, they may choose courses from the MET curriculum which are not listed in the “International Programme”.

Hand in

- a filled-in application form
- a transcript of records
- your learning agreement

and spend a semester in Austria, Kapfenberg!

Application deadline is **31st of October 2016**

The number of participants for this programme is limited.



List of all courses offered in the International Programme

Deg.prog.	Course no.	Course	ECTS
AEE	090421201	Semiconductor Physics	3
AEE	090421209	Automotive Electronics	4
AEE	090421205	Automobile Electric Drives	3
AEE	090421401	International Management	5
AEE	090421402	Innovation Management	1,5
AEE	090421404	Meetings & Presentations	1,5
			18
EVU	140591402	Thermal Engines	2
MET	130592204	Water supply & Drainage	2
MET	130592202	Traffic Telematics	4
MET	130592209	Economics: Infrastructure Financing	4
MET	130592205	Environmental Chemistry	2
MET	130592211	Human Ressource Management	3
MET	130592208	Environmental Control for E&T	2
			19
ITM	110418408	IT-Project Work 1	4
ITM	110418411	Professional English Advanced	2
IMS	140419203	Scientific Working	3
IMS	140419204	Mobile Operating Systems	5
IMS	140419205	Cross-Platform Development	6
IRM	140472205	Legal English 2	4
IRM	140472208	Entrepreneurship	2
IRM	140472202	e-business applications	2
			28
IWI	080589605	Scientific project work (Bachelor Thesis)	5
IWI	080589603	Industrial Projects	4
IWI	080589209	Language of meetings (English II)	2
IWI	080589609	Cross-cultural Communication	4
IIM	110590204	Intercultural Communication 2	2
			17
		German beginners (A1/1 or A1/2)	3
		German intermediate	3
		Austria – People and Culture	2
			8
		Total ECTS	90



Semiconductor Physics

(AEE/2. Semester)

4 ECTS

Description of course elements:

- crystals
- electron band structure
- effective mass
- carrier concentration
- dopants
- pn-junction
- semiconductor devices
- photoelectronic devices

Learning outcome from related module:

The students are proficient in the mathematical principals of electronics, are able to execute the Maxwell-theorem in electronics and know the basics of semiconductor physics

Assessment:

Exam at the end of semester

Automotive Electronics 1

(AEE/2. Semester)

4 ECTS

The course gives an overview on electrical components in vehicles.

The content is structured as follows:

- On-board generation of electric energy
- Energy storage (batteries, super-caps, hydrogen with fuel cell)
- Board-net architectures and board-net control
- Auxiliaries (air-condition, fans, pumps, etc.)
- Automotive sensors

Evaluation: The chapter automotive sensors is elaborated on and presented by the students as a seminar paper. The other chapters are evaluated by a written exam.

Automobile Electric Drives

(AEE/2. Semester)

3 ECTS

The course gives an introduction to new automobile propulsion systems like Hybrid Drives, Electrical Cars, and combinations with fuel cells.

It covers the following topics:

- CO2 emission and climate change/limited fossil resources
- Individual Mobility today and in the future (comparing conventional cars with future concepts)
- Efficiency of vehicles in typical driving cycles
- Hybrid Drive Concepts
- Hydrogen as an energy transport medium
- Batteries and Supercaps
- Renewable energy production for Road Transport (closed overall cycle)

Evaluation: Exam at the end of the semester



International Management

(AEE/4. Semester)

5 ECTS

This **BLOCKED** course examines the dimensions of international business. It is structured beginning with the macro-environment, transitions to the firm level, and concludes with the individual manager in the international setting. Students will be introduced to theories of international management in the context of current and emerging realities in the global marketplace. This course will take a practical approach to International Management with a special emphasis on cases & examples that are relevant to the actual practices of international business today.

Evaluation: Immanent evaluation and final exam.

Innovation Management (AEE/4. Semester) 1.5 ECTS

The blocked course gives an introduction to the following topics:

- Importance of innovation
- Evolutionary economics
- The theory of inventor's problem solving (TRIZ)
- Managing technology and knowledge
- Managing intellectual property
- Innovation as an operations process
- Development of new products

Evaluation: Accompanying (immanent) evaluation based on case studies.

Presentations and Meetings (AEE/4. Semester) 1.5 ECTS

The blocked course will be held as a workshop focussing on the following topics:

- Developing effective oral presentations
- Designing effective visual aids for presentations
- Preparing and leading efficient meetings
- Practical cases

Evaluation: Accompanying (immanent) evaluation based on practical exercises

Thermal Engines (EVU/4. Semester) 2 ECTS

In Thermal Engines the following topics will be covered:

- Basic thermodynamics of heat engines
- Historical aspects
- Design aspects, operating performance, etc.: piston engines, internal combustion engine (Otto, Diesel), steam turbine, gas turbine, combined cycle

Water supply & drainage (MET/2.Semester) (2 ECTS)

Description from application:

Urban irrigation and drainage; in-depth treatment of water supply/distribution in urban networks and wastewater engineering/drainage in urban networks, hydrology, hydraulics; road drainage and wastewater discharge in road networks.

Learning outcome from related module:

In-depth knowledge about the management of energy & transport networks including the underlying infrastructure and environmental influences/emissions; network design, including modelling and simulation; network operation including issues of stability, quality levels and controlled access to networks; network maintenance; network stability; restoration of power in the event of grid failures (e.g. power grid blackout; power interruption due to accidents or maintenance work); ability to understand and specify quality parameters (Quality of Service).

Teaching and Learning Methods:

integrated course

Assessment:

written and/or oral exam

(Elective course): This course requires a minimum number of participants to be held!

Traffic telematics (MET/2. Semester)

4 ECTS

Description from application:

Key areas 1) Quality parameters of mobile phone systems in the transport sector 2) Mobile phone systems; positioning system and RFID, possible applications and their evaluation (no details about functional principles) 3) Operation and configuration of telematic networks 4) Intelligent transport systems (“ITS” intelligence in vehicles, intelligence in infrastructure). 5) Road-to-car communication, car-to-car communication 6) Application of current wireless communication systems and determination of quality parameters required for specific applications 7) Applied telecommunications; quality of service of telecommunication networks, service level agreement, availabilities, interfaces, time response.

Learning outcome from related module:

In-depth knowledge of transport planning, transport modes (road, rail, aviation), transport industry and traffic telematics for application by transport providers, authorities, consulting firms or the manufacturing industry; knowledge about the financing and legal status of companies, special knowledge about environmental impacts in the transport sector.

Teaching and Learning Methods:

integrated course

Assessment:

written and/or oral exam

(Elective course): This course requires a minimum number of participants to be held!



Economics Infrastructure Financing (MET/2. Semester) 3 ECTS

Investment rating, financing methods (e.g. PPP, BOT), efficient economic and political risk management, financial institutions (local banks, development banks), current exemplary infrastructure projects, real option theory, project calculation; composition of tariffs in the energy and transport sector.

Environmental chemistry (MET/2. Semester) 2 ECTS

Description from application:

Representative methods of environmental analysis and operation of typical equipment (e.g. flue gas analysis)

Learning outcome from related module:

In-depth knowledge about the management of energy & transport networks including the underlying infrastructure and environmental influences/emissions; network design, including modelling and simulation; network operation including issues of stability, quality levels and controlled access to networks; network maintenance; network stability; restoration of power in the event of grid failures (e.g. power grid blackout; power interruption due to accidents or maintenance work); ability to understand and specify quality parameters (Quality of Service).

Teaching and Learning Methods:

tutorial

Assessment:

written and/or oral exam

Elective course: This course has a limited number of participants

Human Resource Management (MET/2. Semester) 3 ECTS

Human resources management (agreeing on targets, giving feedback, motivation, meaning-oriented leadership), conflict management, behavior and tactics in negotiations, people management, people development, time management, training and further education management, personnel recruiting and aptitude diagnostics.

Environmental Control for E&T (MET/2. Semester) 2 ECTS

Environmentally relevant topics in the field of energy and transport; emissions <> immissions; different kinds of emission (pollutants, exhaust gases, noise, air pollution control, dusts (e.g. particulate matter), CO, nitrogen oxide, sulphur dioxide, hydrocarbons, secondary reactions (aerosols, ozone formation); exhaust aftertreatment systems in vehicles (catalytic converters, filter systems), limit values for key pollutants (particulate matter measurement), noise, emission sources; emission reduction measures; environmental impact assessment; EU-law related subject

Learning outcome from related module:

In-depth knowledge about the management of energy & transport networks including the underlying infrastructure and environmental influences/emissions; network design, including modelling and simulation; network operation including issues of stability, quality levels and controlled access to networks; network maintenance; network stability; restoration of power in the event of grid failures (e.g. power grid blackout; power interruption due to accidents or maintenance work); ability to understand and specify quality parameters (Quality of Service).

Teaching and Learning Methods:

integrated course

Assessment:

written and/or oral exam

IT- Project Work 1	(ITM/4. Semester)	4 ECTS
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By working independently on projects of average difficulty students learn to apply project management skills.

Professional English Advanced	(ITM/4. Semester)	2 ECTS
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Consolidation of relevant skills for the students' professional careers: Improvement of negotiation and meeting skills, critical reflection of relevant topics from the fields of business, law and engineering; English for specific purposes: specific language used in meetings and negotiations; simulated meetings in class.

Mobile Network Security	(IMS/2. Semester)	5 ECTS
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This course expands the basic knowledge of network security to get an insight into security for mobile devices and mobile infrastructures. The main topics of the course are Wireless LAN, WiMax, Bluetooth, NFC, etc. After an introduction to mobile networks such as GSM, UMTS, LTE follows VPN as the basis for a secure connection within distributed networks. The topic VPN includes the basics, authentication and the implementation in the OSI layers 2, 3, and 4. In addition, the course discusses core topics such as IPSec, "KeyManagement", opportunistic encryption, performance, availability, DDOS-solution, "network monitoring ", NIDS, algorithms for pattern recognition, "honeypots/ -nets" as well as "Intrusion Prevention and Detection Systems". An outlook on "Next Generation Networks" like sensor nets and "Smart Grids" etc. concludes the course at hand.

Learning outcome from related module:

The graduate designs, plans and diagnoses computer networks with focus on mobile infrastructures. He/she recognizes security risks and uses his/ her advanced knowledge of all types of communication systems and their hardening against attacks of all kinds in order to prevent threats such as Denial of Service, Eavesdropping, unauthorized access, etc. effectively.

Prior knowledge from related module:

Basic knowledge about computer networks

Teaching and Learning Methods:

1 ECTS lecture, 4 ECTS tutorial

Assessment:

Lecture: final exam, tutorial: continuous assessment

Scientific Working

(IMS/2. Semester)

3 ECTS

This course teaches students about the basic principles of scientific work in the field of applied computer sciences. It is an introduction into the fascinating field of research. The course shows the power of theory and literature, helps formulating intriguing research questions, provides an overview of scientific methods and data analysis, and gives hints on how to derive insightful conclusions out of results. Using this topic area, we will understand what it means to 'do science' and to develop skills such as how to do literature review, how to critically read and review written papers, hold oral presentations and posters.

Learning outcome from related module:

The graduate possesses detailed knowledge in the foreign language. He/she can express himself/herself spontaneously and fluently. He/ she can use language flexibly and effectively for social, academic and professional purposes. Moreover, the student can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors and cohesive devices. In addition to that, the student will be able to successfully participate in scientific research work in order to present his/her research impressively to the scientific community. He/ she is also able to create and present scientific posters.

Prior knowledge from related module:

English Proficiency in B2/ C1

Assessment:

Seminar: continuous assessment



Mobile Operating Systems

(IMS/2. Semester)

5 ECTS

Operating system basics, architectures and functional principles; special focus on operating systems in mobile systems and the specific requirements in this field, Introduction to C as a systems programming language and its application; Virtualization principles

Learning outcome from related module:

Proper knowledge about operating systems for mobile environments and their architectures. Based on that sound knowledge about operating system safety and security

Prior knowledge from related module:

general informatics

Teaching and Learning Methods:

3 ECTS lecture, 2 ECTS tutorial

Assessment:

Lecture: final exam, tutorial: continuous assessment

Cross-Platform Development

6 ECTS

Development of HTML5 web apps for different platforms - including social media frameworks and real-time web application - are covered. Aspects of cross-platform code generation are treated.

Learning outcome from related module:

Students gather knowledge of design, development and evaluation of secure mobile applications on different platforms.

Assessment:

Lecture: final exam, lecture: continuous assessment

Prerequisites:

Advanced knowledge in:

- OO-Programming and Debugging, Javascript (async, callbacks), Responsive Web Design (HTML5, CSS3, WebSockets), Restful Webservices, ...

Basic experiences with:

- Linux/Unix, Network Troubleshooting, NoSQL Databases, git repositories, ...

Further helpful/suggested competences:

- Android Development (design, implement, debug and deploy Android Apps)

Legal English 2

(IRM/2. Semester)

4 ECTS

The course covers the following topics:

- Sale of goods, warranties, terms and conditions of sale, retention of title; writing a memorandum
- Company Law: capitalization, shares, rights issue; contrasting, expressing opinions
- Changes in the company: mergers, acquisitions etc.; explaining procedure;
- Intellectual Property; the case of Joel Tennenbaum; discourse markers; phrases for discussions;
- IT law and cybercrime; the case of the Palin hacker
- Secured Transactions; formal letter writing; financial crisis

- ILEC test examples and tips on preparing for and passing the ILEC exam; Competition law; Employment Law Contracts: repetition of express and implied terms; case studies on contract law and intellectual property law; Licensing agreement theory and sample contract

Entrepreneurship

(IRM/2. Semester)

2 ECTS

Entrepreneurs generate substantial economic growth by pursuing innovations, introducing new products and services, opening new markets as well as adapting themselves to new knowledge. Therefore the present course focuses on starting and growing new businesses. We investigate concepts, tools, and practices of entrepreneurship by assessing the value of a new venture, writing a business plan, and selected guest speakers. Above that we identify and exercise entrepreneurial skills and behaviors that lead to firm performance and growth.

The course consists of two modules:

MODULE 1: Entrepreneurial concepts, tools, and practices

MODULE 2: Entrepreneurial skills and behaviors



E-Business Applications - project (IRM/2. Semester) **2 ECTS**

E-business models are the theoretical basis for e-business applications. In this lecture the focus is on the practical implementation of e-business concepts. This implementation occurs via the use of appropriate software engineering methods, such as specifications, requirements specification, project plan, schedule, resource plan. E-business Applications also includes the implementation and testing of the developed concept. You will have to do a project on your own.

Scientific Project Work (Bachelor's Thesis 2) (IWI/6. Semester) **5 ECTS**

Students, supervised by a lecturer, will write an academic paper, using scientific methods and techniques, as well as formalities. Within the scope of this project work, the participants should adapt industry-related tasks and autonomously work on solutions for their research problems.

Industrial Projects (IWI/6. Semester) **4 ECTS**

Description:

Small project groups, supervised by a lecturer, will work on subjects, case studies or real situations given by an industry partner or the degree program Industrial Management. Participants will learn the basic principles of project management improve their teamwork skills and gain an insight into the daily business of an industrial environment.

Attention: There are only a view places for an English Industrial Project. If you want to participate in a German Industrial Project good German skills are required. To check your skills you will have a talk to the international coordinator before starting the project.

Prerequisites:

Knowledge in topics related to the project
Good language skills in English or German

Intercultural Communication 2 (IIM/2. Semester) **2 ECTS**

Description:

As our social, business and educational environments have become increasingly complex, the potential for conflicts has grown enormously. Managing these conflicts can be challenging enough in your own language and cultural setting; it becomes a challenge squared when dealing with people and organisations with highly diverse backgrounds. This course will build on many of the concepts and topics covered in IC 1 (i.e. high vs. low context conflict resolution). An additional variable in many conflicts stems from opinions and emotions concerning political and current affairs; everyone has an opinion, some of which may be considered "taboo"(current developments in Ukraine/Russia, Latin America, Africa; colonial history and post-colonial trauma).

Furthermore, the course will cover business ethics in an intercultural context; topics will range from taxation to Islamic Finance and environmental awareness.

Prerequisites:

Knowledge in topics related to Intercultural Communication



Language of Meetings (English 2)

(IWI/2. Semester)

2 ECTS

In the course Language of Meetings the following topics will be covered:

- Meetings and moderation with multi-cultural participants.
- Language functions in English as a participant, moderator or chairperson.
- Telephone conferences
- Plan of action
- High level questions to clarify information

Cross-cultural Communication

(IWI/6. Semester)

4 ECTS

This course will teach students the appropriate language skills to:

- Use English for business and socializing in a globalised world
- Express themselves adequately in technical and financial terms in an industrial business environment with English as the target language.
- Use English as the business language for presentations and other professional settings while understanding the differences of communication with culturally diverse participants.
- Implement academic writing skills for abstracts and introductions.

Requirements:

Students will have to prepare and conduct project presentations; engage in topical classroom debate based on readers; write homework assignments on questions from script/reader; prepare and write a final abstract for BSc Thesis.



German Courses and Intercultural Subjects:

There might be slight changes in the course offerings due to student numbers and required levels! Please note that several German courses of different levels cannot be taken at once.

**German Beginners 1 (A1/1) or
German Beginners 2 (A1/2)**

3 ECTS

Whether both or just one of the above mentioned courses will be offered depends on the student numbers.

The beginner courses (first and second level) integrate the skills of listening, speaking, reading and writing and emphasize oral communication and listening comprehension in a culturally authentic context.

More information about the contents: www.fh-joanneum.at/daf

Prerequisites: No command of the German language for German Beginners 1 (A1/1). The course German Beginners 1 is a prerequisite for German Beginners 2.

Evaluation: Continuous assessment, written exams

Bibliography: Schritte international 1, A1/1 or 2, A1/2 (Hueber 2006) with Audio-CD and interactive exercises, about € 13,-

German Intermediate 2 (B1/2)

3 ECTS

The course "German Intermediate 2" focuses on your grammar competences and the structure of the German language. It will also enlarge the students' range of vocabulary and expressions. Students will be exposed to more complex issues of grammar at level B1/2 such as: Temporal and local connectors and prepositions, passive voice in past tense and perfect tense ("Präteritum" and "Perfekt"), future tense I, ("Futur I"), unreal comparison, conditional II, word order, conditional II ("Konjunktiv II") etc.

Prerequisites: Level B1/1

Bibliography: You will get up-to-date and didactic teaching materials in the course, which are designed specifically to meet the needs of your language level: € 13,-

Evaluation: Continuous assessment, written exams



Austria – People and Culture

2 ECTS

In this course, the intercultural experiences of the participants will be discussed and the cultural differences between Austria and the participants' home countries analysed. It will not only provide useful information about Austria, but also focus on the basics of the German language and on how to handle difficult situations caused by the cultural differences discussed.

Prerequisites: None

Bibliography: Teaching materials are provided by the lecturer: € 13,--

Evaluation: Class participation and presentation

Minimum number of participants: **8**

*Have you always wanted to get to know Austria and learn some German?
Do you enjoy being part of a small and very intimate community of students?
Do you relax best when doing sports?*

Kapfenberg is just the place to go!

Why Kapfenberg?

It not only offers the best out and indoor sports facilities but also a first class educational environment. With about 23.000 inhabitants Kapfenberg is the third biggest town of the province of Styria. It is one of the most modern and innovative high-tech industrial cities in Austria.

In Kapfenberg students can enjoy a unique campus atmosphere: after lectures, students are encouraged to meet and talk with professors and lecturers, who spend much of their time attending to their students' needs. Due to the small campus our students form a real community and it will be easy for you to get fully involved in student life. State-of-the-art laboratories, a canteen, a comfortable students' lounge and a residence hall, which is also a starting point for great running and mountain bike trails, provide you with the perfect study environment.

How to get to Kapfenberg?

The campus is easy to reach as railway station and bus stops are located directly in front of the building. And Graz, the capital of Styria, is less than an hour away.



Where to stay?

Kapfenberg provides a range of accommodation facilities for students. The nearest housing possibility is the student home WIST. For more information please contact us directly via mail.