

Information Systems Management

- study degree – Graduate/ Master
- language – English
- credits/ study duration – 120 ECTS/ two years study program
- form of study – full-time program
- start of studies – in September
- application deadline – 28 February/ 30 April
- tuition fee – 3.800 EUR per academic year

Study plan

Compulsory core courses – 66 ECTS

[Elective/optional courses – min. 42 ECTS](#)

Final state exam and Thesis defence – 12 ECTS

Compulsory core courses – 66 ECTS

1st Semester

[Information Technologie in Entrepreneurship](#)

[ICT Project Management](#)

[Information System Audit](#)

[Software Process Improvement](#)

[Modern Risk Management](#)

[Information Systems Management](#)

+ [elective courses for 3ECTS](#)

2nd Semester

[Information Managment](#)

[Information Modelling of Organizations](#)

[Management of Enterprise IT](#)

[Knowledge Discovery Databases](#)

[Competitive and Business Intelligence](#)

+ [elective courses for 3ECTS](#)

3rd Semester

[Diploma Seminar](#)

+ [elective courses for 24ECTS](#)

Exchange semester - optional

4th Semester

[New Media and Social Network Services](#)

+ [elective courses for 12ECTS](#)

+ Final state exam and Thesis defence

Compulsory core courses (syllabus)

Information Technologies in Entrepreneurship - 4IT487, 6 ECTS

Aims of the course:

The aim of the course is to introduce the basic principles of entrepreneurship applied to projects in the field of information technology. The course will guide students through different phases of the process of preparing a startup project business plan and introduce them the innovative use of information technology for business support. Course will also present core business applications such as e-business and their integration in the architecture of the emerging small businesses.

Learning outcomes and competences:

Upon successful completion of this course, students will be able to:

- Prepare a business plan of a startup company and present to potential investors
- Understand and apply innovative use of information technology to support business
- Understand the development, functional possibilities and limits of e-business applications
- work in the larger team

Course contents:

1. Course IT topic selection, communication tools, knowledge base creation (allowance 6/6) - course IT topic selection, communication tools, knowledge base creation
2. Entrepreneurial basics (allowance 6/6) – storytelling, Lean Canvas, prototyping
3. Product and service design (allowance 6/6) – product and service design basics, personas, customer journey
4. Team project (allowance 6/6) – MVP, prototype, validation, Investor presentation outline
5. Demo Day (allowance 2/2) – final team project presentation

ICT Project Management – 4IT524, 6 ECTS

Aims of the course:

Provide an introduction to the principles and the fundamental concepts of the project management in general and of the IS/ICT projects in particular. Explain the fundamentals of the well-known project management methods (MMDIS RIP, TOC, PMBOK, PRINCE2) and tools (MS Project). Provide an overview of other aspects of the IS/ICT project management such as project management procedures, project planning methods and techniques, project organization (roles and teams) or coordination of projects.

Learning outcomes and competences:

Upon successful completion of this course, students will be able to prepare projects, plan projects, manage and control projects and evaluate projects. They will be able to use project planning and management techniques and tools. Students will be able to select an IS/ICT project management method and adapt it to fit the needs of a specific project.

Course contents:

1. Objectives of the course, terminology, fundamental principles of the project management, IS/ICT project management, project critical success factors.
2. IS/ICT strategies, development of information systems and the IS/ICT project environment.
3. Definition of a project and the project lifecycle. Project lifecycle vs. technical procedures (e.g. software development procedures and processes). Project management processes and knowledge areas.
4. Project management products. Preparing and planning a project. Workload estimation methods and techniques. Executing a project. Closing a project.
5. Project organization and control. Project team. Competencies of the project management professionals.
6. Project and portfolio management tools.
7. Standardization bodies developing the project management methods and standards. PMBOK, PRINCE2, ISO standards, IPMA standards, MMDIS RIP, CMMI, COBIT, ITIL.
8. Implementation and maintenance of the project management method.
9. Knowledge management in the project environment.

Information System Audit -4SA613, 6 ECTS

Aims of the course:

The aim of this course is to acquaint students with the development, content, tools and problems of implementation of the audit of information systems and its linkages to financial audits. It is therefore an attempt to contribute to reducing the gap between what users expect from an audit and what results they can actually receive (audit expectation gap).

Learning outcomes and competences:

Upon the successful completion, the students will be able on the base of risk analysis or other scoping procedures to refine the audit objectives, define the realistic objectives of the audit in a particular environment, select the appropriate evaluating criterion, design audit plan, realize the different types of audit / assurance (in cooperation with other professionals according to the focus of the audit), create the final audit report.

Course contents:

Lectures:

1. IS audit evolution and the role of auditor
2. Basic components and types of audit/assurance
3. Standards and IS audit (principles of EGIT, regulatory environment,assurance function perspective standards (ITAF, IPPF, SSAE), assessment perspective standards (IS security and quality standards)
4. Examples of criteria (standards) for IS security and quality assessment
5. Cobit framework, evolution, concept (Cobit 5 Business Framework, Cobit 5 Enabling Processes, Cobit 2019)
6. Cobit support of IS audit/assurance (audit process, Cobit 5 for Assurance, comparison of different frameworks)
7. Process maturity and capability assessment (CMMI, ISO 15504, Cobit 5 assessment program
8. Risk management process and its importance within the assurance engagement
9. Internal control systems of organizations (application and general controls, testing, relevance for financial audit
10. Audit documentation (audit agreement, audit documentation, audit evidence, audit report)
11. SW support of audit (CAAT, EGRC tools)
12. Examples of different types of IS audit (e.g. audit of IS department, audit of IS outsourcing (cloud computing, DB audit, chosen IT process audit, audit of project)
13. Invited lecturer from practice

Tutorials:

Case studies and presentations of seminar papers

Software Process Improvement – 4IT522, 6 ECTS

Aims of the course:

The aim of the course is to introduce software development methodologies, frameworks, standards and tools.

Learning outcomes and competences:

After successful completion of this course students will be able to use ISO/IEC 12207 process reference model, ISO/IEC 29110 standard for SW processes in very small entities, CMMI process reference model and most important IS development methodologies. Students will understand how to choose the right tool.

Course contents:

1. Current state of IS development
2. Categorization of methodology elements
3. ISO/IEC 12207 process reference model
4. CMMI process reference model
5. Capability evaluation according to ISO/IEC 15504
6. ISO/IEC 29110 for very small entities
7. Life cycle models
8. IS development methodologies
9. Rigorous methodologies
10. Iterative (Rational Unified Process)
11. Agile methodologies, especially Scrum, Feature Driven Development (FDD), Extreme programming (XP), OpenUP, Kanban
12. Scaling of agile methods (DAD, Less, SAFe)
13. Selecting the right method

Modern Risk Management – 4SA551, 3 ECTS

Aims of the course:

This subject is focused on the modern risk management area, process managed organizational concept, basic legislation foundation principles, the competencies of process owners and control owners, internal control concept including testing and audit of internal controls.

Learning outcomes and competences:

Upon successful completion of this course, students will be able to design, implement and testing / audit of internal controls plus evaluation of their effectiveness.

Course contents:

1. Key reasons for risk management control systems (Six Sigma, Kaizen, Lean, ISO)
Operational Excellence principles and their practical use
2. Sarbanes – Oxley Law in brief
Details of SOX302, SOX404 and SOX906
3. SOX localization in some countries (J-SOX, Swiss SOX)
Comparison of risk management legislation between EU and USA
4. ISO 31000 in brief
COSO and COBIT principles
5. Risk classification and basic risk management
Practical recommendation for risk management in the environment of average companies
6. Risk measurement
Risk map assembling
Risk classification upon the principles of probability and impact
7. How to recognize process managed organizations
Process maps and necessary supports for internal / external audit
8. Competencies of process owners and controls owners
9. Internal control concept
Design of internal control and its test plan
Implementation of internal controls into an organization
10. Independent testing of internal controls and how to analyse the results
11. How to co-operate with auditors
12. Internal audit outcomes
13. Electronic records document system for IT products development and implementation

Information Systems Management – 4SA431, 3 ECTS

Aims of the course:

The main goal of the course is to discuss and explore management actions which can increase probability that IS/IT will add value to business.

Learning outcomes and competences:

Upon successful completion of this course, students will be able to explain the specifics of IS/IT management within an organization and effectively communicate with its management.

Course contents:

Synopsis of lectures

1. Evolution and terminology of information systems management (ISM)
2. IT management models and frameworks
3. IT Governance -- the current IT management framework
4. IS/IT Planning (content, methodologies, phases)
5. IS/IT organization (general types of organizational models, centralization versus decentralization)
6. Standards and procedures (external, internal)
7. Legal issues (areas of computer law, software protection, IS/IT contracts)
8. Financial issues: departmental and project accounting (cost allocation models, budgeting, metrics of IT value)
9. IS/IT quality management (quality of SW development processes, quality of IS/IT performance, quality of SW products, quality of IS/IT services)
10. IS/IT security (security standards, information assurance, ROSI)
11. Information systems development/implementation (types of SDLC models, types of project management methodologies and SW tools)

Synopsis of tutorial

1. Setting the studies (semester works)
2. Presentation of studies
3. Discussion about IS specific problém

Information Management – 4SA615, 6 ECTS

Aims of the course:

Course gives knowledge and skills for practical improvement of information management on enterprise level. Strategic schools of management are presented at this course and its application in business. It accents modern concepts of change management, proactive strategies, re-engineering approach and learning organization.

Learning outcomes and competences:

Upon successful completion of this course, students will be able to:

- formulate strategy for enterprise informatics,
- apply concept of learning organization on corporate informatics management.

Course contents:

Lectures:

1. Concept of information management – components and their relations
2. Innovation in ICT, business processes, ICT processes
3. Strategic management and its application in ICT management
4. Corporate informatics
5. Architecture of IS
6. Concept of multidimensional databases (OLAP) vs. relation databases (OLTP)
7. Metadata and their impact on corporate informatics management
8. Model for corporate informatics management – organization structures, processes
9. Informatics management – enterprise informatics standards, COBIT process management model.
10. Informatics management – ITIL process management model.
11. Effectiveness and efficiency in corporate informatics management.
12. Invited lecture - Enterprise informatics management.
13. Final test.

Tutorials:

As part of the teamwork, the students perform a process analysis of the selected company with a specific focus on the information flows in the company, and on this basis then suggest appropriate ICT support for selected processes, alternatively risk analysis.

Information Modelling of Organizations – 4IT525, 6 ECTS

Aims of the course:

Overview of principles, methodologies, and tools for the analysis and design on the IS.

Training in the use of methodologies with CASE tools.

Teamwork in the IS development project in order to create the ability for performing IS/IT projects with use of the progressive methods and tools.

Learning outcomes and competences:

Upon successful completion of this course, students will be able to analyse the business system in order to develop its information system as well as re-engineer its business processes. Moreover, they will be able to attend IS development projects in different roles.

Course contents:

1. Presentations:
2. IS development methods and methodologies
3. Business System and Information System
4. Project Management
5. Methods of Analysis
6. Other topics (meta-modelling, BPM, CASE, OO development trends,etc.)

Exercises:

Project Kick-Off

Project work

1st Project Checkpoint - Global analysis completion

Project work

2nd Project Checkpoint - Detail analysis completion

Project work

Project Conclusion and Product Evaluation

Management of Enterprise IT – 4IT528, 6 ECTS

Aims of the course:

IT Governance, Management of IT services, IT operations and IT resources, Information Systems, MMDIS, ITIL, information strategy, variants of enterprise IT development, IT sourcing, IT vendor management

Learning outcomes and competences:

Familiarize students with principles of business IT management at strategic, tactical and operational levels, especially with development and management of IT services, with various forms of IT services delivery.

Course contents:

1. Business Informatics (BI) , Basic terms, IT resource , IT process , IT service
2. BI stages and variants, IT – Business relationship development , Models of IT service delivery, Factors influencing BI management
3. Management principles in BI, Organizational structures, Structure of IT department
4. IT Architectures, IT architectures theory , Enterprise architecture, IT services architecture, application architecture, software architecture, technological architecture
5. Principles and models of IT management, IT management principles , IT management models – MMDIS (Multidimensional Management and Development of Information System)
6. Frameworks for IT management, ITIL, ISO/IEC 20000
7. Reference model of IT management, Reference model principles, MMDIS-MBI description, Customization and implementation of the model
8. Strategic IT management, IT and enterprise competitiveness, IT strategy – design and implementation principles
9. IT services management, IT service life cycle, IT service architecture, IT service definition (SLA)
10. IT sourcing, Reasons for outsourcing, Outsourcing risks, Outsourcing variants and their CSF, Process of outsourcing, Tender and vendor management

Knowledge Discovery in Databases – 4IZ451, 6 ECTS

Aims of the course:

Knowledge Discovery in Databases (KDD) can be defined as "Non-trivial process of identifying valid, novel, potentially useful and ultimately understandable patterns from data". This modern branch of computer science is on the edge of database technologies, statistics and artificial intelligence. KDD techniques can be used to solve classification, prediction, summarization or segmentation tasks on various application areas.

Students will get familiar with the methods used for knowledge discovery in databases from both theoretical and practical point of view. The main focus of the lectures will be on description of used data mining methods and algorithms. In practical part, the students will work with selected data mining systems.

Learning outcomes and competences:

Upon successful completion of this course, students will be able to:

- understand the role of KDD for data analysis,
- understand the basic principles of various data mining algorithms,
- understand the basic methods of evaluation of created models,
- understand basic preprocessing operations,
- formulate and solve KDD tasks for real-world data,
- use selected data mining systems.

Course contents:

1. The process of KDD: tasks, methodologies, tools
2. The background for KDD: databases, statistics, machine learning
3. Machine learning methods: decision trees, decision rules, association rules, neural nets, bayesian methods, instance based learning
4. Evaluation what has been learned
5. Data preprocessing methods
6. Text mining
7. Real-world application

Competitive and Business Intelligence – 4IT555, 6 ECTS

Aims of the course:

Gain pre-requisites for the positions of analysts or consultants of managerial applications (directed to support business and strategic decision making), demonstrate them by interconnection of Business and Competitive Intelligence tools.

Learning outcomes and competences:

Upon successful completion of this course, students will be able to design and implement Business Intelligence solution (starting from multidimensional analysis, multidimensional cubes to client reporting). Students will be able to define information needs, find its appropriate sources, analyze found information and elaborate report to senior managers to support their strategic decisions in a Strategy or a Business Area within the organization.

Course contents:

1. Basic principles of Business Intelligence, development in BI area
2. Core OLAP (On Line Analytical Processing) technologies, demonstration of principles on examples
3. BI, planning and analysis
4. Design and modeling -- principles of dimensional modeling, relationship between measures and relevant dimensions, physical design and modeling, data quality management, data granularity problems management
5. Server applications solution, basic principles of MS Analysis Services, functions and options
6. Client applications solution
7. Characteristics, definition and classification of CI.
8. Strategic management system and the importance of information in a competitive fight
9. CI intelligence cycle. Information Key Topics / Questions
10. Evaluation of information. Time, financial and personnel constraints, reliability and consistency of data, data anomalies, false information
11. Methods and analysis tools, presentation and communication of information

Diploma Seminar – 4SA620, 3 ECTS

Aims of the course:

To introduce students to the principles of formation of diploma thesis (topic selection, content and form of the thesis, work with information sources, work ethics). To remind the basic methodical principles of scientific work.

To provide students with the knowledge and skills necessary to create a thesis. Formulation of objectives of the work, the schedule and the solution procedure, the selection of relevant sources. Diploma thesis elaboration (min. 20%).

Learning outcomes and competences:

Upon successful completion, students will be able to write the diploma thesis.

Course contents:

1. Explanation of the method of elaboration of the diploma thesis (formal requirements, content requirements, academic standards, ...).
2. Determining the main steps and progress of work.
3. Finding a suitable topic and the supervisor.
4. Formal registration of the diploma thesis into the information system.

In cooperation with the supervisor:

5. Proposal of the structure of work and the timetable of the solution of the diploma thesis.
6. Selection of information sources.
7. Selection of appropriate scientific methods.
8. Draft of the diploma thesis (20 %).
9. Presentation of the elaborated parts of the diploma thesis.

New Media and Social Network Services – 4SA526, 3 ECTS

Aims of the course:

The goal of this course is to acquaint students with the New media and its challenges, opportunities, threads and both technological & social possibilities. The course consists not just of the theory, there is also a practical audiovisual project, which gives students "hands-on experience" within film-language.

The main goal of the course is to help change the perception of the media as an unbiased and neutral source of information and help a student to understand the complexity and variability of the modern world - information society. The area of New media is quite broad and interdisciplinary - it covers informatics, laws, politics, economics, art, history and sociology.

We shall focus on the universal aspects and influences (such as digitalization, globalization, e-government, ownership/power concentration, economic/political/social pressures). Its better understanding helps to orientate better in the contemporary information society.

The course is opened not just for informatics' students, but for all students interested in new technologies (e.g. management, finance, and economics students are welcome). Just basic understanding of the internet and computers is expected. The course is both for graduate/undergraduate students. The course includes an original student semestral team work.

Learning outcomes and competences:

Upon successful completion of this course, students should be able to orientate in the turbulent environment of New media and have a good grasp of the many-2-many concept of communication (as opposed to traditional broadcasting one-2-many).

Course contents:

New media are rapidly changing contemporary society about the same way Johannes Gutenberg's invention of printing changed medieval society - when revolutionized access to the information by industrial means.

Turbulent development of modern media together with their close relation to the Information and Communication Technologies (ICT) makes New media studies absolutely essential for the students who want to stay in touch with the latest development. New Media is a field of study where a computer plays a central role as the medium of production, storage, and distribution of information.

The course focuses not only on the technological level of the new media, but also reflects on the social and ideological impact of the personal computer, computer networks and digital mobile devices on modern society as a whole and individual potential in particular.

List of weekly topics

1. History of communication and media
2. A modern form of communication and new media
3. Social media
4. Information society
5. Information oversaturation
6. Digitalization
7. e-government
8. e-voting, Digital signature
9. Artificial Intelligence
10. Copyright
11. Privacy
12. ICT security

13. Modern trends in ICT

List of elective courses – min. 42 ECTS

Business Process Engineering (6 ECTS) – 4IT531
Cloud Computing: Principles and Technology (3 ECTS) – 4IT482
Czech for Foreigners (3 ECTS) – 4SA622
Data Science in Python and R (6 ECTS) – 4IZ565
Economic Demography I (3 ECTS) – 4DM465
Economic Statistics (6 ECTS) – 4ES611
Challenges in Information Management I (3 ECTS)- 4SA434
Challenges in Information Management II (3 ECTS) – 4SA535
Communication and Presentation of Information (6 ECTS) – 4SA612
IS/ICT Trends II (3 ECTS) – 4IT471
Modern Change Management (3 ECTS) – 4SA553
Multiple Criteria Decision Making (6 ECTS) – 4EK606
Presentation Skills (3 ECTS) – 4ME378
Probability and Mathematical Statistics I (6 ECTS) – 4ST621
Project Management (3 ECTS) – 4EK603
Simulation of Systems (6 ECTS) – 4IT496
Time Series (6 ECTS) – 4ST631
Use MS Excel in Business Practice (3 ECTS) – 4IT522
Web 2.0 & Social Network Services (4ECTS) – 4SA220
International Week courses (3 ECTS) – intensive courses in January