

## **FULL-TIME STUDIES**

### **SEMESTER 1**

#### **History and Culture of Japan, 30 hours of lectures**

The goal of the course is to introduce students to the history and culture of Japan, including traditions, customs, norms and ethical standards that have evolved during the process of the civilizational development of society in East Asia. Students will also be introduced to information about Japanese art and technological achievements.

#### **Foundations of Management and Organization 1, 30 hours of lectures, 30 hours of classes**

The course focuses on the basic concepts and issues in the field of management and organization. Developing the ability to assume different roles in an organization, including leadership skills. Students will acquire the ability to analyze typical problems that organizations face and develop and implement solutions.

#### **Mathematics (1), 15 hours of lectures , 30 hours of classes**

The aim of the course is to provide the students with a good understanding of the basic ideas of logic, set theory and mathematical analysis, including functions of one real variable, sequences, limits of a real function, continuity, its derivative and applications (as location of extrema, the L'Hospital's Rule, Taylor Polynomial). Also the connections of mathematical analysis with computer science, optimization and economics are presented.

#### **Computer System Architecture, 30 hours of lectures, 30 hours of classes**

The course aims to familiarize students with the basics of computer use on Windows and Linux operating systems. The goal of course is to acquaint students with selected software available for the above mentioned operating systems. The course will also cover installation, configuration and utilization of operating systems.

#### **MS Office Suites, 15 hours of lectures, 30 hours of classes**

The aim of this course is to familiarize students with desktop publishing rules, which are used in any form of written communication between people. Students learn how to use these rule in Microsoft Office Package. The specific issues of Word, PowerPoint and Excel are presented.

### **Foundations of IT and Programming in Management, 30 hours of lectures, 30 hours of classes**

The aim of this course is to familiarize students with basic elements of Java language: variables, literals, variables, types, operators, expressions, instructions, iterations, tables, files, text decomposition, methods of sorting and searching. The broader goal of classes is to help students to develop skills of abstract thinking and resolving simple programming problems.

### **Microeconomics 30 hours of lectures, 30 hours of classes**

The didactic goal of the subject is to: familiarize students with the basic concepts of microeconomics used to describe market processes and phenomena; present market behaviors of households and economic aspects of the functioning of enterprises in the economy. Emphasis will be placed on mastering the ability to understand and analyze market mechanisms that determine how consumers, producers and employees make decisions concerning the use of their resources .

## **SEMESTER 2**

### **Mathematics (2), 15 hours of lectures, 30 hours of classes**

The aim of the course is to provide the students with a good understanding of the basic ideas of Calculus, including integrals, visual data presentation, partial derivatives and their applications. Also the student is introduced to Linear Algebra i.e. algebra of matrices, determinants and solutions of linear systems of equations and the Theory of Graphs. The connections with computer science, optimization and economics are presented.

### **Object-Oriented Programming, 15 hours of lectures, 30 hours of classes**

The aim of this course is to familiarize students with basic elements of object oriented programming (Java): classes, objects, fields, setters-getters, static methods, constructors. The topics include also overloading methods, static attributes, methods with variable number of

parameters. interfaces. Classes emphasize the power of object oriented programming while projecting and implementing own classes: inheritance, composition, aggregation and association.

### **Foundations of Marketing, 15 hours of lectures, 30 hours of classes**

The aim of the course is to acquaint students with the basic concepts in the field of marketing. Particular emphasis will be put on the impact of marketing activities on the organization's environment and its relations with stakeholders.

### **Foundations of Management and Organization, 30 hours of lectures, 30 hours of classes**

The goal of the course is to familiarize students with basic concepts and issues in the field of management and organization. Developing the ability to assume different roles in the organization, including leadership skills. Developing the ability to analyze problems that occur in an organization, establishing and implementing solutions.

### **Multimedia Technologies, 30 hours of lectures, 30 hours of classes**

Classes are aimed at acquainting students with the technologies used to create multimedia content and ways of presenting a given topic with their use. Familiarizing students with basic issues of two and three dimensional graphics. Emphasis will be placed on acquiring knowledge of software (PowerPoint, Google Docs, Prezi) used to prepare multimedia presentations and software used to create multimedia content, such as: Adobe Photoshop, Flash, Gimp.

### **Accounting and Finance of Business Entities, 30 hours of lectures, 30 hours of classes**

The general objective of the course is to familiarize students with the principles of financial accounting used to reflect the economic phenomena and processes taking place in the business entity and their impact on the company's assets.

Detailed objectives:

Students will:

- acquire basic skills regarding recording of business transactions on company accounting records and the preparation of basic financial statements.

- have knowledge pertaining to the organization of accounting in an enterprise, e.g. accounting policies, data protection, control.
- be familiar with possible ways of raising capital by enterprises.
- possess basic skills in the field of budgeting.

### **Legal Foundations of Business, 15 hours of lectures, 15 hours of classes**

The aim of the course is to familiarize students with various forms of running a business, such as: sole proprietorship, joint-stock company, limited partnership and limited liability company. The class will also cover such issues as fair competition, unlawful market practices, competition and consumer protection and legal issues connected with internet and online businesses.

## **SEMESTER 3**

### **Databases (1) 30 hours of lectures, 30 hours of classes**

After completing the course the student should be able to create a user-friendly database application in MS ACCESS that meets the client's expectations, correct from the point of view of the form of normal entities, equipped with technical documentation and instructions for the user.

### **Physics, 30 hours of lectures, 30 hours of classes**

The aim of the course is to familiarize students with the basic concepts of physics of electricity and magnetism including their application in the theory of signals and electrical circuits. As part of the lecture, students learn about processing and transmitting information, methods of analysis of electrical circuits and the principle of operation of selected electronic circuits that facilitate processing of electronic signals.

### **WWW Pages and Portal Design, 15 hours of lectures, 30 hours of classes**

The goal of the course is to familiarize students with the current basic Internet technologies used to describe the content and formatting of HTML and CSS languages, the principles of building websites and the basics of using content management systems.

### **Statistical Data Analysis, 30 hours of lectures, 30 hours of classes**

Understanding the basics of statistical data analysis: graphical and numerical methods of presenting various types and forms of data, description of the dynamics of time series, description and examination of correlation and regression dependencies of features. Learning the basics of statistical inference on the basis of a random sample model used in regression and correlation analysis.

### **Market Research, 15 hours of lectures, 15 hours of classes**

The aim of the course is to provide theoretical and practical knowledge regarding the goals, organization and methodology of market and marketing research. Students will gain knowledge about research methods and techniques adapted to the nature of decision-making problems of enterprises. The class will also cover the latest trends in research – e.g. the use of IT tools and systems, conducting research via the Internet, etc.

### **Organizational Behavior, 15 hours of lectures, 15 hours of classes**

The aim of the course is to present students with a general overview of organizational behavior and its impact on the functioning of the organization and management. The topics of the classes cover such issues as individual decision making, the basis of group behavior, working in teams, communication in the organization, leadership and power, interpersonal conflicts, negotiating, organizational change and improvement.

### **Information Technologies in Management, 15 hours of lectures, 15 hours of classes**

The course focuses on modern IT tools used to support management of enterprises. Students will learn about types of IT tools, their possible uses and benefits. The most important topics of the course include: implementing IT systems in an enterprise, CRM Systems; Work Process Management systems; Business Intelligence systems, OLAP systems; document management systems; business e-learning systems.

### **Information Systems Design, 30 hours of lectures, 30 hours of classes**

The aim of the course is to introduce object-orientedness in the context of its use in the analysis and design of systems and presentation of the UML language (an industrial standard used to specify, visualize, construct and document artifacts generated in the software development process). Students will acquire knowledge about the life cycle of IT products, usage methodologies and the implementation and management of IT solutions in the workplace.

## **SEMESTER 4**

### **Data Bases (2), 30 hours of lectures, 30 hours of classes**

On completion of Databases 2, students should be able to independently design an application in PL / SQL, which will meet the client's expectations through appropriately created procedures and triggers including the use of cursors, exceptions and properly constructed queries.

They should possess well-grounded understanding of the need to construct proper entity diagrams and the skill to define the form of normal relations, as well as the skill to decompose them with the view to optimizing this form.

### **Digital Systems and Foundations of Electronics, 30 hours of lectures, 30 hours of classes**

The course aims to provide practical knowledge of the basics of electronics, metrology, digital technology and microcontrollers. The course covers such topics as:

- using analog and digital instruments to measure various electrical quantities, as well as measurement of passive parameters and active electronic components,
- electronic circuits (filters, transistor keys, etc.),
- logic gates (construction and standards),
- classic methods of analysis and synthesis of combinational systems (Karnaugh maps),
- flip-flops (usage in sequential systems),
- microcontrollers and their practical uses (handling of various types of inputs and outputs (e.g. ADC, PWM, ports), event handling techniques and communication standards.

### **Human Resources Management, 15 hours of lectures, 15 hours of classes**

The didactic goal of the course is to provide current knowledge about human resources management (tools, goals and principles). Students will gain knowledge and skills pertaining to the most effective methods of human resource management.

### **Finance in Enterprises, 15 hours of lectures, 15 hours of classes**

The course focuses on familiarizing students with the basic concepts and mechanisms of company finances, methods of financial analysis and managing basic resources of economic entities. Students will acquire the following skills: preparing a basic financial analysis of the company (including recommendations for changes), interpretation of the break-even point and the use of financial, operational and combined leverage.

### **Computer Networks and Information System Security, 30 hours of lectures, 30 hours of classes**

The main goal of the course is to familiarize students with issues connected with security in IT systems, especially from the perspective of a specialist responsible for implementation of IT systems or an IT manager. Students will be provided with fundamental engineering knowledge necessary to build and maintain computer networks.

### **Business Process Modelling, 30 hours of lectures, 30 hours of classes**

On completion of the course, students should understand the importance of business process modeling, know the methods, tools, notations and languages for business process modeling (especially the BPMN notation), understand the Workflow model and be familiar with the tools and programming languages of workflow processes. The student should also acquire the ability to identify and model a business process in appropriate notation with the use of a process modeling tools and conduct a simulation of the process. The participants of the course should be prepared to work in a project team and be able to assume various project roles.

### **Quality Management, 15 hours of lectures, 15 hours of classes**

The course focuses on presenting the essence of quality and the basics of quality management, especially in the context of efficient functioning of a modern enterprise. On completion of the course students will be familiar with concepts, methods and tools used in quality improvement, various quality models and systems.

### **Physical Education, 30 hours of classes**

The course focuses on developing physical fitness. Getting to know various individual and team sports. Improvement of motor skills. Acquiring the ability to deal with stress. Ability to cooperate in a team. Overcoming barriers and weaknesses.

## **SEMESTER 5**

### **IT Project Management, 30 hours of lectures, 30 hours of classes**

The aim of the course is to familiarize students with modern methods of project management with particular emphasis on the specificity of IT project management and understanding the complexity of running IT projects. Participants will learn about methods of conducting and supervising IT projects, practical project management tools and achieving project goals set by project sponsors. The course will also address issues pertaining to managing risk, quality, versions, teams, time and costs of projects. Students will be acquainted with modern project management methodologies (PMBOK, Prince 2, MSF, UP, XP, SCRUM), IT infrastructure management methods (MOF, ITIL) and commonly used IEEE standards. On completion of the course, students will be prepared to effectively participate in the work of project teams and possess skill needed to manage IT projects.

### **Human-Computer Interaction, 30 hours of lectures, 30 hours of classes**

The aim of the course is to familiarize students with the basic issues of designing human-computer interaction, creating useful user interfaces and using the User-Centered Design (UCD) approach in designing, testing and improving the usability of information systems.



### **Intelligent Management Systems, 30 hours of lectures, 30 hours of classes**

The course focuses on acquainting students with the concept of BI and the tools used in this field using the SAS platform as an example. Students will get to know the basic applications of BI techniques and tools, basics of 4th generation languages, methodology for creating a data warehouse, ETL processes, OLAP vs OLTP. Other topics such as Data Visualization, Data Mining, Text Mining, Social Networks will also be discussed.

### **Enterprise Resource Planning System, 30 hours of lectures, 30 hours of classes**

The aim of the course is to provide theoretical and practical knowledge regarding the use of ERP information systems in enterprise management, understanding the role of ERP packages in the context of business strategies and presenting the importance of business processes integration and information.

### **Technical Subject Elective 1 and 2, 30 hours of lectures, 30 hours of classes**

For details refer to the Elective Technical Subjects, Monographic Lectures.

### **Physical Education, 30 hours of classes**

The course focuses on developing physical fitness. Getting to know other various individual and team sports. Improvement of motor skills. Acquiring the ability to deal with stress. Ability to cooperate in a team. Overcoming barriers and weaknesses.

## **SEMESTER 6**

### **Development, Integration and Testing of IT Systems, 30 hours of lectures, 30 hours of classes**

The goal of the course is to familiarize students with basic issues of software engineering, including stages of software development and methods of increasing software quality. After the course the student should be able to select methods and tools for project engineering and use them in a team-based IT project.

### **Protection of Intellectual Property, 30 hours of lectures**

The main objective of the course is to acquaint students with essential concepts of intellectual property law, including interpretation of regulations. The course will also cover such topics as copyrights, related rights and property rights, concluding contracts, intellectual industrial property (utility models, industrial designs, trademarks) and protection of personal data (especially in the context of providing electronic and online services).

### **Speciality Lecture 1 and Speciality Lecture 2, 30 hours of lectures, 30 hours of classes**

Courses depending on the chosen speciality area (descriptions are included in the Speciality Lectures section).

### **Social Sciences/Humanities – Elective, 15 hours of lectures, 15 hours of classes**

For details refer to the Elective Social Sciences/Humanities section.

### **Final Project 1, 30 hours of classes**

The goal of the course is to prepare students to independently write an engineering thesis which will be based on providing a solution to a complex engineering problem. Presentation of types of scientific publications, research methods and systematization of results. Determining the topic of the thesis, discussing references. Techniques of writing an engineering thesis. Presentation of engineering thesis topics.

## **VII SEMESTER**

### **Business Plan and Assessment of Investment, 15 hours of lectures, 15 hours of classes**

The aim of the course is to present theoretically and methodologically important issues related to the principles of preparing a business plan and entrepreneurship. The classes will present the use of a business plan when making decisions related to: starting a business, obtaining a loan and obtaining EU funding. The thematic scope of the lectures includes: analysis of the business plan

structure, analysis of the company, product, market, demand and competition, principles of preparing an economic-financial plan. Students (in groups of three) will prepare a business plan, financial plan and solve practical tasks related to tax issues.

### **Monographic Lecture, 30 hours of lectures, 30 hours of classes**

For details refer to the Elective Technical Subjects, Monographic Lectures.

### **Speciality Lecture 3, 30 hours of lectures, 30 hours of classes**

Courses depending on the chosen speciality area (descriptions are included in the Speciality Lectures section).

### **Final Project Seminar 2, 30 hours of classes**

The aim of the course is to prepare the student to write an engineering thesis. Students present and discuss following chapters of their engineering thesis.

### **6-month Internship (720 h)**

The main objective of the internship is to verify, develop and use practical skills acquired by the student during the course of studies. An additional goal is to broaden the knowledge gained during studies. The student learns to be independent and seek solutions to encountered problems. The student has the opportunity to gain experience, knowledge of the labor market and skills required in the workplace.

Students will self-evaluate acquired skills in order to increase the ability to compete effectively in the labor market. During the internship, students have the possibility to observe the functioning of a company and practical the uses of information technologies. Internships at the Information Management Department include the use of modern IT systems and IT tools in management. Student internships may cover a wide range of knowledge verification in the field of economics and IT.