

**The courses' availability depends on the minimum number of registered students (5). If the course couldn't start, students can still complete it in the form of project work and regular consultations with the supervising teacher.**

## Courses in English

### Business Communication

#### **3 Credits**

lecturer: Dr. Endre Horvath

requirements: practical

#### **Purpose and requirements of the subject:**

The basic purpose of this subject is to develop effective communication and attitude-behaviour skills required in business life. In order to improve business communication skills, various practical tasks, case studies, tests, situational exercises and consultations supplement the theoretical grounding of communication theory. Students acquire the communicational knowledge necessary for career management and to effectively develop successful business relationships.

#### **Description of the subject:**

The first task of the students is to get acquainted with the basic approach and terminology of communication enabling them for a later independent study of communication theory reference material. This is followed by the introduction of well-known models and the study of the dynamics of communication as a necessity and a socially embedded activity. Students will be able to identify different roles, communication channels and targets. With this theoretical foundation they are ready to implement it in the context of business communication.

### Computer Architecture (I)

#### **4 credits**

Lecturers: Dr. István Vári-Kakas

Requirement: written exam

#### **Purpose of the subject:**

Computer Architecture is a basic subject worldwide for the students in Computer Engineering and Information Technology. Our course is based on the most recent edition (2015) of William Stallings's textbook, which covers as well the evolution and the actual implementations of the related concepts. The main goal of the course is to give a solid understanding of the organization of computers from a hardware perspective along with a lot of practical examples. Most of the examples are given from the Intel and ARM families, the first being widely used in personal computers and the second in embedded applications like cell phones, iPods and remote controls. The main principles and techniques used in the design of computers are illustrated by interactive simulations.

#### **Topics:**

The topics covered throughout the course include the following:

- computer evolution and performance
- number systems and representations
- computer components and interconnections
- CISC and RISC processors
- pipelining and superscalar processors
- internal memory
- cache memory
- external memory
- input/output
- multicore computing

## Image Processing

### **5 Credits**

lecturer: Dr. József Berke

requirements: exam

### **Purpose and requirements of the subject:**

Our goal is to provide students with a comprehensive picture of the jobs at the end of their digital image processing topics of theory and practice, as well as major development and application trends in the near future. Students, with digital imaging multimedia instructor systems / DIGKEP v7.0 / using the theory and practical applications related tasks solved.

### **Topics:**

Introduction

- Digital image processing concept, historical overview.

Human and machine vision

- Comparison of human and artificial vision systems. Image sensors in practice.

Image Processing Tools

- Input, storage, processing, copy, coding, compression and transmission.

Digital Imaging

- The digital imaging model, sampling, quantization, restoring a continuous image.

Image Enhancement

- Basic concepts, image restoration, Look-up-table transformations, noise reduction, edge enhancement, multi-band image correction.

Geometric Correction

- The geometric correction model, coordinate transformations, homogeneous coordinates, into practice.

Segmentation

- Segmentation aims, model, split, merge, edge detection.

Classification

- The classification model, statistical pattern recognition, clustering, pattern recognition, texture analysis.

Image Encoding and Compression

- Redundancy, expectations, lossless and lossy image compression, compression of moving images.

Applications

- agricultural applications,
- medical applications,
- remote sensing,
- digital photography,
- machine vision systems,
- digital video,
- computer animation,
- optical character recognition,
- visual data formats,
- criminal and security applications.

## Multimedia

### **5 Credits**

lecturer. Dr. Beáta Jarosievitz

requirements: exam

### **Purpose and requirements of the subject:**

The purposes of the subject are as follows:

- To acquaint students with the multimedia, information processing technology in general (audio, video, Internet, interactivity)
- To acquaint students with the most important hardware and software components, their operation characteristics and application possibilities.
- Theoretical lectures are followed by laboratory practices to develop the skills of the students in handling multimedia applications.

At the output of the course the student has to be able:

- to create little animation from a set of photos
- to create colourful multimedia projects (video movies with sound)

### **Topics:**

### **Lectures:**

- Basics of multimedia, introduction to multimedia systems

- Discussing the importance of multimedia in different fields of society
- Design steps of a multimedia project. General considerations
- Storage media for digital technology (CD, DVD, BD).
- Multimedia applications (OCR, hypertext, hypermedia etc.).
- Human vision and informatics. Light, colours, etc.
- Image processing, comparison of different procedures of pictures' compression, animations
- Human hearing (acoustics). Sound, different frequencies, sampling.
- Digital technique of the sound, digitalizing different sounds, processing of the sound.

Multimedia and the internet, different animations, movies, videos, video technique Videoconferencing

**Laboratory:**

- Use of different Web 2.0 programs for manipulation of the images, use of professional photo editor program (Photoshop). Creation of animations.
- 1st practical exam: creating of animation
- Introduction to use of video editing programs
- Use of video editing programs: Adobe Premier Pro, etc.
- 2nd practical exam: creating a little film with music, subtitle and narration.

**Requirements:**

- Should be able to solve all exercises discussed during laboratories
- Pass the practical exam (see study guide for detailed requirements)

**Project Management**

**2 Credits**

lecturer: Dr. László Komáromi

requirements: report (term paper)

**Purpose and requirements of the subject:**

- Get acquainted with the methods and techniques used in the preparation, planning, management and realization of projects (technical buildings,

developments, change). Practice their implementation and result facilitation techniques through case studies. The overall change in the economic structure, the cumulative effects of altered property relations have invoked changes that having a huge impact on management mindset and behaviour.

- Following a theoretical foundation, students will get acquainted with the use of the software Microsoft Project, in the form of a laboratory practice.

**Topics:**

The foundation and functions of Project Managements

- General concepts
- Project life cycle
- Cost-time-quality balance

Project definition

- Project stakeholders and participants
- Project documents

Project Planning

- Risk management
- Work breakdown structure (WBS)
- Timing, Logistics, local connections
- Realistic scheduling
- Accurate estimating
- Network planning methods
- Cost planning
- Project balancing

Project Management

- High performance project team
- Project tracking
- Enterprise Project Management
- Project-, Program- and Portfolio Management
- Agile approach

### Strategic and Business Planning

#### **5 Credits**

lecturer: Dr. Endre Horvath

requirements: report (term paper)

#### **Purpose of the subject:**

To introduce students into

- the basics of strategic management, its concepts and tools, methods of implementation,
- the philosophy of strategic and management systems, their basic approach, the principles of strategic thinking,
- the tools of strategic management, contemporary methods of evaluation and the selection criteria of the required strategy;
- the process of business planning, on the basis of which students will be able to create the business plan for an organisation.

### Visual Programming

#### **4 Credits**

lecturer: György Mészáros

requirements: exam

#### **Purpose and requirements of the subject:**

- The goal of the subject is the introduction of a widely used, Windows-based development environment, i.e. the Microsoft Visual Studio, and getting acquainted with some of its popular .NET programming languages like Visual Basic or C #.

#### **Topics:**

- After getting acquainted with the foundation of programming, the students will learn the basic steps of developing Windows-based programmes by applying object oriented planning and implementation

techniques, setting up the graphical user interface, and setting up event driven control, which can be used in similar development environments.

- Requirements:
  - Practical knowledge of the Microsoft Windows Operating System and the MS Office Software Suit.
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