

The study program includes 4 technical subjects to choose from the list of elective subjects (subjects chosen by a majority vote are attended by all students of a given year)

Data Warehouses

The aim of the course is to familiarize students with the full cycle of building a data warehouse, starting from designing a data warehouse for defined business requirements, through preparing extraction, transformation and loading procedures, and building a cube and improving it, to creating a set of required reports.

The course include the following topics:

- introduction to the subject of data warehouses, taking into account their use in business practice
- data warehouse architecture
- multidimensional data model
- data warehouse design
- ETL – extraction, transformation, loading data
- problems related to data refreshing; problems related to attribute values changing over time
- processing and optimization of queries; data quality in warehouses
- data visualization in Power Bi.

Production (Engineering) Management

The aim of the course is to familiarize students with the problems of modern production management, including methods and techniques of organizing, optimizing and controlling the production process, the role of integrated ERP management information systems in the planning and production control processes - i.e. in technical preparation, planning of production capacity and material requirements, processing production orders, monitoring the production process, determining costs, reporting and analyzing. Tasks within the scope

of conducted research and development activities are available to users of business applications all around the world.

Programming Workshops

The course introduces students to modern technologies for creating applications in the .NET Core ecosystem using C# and the Visual Studio environment. It covers the basics of object-oriented programming, SOLID patterns, code versioning using Git, and designing REST API applications. Students learn both low-level database support using SQL and SqlCommand, as well as working with Entity Framework Core in the Database First and Code First approaches. Topics related to security, middleware, caching, and application architecture (monolith, modularity) are also discussed. In the frontend part, students learn ASP.NET MVC and Blazor technology (server-side and client-side) in the context of communicating with the database and creating modern interfaces.

Advanced Information Systems Design

The subject is devoted to advanced conceptual modeling of the problem domain. Particular emphasis is placed on conducting the strategic phase with the possible use of reusable elements and requirements management (including the formulation and consideration of non-functional requirements in the modeling). The analysis of user requirements regarding the functionality of the designed system is also considered in the context of UX (user experience). The refinement of the analysis phase (e.g. analysis of derivative values, constant values) and its impact on the conceptual model are discussed. During the course, students are required to conduct an advanced strategic phase for an example project (including the analysis of similar solutions existing on the market). After conducting the refinement of the analysis phase and the dynamic analysis, they should include the results of the considerations in the class diagram.

Foundations of Artificial Intelligence

The aim of the course is to introduce students to the basic issues related to artificial intelligence, with particular emphasis on classification, regression and typical machine learning algorithms. Participants will learn the principles of operation of selected methods, such as decision trees, kNN, linear regression and neural networks. The course ends with an introduction to large language models (LLM) and their applications.

Enterprise Resource Planning Systems 2

The subject will present practical possibilities of using ERP software to manage resources and business processes in companies. ERP systems are used to support management in areas such as: finance and accounting, production, sales, HR and payroll, analysis and reporting. In particular, the subject aims to familiarize students with SAP Fiori and Symfonia IT systems, their operation, functionalities and application in the company's business strategy and commercial processes.

Internet Technologies

Students will gain practical skills that will allow them to build web applications that support enterprise processes, as well as theoretical knowledge that will allow them to choose the right architecture of IT systems in an enterprise. During the course, students will learn the JavaScript language and how to use it to build simple applications on the browser and server side. Issues related to the HTTPS, HTTP/2 and HTTP/3 network protocols. Web application security.

Cloud Computing

The aim of the course is to familiarize students with IaaS, PaaS and SaaS services offered by cloud service providers. During the classes we focus on the Microsoft Azure and Amazon AWS solutions. The basic services offered by both services, working with them, estimating costs and the ability to tailor services to specific needs will be discussed.

The study program also includes 1 humanities subject to choose from the list of elective subjects (all students of a given year attend the subject chosen by a majority vote)

Business Communication

The course focuses on conveying basic knowledge in the field of broadly understood communication in business. Some of the topics covered in the course include: business communication skills, knowledge of communication and conflict styles, social influence theories and other factors that have an influence on effective communication. Students will gain skills needed in the process of negotiating, conducting meetings, preparing and delivering presentations.

Stress Management

This course focuses on the effects of stress as it relates to student life and the workplace. We compare the differences between stress, anxiety, and arousal. The different types of stress, the nature of stress, determinant causes, and the physiological and psychological reactions to stress are considered with a major part of the course focusing on coping strategies. The activity portion of the class will introduce and implement physiological, cognitive and behavioural stress management techniques.

Public Speaking Skills

The course focuses on public speaking and communication. It is aimed at improving students English public speaking skills as well as developing them personally and building their confidence in all aspects of their lives, not just at university. The course will provide students with the opportunity to recognize and improve key verbal and non-verbal skills. Students will also identify and apply essential public speaking techniques such as storytelling, humour, and the relevant and effective use of visual aids. Furthermore, students will also understand what it takes to make a connection with their audience and engage them in a way that will leave a lasting impression.