Study programme

Information technology

Železnička 5 , 14.000 Valjevo, Serbia
phone./fax: 014/292-610; 292-611
mail: pf@singidunum.ac.rs
fzp@singidunum.ac.rs

Study program: Information technology
Course title: BUSINESS INFORMATICS
Course status: Compulsory
ECTS number: 8
Condition: /

Objective of the course

Getting to know the basics of information technology, the hardware and software basics of modern computer systems, as well as the phenomenon of networking and the Internet. Through practical laboratory exercises, the basics of computer literacy are acquired in terms of operating systems, working with files, using word processing programs and working on the Internet. It points out the place of information technology in the business environment and its role in managing business processes.

Outcome of the course

Acquisition of theoretical and practical knowledge regarding operating systems, working with files, using word processing programs, tabular calculations and working on the Internet. Mastering knowledge and IT skills in the use of basic user applications necessary for data collection, their analysis, interpretation and effective decision-making.

Course content

Theoretical teaching

Informatics, computer science and cybernetics, and informatics in business systems , information theory. Computer development. Computer architecture and operation. Basics of hardware inside a computer. Basics of hardware - peripherals. Basics of software, system application software. Basic business applications, the concept of algorithm, programs, programming and programming languages. Graphics, digital media and multimedia. databases, data and information, concept and types of databases, relations between data. Computer networks and fundamentals of telecommunications. Internet, development, connection, services and organization, programs for using Internet services. World Wide Web, World Wide Web development, concept of hypermedia, creation of Web pages, HTML. Safety and risks. Concept of information technology and information systems, collection, processing and use of information in the business environment. Business information systems. Electronic business and electronic commerce.

Practical teaching

Computer systems (hardware and software). ECDL modules, practical training on computers in the electronic laboratory . Exercises on computers (OS Windows, MS Word, MS Excel, MS PowerPoint, Web browsers with associated software tools). Working on a computer network, working on database searches.

Literature

1. R. Kelly Rainer, Brad Prince, *Introduction to Information Systems*, 8th ed., Wiley, 2019.
2. Weber, Peter & Gabriel, Roland & Lux, Thomas & Schroer, Nadja & Knauf, Katharina M., *Basics in Business Informatics*, Springer, 2019.
3. Randy Nordell, Kathleen Stewart, Annette Easton, Pat R. Graves, Inc. Triad Interactive, *Microsoft Office 365: In Practice, 2021 Edition*, 1st ed., McGraw Hill, 2022.
4. Jonah C. Pardillo, *Business Informatics*, Society Publishing, 2019.

Number of hours of active teaching: 5	Theoretical teaching: 3	Practical teaching: 2

Teaching methods

Lectures, exercises, seminar work, colloquiums, final written exam .

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
activity during the lecture	5	Exam (written)	30
practical teaching	**5**		
colloquiums	**60**		
seminars			

Study program: Information technology
Course title: PROGRAMMING METHODS
Course status: Compulsory
ECTS number: 8
Condition:/
Objective of the course
Acquaintance of students with basic concepts and algorithms of programming languages. Getting to know the basics of object-oriented programming. Basics of the Java programming language.
Outcome of the course
Understanding of basic concepts of programming languages and object-oriented programming. Writing basic programs and implementing algorithms in the Python programming language .
Course content
Theoretical teaching
The course covers the basic structures of the Python language : variables, operators, expressions, flow control commands and working with classes. Also included are working with arrays, strings, packages, exceptions, and the graphical user interface.
Practical teaching
Practical teaching means working in an environment for the development of Python applications (Idle) in which students learn practical software development skills and apply the theoretical knowledge acquired during lectures on practical examples from the field of software development.
Literature

1. Luciano Ramalho, *Fluent Python: Clear, Concise, and Effective Programming*, 2nd ed., O'Reilly Media, 2022.
2. John Zelle, *Python Programming: An Introduction to Computer Science, 3rd Ed.*, Franklin, Beedle & Associates, 2016.
3. Bill Lubanovic, *Introducing Python: Modern Computing in Simple Packages*, 2nd ed., O'Reilly Media, 2019.
4. Eric Freeman, *Head First Learn to Code: A Learner's Guide to Coding and Computational Thinking*, 1st ed., O'Reilly Media, 2018.

Number of hours of active teaching: 5	**Theoretical teaching: 2**	**Practical teaching: 3**
Teaching methods		
Lectures and computer exercises with problem solving.		

Knowledge assessment (maximum number of points 100)			
Pre-examination obligations	points	**Final exam**	points
activity during the lecture	10	written exam	30
practical teaching		oral exam	
colloquiums	60	....	
seminars			

Study program: Information technology
Course title: QUANTITATIVE METHODS
Course status: Compulsory
ECTS number: 8
Condition: /
Objective of the course
The easiest and clearest way to master basic concepts and assertions in mathematical analysis for functions of one and two independent variables. One of the goals is to master calculus: matrix, differential, integral, probability and statistical analysis, all with the aim of better mastering phenomena, as well as their further monitoring and forecasting.
Outcome of the course
The student will be able to independently solve the most basic problems and tasks in the field of differential and integral function calculus, matrix calculus, basics of statistics and probability theory. With the use of the Octave software package, solving practical problems of matrix, differential and integral calculus.   Mastering the knowledge and skills of economic phenomena that can be quantitatively measured or evaluated.
Course content
Theoretical teaching
The subject includes: number theory, elementary functions, arithmetic and geometric series, analytic geometry, matrix calculus, solving systems of equations (Gauss method, Kramer method, Kronecker-Kappelli theorem, homogeneous system of linear equations, matrix method) and differential calculus (pim functions, functions of one variable, limit value of a series, limit value of a function, asymptotes of a function, monotonicity, extreme values and inflection points) and its application. Integral calculus (indefinite integrals, definite integrals, improper integrals and application of integral calculus), differential equations (DJ of the first order and DJ of the second order), elements of probability theory and elements of statistics are also covered.
Practical teaching
In addition to exercises from the already mentioned areas, practical work and the use of the Octave software package to solve practical problems of matrix, differential and integral calculus.
Literature
  [1] David Anderson, Dennis Sweeney, Thomas Williams, Jeffrey Camm, James Cochran, *Quantitative Methods for Business*, 13th ed., Cengage Learning, 2015.   [2] Paolo Brandimarte, *Quantitative Methods: An Introduction for Business Management*, 1st ed., Wiley, 2011.   [3] Berenson M., Levine D., Krehbiel T., *Basic Business Statistics*, Pearson Education International, 2006.   [4] Dowling E., *Mathematical Methods for Business and Economics*, Mc Graw-Hill, 1993.

Number of hours of active teaching: 5	Theoretical teaching: 2	Practical teaching: 3

Teaching methods
Lectures, exercises, colloquiums, laboratory exercises in the electronic classroom - Octaves, homework and consultations

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
Attendance and activities	**10**	Exam (written/oral)	**30**
Colloquium I	**30**		
Colloquium II	**30**		
In total	**70**		

Study program: Information technology
Subject name: PSYCHOLOGY
Course status: Compulsory
ECTS number: 6
Condition: /

Objective of the course

This course is designed to provide students with a basic knowledge of psychology so that they can understand its application in specific areas of human activity such as human resource management. The goal of the course is to master the basic concepts in psychology as well as to acquire knowledge about the basic laws that govern human behavior.

Outcome of the course

The student will be able to use basic concepts from psychology in explaining and understanding human behavior, designing research and applying it in practice .

Subject content

Theoretical teaching

Psychology as a science (definition, subject of research, development of psychology as a science , psychological trends). Scientific methods in psychology (types of research, sampling and measurement, statistics , reports on conducted research). Biological basis of psychic life. Charm and perception. Learning. Remembering and forgetting. Thought and language. Intelligence and intelligence tests. Motivation. Emotions, stress and health. Human development. Personality. Social perception (cognition). Attitudes. Group psychology. Social impact. Independent analysis of the case study.

Practical teaching

Practical teaching follows the topics of theoretical teaching, through workshops and individual and group activities.

Literature

[1] David G. Myers, C. Nathan DeWall, *Psychology*, 13th ed., Worth Publishers, 2020.
[2] Hawkes Learning, *Introduction to Psychology 1st Edition Textbook*, Hawkes Learning, 2020.
[3] Kalat, W. J., *INTRODUCTION TO PSYCHOLOGY*, 9th ed., Cengage learning, 2011.
[4] Kearns T., Lee D., *GENERAL PSYCHOLOGY: An Introduction, Psychology, Sociology, Anthropology, and Social Work*, Open Textbooks, 2015.

Number of hours of active teaching: 5	Theoretical teaching: 3	Practical teaching: 2

Teaching methods

Lectures and exercises, doing homework.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
activity during the lecture	**10**	written exam	
practical teaching		oral exam	**30**
colloquiums	**60**	....	
seminars			

Study program: Information technology
Course name: WEB DESIGN
Course status: Compulsory
ECTS number: 8
Condition: /

Objective of the course

Familiarity with the basic concepts of markup languages and script languages and training for creating web applications using the Javascript language.

Outcome of the case

After successfully completing the course, the student knows the basic concepts of markup languages, web page visualization languages, and script languages. He is capable of creating more complex web applications using the HTML language, CSS visualization language, Javascript programming language and Javascript libraries .

Course content

Theoretical teaching

The course deals with the field of web design with an emphasis on the basic concepts of the Internet, the basics of the WWW (URL, HTML, HTTP, document representation - DOM tree). HTML, XML, XHTML, CSS, as well as the Javascript programming language are also processed. Some of the topics covered are web design software tools (introduction and basic functionality), layout of elements on a web page (techniques such as boards and divs), and using common layouts.

Practical teaching

In the classes, the techniques covered in the lectures are practically practiced - the use of HTML and all the most important tags, as well as the use of CSS (selectors , classes, identifiers, attributes, commands...) . The basics of the Javascript language are also covered (introduction, syntax, enabling scripts, modes of inclusion in an HTML document, variables, operators), events, cookies, dialog boxes, station redirection, page printing, keyword void, Javascript objects (user objects, native objects , Document object), commands to control the flow of program execution, functions, advanced elements (error management, forms and validation, multimedia and animation, browser compatibility, program debugging), interactive user interface (JQuery Javascript library).

Students also create practical projects - websites - using the tools and techniques developed.

Literature

1. Terry Felke-Morris, *Basics of Web Design: HTML5 & CSS* , 5th ed., Pearson, 2019.
2. Elisabeth Robson, Eric Freeman, *Head First HTML and CSS: A Learner's Guide to Creating Standards-Based Web Pages*, 2nd ed., O'Reilly Media, 2012.
3. Denise Woods, *HTML5 and CSS: Complete*, 7th ed., Cengage Learning, 2012.
4. Eric Meyer, Estelle Weyl, *CSS: The Definitive Guide: Web Layout and Presentation*, 5th ed., O'Reilly Media, 2023.

Number of hours of active teaching: 5	Theoretical teaching: 2	Practical teaching: 3

Teaching methods

Lectures, exercises, final exam.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
activity during the lecture	**10**	written exam	**30**
practical teaching		oral exam	
colloquiums	**60**	....	
project			

Study program: Information technology	

Course title: ALGORITHMS AND DATA STRUCTURES

Course status: Compulsory

ECTS number: 8

Condition: /

Objective of the course

Acquaintance of students with essential properties of data structures and algorithms.
Acquisition of basic theoretical and practical knowledge about basic data structures and algorithms using pseudo-language.

Outcome of the course

Ability of students to independently set and solve problems at the algorithmic level.
Ability of students to implement various data structures and algorithms in pseudo-language.

Course content

Theoretical teaching

Examples of algorithm design and analysis: sorting and searching. Algorithm execution time.

Basic linear data structures: arrays and matrices. Lists and stacks. Waiting lines. Recursive algorithms. Analysis of recursive algorithms. Rooted and binary trees. Binary search trees. Binary Hips. Graph Traversal Algorithms and Graph Spanning Algorithms.

Practical teaching

Practical application of how to implement graphs. Realization of data structures STABLO and GRAF, as well as various ways of their practical application and their modification.

Literature

1. Robert Sedgewick, Kevin Wayne , *Algorithms (4th Edition)* , Addison-Wesley Professional, 2011.
2. Marcello La Rocca, *Advanced Algorithms and Data Structures*, Manning, 2021.
3. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, *Introduction to Algorithms, fourth edition*, 4th ed., The MIT Press, 2022.
4. Aditya Y Bhargava, *Grokking Algorithms, Second Edition*, 2nd ed., Manning, 2024.

Number of hours of active teaching: 5	**Theoretical teaching: 3**	**Practical teaching: 2**

Teaching methods

Lectures, consultations, exercises, homework, colloquiums, final exam .

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	**Final exam**	points
activity during the lecture	**10**	written exam	
practical teaching		oral exam	**30**
colloquiums	**60**	....	
seminars			

Study program: Information technology
Course title: BASICS OF COMPUTER TECHNOLOGY
Course status: Compulsory
ECTS number: 8
Condition: /
Objective of the course
Acquaintance of students with the basic terms of computer technology, principles and concepts, basic characteristics of components of computer systems of various complexity and their implementation . Acquisition of basic knowledge of arithmetic, logical and algebraic foundations of digital devices, namely combinational and sequential switching networks, logic and memory elements and standard combinational and sequential modules.
Outcome of the course
Understanding the structure and functioning of computer systems at the arithmetic and logical level . Mastering and solving logical problems and abstract reasoning using logic circuits and logical laws , as well as familiarization with the minimization of logical functions, combinational and sequential modules and microprocessor architecture . Students will be able to understand the operation of computers and successfully solve practical problems without being burdened by technical solutions, using the basics of mathematics.
Course content
Theoretical teaching
Arithmetic fundamentals of computers : Numerous systems and numerous foundations. Representation of data in computer memory. Complete and incomplete complement. Floating and fixed point. Realization of arithmetic operations. Translation of numbers using tables. Translating numbers by dividing them into classes. Character data representation. Representation of logical data. Codes and coding. **Logical foundations of computers** : Boolean logic. Elementary logic functions and elementary logic circuits. Additional logic functions and logic circuits. Logical identities. Complete and minimal forms of logical functions. Methods of minimization of logical functions. Adders. **Architecture of personal computers** : Computer model. Hierarchical structure of the computer system. Functional parts of the computer system and their characteristics. Hardware. **Algorithmization** : Basic algorithmization. Algorithmic blocks. Algorithmic structures. **Software** : System software. Files. Hierarchical file structure. Application software. Classification of application software.
Practical teaching
Practical training on computers in the electronic laboratory, introducing students to the basics of computer architecture and organization in order to study how it functions. As part of the calculation exercises, practical examples from the arithmetic-logical foundations of computers and algorithmic structures are discussed and the logical description of problems using logical functions is encouraged.
Literature

[1] Charles Petzold, *Code: The Hidden Language of Computer Hardware and Software*, 2nd ed., Microsoft Press, 2022.
[2] David A. Patterson, John L. Hennessy, *Computer Organization and Design: The Hardware/Software Interface (The Morgan Kaufmann Series in Computer Architecture and Design)*, 4th ed., Morgan Kaufmann, 2011.
[3] William Stallings, *Computer Organization and Architecture, Global Edition*, 11th ed., Pearson, 2021.
[4] Linda Null, Julia Lobur, *Essentials of Computer Organization and Architecture*, 5th ed., Jones & Bartlett Learning, 2018.

Number of hours of active teaching: 5	Theoretical teaching: 3	Practical teaching: 2
Teaching methods		
Lectures using presentation, computational exercises with problem solving, work in the laboratory with a visual simulator of switching networks.		

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
activity during the lecture	**5**	written exam	**30**
practical teaching	**5**		
colloquiums	**60**		
seminars			

Study program: Information technology
Course name: ENGLISH LANGUAGE 1
Course status: Compulsory
ECTS number: 6
Prerequisite: completed course and passed pre-examination requirements
Objective of the course
Getting to know the basic vocabulary and structures of the English language on the basis of simple written and auditory texts related to everyday private and business environments.
Outcome of the course
Reading and listening: Students understand simple texts (written and spoken) that relate to everyday life situations in private life and at work.   Speaking and writing: Students can say something about themselves, their habits, needs and desires in simple written and oral form.   (According to level A1 of the "Common European Framework" level scale)
Course content
Course content   The course includes activities that pay attention to the skills of listening, reading and understanding the text, as well as finding the necessary information from the given inputs for each topic that is covered. In addition, it includes reproductive activities such as writing simple business forms of correspondence and simple topics for discussion. All topics and skills are provided with a proper grammar and vocabulary foundation.   "Primary and ordinal numbers"; "Personal pronouns"; "Countries and Nationalities"; "Plural nouns"; "Definite and indefinite article"; "Simple Present Tense"; "Continuous Present Tense"; "Possessive adjectives"; "Vocabulary - food and drink"; "Vocabulary - places in the city and giving directions"; "Vocabulary - professions and work space"; "Vocabulary - activities during a typical day"; "Vocabulary - parts of the day and hours"; "Formal email"; "Informal Email".   *Practical teaching*   Practicing all four language skills (reading comprehension skills, speaking comprehension skills, writing skills and speaking skills) at level A1 of the Common European Framework of Reference for Foreign Languages.
Literature

Mandatory reading
 	
 [1] *Business Start-up 1, Beginners,* Student's book, Mark Ibbotson and Bryan Stephens,
     Cambridge University Press
 	
 [2] *Business Start-up 1, Beginners,* Workbook, Mark Ibbotson and Bryan Stephens,
     Cambridge University Press
 	
 Supporting literature
 	
 [3] numerous professional literature, video and audio recordings, podcasts, interactive exercises, texts, etc. available on the Internet, and adapted to the educational and professional needs of students. [4] The Oxford English Dictionary, Oxford University Press
 	
 [5] Online dictionaries BusinessDictionary.com, Travel industry Dictionary, Webopedia (IT Business Dictionary), The Free Dictionary (for Banking).

Number of hours of active teaching: 5	Number of hours of active teaching: 5	Practical teaching: 3
Teaching methods		
Lectures, exercises, simulations of real language situations in a business environment, projects, use of online space for additional and non-faculty teaching activities, continuous process of checking knowledge and adapting teaching to students' needs, colloquiums, consultations, exams.		

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	поена
activity during the lecture	**10**	written exam	
practical teaching		oral exam	**30**
Colloquiums	**60**	....	
Seminars			

Study program: Information technology
Course title: MARKETING
Course status: Compulsory
ECTS number: 8
Condition: /

Objective of the course

Acquainting students with the basic assumptions, postulates and criteria of marketing, as well as training students for the practical application of marketing approaches in solving business problems. Also, understanding the key role of marketing in the organization, recognizing the needs and desires of the customer, creating products and services that will satisfy those needs. Then, understanding the promotional mix and its elements, market segmentation and differentiation of products and services . Through these concepts, students will gain insight into the ways in which marketing can be applied to information technology, including analyzing user requirements, positioning software and services, and developing strategies for achieving competitive advantage. Acquiring practical skills such as teamwork, negotiation skills, application of the case study method.

Outcome of the course

Students are expected, first of all, to gain a basis for understanding marketing as a business function, as well as to implement the acquired knowledge in combination with other studied disciplines in practice. By successfully mastering the course, students will be able to: manage the marketing mix of products and services, independently perform market analysis , predict demand and sales , understand the role of the global market markets and understand the basic tools of digital marketing .

Through an interactive approach to learning, various study cases and projects, students will be able to develop creative and innovative approaches to problems in information technology marketing. By integrating strategic concepts with modern aspects of information technology through analysis of market trends, competition and user requirements, students will develop critical thinking skills and be able to apply professional knowledge to practical problems .

Course content

Theoretical teaching

The nature and global environment of marketing; Evolution of marketing and approaches to study; Marketing management process, creation of strategy and marketing plan; Market research and analysis; Ethics and social responsibility; Integrated marketing communications; The field of services and marketing of non-profit institutions; Instruments of marketing mix of products and services; Promotional mix (public relations, promotion, advertising, sales promotion, personal selling, social media); Market segmentation and selection of target markets (targeting and positioning); Motives, needs and desires of consumers; Consumer decision-making process and innovation diffusion; Product and brand management; Marketing information systems; Price psychology and main influencing factors; Distribution of products and services; The most important principles of digital marketing .

Practical teaching

Practical classes include practical exercises, case studies and practice of concepts covered in lectures.

Literature

1. Charles W. Lamb, Joseph F. Hair (Jr.), Carl McDaniel (Jr.), Marc Boivin, David Gaudet, Kim Snow, *MKTG, 5th Edition*, Cengage Canada, 2021.
2. Gary Armstrong, *Principles of Marketing*, 17th ed., Pearson, 2017.
3. Barry J. Babin, Eric Harris, *CB*, 8th ed., Cengage Learning, 2017.
4. Philip Kotler, Gary Armstrong, *Principles of Marketing*, 18th ed., Pearson, 2020.

Number of hours of active teaching: 5	Theoretical teaching: 2	Practical teaching: 3

Teaching methods

Lectures and exercises, doing homework.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
activity during the lecture	5	written exam	
practical teaching	5	oral exam	*30*
colloquiums	60	....	
seminars			

Study program: Information technology
Course title: MANAGEMENT INFORMATION SYSTEMS
Course status: Compulsory
ECTS number: 8
Condition: /
Objective of the course
Acquaintance of students with modern theoretical and practical aspects of management information systems (MIS), information technologies to support management and decision-making processes, basic methods, techniques and tools for building management information systems, as well as management of managerial knowledge.
Outcome of the course
The student will be able to understand the stake in , basics, concepts and structures of management information systems, and will acquire the necessary theoretical and practical knowledge and skills about methods, techniques and software tools in the use of modern applied artificial intelligence software solutions, expert systems, support systems decision-making and knowledge management systems in the management of business changes.
Course content
Theoretical teaching
Developmental changes and IS management . O general theory of systems. Information systems (IS). Classification of information systems , business processes and reengineering of business processes. IS architecture. Functional structure of business IS . Transaction processing systems to support business operations. Management and decision-making in business systems . Management IS . Business information systems (ERP, CRM, SCM, PLM). Functional , information and application modeling of business processes, management of business processes and design of management information systems . Decision support systems . Group decision support systems . Executive IS (EIS) . Analytical IS . Expert systems. Intelligent systems . Concepts of data warehouse (Data Warehouse) and large data sets (*Big data*). OLAP cubes, *data mining* and knowledge discovery from data. Methodologies and IS development models . Structural system analysis . Link object model . CASES tools .
Practical teaching
It is carried out in computer laboratories. It includes the elaboration of the program of the intended material with the presentation of examples from practice. Application of methods of analysis, design, improvement and maintenance of management information systems. Presentation on computers of practical application of information systems, Web tools and application software and CASE tools for modeling processes and data for selected management information systems. Application and work in the most famous ERP solutions, through practical examples and project tasks. Practical application of *data mining* algorithms on data sets using software packages.
Literature

1. Kenneth Laudon, Jane Laudon, *Management Information Systems: Managing the Digital Firm*, 15th ed., Pearson, 2017.
2. Mathias Weske, *Business Process Management: Concepts, Languages, Architectures*, 2nd ed., Springer, 2012.
3. Ken J. Sousa, *Management Information Systems*, 7th ed., Cengage Learning, 2014.
4. Paul Harmon, *Business Process Change: A Guide for Business Managers and BPM and Six Sigma Professionals (The MK/OMG Press)*, 3rd ed., Morgan Kaufmann, 2014.

Number of hours of active teaching: 6	Theoretical teaching: 3	Practical teaching: 3

Teaching methods
Lectures, exercises in the computer laboratory, consultations

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
Activity during the lecture	**10**	Exam (oral/written)	**30**
Colloquium I	**30**		
Colloquium II	**30**		
Total:	**70**	Total:	**30**

Study program: Information technology
Course title: MANAGEMENT
Course status: Compulsory
ECTS number: 8
Condition: /

Objective of the course

For students to understand the definition of the concept of management and the evolution of management theory; to get to know the basics of 21st century management trends; to understand all determinants related to management processes (planning, organizing, leading and controlling); to know the management process through the study of case studies; to get to know the importance of the management process in the business of the company and to actively participate in the improvement of business processes at their faculty and the University as a whole.

Outcome of the case

After completing the Management course, students are expected to understand the problems they encounter in their work as a chance and opportunity for improvement and to approach them treating them as such, and not to avoid dealing with them. In teaching, we apply educational techniques that prioritize interactivity in teaching and a problem-based approach through case studies, which should encourage students to be creative in solving problems and make quality managerial decisions and solve problems based on facts and knowledge, not exclusively on intuition. .

Subject content

Theoretical teaching

Concept of management and managers. Evolution and theory of management. Management as a process: planning, organizing, leading and controlling. Ethics and social responsibility of managers. Planning. Communication. Deciding. Innovation and change. Organizing. Human resource management. Teams. Motivation. Leadership. Control.

Practical teaching

Teaching is carried out in the following ways:

- Case studies;
- Professional visits to companies;
- Debates and discussions with business owners and managers.

Literature

1. Chuck Williams, Terri Champion, Ike Hall, *MGMT, 4th Edition*, Cengage Canada, 2023.
2. Stephen P. Robbins, Mary Coulter, *Management*, 11th ed., Pearson-prentice Hall, 2011.
3. Slack. N, Brandon-Jones A., Jonston, R., Betts, A., *Operations and Process Management*, Pearson Education, 2015.
4. Richard Daft, *Management*, 12th ed., Cengage Learning, 2015.

Number of hours of active teaching: 5	Theoretical teaching: 2	Practical teaching: 3

Teaching methods

Lectures and exercises, doing homework.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	Point
activity during the lecture	10	written exam	
practical teaching		oral exam	30
colloquiums	60	....	
seminars			

Study program: Information technology		
Course title: ENGLISH LANGUAGE 2		
Course status: Compulsory		
ECTS number: 6		
Condition: Attended classes in the subject and passed pre-examination requirements. Passed English language 1.		
Objective of the course		
This course is designed to prepare students to work in an international business environment. In each teaching unit, care is taken to achieve the below subject outcomes, by adapting the teaching and teaching material to each group of students, as well as to each student individually, in order to achieve the desired outcomes. The ultimate goal is a student who can confidently enter into modern business waters, possessing all the necessary language skills in the planned framework: listening, reading, speaking and writing.		
Outcome of the course		
The course prepares students to deal with situations related to the description of the company, corporate culture, production and sales process. The student will be able to describe his occupation, workplace and the company he works for. He will be able to navigate foreign websites, as well as create his own based on the existing one. Can read and write formal and informal emails, as well as fill out forms. In addition, he will be able to describe the equipment he works with, as well as office supplies, place orders or receive orders over the phone, and deal with the delivery of goods. Also, students will be able to understand spoken and written text within the given topics. Finally, students will actively use the vocabulary and grammatical structures covered in the syllabus.		
Course content		
Theoretical teaching		
The course includes activities that pay attention to the skills of listening, reading and understanding the text, as well as finding the necessary information from the given inputs for each topic that is covered. In addition, it includes reproductive activities such as writing business forms of correspondence and topics for discussion, giving opinions and proposals, disagreeing with the proposed, all in the appropriate business register. All topics and skills are provided with a proper grammar and vocabulary foundation.		
Simple present tense (present simple); Present continuous tense (present continuous tense); Adverbial clauses for time; Simple past tense (past simple: regular and irregular verbs); Past continuous tense (past continuous); Passive; Writing formal emails; Writing informal emails; Collocations with the verbs do, make, have; word formation; Vocabulary - positions within the company; Vocabulary - office equipment and accessories"; Vocabulary - processes and production; Online communication; Corporate culture; Outsourcing.		
Practical teaching		
Practicing all four language skills (reading comprehension skills, speaking comprehension skills, writing skills and speaking skills) at level B1 of the Common European Framework of Reference for Foreign Languages.		
Literature		
Mandatory reading		
[1] *Business Benchmark, Pre-intermediate to Intermediate,* Student's book, Norman Whitby, Cambridge University Press		
[2] *Business Benchmark, Pre-intermediate to Intermediate,* Personal Study Book, Norman Whitby, Cambridge University Press		
Supporting literature		
[3] numerous professional literature, video and audio recordings, podcasts, interactive exercises, texts, etc. available on the Internet, and adapted to the educational and professional needs of students. [4] *The Oxford English Dictionary*, Oxford University Press		
[5] Online dictionaries BusinessDictionary.com, Travel industry Dictionary, Webopedia (IT Business Dictionary), The Free Dictionary (for Banking).		
Number of hours of active teaching: 5	**Theoretical teaching: 3**	**Practical teaching: 2**
Teaching methods		
Lectures, exercises, simulations of real language situations in a business environment, projects, use of online space for additional and non-faculty teaching activities, continuous process of checking knowledge and adapting teaching to students' needs, colloquiums, consultations, exams.		
Knowledge assessment (maximum number of points 100)		

Pre-examination obligations	points	Final exam	Points
activity during the lecture	**5**	written exam	
practical teaching	**5**	oral exam	**30**
Colloquiums	**60**	....	
seminars			

Pre-examination obligations	points	Final exam	Points
activity during the lecture	**5**	written exam	
practical teaching	**5**	oral exam	**30**
Colloquiums	**60**	....	
seminars			

Study program: Information technology
Course title: DATABASES
Course status: Compulsory
ECTS number: 8
Condition: /

Objective of the course

Acquaintance of students with basic terms and principles of database management systems, basic concepts of database design, concepts of implementation of specific databases and use of commercial database management systems. Mastering the techniques of database administration and maintenance and database recovery in case of system failure.

Outcome of the course

The student will work independently at Microsoft Access , which includes creating a database, creating a user interface, searching and creating reports. Mastering the syntax and techniques of using the SQL language.

Subject content

Theoretical teaching

The concept of databases. Data models: hierarchical, network, relational, object. Entity-Relationship model (E/R - Entity-Relationship model) . Relational databases , structural, integrity and manipulative component . Database management systems .
Structural system analysis of business functions in a real environment . Relational algebra. Functional dependencies and normalization. Indexes and query optimization.
Theoretical foundations of the SQL language. Transactions, concurrent operation, locking techniques . Transactions and competitiveness. Data security and integrity. Database recovery in case of failure . Database administration. Databases and applications - techniques of connection with programming languages.

Practical teaching

Practical training on computers in the electronic laboratory in the selected DBMS .
Freelance at Microsoft Access , which includes creating a database, creating a user interface, searching and creating reports.
Mastering the syntax and techniques of using the SQL language. Application SQL language for working with relational databases and getting to know the techniques of connecting databases with specific programming languages.

Literature

[1] Abraham Silberschatz, Henry Korth, S. Sudarshan, *Database System Concepts*, 6th ed., McGraw Hill, 2010.
[2] Ramez Elmasri, Shamkant Navathe, *Fundamentals of Database Systems, Global Edition*, 7th ed., Pearson, 2016.
[3] Thomas Pettit, Scott Cosentino, *The MySQL Workshop: A practical guide to working with data and managing databases with MySQL*, 1st ed., Packt Publishing, 2022.
[4] Vinicius Grippa, Sergey Kuzmichev, *Learning MySQL: Get a Handle on Your Data*, 2nd ed., O'Reilly Media, 2021.

Number of hours of active teaching: 5	Theoretical teaching: 3	Practical teaching: 2

Teaching methods

Lectures and exercises, homework , colloquiums, written exam .

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
activity during the lecture	**10**	written exam	**30**
practical teaching		oral exam	
colloquiums	**60**	....	
seminars			

Study program: Information technology
Course title: MODERN BUSINESS COMMUNICATION
Course status: Elective
ECTS number: 8
Condition: /
Objective of the course
The goal of the course is the importance of effective business communication in a changing work environment and for students to realize that a well-designed message, written or spoken in an adequate way, is the key to successfully solving everyday business situations. The goal is to master the channels, techniques and methods of communication in the modern business environment ; o enabling to recognize the business context and adapt the message to the recipient. Mastering the basic forms of written and oral communication, as well as planning, problem solving and teamwork skills.
Outcome of the course
After completing the course, students will be able to use oral and written communication skills, to apply various types and methods of effective business communication in everyday work situations, to apply the acquired knowledge about the rules of business etiquette, with understanding and respect for diversity in intercultural business communication; awakened awareness of ethics and application of ethical principles in practice; to apply communication skills in interaction and cooperation with others from different social groups and apply the ethical standards of their profession.
Course content
Theoretical teaching
Communication as a process, types of communication, interpersonal and organizational communication, verbal (written and oral) and non-verbal communication, business etiquette in communication, barriers and overcoming barriers in business communication, multicultural communication, business negotiation, psychology communication, how to make our message as acceptable as possible by knowing human psychology, recognition of manipulation.
Practical teaching
Planning a business message, writing an email, writing a persuasive message, writing a negative message, non-verbal communication, the specifics of different business customs , communicating with members of different cultures , communication in a team , writing a work biography , preparing a presentation , overcoming barriers in business communication, simulating business meetings , attending job interviews and discussions with human resources managers of different companies .
Literature   1. John Thill, Courtland Bovee, *Excellence in Business Communication*, 12th ed., Pearson, 2017.   2. Kitty Locker, Jo Mackiewicz, Jeanine Elise Aune and Donna Kienzler, *BUSINESS COMMUNICATION*, 13th ed., McGraw Hill, 2023.   3. Mary Ellen Guffey, Dana Loewy, *Essentials of Business Communication*, 11th ed., Cengage Learning, 2018.   4. Courtland Bovee, John Thill, *Business Communication Today*, 14th ed., Pearson, 2017.

Number of hours of active teaching: 5	Theoretical teaching: 2	Practical teaching: 3
Teaching methods		
Lectures and exercises, doing homework.		

Knowledge assessment (maximum number of points 100)			
Pre-examination obligations	points	**Final exam**	points
Active participation in classes	10	Oral / written exam	30
Colloquium 1	30		
Colloquium 2	30		
In total	**70**		**30**

Study program : Information technologies

Course name: STATISTICS

Course status: Elective

ECTS number: 8

Condition: /

Objective of the course

The course enables the student to acquire theoretical and practical knowledge of the basics of statistics. Also, the subject enables the student to understand statistical principles, concepts of probability, random variable, statistical evaluation, statistical hypothesis testing, regression and correlation of random variables. The goal is to train students for the independent application of statistical methods in their further education.

Outcome of the case

Mastering the skills of applying the acquired theoretical and practical knowledge. Ability to apply appropriate statistical methods, computer processing of statistical data and conclusions based on the obtained results.

Subject content

Theoretical teaching

Introductory lecture - concept and subject of statistics as a science. Familiarity with basic statistical concepts: population, characteristic, sample. Sorting and graphical presentation of data. Numerical descriptive measures. Basic concepts of probability. Discrete random variables and their probability distributions. Continuous random variables and normal distribution. Distributions of sample parameters. Estimating the arithmetic mean. Testing hypotheses about arithmetic mean and proportion. Evaluation and hypothesis testing: two basic sets. Non-parametric tests, Pearson's chi-square test. Regression and correlation analysis. Simple linear regression. Data analysis of psychological research in to SPSS.

Practical teaching

It is realized through exercises. Creation of tasks through practical examples that follow the teaching units presented in theoretical classes. Calculation and interpretation of measures of central tendency and measures of dispersion, data analysis based on diagram, regression analysis, t-test, factor and cluster analysis.

Literature

1. Robert S. Witte, John S. Witte, *Statistics, 11th Edition*, Wiley, 2016.
2. Michael J. Evans and Jeffrey S. Rosenthal, *Probability and Statistics: The Science of Uncertainty*, University of Toronto, 2023.
3. David S. Moore, George P. McCabe, Bruce A. Craig, *Introduction to the Practice of Statistics*, 9th ed., W. H. Freeman, 2016.
4. Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying E. Ye, *Probability and Statistics for Engineers and Scientists (9th Edition)*, Pearson, 2011.

Number of hours of active teaching: 5	**Theoretical teaching: 2**	**Practical teaching: 3**

Teaching methods

Lectures, exercises, colloquiums, domestic tasks , projects

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	**Final exam**	points
An activity during the lecture	**10**	Exam (oral/written)	**30**
Colloquium I	**30**		
Colloquium II	**30**		
Total:	**70**	Total:	**30**

Study program: Information technology
Course name: GERMAN LANGUAGE 1
Course status: Elective
ESPB number: 8
Condition: /
Objective of the course
Acquaintance of students with basic vocabulary and structures, as well as cultural aspects of the German language based on simple written and auditory texts related to everyday private and business environment.
Outcome of the course
Students understand simple texts (written and spoken) that relate to everyday life situations in private life and at home. Students can say something about themselves, their habits, needs and wishes in a simple written and oral form. Novembers can understand and use everyday familiar expressions and very simple phrases in order to satisfy a specific need. They can introduce themselves, introduce others, give information about themselves and others, e.g. where they live, what people they know, things they own. They can communicate in a simple way if the interlocutor speaks slowly and clearly and is ready to help." (Level A1 according to the level scale of the "Common European Framework", p. 24)
Course content
Texts, exercises and tasks, which are representative of certain skills, thematic units and language structures : meeting and meeting (declarative and interrogative sentences, present, numbers), objects of daily use and shopping (articles, verb *möchte*), daily schedule (verbs with stressed prefix), family and friends (possessive pronouns , preterite of the verb *sein* and *haben*), restaurant situations (modal verbs) *Theoretical teaching* Since German as a foreign language is learned and taught based on the principles of interactive teaching, familiarization with lexical and grammatical material, as a conditionally speaking theoretical part of the course, mostly takes place through activities in which students discover these phenomena as much as possible independently and based on examples. *Practical teaching* In accordance with the aim and outcomes of the course, which are based on the active use of the language, the teaching of German as a foreign language is based on the interactive practice of language skills within the activities of reading, listening, writing and speaking in communicative situations that simulate real situations.
Literature
[1] Group of authors , Panorama, Deutsch als Fremdsprache, A1, 2015 [2] Author Group, Berliner Platz 1, Langenscheidt KG, Berlin und München, 2009 [3] Group of authors , Unternehmen Deutsch, Ernst Klett Sprachen GmbH, Stuttgart, 2004

Number of hours of active teaching: 5	**Theoretical teaching: 2**	**Practical teaching: 3**
Teaching methods		
Teaching is based on an interactive, communicative method that takes into account sociocultural aspects of foreign language learning and includes lectures, exercises, projects, colloquiums and consultations.		

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	**Final exam**	points
activity during the lecture	**5**	exam (written / oral)	**30**
practical teaching	**5**		
colloquiums	**60**	....	
seminars			

Study program: Information technology	
Course title: OBJECT ORIENTED PROGRAMMING	
Course status: Elective	
ECTS number: 6	
Condition: /	

Objective of the course

Getting to know the elements of object-oriented programming in the C++ programming language. Acquisition of basic theoretical knowledge about object-oriented programming and training for independent solving of programming problems through practical work on the computer.

Outcome of the course

Ability to navigate and work in different development environments. Possession of theoretical and practical knowledge of object-oriented programming and independent and group work at solving programming problems and projects from different areas of computer science.

Course content

Theoretical teaching

Development and standardization of the C++ language. Comparison with other object-oriented languages. Application development cycle. Data types, operators, variables, expressions, C++ program structure, declaration and scope of variables. Basic control structures, arrays, strings and pointers. Dynamic memory allocation, functions, parameter transfer. Classes, objects, encapsulation, constructors and destructors, the this pointer. Overlapping operators. Inheritance, abstract classes. Virtual functions and polymorphism. Exception Management. Input/output - work with files. Overview of standard and STL libraries. Effective programming techniques in the S++ language. Advanced topics: function pointers, friend functions, multiple inheritance, inline functions, function templates

Practical teaching

Practical classes include laboratory exercises and practice of concepts covered in lectures.

Literature

1. Stephan Roth, *Clean C++: Sustainable Software Development Patterns and Best Practices with C++ 17*, 1st ed., Apress, 2017.
2. John C. Molluzzo, *C++ for Business Programmers*, Prentice Hall, 2005.
3. Ronald Mak, *Object-Oriented Software Design in C++*, Manning, 2024.
4. Gamma Erich, Helm Richard, Johnson Ralph, Vlissides John, Grady Booch, *Design Patterns: Elements of Reusable Object-Oriented Software (Addison-Wesley Professional Computing Series)*, 1st ed., Addison-Wesley Professional, 1994.

Number of hours of active teaching: 5	**Theoretical teaching: 3**	**Practical teaching: 2**

Teaching methods

Lectures and practical exercises on the computer, homework , written exam.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	**Final exam**	points
activity during the lecture	**10**	written exam	**30**
practical teaching		oral exam	
colloquiums	**60**	....	
seminars			

Study program: Information technology
Course title: MARKETING SERVICES
Course status: Elective
ECTS number: 6
Condition: /

Objective of the course

The aim of studying this course is to acquaint students with the basics and principles of marketing in the service sector. This sector represents the basic potential for the growth and development of modern economies. The study of marketing in this sector is carried out through the analysis of the specifics of the service sector, the market characteristics of services and the processing of specific cases related to the concept of marketing and services .

Outcome of the course

Students will be able to understand and differentiate services in relation to goods and commodity markets and to analytically use services as a marketing tool at the level of companies and other institutions. They will be able to demonstrate the ability to apply basic marketing concepts in a service context, which includes creating, segmenting and positioning services, managing customer relationships and forming a marketing strategy for service organizations.

It will develop the ability to apply elements of the service marketing mix (product, price, distribution, promotion, people, service process and service environment) in the context of services, with a focus on creating value for users and achieving organizational goals.

Students will understand ethical aspects in service marketing and be able to develop strategies for ensuring customer loyalty and retention through ethical business and service quality. Also, they will be able to apply the acquired knowledge and skills in concrete business situations in the real world, including creative problem solving and developing strategies for service improvement.

Course content

Theoretical teaching

The content of the course covers the areas of introduction to service marketing, consumer analysis in the service sector, then customer relationship management and analysis and management of elements of the service organization's offer. The following are covered: Concept and characteristics of the service. Classification of services. Basic concepts of service marketing. Service market research and formation of a marketing database. Ethical considerations in service marketing. Positioning of services and development of long-term relationships with consumers. Consumer perception, motivation and emotions. Basics of measuring service users' satisfaction. Marketing mix for the service sector. Creating a service product. Service process management. Management of errors in the service process and implementation of recovery strategies. Service environment as an element of the marketing mix. People as an instrument of marketing in the service sector. Service distribution channels. Price as an instrument of service marketing mix. Integrated marketing communications in the service sector. Loyalty strategies and customer retention.

Practical teaching

Practical teaching involves practical exercises and practicing the concepts covered in the lectures.

Literature

1. Bruhn M., Georgi D., *Services Marketing: managing the servise value chain*, Pearson Education, 2006.
2. Jochen Wirtz, Christopher Lovelock, *Services Marketing: People, Technology, Strategy*, 9th ed., World Scientific (Us), 2021.
3. K. Douglas Hoffman, John E.G. Bateson, *Services Marketing: Concepts, Strategies, & Cases*, 5th ed., Cengage Learning, 2016.
4. Alan Wilson, Valarie Zeithaml, Mary Jo Bitner, Dwayne Gremler, *EBK: Services Marketing: Integrating Customer Service Across the Firm 4e: Integrating Customer Focus Across the Firm*, McGraw Hill, 2020.

Number of hours of active teaching: 5	**Theoretical teaching: 3**	**Practical teaching: 2**

Teaching methods

Lectures and exercises, doing homework a .

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	**Final exam**	points

activity during the lecture	10	written exam	
practical teaching		oral exam	30
colloquiums	60	....	
seminars			

Study program: Information technology

Course title: DISTRIBUTED COMPUTER SERVICES

Course status: Elective

ECTS number: 8

Condition: /

Objective of the course

The primary goal of this course is to familiarize students with the basic principles of the cloud computing paradigm, which is based on the delivery of distributed computing services, and the main technologies that enable it - virtualization technology and hyper-converged infrastructure. In addition, students will understand the relationship between distributed computing systems and cloud computing. The secondary goal of this course is to gain experience in the implementation of cloud services through practical projects using existing public cloud tools. Among other things, another goal of the course is for students to acquire the necessary skills to conduct research activities in this dynamic area by exploiting existing environments and simulators, such as the CloudSim software package.

Outcome of the course

The general competencies that students will acquire are: analysis, synthesis and predictions of solutions and consequences, mastering research methods, procedures and processes as well as application of knowledge in practice.

The professional outcome of this course includes the following five components: 1. Understanding the basic concepts of the cloud computing paradigm - why and how this paradigm was developed, its basic characteristics, advantages and challenges of different cloud computing service and delivery models; 2. Training for self-application of basic concepts of cloud infrastructure and understanding of trade-offs in energy use, efficiency of cloud operations and costs, researching ways to manage cloud computing centers, in order to build and implement cloud applications that are resilient, elastic and cost-effective ; 3. Getting to know the concepts of virtualization of systems, networks and data warehouses and the technology of hyper-converged infrastructure and the role that these technologies play in enabling cloud computing services; 4. Familiarity with cloud platforms and services of global vendors such as Amazon Web Services (AWS), Microsoft Azure and Google Compute Engine (GCE).

Course content

Theoretical teaching

Cloud computing has transformed the IT industry in recent decades by opening up the possibility of using "unlimited" and elastic computing resources and delivering *enterprise* application in the form of software as a service. During theoretical classes, students will gain insight into the principles and technologies of cloud computing through the following teaching units (topics): converged and hyper-converged infrastructure, virtualization technology, types of cloud computing according to service models (SaaS , PaaS , IaaS , XaaS) and delivery (public, private, shared and hybrid cloud), execution of cloud migration, alignment of physical resources with virtual computing resources in the cloud, types and types of cloud data storage, mechanisms for disaster recovery and business continuity in the cloud, basic principles and goals of cloud security and technologies used to achieve the stated goals.

Practical teaching in labs

Implementation and configuration of virtual machines in environments type 1 (VMware Sphere) and type 2 hypervisor (Oracle VBox , VMware Workstation), implementing and configuring virtual resources in AWS environments EC 3 (Elastic Computer Cloud) and Microsoft Azure , creating and connecting applications through the provided APIs on Amazon and Microsoft cloud computing platforms, implementation of applications based on the architecture of microservices and RESTful Web services using technologies Spring , Spring Boot and Spring Cloud and hosting on cloud platforms.

Literature

1. Montgomery T., *CompTIA Cloud+ Study Guide*, John Wiley & Sons, 2016.
2. Klepmann M., *Designing data intensive applications*, Wiley, 2017.
3. Herbert Schildt, Danny Coward, *Java: The Complete Reference, Thirteenth Edition*, 13th ed., McGraw Hill, 2024.
4. Brendan Burns, *Designing Distributed Systems: Patterns and Paradigms for Scalable, Reliable Services*, 1st ed., O'Reilly Media, 2018.

Number of hours of active teaching 5	Theoretical teaching: 2	Practical teaching: 3

Teaching methods: Lectures, computer exercises, consultations , practical work in the form of project activities.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
Presence	10	*Oral exam*	30
Colloquiums	60		

Study program: Information technology
Course title: Creativity and innovation - psychological and economic approach
Course status: Elective
ECTS number: 8
Condition: /
Objective of the course
The basic objective of the subject is to provide knowledge and skills important for understanding the impact of creativity and innovation on the daily functioning of organizations, as well as the relationship between creativity, innovation and entrepreneurship.
Outcome of the course
Students master theoretical and applied knowledge, in order to more successfully perceive opportunities for creative and innovative contributions to the organization, as well as for the development of their own abilities in that domain.
Course content
Theoretical teaching:
Definition of creativity; Creative process; Theories of creativity; Creativity and contemporary society; Relationship between creativity and innovation; Definition of innovation; Theories and models of innovation; Individual characteristics and creative thinking; Team, group and creativity; Leader and new ideas; Organization and ways of influencing creativity and innovation; Resistance to change and ability to overcome.
Exercises:
experience and explain certain phenomena through practical work (role play, meeting groups, discussion groups, teamwork) . Students acquire the basic knowledge and skills needed to improve innovation and creativity within the organization, but also at the individual level.
Literature
[1] P Dawson, C Andriopoulos, *MANAGING CHANGE, CREATIVITY AND INNOVATION*, Sage, 2014. [2] MD Mumford, ED Todd, *CREATIVITY AND INOVATION IN ORGANIZATIONS*, Routledge, 2020. [3] Jonathan A. Plucker, *Creativity and Innovation: Theory, Research, and Practice*, 2nd ed., Prufrock Press, 2022. [4] Harvard Business Review, *Managing Creativity and Innovation (Harvard Business Essentials)*, Harvard Business Review Press, 2003.

Number of hours of active teaching: 5	Theoretical teaching: 2	Practical teaching: 3
Teaching methods : Lectures, group work, mentoring, experiential groups.		
Knowledge assessment (maximum number of points 100)		

Pre-examination obligations	points	Final exam	points
Attendance and activities	**10**	Oral exam	**30**
The first colloquium	**30**		
The second colloquium	**30**		

Study program: Information technology
Course title: INTERNET AS A BUSINESS ENVIRONMENT
Course status: Compulsory
ECTS number: 8
Condition: /

Objective of the course

Getting to know the basics of information transmission, hardware and software basics of modern telecommunications. Understanding the possibilities of applying Internet technology in electronic business with a focus on the introduction to the digital economy . Learning about the basic models in electronic business , as well as about the basic principles of designing and projecting websites in an online environment.

Outcome of the course

Mastering knowledge of methods, techniques and tools for synthesizing electronic business services in a distributed Internet environment and acquiring specific theoretical and practical knowledge in the field of electronic commerce, e-banking, e-marketing, e-administration, e-insurance, e-tourism. About enabling students to choose hardware and software solutions and practical application of existing software platforms for creating an electronic store.

Course content

Theoretical teaching

E-business - the leading force of the digital economy. Electronic commerce (through the introduction and types of concepts, technologies, security environment, business models and internet infrastructure, implementation of e-commerce websites and evaluation of its functionality and efficiency). Mobile commerce (M-Commerce). E-banking (automation of banking operations, electronic money, home banking, on-line banking, internet banking, electronic payment systems on the Internet, types of electronic payment systems). E-payment transaction. Internet marketing (models of appearance on the Internet, online marketing techniques, e-mail marketing, blog marketing, monitoring statistics of visits to the web-presentation). E-insurance (development of electronic business in insurance , models of electronic business in insurance , websites of insurance companies) . Online marketing support. M odels of e-government including ways of obtaining information via the Internet. Computerized distribution and reservation systems of aviation companies and in the hotel industry . Theoretical foundations of current CMS systems.

Practical teaching

Through practical laboratory exercises, knowledge is gained about the possibilities of signal processing, projecting and designing websites intended for electronic business. The importance of internet business in the modern world is pointed out . Practical training on computers in the electronic laboratory: web development e-commerce site (analysis and design), web construction e-commerce site (implementation and management).

Literature

[1] K.C Laudon, C.G.Traver, *E-commerce, business, technology, society*, 13th ed., Pearson, 2017.
[2] Dan Croxen-John, Johann van Tonder, *E-Commerce Website Optimization: Why 95% of Your Website Visitors Don't Buy, and What You Can Do About it*, Kogan Page, 2020.
[3] Tanner Larsson, *Ecommerce Evolved: The Essential Playbook To Build, Grow & Scale A Successful Ecommerce Business*, 2016.
[4] Charles Camisasca, *How to Start and Grow an E-Commerce Business: Answering the 5 Fundamental Questions of eCommerce and Taking the Entrepreneurial Leap*, 2022.

Number of hours of active teaching: 5	Theoretical teaching: 3	Practical teaching: 2

Teaching methods

Lectures and exercises, homework and final exam.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
activity during the lecture	**10**	written exam	**30**
practical teaching		oral exam	
colloquiums	**60**	....	
seminars			

Study program: Information technology
Course title: WEB PLATFORMS
Course status: Compulsory
ECTS number: 8
Condition: /

Objective of the course

Acquaintance of students with the basics of the functioning of the Web as one of the most frequently used Internet services. Understanding the protocols and technologies on which the Web is based. Familiarity with Web services and higher-level platforms, such as content management systems (CMS), electronic documents (DMS), learning process (LMS), knowledge (KMS) and others. Getting to know the ways of using these systems and platforms for business purposes.

Outcome of the case

A student who understands the principles, protocols and technologies of the Web as well as their use in the development of Web platforms. Ability to identify optimal existing Web platforms to respond to business system requirements in that domain. Understanding the process of adapting existing Web platforms to the specific needs of business systems.

Subject content

Theoretical teaching

Web architecture, protocols and technologies , Web service provisioning models (development, purchase, rental, free software), Web server platforms, Production Web environments, Web content management systems, Document management systems, E-learning platforms and systems, Knowledge Management Systems, Wiki Platforms and Web Collaboration, Web Platforms for E-Commerce, Web Platforms for E-Government, Web Analytics Services, Security Aspects of Web Platforms

Practical teaching in the electronic laboratory

Students encounter virtual production environment simulations, CMS solution installation, theme selection (Process of purchasing themes that are not free), theme installation, basic security, plugin installation, page creation with the help of page builders, site multilingualism, online store integration, setup products and product categories, warehouse management, product delivery.

Literature

- Karol Król, *WordPress 5 Complete - Seventh Edition: Build beautiful and feature-rich websites from scratch*, 7th ed., Packt Publishing, 2019.
- Patrick Rauland, *Mastering WooCommerce - Second Edition: Build, customize, and launch a complete e-commerce website with WooCommerce from scratch*, 2nd ed., Packt Publishing, 2024.
- Kunigk J., Buss I., Wilkinson P., George L., *Architecting Modern Data Platforms: A Guide to Enterprise Hadoop at Scale*, O'Reilly Media, 2019.
- Dan Doherty, *Building a Website with WordPress: A Step-by-Step Guide - 2023 Edition: Including bonus chapters on: E-Commerce, HTML, CSS, JavaScript, PHP, & MySQL*, 2023.

Number of hours of active teaching: 5	**Theoretical teaching: 2**	**Practical teaching: 3**

Teaching methods

Lectures, exercises, colloquiums, exercises in the electronic classroom , projects, exams.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
An activity during the lecture	**10**	Exam (oral/written)	**30**
Colloquium I	**30**		
Colloquium II	**30**		
Total:	**70**	Total:	**30**

Study program: Information technology
Subject name: ECONOMY
Course status: Elective
ECTS number: 8
Condition: /

Objective of the course

Acquaintance of students with basic concepts and categories from the field of economics, as well as with the operation of economic laws in the conditions of the commodity economy with the application of analysis of transition problems of the economy. Training students to understand the key microeconomic processes, the target function of the company and capital, as well as the analytical evaluation of the microeconomic position of the company on the partial market.

Outcome of the case

The student will be able to understand the key microeconomic processes, the target functions of the company and capital, as well as the analytical evaluation of the microeconomic position of the company on the partial market.

Subject content

Theoretical teaching

Within the subject matter related to the principles of economics, market functioning, welfare economics, public sector economics, fundamentals of macroeconomics, market structures, labor market economics, basic macroeconomic indicators, inflation, real economy in the long term, money and prices in the long term are studied. , macroeconomics of an open economy, short-term economic fluctuations and transition in the world.

Practical teaching

Practical teaching involves practical exercises and practicing the concepts covered in the lectures.

Students solve case studies, conduct research on given topics, test economic models, master the basics of economic analysis.

Literature

[1] N. Mankiw, *Principles of Economics*, 8th ed., Cengage Learning, 2017.
[2] Andrew Prentice, Lara Bryan, Federico Mariani, *Economics for Beginners*, Usborne, 2023.
[3] Ha-Joon Chang, *Economics: The User's Guide*, Bloomsbury Publishing, 2015.
[4] Howard Yaruss, *Understandable Economics: Because Understanding Our Economy Is Easier Than You Think and More Important Than You Know*, Prometheus, 2022.

Number of hours of active teaching: 5	Theoretical teaching: 3	Practical teaching: 2

Teaching methods

Lectures and exercises, doing homework.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
Attendance and activities	**10**	oral exam	**30**
The first colloquium	**30**		
The second colloquium	**30**	....	

Study program: Information technology
Course title: LABOR LAW
Course status: Elective
ECTS number: 8
Condition: /
Objective of the course
Getting to know the basic issues of labor law, collective and individual employment contracts in the modern sense, as well as relations between employers and employees (the concept of employment relationship; legal regulation of employment relationships; what are the conditions that must be met when establishing and terminating an employment relationship; the concept employment contracts; working hours; vacations).
Outcome of the course
The student should be able to demonstrate an understanding of basic terms in the field of labor law (employment, employment contract, collective agreements, working hours, social insurance); to be able to explain the relationship between the concept of individual and collective labor contracts; that he can, with the help of the appropriate legal source (labor law and collective agreement), draw up an individual employment contract, other individual acts.
Course content
Theoretical teaching. Includes: Introductory questions: Concept and object of labor law ; Principles of labor law ; Sources of labor law ; Employment relations: The concept of an employment relationship ; Collective agreements ; Establishing and methods of establishing an employment relationship; Specific working relationships ; Establishing a working relationship with foreign nationals ; Agreement on rights and obligations of directors ; Damage compensation ; Working hours; Vacations and absences ; Salary, remuneration and other income; Disciplinary responsibility of employees; Termination of employment; Protection at work; Protection at work according to international conventions; Safety measures at work ; Injuries at work and occupational diseases ; Rights based on injury at work and occupational disease ; Labor relations in state bodies ; Social insurance ; Health and pension and disability insurance   *Practical teaching*   Through the exercises, students will be directly acquainted with legal acts - laws, collective agreements and general and individual acts of commercial entities such as: articles of incorporation, regulations , employment contracts, decisions and Ph.D. as well as with the method of drafting individual acts.
Literature   1. Patrick Cihon, James Castagnera, *Employment and Labor Law*, 9th ed., Cengage Learning, 2016.   2. Michael Evan Gold, *An Introduction to Labor Law*, 3rd ed., ILR Press, 2014.   3. Paul Secunda, Anne Lofaso, Joseph Slater, Jeffrey Hirsch, *Mastering Labor Law (Mastering Series)*, Carolina Academic Press, 2014.   4. David Twomey, Stephanie Greene, *Labor and Employment Law: Text and Cases (Higher Education Coursebook)*, 16th ed., West Academic Publishing, 2020.

Number of hours of active teaching 5	Theoretical teaching: 3		Practical teaching: 2	
Teaching methods				
Lectures, colloquiums, oral exam				
Knowledge assessment (maximum number of points 100)				
Pre-examination obligations	points	**Final exam**		points
Attendance and activities	**10**	Oral exam		**30**
The first colloquium	**30**	....		
The second colloquium	**30**			

Study program: Information technology
Course name: GERMAN LANGUAGE 2
Course status: Elective
ESPB number: 6
Condition: /
Objective of the course
Acquaintance with relevant lexicon and structures, as well as cultural aspects of the German language based on written and auditory texts related to both private and business environments, with the aim of mastering writing skills, oral presentation and basic business communication and correspondence in German.
Outcome of the course
Reading and listening: Students can understand simple information within a familiar field or label and simpler texts and reports on familiar topics in the immediate environment and at work . Speaking: Students can express simple views or requests in a familiar context. Writing: Students can write short letters containing personal information and simple business notes. (Level A2 according to the "Common European Framework" level scale.)
Course content
Texts, exercises and tasks, which are representative of certain skills, thematic units and language structures: navigating the city (prepositions with dative), workplace (perfect), housing (prepositions with accusative and dative), health (imperative), clothes (pronoun *es* , compounds), celebrations and customs (possessive pronouns, modal verbs in the preterite, ordinal numbers), free time (*w ü rde + Inf* .)
Theoretical teaching
Since German as a foreign language is learned and taught based on the principles of interactive teaching, familiarization with lexical and grammatical material, as a conditionally speaking theoretical part of the course, mostly takes place through activities in which students discover these phenomena as much as possible independently and based on examples.
Practical teaching
In accordance with the aim and outcomes of the course, which are based on the active use of the language, the teaching of German as a foreign language is based on the interactive practice of language skills within the activities of reading, listening, writing and speaking in communicative situations that simulate real situations.
Literature
[1] Group of authors , Panorama, Deutsch als Fremdsprache, A1, 2015 [2] Author Group, Berliner Platz 1, Langenscheidt KG, Berlin und München, 2009 [3] Group of authors, Berliner Platz 2 , Langenscheidt KG, Berlin und München, 2009 [4] Group of authors , Unternehmen Deutsch, Ernst Klett Sprachen GmbH, Stuttgart, 2004

Number of hours of active teaching: 5	Theoretical teaching: 3	Practical teaching: 2

Teaching methods
Teaching is based on an active, communicative method that takes into account sociocultural aspects of foreign language learning and includes lectures, exercises, projects, colloquiums and consultations.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
activity during the lecture	5	exam (written / oral)	30
practical teaching	5		
colloquiums	60	....	
seminars			

Study program: Information technology			
Course title: ENTREPRENEURSHIP			
Course status: Elective			
ECTS number: 8			
Condition: /			

Objective of the course

Students should develop key competencies and abilities for successful performance of business activities in entrepreneurial business.

Outcome of the course

Special emphasis is placed on developing the ability to research the competitive and general environment and orientation to innovation and the creation of new ventures, as well as creating the ability to take programmed risks in order to operationalize an entrepreneurial business idea and at the same time prepare the ground for its practical realization.

Course content

Theoretical teaching

The course deals with the origin, definition, development of entrepreneurship, choice of business idea, marketing strategy, technical-technological and organizational aspects, financial plan and creation of a business plan. In addition to the above, the aspect of internationalization of entrepreneurial activity, as well as possible exit strategies and a system of support for the development of entrepreneurship in the Republic of Serbia and the EU, are discussed.

Practical teaching

Practical teaching involves practical exercises and rehearsing the thematic units covered in lectures , through the creation of projects, development and testing of a concrete entrepreneurial idea.

Students develop their own project-analysis of a business idea, through which all thematic units of the course are tested.

Literature

1. Donald Kuratko, *Entrepreneurship: Theory, Process, and Practice*, 10th ed., Cengage Learning, 2016.
2. Andrew Zacharakis, William D. Bygrave, Andrew C. Corbett, *Entrepreneurship*, 5th ed., Wiley, 2019.
3. Cynthia Greene, *Entrepreneurship: Ideas in Action*, 6th ed., Cengage Learning, 2016.
4. Heidi M. Neck, Christopher P. Neck, Emma L. Murray, *Entrepreneurship: The Practice and Mindset*, 3rd ed., SAGE Publications, Inc, 2024.

Number of hours of active teaching: 5	Theoretical teaching: 3	Practical teaching: 2

Teaching methods

Lectures and exercises, doing homework.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
Attendance and activities	**10**	Oral exam	**30**
The first colloquium	**30**	....	
The second colloquium	**30**		

Study program: Information technology

Course title: BIG DATA

Course status: Elective

ECTS number: 8

Condition: /

Objective of the course

The aim of this course is to acquaint students with the most important information technologies used in the manipulation, storage and analysis of large data sets. Mastering basic analytical techniques essential for extracting useful information from large data sets, necessary for business systems based on modern distributed network infrastructure.

Outcome of the case

Students gain the ability to understand the life cycle of large data sets and apply adequate analytical tools, primarily in the domain of explanatory analysis, modeling and statistical inference. The ability to identify the primary and secondary (correlated) sources of big data most informative for obtaining quality information necessary in typical scenarios of the modern digital economy. Mastery of modern software platforms for collecting and processing large data sets. Developing the ability to effectively present the results of the analysis within the information flows of modern business systems.

Subject content

Theoretical teaching

Concepts and terminology of large data sets. Characteristics: quantity, speed, heterogeneity, variability, value. Sources of large data sets: numerical, textual, audio, visual - structured and unstructured. Data access techniques, normalization and preparation for further processing. Primary transformations of unstructured data: vectorization and embeddings based on deep learning techniques. Generic analyses: exploratory statistical analysis, visualization, modeling for the purpose of clustering, prediction and classification. Elements of Machine Learning: Classical Algorithms and Modern Deep Learning Neural Network Architectures. Designing machine learning processes in order to solve domain-specific problems. Mastering solutions to generic problems based on large data sets: user segmentation, mood analysis (sentiment analysis), service and product recommendation systems, user profiling based on digital footprints from social networks, risk assessment in the economic and financial sector, etc.

Practical teaching in the electronic laboratory

Installing Appach Spark within Google Colab service. Formation of an environment for practical work with large data sets, based on the Python programming environment. Mastering the basic algorithms of machine learning and deep neural networks within the Scikit -learn , SciPy , NumPy , Tensorflow and Keras libraries . Visualization based on Pyplot and Seaborn programs packages . Exercising of work with numerical , visual and textual sources data . Dating with principles synthesis generic system for recommendation content , extraction emotional condition from texts , pictures and speech , reconstruction model personality from available information with social network and the web, segmentation user for needs digital marketing , prediction and classification for needs efficient business and others current tasks contemporary digital economy .

Literature

1. Ivan Marin, Ankit Shukla, Sarang VK, " Big Data Analysis with Python: Combine Spark and Python to unlock the powers of parallel computing and machine learning", Packt Publishing, 2019.
2. Patanjali Kashyap, "Machine Learning for Decision Makers: In the Age of IoT, Big Data Analytics, the Cloud, and Cognitive Computing", Apress, Berkeley, CA, 2018.
3. Bruce Ratner, "Statistical and Machine-Learning Data Mining: Techniques for Better Predictive Modeling and Analysis of Big Data " , Third Edition , CRC Press, 2017.
4. Peter Norvig, Stuart Russell, Artificial Intelligence: A Modern Approach, Global Edition, 4th ed., Pearson, 2021.

Number of hours of active teaching: 5	Theoretical teaching: 3	Practical teaching: 2

Teaching methods
Lectures, exercises, colloquiums, exercises in the electronic classroom , projects

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
An activity during the lecture	10	Exam (oral/written)	30
Colloquium I	30		
Colloquium II	30		
Total:	70	Total:	30

Study program: Information technology
Course name: ENGLISH LANGUAGE 3
Course status: Compulsory
ECTS number: 6
Requirement: Attended classes in the subject and passed pre-examination requirements. Passed English language 2.
Objective of the course
This course naturally builds on the previous one, still preparing students to work in an international business environment. In each teaching unit, care is taken to achieve the goals of the course listed below, by adapting the teaching and teaching material to each group of students, as well as to each student individually, in order to achieve the desired goals. In doing so, they take into account the language professional and academic needs of students, previously acquired knowledge, student motivation, preferences and different learning methods and styles characteristic of each group, that is, of each individual student.
Outcome of the case
The course prepares students for dealing with situations related to business trips and creating and maintaining business connections important for jobs in healthcare. The student will be able to make an appointment/schedule an examination by phone, as well as book a hotel for his or someone else's business trip, i.e. for the patient's stay during therapy or intervention. Also, he knows how to successfully manage on a trip, in a hotel and similar related situations. In addition, he is able to organize a conference/meeting/meeting, participate and present on topics of interest (including those from the health field). Furthermore, he will be able to create business contacts by taking care of cultural differences in business with foreign partners and patients. Another skill that the student will acquire is working in a team, hosting foreign partners and patients, and entertaining them (for example, taking them to a restaurant, on a tour of the company, the city, etc.).
Course content
Theoretical teaching
The course contains general business topics with the inclusion of topics related to healthcare. The course includes activities that pay attention to the skills of listening, reading and understanding the text, as well as finding the necessary information from the given inputs for each topic that is covered. In addition, it includes reproductive activities such as writing business forms of correspondence and topics for discussion, giving opinions and proposals, disagreeing with the proposed, all in the appropriate business register. All topics and skills are provided with a proper grammar and vocabulary foundation.
Arranging meetings/examinations; Project - scheduling a meeting; Transportation and travel; Accommodation when traveling for business/health purposes; Out of office; Project - organization of a conference/scientific or professional meeting and participation; Project - simulation of dating partners in a restaurant and on a city tour; Project - giving a speech on a selected topic from the field of health in a given time frame; Differences in business culture; Team work; Project - team building event; Entertaining clients; Creating business contacts; Writing a business biography; Writing motivational letters.
Practical teaching
Practicing all four language skills (reading comprehension skills, speaking comprehension skills, writing skills and speaking skills) at level B1 of the Common European Framework of Reference for Foreign Languages.
Literature
Mandatory reading
[1] *Business Benchmark, Pre-intermediate to Intermediate,* Student's book, Norman Whitby, Cambridge University Press
[2] *Business Benchmark, Pre-intermediate to Intermediate,* Personal Study Book, Norman Whitby, Cambridge University Press
Supporting literature
[3] numerous professional literature, video and audio recordings, podcasts, interactive exercises, texts, etc. available on the Internet, and adapted to the educational and professional needs of students. [4] *The Oxford English Dictionary*, Oxford University Press
[5] Online dictionaries BusinessDictionary.com, Travel industry Dictionary, Webopedia (IT Business Dictionary), The Free Dictionary (for Banking. [2]…

Number of hours of active teaching: 5	Theoretical teaching: 2	Practical teaching: 3
Teaching methods		

Lectures, exercises, simulations of real language situations in a business environment, projects, use of online space for additional and non-faculty teaching activities, continuous process of checking knowledge and adapting teaching to students' needs, colloquiums, consultations, exams

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
activity during the lecture	**5**	written exam	**30**
practical teaching	**5**	oral exam	
Colloquiums	**60**	....	
seminars			

Study program: Information technology
Course title: SOCIAL NETWORKS
Course status: Compulsory
ECTS number: 8
Condition: /

Objective of the course

Understanding of social concepts and technological infrastructure of social computing and social networks; acquisition of knowledge and skills needed for social network software development; familiarization with data analysis and research on social networks; acquiring basic knowledge about the ethical and legal aspects of the use and development of social network software and the analysis and research of data on social networks.

Outcome of the course

(1) understanding of social concepts and the technological infrastructure of social computing and social networks, (2) understanding of the direction of development of social computing, (3) being able to develop social network software, (4) being able to analyze and social network data research, (5) awareness of the ethical and legal aspects of using and developing social network software and social network data analysis and research.

Course content

Theoretical teaching

Social computing : concepts, methodologies, tools, applications , privacy and risks in social computing . Standards in social computing. Web 2.0 . Collaborative tagging and navigation. Wikis, blogs, wiki support platforms and blog communications. Identity management. Presentation and analysis of social networks (graph theory and social networks, strong and weak ties, identification of central nodes , network segmentation, information diffusion) . Research and data analysis on social networks (classification and recommendation systems, sentiment analysis and attitude research and analysis). Crowdsourcing . Crowdsourcing technologies. Web 3.0 .

Practical teaching

Practical teaching involves practical training of concepts covered in lectures through interactive exercises using specialized software tools.

Literature

1. Russell MA , Klassen M., Mining the Social Web, O`Reilly, 2019.
2. Tapscott A., Web 3: Charting the internet's next economic and cultural frontier, Harper Business, USA, 2023.
3. Joshua Porter, *Designing for the Social Web*, 1st ed., New Riders, 2010.
4. Gavin Bell, *Building Social Web Applications: Establishing Community at the Heart of Your Site*, 1st ed., O'Reilly Media, 2009.

Number of hours of active teaching: 5	Theoretical teaching: 3	Practical teaching: 2

Teaching methods

Lectures, exercises, written exam.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
activity during the lecture	10	written exam	30
practical teaching		oral exam	
colloquiums	60	....	
seminars			

Study program: Information technology
Course title: MODERN COMPUTER NETWORKS
Course status: Compulsory
ECTS number: 8
Condition: /
Objective of the course
Acquisition of theoretical and practical knowledge in communication technologies and computer networks. Network protocols on certain standardized layers. Independent practical work on designing and maintaining computer networks. Networking, hardware selection, software installation, parameter setting and network management.
Outcome of the case
The student acquires theoretical and practical knowledge of communication technologies and computer networks. With independent practical work on the design and maintenance of computer networks, the student acquires knowledge of networking, hardware selection, software installation, parameter settings and network management.
Course content
Theoretical teaching
In the introductory part of the course, students are introduced to the types of computer networks, network hardware and network software. Data transmission and communication basics are then covered. Furthermore, students are introduced to the layered architecture of a computer network. Physical layer, data link layer, media access management, network layer, network layer management algorithms, transport layer, TCP / IP , application layer protocols are studied. In the final part, there is a special emphasis on security in the computer networks.
Practical teaching
Administration and practical work with various elements of computer networks - switch , gateway , various services and servers (DNS , DHCP , FTP , HTTP , HTTPS), monitoring and administration software computer networks .
Literature

[1] William Stallings, *DATA & COMPUTER COMMUNICATIONS*, Prentice hall International, 2020.
[2] Christian Benvenuti, *Understanding Linux Network Internals: Guided Tour to Networking on Linux*, O'Reilly Media, 2006.
[3] James Kurose, Keith Ross, *Computer Networking: A Top-Down Approach*, 7th ed., Pearson, 2016.
[4] Craig Hunt, *TCP/IP Network Administration: Help for Unix System Administrators*, 3rd ed., O'Reilly Media, 2002.

Number of hours of active teaching: 5	Theoretical teaching: 3	Practical teaching: 2

Teaching methods

Lectures and exercises, colloquiums, written exam .

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
activity during the lecture	10	written exam	30
practical teaching		oral exam	
colloquiums	60	....	
seminars			

Study program: Information technology
Course title: PROJECT PLANNING
Course status: Elective
ECTS number: 8
Condition: /

Objective of the course

This course prepares students to work in a modern business environment. The goal is to develop time, financial and general project planning skills with an emphasis on filling out simpler forms of project forms and accompanying documentation, with adequate monitoring and reporting on the results of the implementation of project activities.

Outcome of the course

The student will be able to:

* will have insight into the principles of project cycle management and will be able to plan the project creation process to a certain degree

* fill out the project form and accompanying documentation within the known framework within the team, with at least 50% success rate

* create a project budget in the team according to a simple budget framework

Course content

Theoretical teaching

The subject consists of the introduction of basic principles, techniques and tools necessary for managing the project cycle, filling out the project form, including the budget and accompanying documentation.

Practical teaching

The subject includes the creation of situations (simulations) in which the necessary skills could be applied for the purposes of their acquisition and development in the planned degree and conditions/limitations.

Literature

1. *PMBOK seventh edition*, Project management institute, 2021.
2. Verzuh, E., *The fast forward MBA in Project Management*, Wiley, 2021.
3. Jack Hayden, *Project Management Mastery: A COMPREHENSIVE GUIDE TO SUCCESSFULLY IMPLEMENTING THE CORE PRINCIPLES OF PROJECT PLANNING AND SCOPE MANAGEMENT FROM CONCEPT TO COMPLETION*, 2023.
4. Joseph Heagney, *Fundamentals of Project Management*, AMACOM, 2016.

Number of hours of active teaching : 5	**Theoretical teaching: 3**	**Practical teaching: 2**

Teaching methods

Lectures, exercises, simulations of real situations in project planning, project tasks, use of online space for additional teaching activities (blended learning), continuous process of checking knowledge and adapting teaching to the needs of students, teamwork and independent work

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
Attendance and activities	**10**	Oral exam	30
The first colloquium	**30**		
The second colloquium	**30**		

Study program: Information technology
Subject name: FINANCE
Course status: Elective
ESPB number: 8
Condition: /
Objective of the course
Acquisition of basic theoretical-analytical and applied knowledge and skills in the field of finance, with analysis of the financial system, financial flows and analysis of micro and macro finance.
Outcome of the course
Students will be able to: - understanding of basic financial terms ;   - by analyzing examples from practice, students will understand the financial system in the best way and master basic skills and knowledge in managing personal and company finances ;   - creation of a basis for further study of derived financial disciplines .
Course content
Theoretical teaching
Within the scope of the course, the concept of finance , the science of finance and the relationship to other economic disciplines are studied. Starting from the analysis of the financial system, through the analysis of the monetary, banking and fiscal system, the concept of money, payment system, monetary policy, as well as the basis of the tax system, budget and public finances are defined. Students are presented with the entire system of public finances with explanations of the taxation system, as well as the system of budget adoption. The basic analysis of bank operations, the principles of banking operations and the current regulations of the banking sector and financial institutions occupy an important place, as well as the analysis of equity and debt securities. The basics of company and business finance, making financial decisions in the company, the basics of financial planning and management, analysis of investment and borrowing decisions with reference to risk evaluation, are presented in a separate chapter. A special review is given to the analysis of personal and family finances, along with family analysis as an economic community, as well as understanding the importance of the concept of savings and financial accumulation. At the end, the system of planning, organizing and leading in finance and the modalities of the optimal debt structure are analyzed.
Practical teaching
Practical teaching includes practical exercises and rehearsing the thematic units covered in lectures , case studies and the basics of financial analysis.
Literature
1. Ronald W. Melicher, Edgar A. Norton, *Introduction to Finance: Markets, Investments, and Financial Management*, 17th ed., Wiley, 2019.   2. Moorad Choudhry, Neal Ardley, Sharon Bowles, Henrique Fragelli, Oldrich Masek, Jason Oakley, Helen Sachdev, *The Principles of Banking (Wiley Finance)*, 2nd ed., Wiley, 2022.   3. Stanley Eakins Frederic S. Mishkin, *Financial Markets and Institutions*, 8th ed., Pearson India, 2017.   4. Richard Brealey, Stewart Myers, Franklin Allen, *Principles of Corporate Finance*, 13th ed., McGraw-Hill Education, 2019.

Number of hours of active teaching: 5	Theoretical teaching: 3	Practical teaching: 2
Teaching methods		
Lectures and exercises, doing homework.		

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	Point
Attendance and activities	**10**	Oral exam	**30**
The first colloquium	**30**		
The second colloquium	**30**	....	

Study program: Information technology
Course title: Information systems engineering
Course status: Compulsory
ECTS number: 8
Condition: /

Objective of the course

Gaining knowledge about the place and role of the information system in real system management procedures, about methodological paths in the analysis and design of information systems and the main segments of their structure. Students are trained for competent participation in the processes of engineering, reengineering and documentation of information systems, as well as their evaluation, exploitation and maintenance. Acquaintance with all phases of development of information systems, from defining requirements to functional modeling of processes and data, using various methods and techniques (BSP, BPM, SSA) . Learning the basics of object-oriented analysis, database design and the application of modern software tools for designing software and information systems.

Outcome of the course

of theoretical knowledge in the field of engineering and reengineering of information systems, and practical application of dedicated, standardized methods and tools from the field of system analysis and modeling of system structures.

Students will learn life cycle models of information system development, basic principles of SSA (Structured Systems Analysis), process decomposition, connection IDEF 1 X with PMOV, cardinality of relationships, analyzing user requirements, basic elements of UML, UML diagrams, general mechanisms of UML, use cases (use case), actors and their identification, determination of the system boundary, expansion relation, specificities of the activity diagram, specificities of the state diagram . They will independently apply modern, dedicated, standardized techniques and tools from the field of software engineering.

Course content

Theoretical teaching
Theory of information systems, Analysis of systems and user requirements, Processes and methods of system development, Planning, analysis and specification of information systems , Life cycle of development of information systems (System Development Life Cycle - SDLC), Making a prototype , Joint Application Development (JAD), Structural System Analysis (SSA), Data files, data dictionary, modeling tools, system development tools , CASE technologies, Standard graphic language for object-oriented software modeling - UML (Use case diagrams, Activity diagrams, sequences, Class diagrams, State diagrams, sequence diagrams), Control and security of information systems a.

Practical teaching
Practical work on computers includes interactive work with students. In practice classes, students work on concrete examples and solve tasks included in the course content, which includes defining process models through the creation of decomposition diagrams, then data flow diagrams and ER diagrams, assistance in CASE tools, database design, and implementation UML diagrams and solving specific problems on the chosen business/information system model, in the "IBM Rational Software Architect" (IBM RSA) , which provides a wide range of tools for specification, analysis, design and implementation of software.

Literature
[5] Pressman, R. S., Maxim, B. R., *Software Engineering: A Practitioners Approach (8th edition)*, McGraw-Hill, 2014.
[6] Ralph Stair, George Reynolds, *Fundamentals of Information Systems*, 9th ed., Cengage Learning, 2017.
[7] Ralph Stair, George Reynolds, *Principles of Information Systems*, 13th ed., Cengage Learning, 2017.
[8] Mark Richards, Neal Ford, *Fundamentals of Software Architecture: An Engineering Approach*, 1st ed., O'Reilly Media, 2020.

Number of hours of active teaching: 6	**Theoretical teaching: 3**	**Practical teaching: 3**

Teaching methods

Lectures, exercises in the computer laboratory, consultations

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
Activity during the lecture	**10**	Exam (oral/written)	**30**
Colloquium I	**30**		
Colloquium II	**30**		
Total:	**70**	Total:	**30**

Study program: Information technology

Study program: Information technology
Course title: DESIGN AND DEVELOPMENT OF USER INTERFACES
Course status: Compulsory
ESPB number: 8
Condition: /

Objective of the course

The aim of the course is to acquire the key principles on the basis of which modern user interfaces can be designed , as well as to acquaint the student with the best practices, standards and techniques for the development of modern user interfaces . The goal is to acquire techniques for the successful design of user interfaces, as well as the application of acquired knowledge in order to design transparent user interfaces .

Outcome of the course

Students will be able to use techniques and acquired theoretical and practical knowledge for user interface development , they will be able to objectively assess the usability of the user interface , as well as design and implement the user interface based on the knowledge and skills acquired during this course .

Course content

Theoretical teaching

The subject includes familiarization with the most diverse elements of user interface development, both for computers and for mobile devices and tablets. Introduction to human-computer interaction including design principles, interface evaluation methods and user interface development techniques is also covered.

Practical teaching

The practical part of the teaching involves the application of techniques, methods and strategies acquired during lectures for the development of applicable and usable user interfaces within the framework of practical exercises and practical tasks.

Literature

1. Jon Yablonski, *Laws of UX: Using Psychology to Design Better Products & Services*, 2nd ed., O'Reilly Media, 2024.
2. Jenifer Tidwell, Charles Brewer, Aynne Valencia, *Designing Interfaces: Patterns for Effective Interaction Design*, 3rd ed., O'Reilly Media, 2020.
3. Tidwell J., Brewer C., Valencia A., Designing interfaces: Patterns for effective interaction design., O Reilly Media, USA, 2020.
4. Head V., Designing Interface Animation, Rosenfeld Media, 2016.

Number of hours of active teaching 5	**Theoretical teaching: 3**	**Practical teaching: 2**

Teaching methods

Lectures, exercises, written exam.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	**Final exam**	points
activity during the lecture	**10**	written exam	**30**
colloquium and	**60**	oral exam	
		....	

Study program: Information technology	
Course name: ARTIFICIAL INTELLIGENCE	
Course status: Compulsory	
ECTS number: 8	
Condition: /	

Objective of the course

Training of students in the application of techniques, methods and tools in the field of research and data analysis (Data Mining, DM) and in the design and maintenance of DM systems.

Outcome of the course

Knowledge of principles, techniques and tools of data mining systems. The student is trained to perform data analysis, create predictive models, design and maintain systems for research and data analysis in the business and engineering domain.

Course content

Theoretical teaching

Basic concepts and overview of the field of DM. Data preprocessing. Data warehouses and OLAP. Exploratory analysis and data visualization. Basic classification techniques: unlearning trees, naive Bayes method. Basic classification techniques: k-nearest neighbors, support vector machines. Advanced classification techniques: ensembles of classifiers, bagging, boosting, semi-supervised learning. Evaluation of classifiers, automatic determination of parameter values and selection of attributes. Clustering techniques: k-means, hierarchical clustering, dbscan algorithm. Discovery of association rules: a priori algorithm, fp-growth algorithm. Overview of applications of research and data analysis: business data analysis, web data analysis, recommendation systems (movies, books, etc.), sports predictions.

Practical teaching

Practical classes include laboratory exercises and practice of concepts covered in lectures.

Literature

1. Peter Norvig, Stuart Russell, *Artificial Intelligence: A Modern Approach, Global Edition*, 4th ed., Pearson, 2021.
2. John D. Kelleher, Brian Mac Namee, Aoife D'Arcy, *Fundamentals of Machine Learning for Predictive Data Analytics: Algorithms, Worked Examples, and Case Studies*, 1st ed., The MIT Press, 2015.
3. Charu C. Aggarwal, *Neural Networks and Deep Learning: A Textbook*, 1st ed., Springer, 2018.
4. Ian Goodfellow, Yoshua Bengio, Aaron Courville, *Deep Learning (Adaptive Computation and Machine Learning series)*, The MIT Press, 2016.

Number of hours of active teaching: 5	Theoretical teaching: 3	Practical teaching: 2

Teaching methods

Lectures and exercises, colloquiums, written exam.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	Points
activity during the lecture	**10**	written exam	**30**
colloquiums	**60**	oral exam	
		....	

Study program: Information technology
Course title: ELECTIVE PRACTICAL RESEARCH IN INFORMATION SYSTEMS
Course status: Elective
ECTS number: 6
Condition: /
Objective of the course
The focus of optional practical research is on the development of problem thinking, proactivity and finding innovative solutions in the field of software development and business information systems. Individual initiative to give ideas and propose solutions is encouraged and rewarded.
Outcome of the course
Acquiring theoretical knowledge and skills in practical work, which will enable students to search for new knowledge and experiences on their own in the field of software solution development methodology and application of modern methods, models, techniques and tools of designing information systems, which will improve them professionally and personally.
Course content
Theoretical teaching
Introducing students to research methods and methodology. Qualitative and quantitative research methods (collection of primary information, observation, interview, survey, document research, interview and survey questions, scales, sample selection, information processing, experiment). Organization of research (creating and verifying the research plan). Collection and scientific processing of empirical and theoretical material from the field of information systems development. The work is organized through virtual companies, technology centers, business incubators, research in faculty laboratories and cooperation with companies in the environment that deal with the development of information systems and software projects. Acquaintance with the work of relevant scientific and research institutions. Creation of a research project related to software development. Publication of research results, presentations and evaluation, as well as summarizing the achieved results.
Practical teaching
Simulations and case studies from practice in the field of information systems engineering with the development of a research project. Based on acquired knowledge and conducted research, students, in consultation with mentors, make suggestions on how to improve the application of modern information technologies in all stages of development of business information systems. At the end, the achieved results are summarized.

Literature
1. John Gerring, *Applied Social Science Methodology: An Introductory Guide*, Cambridge University Press, 2017.   2. Stephen Carey, *A Beginner's Guide to Scientific Method*, 4th ed., Cengage Learning, 2011.   3. Dr. Catherine Dawson, *Introduction to Research Methods 5th Edition: A Practical Guide for Anyone Undertaking a Research Project*, Robinson, 2019.

Number of hours of active teaching: 5	Theoretical teaching: 2	Practical teaching: 3
Teaching methods		
Lectures, implementation of practical research, creation of project works.		

Knowledge assessment (maximum number of points 100)			
Pre-examination obligations	points	**Final exam**	points
activity during the lecture	**5**	written exam	
practical teaching	**5**	oral exam	**30**
Colloquiums		....	
project work	**60**		

Study program: Information technology
Course title: ELECTIVE PRACTICAL RESEARCH IN WEB TECHNOLOGIES
Course status: Elective
ECTS number: 6
Condition: /
Objective of the course
The aim of the course is to familiarize with and master modern software tools in the field of Internet and web technologies, to apply acquired knowledge and skills in solving specific real problems defined through specific project tasks, to develop the ability to creatively apply given software tools in specific practical situations, as well as to gain practical experience in working with internet technologies, architectures and development models of complex, distributed and scalable electronic business applications.
Outcome of the case
The student will be able to define, specify and develop web technologies using standards, methods and techniques of web-based internet business systems, software engineering methodologies, software project management methodologies, other standards, technologies and tools that he has mastered during his studies, as well as to recognize the need to master new methodologies, standards, technologies and/or tools if a specific project requires it.
Subject content
Theoretical teaching
Acquaintance of students with the basics of the functioning of the Web as one of the most frequently used Internet services. Understanding the protocols and technologies on which the Web is based. Familiarity with Web services and higher-level platforms, such as content management systems (CMS), electronic documents (DMS), learning process (LMS), knowledge (KMS) and others. Ways of using these systems and platforms for business purposes. Process-oriented software development. Modeling of business processes. Reference models and standards of computer networks. The Internet as an infrastructure for secure transmission and delivery of information.
Practical teaching
Principles of Internet network operation. Protocols and services. IoT (Internet of Things) concept. Internet data centers and computer clouds. Electronic mail. Web service and technologies (HTML, CSS, JavaScript, PHP, MySQL...). Content management systems (CMS - WordPress, Joomla...). Security and privacy on the Internet.
Literature

1. John Gerring, *Applied Social Science Methodology: An Introductory Guide*, Cambridge University Press, 2017.
2. Stephen Carey, *A Beginner's Guide to Scientific Method*, 4th ed., Cengage Learning, 2011.
3. Dr. Catherine Dawson, *Introduction to Research Methods 5th Edition: A Practical Guide for Anyone Undertaking a Research Project*, Robinson, 2019.
4. Uttam Kumar Roy, Web Technologies (Oxford Higher Education) 1st Edition

Number of hours of active teaching: 5	**Theoretical teaching: 2**	**Practical teaching: 3**
Teaching methods		
Lectures and exercises, homework and term papers.		
Knowledge assessment (maximum number of points 100)		

Pre-examination obligations	points	Final exam	Points
Active participation in classes	10	Oral / written exam	30
Research project	60		
In total	**70**		**30**

Study program: Information technology
Course title: SOFTWARE PROJECT MANAGEMENT
Course status: Compulsory
ESPB number: 6
Condition: /

Objective of the course

Acquiring the knowledge and skills needed to manage team development and exploitation of complex software products and/or services in accordance with internationally recognized standards and recommendations. Acquiring skills in using software applications for project management.

Outcome of the case

Acquiring competencies for organizational, administrative, financial and technical management of development and exploitation processes of complex software products, IT services and information systems in accordance with internationally recognized standards and recommendations in the field of project management and the use of software applications for project management.

Course content

Theoretical teaching

Projects and participants. Project approval: project selection techniques (Payback, ROI, NPV, Score matrix, SWOT analysis). Feasibility study. Formalization of project objectives. Similarities between project goals and software requirements. Work Breakdown Structure (WBS). Types of WBS.

Estimation and scheduling: algorithmic techniques for estimation, function points. Deployment: task constraints, AOA vs. AON, critical path, scheduling optimization techniques. Budgeting and accounting: direct and indirect costs, cost element structure, cash flow. Software development activities. Building blocks for software development, deployment metrics, testing. Software development process. Traditional, prototype and agile software development: SCRUM methodology, SCRUM example. Change management and software development. Software evolution models. Risk management on a software project. Quality management. Planning, assurance and quality control. Techniques for design artifacts and for software artifacts. Project quality control. Techniques for agile project monitoring and control. Human resource management. Situational leadership. A complex project example.

Practical teaching

Practical teaching includes work with project management tools (Microsoft Project, JIRA), customer management tools (SugarCRM) and project tasks that include writing a project proposal on a concrete example from a real environment, business plan, project planning activities, implementation of several project modules, implementation of standards and procedures for control and monitoring.

Literature
1. Tom DeMarco, Tim Lister, "Peopleware: Productive Projects and Teams", Addison-Wesley Professional, 2013.
2. Jeff Sutherland , *Scrum: The Art of Doing Twice the Work in Half the Time*, Random House Business Books, 2015.
3. Dr. James Stanier, *Become an Effective Software Engineering Manager: How to Be the Leader Your Development Team Needs*, 1st ed., Pragmatic Bookshelf, 2020.

Number of hours of active teaching: 6	**Theoretical teaching: 3**	**Practical teaching: 3**

Teaching methods

Lectures, computer exercises, colloquium, written exam.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	**Final exam**	Points
attending lectures	**10**	written exam	**30**
Colloquiums	**60**	oral exam	
		....	

Study program: Information technology
Course title: DEVELOPMENT OF WEB APPLICATIONS
Course status: Compulsory
ECTS number: 8
Condition: /
Objective of the course
The goal of the course is to familiarize students with the possibilities and advantages of using modern Internet applications and web services . Students should master the techniques of organization and application of internet applications and web services.
Outcome of the course
After mastering the subject, students will be able to apply Internet applications in different ways spheres of business, such as electronic business, electronic government management, business of companies via the web , etc.
Course content
Theoretical teaching
The course program consists of the following units: methodology and design of WEB applications, use of the UML language; implementation of applications using Java technologies - JSF (Java Server Faces) framework - overview, life cycle, implementation details, Spring framework - basics, integration with other systems; advanced technologies - AJAX (Asynchronous JavaScript and XML) – interfaces, application, - aspect-oriented programming within the development of WEB applications; Web services - basic concepts, service oriented architecture - entities and features, REST details.
Practical teaching
Practical teaching includes laboratory exercises and practice of concepts covered in lectures and the development of practical development projects.
Literature

1. Craig Walls, *Spring in Action, Sixth Edition*, 6th ed., Manning, 2022.
2. Nicholas S. Williams, *Professional Java for Web Applications*, 1st ed., Wrox, 2014.
3. Michael Müller, *Practical JSF in Java EE 8: Web Applications in Java for the Enterprise*, 1st ed., Apress, 2018.

Number of hours of active teaching: 7	Theoretical teaching: 4	Practical teaching: 3
Teaching methods		
Lectures and exercises on the computer, written exam.		

Knowledge assessment (maximum number of points 100)			
Pre-examination obligations	points	**Final exam**	points
activity during the lecture	**10**	written exam	**30**
practical teaching		oral exam	
colloquiums	**60**	....	

Study program: Information technology	
Course title: PROFESSIONAL PRACTICE	
Course status: Compulsory	
ECTS number: 2	
Condition: /	

Objective of the course

The aim of the course Professional practice is to adapt the student to the working environment, to connect theoretical knowledge and practical experience, orientation towards future employment . The goal of professional practice is for students to learn about the functioning of organizations that deal with the development of software solutions, and the design, implementation and maintenance of information systems, as well as the processes of developing software and/or information systems in practice, as well as the application of various areas of modern information technologies that have mastered during their studies.

Outcome of the course

Students will be able to actively participate in the work tasks of software development, and planning, designing, implementation and maintenance of information systems in a specific organization, as well as in various applications of information technologies in business operations. They will master the techniques of team communication, they will become familiar with the processes of organizing IT work, they will be able to apply specific tools and techniques for the development of software and/or information systems used by a specific organization, as well as for communication with users practiced by a specific organization. They will become familiar with the organization's attitude towards entrepreneurship and innovation.

Course content

Theoretical teaching

Familiarity with the work and operations of the specific business system/ organization of the unit in which the student will perform professional practice , which should deal with those activities that are in accordance with the acquired theoretical knowledge and practical skills of the student during his studies. Acquaintance with the good practice of the organization in the areas of: engineering requirements, design, design and development of software and business information systems, application of databases, development of computer networks, Web programming, applications for mobile devices, graphic design, etc. Work on specific jobs and tasks under the supervision of the appointed mentor in the business system , writing reports on the completed professional practice (professional practice diary) .

Practical teaching

Practical teaching will depend on the organization in which the student will do the practice.

Literature

Number of hours of active teaching:	**Theoretical teaching:**	**Practical classes:**

Teaching methods

Practical research and practical work.

Knowledge assessment (maximum number of points 100)

In written form by a mentor who is engaged in the organization and appointed by the organization with the consent of the Faculty teacher responsible for the course.

Study program: Information technology
Course title: BUSINESS SIMULATIONS - INFORMATION TECHNOLOGIES
Course status: Elective
ECTS number: 6
Condition: /
Objective of the course
Getting to know the basic concepts of visual simulations and haptic learning. Their divisions, work techniques and methods of use are discussed. Application of decision theory in simulations and prediction of decision consequences. Understanding of benchmarking, statistical analysis and how to manage organizations. Using business simulations to shape the offer, as well as the formation of sales and pricing strategies. Application of information technologies in everyday business in order to make business decisions easier and more accurate.
Outcome of the course
With the help of practical simulation solutions, students will have the opportunity to try out decision-making techniques and the management of company activities, with a special emphasis on the use of information technologies. They will acquire knowledge, skills and abilities that will help them develop an entrepreneurial spirit, in order to prepare for the challenges of the future workplace.
Course content
Theoretical teaching
The course includes an introduction to the field of simulations, their divisions, work techniques and organization. Business decision-making techniques, benchmarking, statistical analysis, price sensitivity analysis in a research study, as well as organization management techniques are also covered. The use of business decision-making in business simulations is also shown, along with shaping the offer, studying the factors that affect prices and evaluating the reactions of competitors. Practical IT tools are also used that can facilitate and simplify the process of making business decisions.
Practical teaching
Hands-on teaching involves the use of the Tata TopSim software simulator specialized for these applications, which allows students to try out various business strategies and immediately see the practical effects of their moves.

Literature
1. Kotler P., Armstrong G., Principles of Marketing, Pearson, 2017.
2. Ralph Stair, George Reynolds, *Principles of Information Systems*, 13th ed., Cengage Learning, 2017.

Number of hours of active teaching: 5	**Theoretical teaching: 3**	**Practical teaching: 2**

Teaching methods
Lectures, exercises, use of simulations, written exam.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	**Final exam**	points
activity during the lecture	**10**	written exam	**30**
practical teaching		oral exam	
colloquiums	**60**	....	
seminars			

Study program: Information technology
Course title: BUSINESS SIMULATIONS - INTERNET MARKETING
Course status: Elective
ECTS number: 6
Condition: /

Objective of the course

Getting to know the basic concepts of visual simulations and haptic learning. Their divisions, work techniques and methods of use are discussed. Application of decision theory in simulations and prediction of decision consequences. Understanding of benchmarking, statistical analysis and how to manage organizations. Creating a marketing mix in business simulations while shaping the offer, as well as sales and pricing strategies. Defining the media plan and techniques of mass and direct communications.

Outcome of the course

With the help of practical simulation solutions, students will have the opportunity to try out decision-making techniques and management of marketing and management activities of the company. They will acquire knowledge, skills and abilities that will help them develop an entrepreneurial spirit, in order to prepare for the challenges of the future workplace.

Course content

Theoretical teaching

The course includes an introduction to the field of simulations, their divisions, work techniques and organization. Business decision-making techniques, benchmarking, statistical analysis, price sensitivity analysis in a research study, as well as organization management techniques are also covered. The use of the marketing mix in business simulations is also shown, along with shaping the offer, studying the factors that affect prices and evaluating the reactions of competitors. The media plan and integrated marketing communications are also being processed.

Practical teaching

Hands-on teaching involves the use of the Tata TopSim software simulator specialized for these applications, which allows students to try out various marketing strategies and immediately see the practical effects of their moves.

Literature

1. Dave Chaffey, Fiona Ellis-Chadwick, Digital Marketing, Pearson Higher Ed, 2022.
2. Kotler P., Armstrong G., Principles of Marketing, Pearson, 2017.

Number of hours of active teaching: 5	Theoretical teaching: 3	Practical teaching: 2

Teaching methods

Lectures, exercises, use of simulations, written exam.

Knowledge assessment (maximum number of points 100)

Pre-examination obligations	points	Final exam	points
activity during the lecture	**10**	written exam	**30**
practical teaching		oral exam	
Colloquiums	**60**	....	
seminars			

Study program: Information technology
Course title: FINAL THESIS COURSE
Course status: Compulsory
ECTS number: 4
Requirement: Attended classes and passed all subjects provided by the curriculum of the OAS Information Technology study program

Objective of the course

Application of theoretical-methodological, scientific-expert and professional-applied knowledge and methods from information technologies to solve specific problems. As part of the research work, the student specifically studies the problem, its structure and complexity and, based on the conducted analyses, draws conclusions about possible ways of solving it and creating adequate decisions of a strategic, tactical and operational nature. By studying the literature, the student becomes familiar with the methods intended for solving similar tasks and the practice of solving them.

Outcome of the course

Enabling students to independently apply previously acquired knowledge from different areas of the study program in order to see the structure of the assigned problem and its systemic analysis in order to draw conclusions about possible ways to solve it. Through mentoring and independent study of various scientific and professional works and other literature, students expand their knowledge in the chosen field and study various methods and works related to a similar topic. Through the practical application of acquired knowledge from various fields, students develop the ability to see their place and role in the chosen study program, the need for cooperation with other professions and teamwork. Applies successful communication skills in interaction and cooperation with others from different social groups.

Course content

It is formed individually in accordance with the need to create a specific final work, its complexity and structure. The student studies the professional literature, the final theses of students dealing with a similar topic, performs analysis in order to find a solution to a specific task that is defined by the task of the final thesis. The research part of the final paper also includes active monitoring of primary findings from the topic of the paper, informational and statistical data processing.

The final paper is an independent work in which students work on a selected topic using scientific and professional methods; prove that they have mastered the study curriculum; prove that they have acquired the necessary knowledge and trained for its scientific and professional application; show that they are able to present logically and adequately prepared: topic of work, problem, objectives, research question, hypotheses, research process, results and conclusion.

Literature

Group of authors: Books and magazines from the Kobson list, final diploma and master theses, literature available in the library.

Number of hours of active teaching: 2	Theoretical teaching: /	Practical classes: /	IR: 2

Teaching methods

As part of the study research work of the final paper, the student consults with the mentor and, if necessary, with other teachers who deal with the field to which the topic of the final paper belongs. Within the scope of the project assignment and assigned topic, the student performs certain tests, surveys, research, and statistical data processing.

Knowledge assessment (maximum number of points 100)			
Pre-examination obligations	Points	**Final exam**	Point
Study research paper	**70**	Examination	**30**

Study program: Information technology
Course title: FINAL THESIS
Teacher: /
Course status: Compulsory
ECTS number: 3
Condition: Attended classes and passed all subjects provided by the curriculum of the OAS Information Technology study program.
The goal The goal of the final paper is for the student to express in written and oral form through an independent research paper the possession of appropriate competences in solving problems in the professional areas that were the content of the study and demonstrate the ability to make independent conclusions and use professional and scientific literature.
The outcome The student acquired knowledge, developed skills and attitudes that were the focus of all individual aspects of the teaching process and educational experience during all the years of study, and which are necessary for competent problem solving in the chosen field of psychology, and is able to plan independently with the use of professional and scientific literature , organize and conduct research, as well as to defend it before the commission.

Course content

I. **Preparation for the thesis (choice of topic, mentor, institution)**
1. Selection of the area for the preparation of work and selection of a suitable mentor
2. Setting the problem and determining the goal of the work
3. Collection of literature
4. Determination of materials and work methods
5. Selection of the appropriate institution where the student will conduct research
6. Collection of material, prospective and/or retrospective analysis, practical exercise, etc., related to the topic
7. Work with a mentor

II. **Preparation of diploma thesis**
Independent and mentored work that includes formal, technical and content processing of individual parts of the work (title page, summary of the work, content, introduction, objective, materials and methods of the work, organization of individual chapters of the work, discussion, drawing conclusions, used literature)

III. **Presentation and defense of the final thesis:**
1. Presentation of the final work in front of the committee for 20 minutes
2. Defense of work: student's answers to professor's questions

IV. **Evaluation of the final paper**
1. Evaluation of the essence of the final paper (choice and processing of the topic, applied methodology, used literature)
2. Evaluation of the quality of the presentation of the final work
3. Assessment of the student's answers to the professor's questions
4. Overall assessment of work, presentation and defense by the committee

Literature: Rulebook on the manner and procedure of defending graduate theses. Faculty of Health and Business Studies, available at www.fzp.singidunum.ac.rs All available literature magazines, textbooks, instructions, procedures related to the topic.			
Number of hours of active teaching:/	**Theoretical classes:/**	**Exercises:/**	**Other: 3**
Preparation methods: Practical work in the institution, retrospective analysis of available materials from previous research			

Grade (maximum number of points 100)			
Pre-examination obligations	points	**Final exam**	points
Final thesis	50	Presentation	20
		Answers to questions	30