



UNIVERSITETI I EVROPËS JUGLINDORE  
УНИВЕРЗИТЕТ НА ЈУГОИСТОЧНА ЕВРОПА  
SOUTH EAST EUROPEAN UNIVERSITY

## Study program **Business Informatics (2017/2018)**

Faculty	Contemporary Sciences and Technologies
Study Cycle	Second Cycle (Postgraduate)
ECTS	60
Code	N-MBI60C
Title	Master of Business Informatics
Accreditation archive number [60]	03-1619/1
Decision for starting of the program	03-1619/16 (10.11.2017)
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## Description of the program

Business Informatics (BI) is a widely known discipline in continental Europe. Even though it is similar to Information Systems, it focuses more on the technical issues, including Information Systems and structural approaches for modeling and analyzing of the business processes and problems.

BI is particularly important in the field of economy and enterprise environment, which is characterized by strategic joining, outsourcing, physically distributed operating environments and global business partnerships. New strategies, techniques, tools and technologies for the development of an appropriate field such as BI will be the main objective of the programme. Understanding both business and informatics is of huge importance to the work of all business professionals, including the executive managers who determine the strategic organization direction, the information professionals who design and deliver new information services; accountancy and finance managers who use information systems for managing the finances and business reports; and marketing and sale managers who use information systems to follow customer purchase and promote new products.

Business Informatics is a study of the Information Technology in business context. The information have become the key business resource which lead to the creation of new careers for the individuals who understand how to operate with the information. These "knowledgeable workers"- people who understand how to store, retrieve, analyze and inform information- currently have a promising and productive career which is imposed on them.

This balance also reflects the relation between the theoretical and practical subject content acquired through lectures, instructions, seminars, sessions in computer laboratories and self- study. The course knowledge is acquired through different approach methods including exam sessions, in-class tests, tutorials, individual tasks, group work and presentations. Students are expected to demonstrate inventiveness and originality aspects.

The instruction objective is to provide students with quality study experiences which will provide them with best possibilities to understand the course fields and realize their maximum potential.

All the instructors at our Faculty are highly respected professionals who remain active in their fields, and realize personal contacts in the region and surroundings. A quality designed programme is also offered, in which the instruction entails real world experiences, practical work and cooperation with successful companies from the business field which will lead to fast employment.

## Career

With the Master of Science in Business Informatics, the graduates will find employment in the fields of system development, software project management, ultimate users of IT support, programming, and as business system analysts, system analysts. For this reason, the individuals who have not only the ability to design technical, computer-based solutions, but also have the ability to notice the possibilities of IT from a business perspective, will be sought for employment by every organization. Students will be equipped with the following skills:

- To manage information function in middle-size and big organizations
- To analyze, plan and develop IT solutions which support the market needs.
- To plan the required business analysis and business risk estimates.
- To develop skillfulness, to contribute in the decision making, design and implementation of the changes in the business process.

## **Learning outcomes**

### **Knowledge and understanding**

- Knowledge and understanding of business and informatics fields (economy, management, marketing, finances and, respectively, programming, databases, computer and information systems, networking and data engineering) on a level that extends the basic acquaintance of fundamental knowledge through elementary research oriented knowledge and ability to demonstrate expertise in the treatment of real-world problems in the area.
- Able to develop and apply original and creative ideas within the environment which requires knowledge in the interdisciplinary, overlapping and cross-linked areas of business and informatics and express specialist competences in the same way.

### **Applying knowledge and understanding**

- Can originally, critically, independently and creatively apply, use, develop and solve problems in new and unfamiliar environments in a multidisciplinary context of a real business and organizational environment.
- Can plan, implement and evaluate independent research issues in the domain of business and implement and apply different methods and methodologies of software development in commercial businesses.
- Can use a variety of software development tools and program them using shell scripts and compiled programs in standalone or web environments.
- Can in an original, critical and creative way participate in the process of solving problems in new, unseen or unknown environments for software development.
- Is able to organize software systems in order to solve different social, economic and / or technological issues.
- Is able to participate in research projects as a basis for further academic development.
- Demonstrates expertise in addressing real problems in the area of software development and project management.
- Can develop and apply original and creative ideas.

### **Making judgement**

- In an adequate way can gather, analyze and evaluate data using modern tools and systems for certain economic and/or information and organizational issues, usually from the perspective of management and marketing.
- Argue ideas and concepts qualitatively and quantitatively from the business and organizational character using and implementing knowledge of information systems, corporate databases, and other software tools.
- Has the ability to adequately assess the required deadlines, resources and risks in the planning, development, deployment and maintenance of software, using appropriate tools.
- Can be tested, assessed and appropriately decide on a variety of possible IT solutions in commercial perspective.

### **Communication skills**

- Able to clearly and unambiguously communicate study outcomes and knowledge to specialist audiences from both business and informatics fields along with the ability to appropriate the style and form of expression to non-specialist audience.
- Have competency for critically independent and creatively argued research, to evaluate methodologies and develop critiques and where appropriate to propose and defend new hypotheses.
- Demonstrate ability for initiating, leading and taking responsibility for a work of individuals and groups where business and informatics competences are crucial for the type of the position.

### **Learning skills**

- Able to identify personal needs and directions for individual and autonomous study and to perform it in self-directed and autonomous manner in the common business and informatics areas.
- Able to take responsibility for ongoing individual and group learning in specialized business and informatics fields within the networked economy, including defining learning objectives for medium and longer terms.

## List of courses

### Semester 1

- [MCBI-01] [6.0 ECTS] **Business Process Modeling**
- [MCBI3031] [6.0 ECTS] **Business Intelligence and Analytics**
- [ECSIS-05] [6.0 ECTS] **Information Systems Management**
- [6.0 ECTS] **Elective course**
- [6.0 ECTS] **Free elective course**

### Semester 2

- [MTBI2010] [24.0 ECTS] **Master Thesis**
- [6.0 ECTS] **Elective course**

## Description of courses

### Core courses

- **Business Process Modeling**

Aims of the course program: Processes are the core technologies of all organizations for producing and delivering products and services that satisfy customer needs. Increasingly, in order to continue to serve their customers and remain competitive, organizations are required to continuously analyze, redesign, and improve their end-to-end core business processes in shorter and shorter time frames to achieve operational goals. Realizing this end-to-end business process integration requires an IT infrastructure that enables people, processes, and information to be integrated in a flexible manner. This course will explore how organizations can model business processes as the first step in achieving flexible and integrated business processes. The course will also examine the information technologies and architectures that show promise for enabling this business process integration. The course will provide students with the following: - A framework for understanding the design, control and improvement of business processes. Much of this material will be drawn from the field of operations management. - A methodology for analyzing, modeling, and designing business processes, including the use of simulation for measuring and comparing performance of various models. - Knowledge of the current and emerging information technologies and architectures as enablers of business process improvement, integration and automation.

- **Business Intelligence and Analytics**

The aim of this program is to give an overview of information systems from organizational and social perspective. The objective is to supply the students with the adequate balance of technical and organizational perspectives that will serve as a foundation for further studies in the field of information systems.

- **Information Systems Management**

The aim of this course is to provide the student with an understanding of several management science techniques and to provide some insight into how these tools may be used to analyze complex business problems and arrive at a rational solution. The techniques to be studied are forecasting, linear planning, simulation, and modeling. Cases of increasing complexity will be used to emphasize problem description, definition, and formulation. The computer will be used extensively throughout the course, primarily by using available programs to perform the calculations after the problem has been correctly formulated. Emphasis will be placed on the interpretation and implementation of results. In addition, we will examine the future of analytics.

- **Master Thesis**

This module enables students to transfer their skills and knowledge to research and carry out more complex tasks related to their master thesis. The module is designed to be fully practical and students to acquire the necessary knowledge and skills to approach writing the thesis. The module has unique return result-to enable students to write the master thesis with minimal difficulties, and with maximum efficiency. The course aims to improve research

techniques and style of writing the paper, taking into account the prevention of the usage of illegal means, such as plagiarism and infringement of copyright, which are prohibited by the Statute of SEEU.

## Elective courses

- **Knowledge Engineering**

The knowledge contained in the World Wide Web is available in interlinked documents written in a natural language. To make use of this knowledge, technologies such as natural language processing, information retrieval, data and knowledge mining must be applied. Semantic Web technologies follow an alternative approach by complementing web documents with explicit semantics based on formal knowledge representations, such as, e.g. ontology. The aim of this subject is to learn the fundamentals of Semantic Web technologies and how they are applied for knowledge representation in the World Wide Web. Students will get insight on how to represent knowledge with ontology and how to access and benefit from semantic data on the Web. Furthermore, the focus will be on how to make use of Linked Data and the Web of Data, currently the most popular applications based on Semantic Web technologies.

- **Web Data Mining for Business Intelligence**

An in-depth study of the knowledge discovery process and its applications in Web mining, Web analytics and business intelligence. The course provides coverage of various aspects of data collection and preprocessing, as well as basic data mining techniques for segmentation, classification, predictive modeling, association analysis, and sequential pattern discovery. The primary focus of the course is the application of these techniques to Web analytics, user behavior modeling, e-metrics for business intelligence, Web personalization and recommender systems. Also addressed are privacy and ethical issues related to Web data mining. The emphasis of the course will be on data gathering and practical usefulness.

- **Data Mining**

Data Mining is one of the most popular fields in Computer Sciences. The objective of this course is to explain to students the advanced methods for data mining from large amounts of data, both in theory and in practical application as well as to evaluate and compare the suitability, scalability and efficiency of different methods. The course will cover advanced topics such as large-scale data mining, similarity search, mining data streams, mining social networks, relational data mining, and matrix factorization methods for data mining.

- **Database Programming**

Databases provide a convenient means of storing large amounts of data, allowing it to be sorted, searched, viewed, and manipulated according to the business needs and goals. This course is designed to develop SQL programming proficiency. Emphasis is placed on data definition, data manipulation, and data control statements as well as on report generation. Structured Query Language (SQL) and PL/SQL (Procedural Language/SQL) are covered. Oracle Developer application development utilities and tools will be used to create and manipulate with databases (in Oracle database management system). Topics include data definition and manipulation languages, stored procedures, triggers, indexing techniques, and elementary query optimization.

- **Data Visualization**

The aim of this course is to introduce students to the field of data visualization. Students will learn visualization design and evaluation principles, and learn how to acquire, parse, and analyze large datasets. Students will also learn techniques for visualizing multivariate, temporal, text-based, geospatial, hierarchical, and network/graph-based data. Additionally, students will utilize Processing, D3, R and ggplot2, and many other tools to prototype many of these techniques on existing datasets.

- **Service Oriented Architectures**

The aim of this course is to establish an in-depth study of Service Oriented Architectures (SOA) from three main perspectives: business, architectural and technological point of view. From business perspective, adopting SOA is essential to delivering business agility; therefore, the importance of SOA in industry will be explained. The architectural perspective will discuss different architectural models of software development, with focus on SOA design and design patterns. The technology perspective will provide students with the opportunity to gain the required experience to implement and deploy SOA solutions that will meet different functional and non – functional requirements.

- **Web Engineering**

The Web has become a major delivery platform for resources. The aim of this course is to address concepts, methods, technologies and techniques to developing high quality, reliable and usable web applications. The course

explores the approaches, methodologies, techniques and tools that support their design, development, evolution and evaluation. Students will be able to learn Web engineering methods and techniques that incorporate unique aspects of the problem domain such as: document oriented delivery, fine-grained lifecycles, user-centric development, client-server legacy system integration and diverse end user skill levels that ensure proper operability, maintenance and security of a web application.

- **Software Development for Mobile Devices**

The aim of the course is to provide students with knowledge and understanding of a pragmatic process for developing applications for mobile devices. It will cover the development aspects for mobile devices, and practical individual project work in design and development oriented towards real practical case for one or more contemporary platforms that will enable students to gain real life practical experience and insights.

- **Cloud Computing Technologies**

This course covers a series of current cloud computing technologies. The students will learn how to develop Cloud-based software applications on top of various Cloud platforms, how to integrate application-level services built on heterogeneous Cloud platforms, and how to leverage SaaS and PaaS solutions to build comprehensive end-to-end business solutions on the Cloud. For different layers of the cloud technologies, practical solutions such as Google, Amazon, Microsoft, Salesforce.com, etc. as well as theoretical solutions (covered by a set of papers) will be introduced.

- **Software Project Management**

The aim of this course is to give students knowledge on how to develop a software project management plan for software intensive systems; how to set up monitoring and control mechanisms; how to allocate and reallocate project resources; how to track schedule, budget, quality, productivity, and progress; frameworks and how to plan for the installation and support phase of the system life cycle. They will understand the importance project structure, resource planning and execution, and progress measures of a project. In addition, they will understand the relationships among quality assurance, configuration management, verification and validation, and test and evaluation. They will also gain an understanding of the key issues in costing and pricing units of effort, motivation of workers, leading project teams, and total quality management.

- **Software Testing and Analysis**

Software plays an important role in our daily activities, often providing critical services to end users. It is important to ensure that these systems function as they are intended with a high degree of quality. Software testing and program analysis are two techniques that are widely used to ensure the software quality. These techniques are used by developers in order to validate, verify, and evaluate the quality of software produced during the software engineering process. This course aims to provide students with advanced knowledge of the techniques used in software testing and program analysis. Students will gain an understanding of the concepts and theories that underlie these techniques. Students will also learn to use existing popular tools that support testing and analysis tasks and will be exposed to new research in the area.

- **Requirements Engineering**

The course covers concepts for systematically establishing, defining and managing software requirements for large, complex, changing and software-intensive systems. The process is covered from technical, organizational and management perspectives, discussing past, present and future paradigms and methodologies in requirements engineering. The course covers informal, semi-formal and formal approaches, while keeping the balance between theory and practice. It involves building models of both requirement engineering process and requirements engineering product, concerning both functional and non-functional goals/requirements/specifications, using a systematic decision-making process.

- **Software Quality Assurance and Risk Management**

As software becomes more complex, and in order to ensure a higher quality, it is necessary to establish clear processes and methodologies. Doing so will ensure that the end-product has been exposed to intensive and rigorous industry-wide verification and validation techniques and procedures. Additionally, it is necessary to provide good management of risks in order to ensure reliable processes. This will translate into a high degree of assurance that a software system passes the test for correctness and reliability. The aim of this course is to provide theoretical and practical knowledge about both the quality assurance processes and risk management.

- **IT Strategy**

The overall objective of this course is to develop your understanding of key IT leadership issues and “best practice” IT management approaches. The intention of this course is to help students successfully navigate IT management

challenges as they pursue their chosen career paths. Specific knowledge that students are expected to obtain from this course include the following: - IT governance and leadership responsibilities and how they have evolved ; - Best practices for delivering large-scale enterprise systems projects; - Frameworks to design and assess a firm's e-business capabilities; - Successful approaches to aligning IT investments with business goals; - IT outsourcing decision approaches and impacts on IT capabilities.

- **IT Project Management**

The aim of this course is the students to gain advanced knowledge of the models, methods, principles, practices, and challenges pertaining to project life-cycle cost. The students will be able to define what a project is and the discipline of project management. They will learn about the concepts of the project life cycle and systems development life cycle, as well as IT project governance and the project selection process. After that students will learn about conceptualizing and Initializing the IT Project and project integration management. Through the lessons will be described the formal and informal organization to conduct analysis to better understand the organizational landscape. Through defining and managing project and product scope, the students will be introduced with the project management knowledge area called project scope management. They will also gain knowledge for the Work Breakdown Structure and Project Estimation where several traditional project estimation approaches will be introduced.

- **Systems Analysis and Design**

The aim of this course is to enable students to understand and use the methodologies, techniques, tools and perspectives essential for systems analysts to successfully investigate and develop information systems requirements, as well as deliver solutions tailored to its requirements using standard modeling techniques such as structured modeling techniques, information engineering modeling techniques, and object modeling techniques. Moreover, understand the methods and constraints involved in creating a workable design from the results of using the above systems analytics.

- **Emerging Trends in Information Systems**

The course on emerging trends in information systems tends to prepare the students to be technology leaders by exploring, analyzing and reporting on these trends and innovations that are reshaping the business in the 21st century.

- **Electronic and Mobile Business**

This course focuses on the technological infrastructure needed for implementing e-Business solutions, on the software components necessary, and on how to implement such applications for the benefit of the companies, following the emerging trends in web & mobile systems. A major component of the course will be a hands-on project of developing an e-business Application.

- **Rhetoric**

During its long history of 2,500 years, rhetoric was used to indicate many different things; but rhetoric nowadays is considered as the art of persuasion through language. Rhetoric marks the way that an individual is linked to a particular theme or idea in order to convince the others. Rhetoric is characterized by several distinguishing features.

- **Multilingualism and multiculturalism**

The purpose of this subject will be multilingualism in multicultural societies as a social phenomenon. This phenomenon is massive in the world. During the lectures, more precise terms such as monoculturalism and multiculturalism will be considered. The term 'linguistic nationalism' has at least two forms of this nationalism, which collide with each other: for the leaders of the most powerful countries nationalism means expansion, and for minorities it takes the form of defiance and struggle for the affirmation of identity, despite such pressure. The emphasis during the program will be multiculturalism in education. In the schools curricula consists of contents from different cultures.

- **Selected Advanced Topics in IT Applications for Preparing a Scientific Paper**

The aim of this subject is: To display the technical elements, the structure of the text and design of a scientific research. To enable students to acquire advanced knowledge and skills from selected advanced chapters of IT applications that will be needed in preparing the scientific and research paper. Practical application of these objectives in preparing student's individual research paper.

- **Selected Advanced Topics in Applications for Statistical Data Processing**

The aim of this subject is: To display the technical elements in the field of statistics: organizing, processing, comparing through analysis and publication of data. To enable students to acquire advanced knowledge and skills

from selected advanced chapters of the applications for statistical data processing. Practical application of these objectives in statistical processing of data obtained from questionnaires, reports, scientific studies and other documents.

- **Professional Communication**

The course is focused on the development of those communication skills that are essential for effective functioning in the professional world. Students will study the process for analysis of different communication situations, and will accordingly comprehend them. Among the themes that will be covered are communication in organization, interpersonal and group communication, oral presentations, interviews for employment, professional business letters and interpersonal skills including group dynamics and teamwork.

- **Labor Market**

The main aim of the course "Labor Market" is to provide second cycle students with basic and in-depth knowledge in the field of labor market theory and the mechanism of functioning of the market economy. The objective of the course Labor Market is to provide and teach students about categories, laws and basic principles through which the labor market functions. The course makes a detailed analysis of behavior pattern and the role that key agents play in labor market: individuals, companies and government. The analysis is based on two basic categories - labor demand and labor supply, which are applied in almost all the topics that are addressed in this course. The knowledge gained by the students from this course, serves as essential theoretical basis necessary to understand and grasp the different theories and policies that are applied in the labor market. The course teaches students to understand how labor markets distribute and use efficiently the rare factor of production- the labor. Lectures include knowledge about the concepts of labor demand and labor supply and their practical application; behavior of individuals in the labor market, in order to maximize their usefulness; behavior of companies in the labor market, aiming profit maximization; government's role in the labor market, the different structures of labor markets: labor market in full competition, monopoly in the labor market, the role of unions in the labor market, the bilateral monopoly in the labor market. Lectures and class discussions cover material that may not be in the book and some aspects of the material contained in the basic literature will not be discussed in class, but are left for active studying of the student. Therefore in order the student to achieve success in learning the course is to be present in lectures and workshops by participating actively in the discussion of various issues related to labor market.

- **Methodology of Teaching**

The aim of the course is to introduce the students to the basic teaching approaches and methods. They are expected to gain knowledge and skills in order to be able to apply the active educational tools. The course also offers development, learning and teaching as concepts and basic practices that allow teachers to teach about the development of thinking. Throughout this course, students will gain both theoretical background and entirety of strategies that will enable them to reflect and develop both their own and their students' critical thinking.

- **Philosophy of Social Sciences**

This module covers information that will provide the learner to gain knowledge, skill and competence of the social sciences, including general methodology (explaining, theorizing, testing), the application of philosophy (especially individualism versus holism), the nature of rationality, and the history of theories and concepts. This module offers an advanced survey of current debates about the ontology, methodology, and aims of the social sciences. It will focus on the central issues of the social sciences: Ethno methodology; Evolution; Phenomenology; Rationality; Relativism; Scientific Methods; Textual Interpretations. Learning outcomes: On successful completion of the course, students will be able to: Understand the goal of social sciences. Tell the difference between explaining and understanding human behavior; To explain the different approach in explanation of the social sciences compare the natural sciences, the peculiarities about human beings and social phenomena; To understand the social structures, practices, norms, institutions, etc. The relationship between individuals and larger social structures; To explain the rely not only on facts about individuals and their mental states, but also the cases in which social phenomena cannot be explained in terms of individual behavior; To understand the value-laden in a different way or to a different degree than natural science, the possibility to have a value-free social science, the possibility to have an objectivity in social science.

- **Project Management**

On successful completion of the course, students will be able to: plan the activities necessary to implement the project, identify their interdependencies, their duration and costs; prepare the necessary reports and perform all the required communication between the project and the client, as well as among the team members and the other stakeholders. structure the project to its constituent activities; prepare a Gantt-chart and a network plan for the project and identify the shortest time needed to complete the project; use MS Project as a tool in the process of planning, implementation and review of the project; define the project, identify its scope and objectives and develop project specification;

- **Optimization Methods**

The aim of this course is to present techniques of modeling and optimization in order to prepare students for developing their ability to prepare models for solving real problems in the field of computer science. The course explore the importance of matrix factorizations as an important tool which offers modality for optimizing the solutions of different numerical algorithms which are of basic interest for problem solving in the area computer sciences. The course introduces optimization theory and approach to find the optimum. The different methods of optimization will be analyzed such as the simplex method, duality problem and sensitivity of the problems of linear programming. The aim is to explore a computer implementation for each of the problems followed by the proposal of the corresponding model for optimization.

- **Ethical and Legal Issues in Information Technology (IT)**

Aims of the course program: to develop an understanding of the relationship between computing, technological change, society and the law; to emphasize the powerful role that computers and computer professionals play in a technological society; to provide an understanding of legal areas which are relevant to the discipline of computing; to provide an understanding of ethical concepts that are important to computer users and professionals; to provide experience in the consideration of ethical matters and the resolution of ethical dilemmas.

- **Protection of Human Rights**

The purpose of this course is: to introduce students with the concept of international law on human rights, their implementation, influence of those rights in the creation of national policies; to encourage students to critically reflect on the relationship between international law and national law; make them aware of current international events, how they affect the daily lives of people in the world; encourage students to contribute in matters of drafting laws for the protection of human rights hoping that, the law makers will consult them same during the creation and implementation of state policies.