

# ROMANIAN –AMERICAN UNIVERSITY

Accredited by the Law no. 274 / May, 15 2002

University rated with **High Confidence** by Romanian Agency for Quality Assurance in Higher Education



## STUDY GUIDE

### MASTER PROGRAM

## Computer Science for Business

2018 – 2019

Faculty of Computer Science for Business Management



**YOUR FUTURE IS STARTING HERE!**

**The Faculty of Computer Science for Business Management** was founded in 1991 as a successful alternative to public education and has been accredited by the Law no. 274 / May, 15 2002 on the incorporation of the Romanian-American University. The Bachelor Program **Computer Science for Economics** underwent regular assessment by the **Romanian Agency of Quality Assurance in Higher Education** in February 2011, which granted a "**trust**" **qualification to accreditation** for full time studies.

The bachelor program "**Computer Science for Economics**" falls within the fundamental domain of "Economic Science", field of study "**Cybernetics, Statistics and Computer Science for Economics**", major in "**Computer Science for Economics**".

**The Faculty of Computer Science for Business Management** is a member of the **Association of Economic Faculties from Romania**.

**The primary task undertaken by the Computer Science for Economics Bachelor Program** is to prepare students so that they meet the challenges posed by their employment in companies that are compelled to carry out activities in a business environment increasingly internationalized, technological and competitive, by providing training and a relevant experience in the field and which are to be recognized both nationally and internationally.

The bachelor program aims to address the curricula not only in theoretical terms, but also to create multiple connections between practice and research.

*Graduates of the Computer Science for Economics Bachelor Program from the **Faculty of Computer Science for Business Management*** can be hired on positions such as: economist specialist in the computer science; IT systems analyst and designer; developer of customer-server applications and of internet/intranet/extranet; IT project manager; web-site designer; data basis administrator; computer network administrator; web-site administrator; developer of decision assisting systems and expert systems; IT consultant; etc.

The Faculty's members meet the legal requirements, in that all teachers and lecturers have a PhD title, lecturers have obtained their PhD title or are PhD students and the teaching assistants and junior assistants have master studies, certified teaching training, part of them being PhD students.

The **curriculum** includes, starting with the second year of study, **compulsory, optional and facultative disciplines**, grouped in **basic subjects, specialized subjects, field subjects and supplementary subjects**. **Optional subjects** are grouped together in pathways providing the students with additional training to the study program they select in the first year. Students choose, at the end of their first year, the route of optional subjects to study until the end of the bachelor program.

According to their content, during the first and second years of study, basic subjects and the economic training prevail and starting with the third year of study, specialized subjects gain more room, in line with legal requirements.

The students in the second year undertake different **internships** of 3 weeks in specialized organizations or in different Romanian companies or in Microsoft Innovation Center – Romanian-American University.

Supplying teaching materials for all subjects is a constant concern of the faculty board and specialty departments which analyze annually the need for textbooks and their availability in the library and the bookstore of the university. Hence, all subjects in the curriculum are provided with corresponding up-to-date teaching materials, elaborated either by the course titular professors (and published, under the aegis of the university, by CNCIS-quoted publishing houses) or by outstanding experts in the field (reference works used in the whole academic system in Romania and/or abroad).

Apart from textbooks and other materials, the RAU library also provides other books, treaties, magazines, received from American universities, as well as other materials elaborated by professors not related to the faculty or official software corporations' materials (e.g. Microsoft, Oracle, IBM).

For the evaluation of the students, the Faculty of Computer Science for Business Management applies the methodology of the Romanian-American University, included in the Regulations on the professional activity of students and it relies on two criteria: *attendance* and *performance*.

Scientific research undertaken at the level of the MA study module *Computer Science for Economics* relies on the **Programme of scientific research** of the Faculty of Computer Science for Business Management and pursues its major objectives, as well as those of affiliated Centers for scientific research: **Microsoft Innovation Center – Romanian- American University, The Center of Research, Consultancy and Training in Computer Science for Economics and IT&C, URA-INFORTIS, The Center of Research, in IT&C and Artificial Intelligence URA-CCTIC**. Teaching staff belonging to the *Computer Science for Economics* module are or have been involved in tens of research projects.

The building of the Romanian-American University is modern and functional, adapted to the requirements of a modern and efficient educational process.

The educational areas, including lecture halls and seminar rooms, are equipped with modern furniture and technical equipment specific to the educational process (sound equipment, video-projectors) and the labs are supplied with the latest soft products, the students being able to access the internet. We can also mention printers, photocopiers which are always available to students. Likewise, in order to improve the communication relations among the management – administration – students, the university is equipped with an info-touch gadget that is equally available to all students. Also, Romanian-American University is part of academic programs of major software corporations and provide to it students free access to a large variety of software products.

They can also benefit from the services of the university **library** (classic or virtual) by means of the bookstore and the reading halls where they can find the specialty works recommended in the curricula, as well as other titles that are useful for further study – each of them counting more than 250 seats. The library includes over 55,950

volumes, 75% of them refer to economics, thus fully covering all the subjects in the curriculum. Over 60% of the books/courses are recent publications from the past 5 years.

## **Master in Computer Science for Business**

**Domain: Economic Informatics**

2 years, full time

Taught in ENGLISH

A Master course is an academically rigorous programme during which you explore your subject in depth, reaching a high level of specialized knowledge. You draw on knowledge and skills from your undergraduate study or your professional life to produce work of a high academic standard, informed by current thinking and debate.

A postgraduate qualification is a major achievement and greatly valued by employers. Recent surveys show that higher degree graduates are more likely to obtain jobs at professional or managerial level and less likely to be unemployed. For some jobs a postgraduate qualification may be essential, for others it offers a competitive edge. Our graduates go into a variety of jobs, where the key employability skills and knowledge they have gained through postgraduate study are put to good use.

The **MSc in Computer Science for Business** programme, offered by **School of Computer Science for Business Management**, is a two-year programme that enhance the students professional and complementary abilities into global IT field, covering a wide range of subjects: computer networks, decision support systems, object oriented software development, databases, enterprise resource planning, business intelligence, web design, mobile devices programming, artificial intelligence and project planning.

The programme falls under the field: Cybernetics, Statistics and Economic Informatics, Major: Economic Informatics and is included in the list of majors that are exempt from income tax, according to OM 539/225/1479/2013.

The mission of this programme is to provide an educational process with a broad practical character, in line with the requirements of Romanian and international business environment in order to harness on a large extent the modern information and communication technologies, using highly qualified human resources both within the institution and through collaboration with specialists in ICT or business or from other educational institutions.

All educational activities are exclusively undertaken in English.

Embracing an interdisciplinary approach, this programme is designed for people willing to enhance their knowledge gained through bachelor studies. The competitive advantage of this master's program is that it addresses both bachelors of computer science who want to refine their practical knowledge and skills with the competences necessary for the administration or management of modern business and those who know the mechanism of business operation and management, but are willing to be acquainted with and use the appropriate information tools for business development, to enhance/validate their information gained through practice. The business component can generate a different kind of candidate who has to acquire a number of skills specific to the entrepreneur of an IT&C business.

The MA comprises two development axes, which are complementary in our view, the former one is related to applied informatics (computer science) whereas the latter one is related to business development in the real or the online environment. These two axes provide a broader framework of development, as well as of selection of the target group, therefore the MA programme can generate a wide range of jobs/professions.

The overall objective is two-fold: to inform and train the master students in applied informatics, answering the need of a more specific, more updated and more applied information content as well as in the business environment in order to meet the need of improving entrepreneurial skills among a new generation of young people who oscillate between the employee position and the employer position.

For the evaluation of the students, the School of Computer Science for Business Management applies the methodology of the Romanian-American University, included in the regulations on the professional activity of students and it relies on two criteria: **attendance** and **performance**.

Each academic year is divided into 2 semesters. The curriculum provides minimum 60 transferable study credit points (ECTS), 30 ECTS per semester. There is a total of four semesters in two years. A semester typically has 14 weeks. The 4th semester has 11 weeks + 3 weeks allocated for internships and completion of the dissertation project. The curriculum includes compulsory subjects and elective subjects (starting with the first year of study, 2nd semester). Elective subjects are grouped together in tracks providing the students with additional training, according to the selection made in the first year.

#### The **Master in Computer Science for Business**

includes the following **compulsory subjects**:

- Database Applications Development (ORACLE)
- Computer Networks Infrastructure and Technologies
- Object-Oriented Software Design
- Business in Virtual Environment
- Project Management
- Web Applications by Java Technologies
- Artificial Intelligence
- Mobile Devices Programming
- ICT-Governance
- Business Intelligence
- Decision Support Systems
- CIM, ERP & CRM Integrated Systems
- Software Quality Management
- Software Engineering
- Training - Specialized Scientific Research Internship
- Dissertation Paper Project

#### The **Master in Computer Science for Business**

includes the following **elective subjects**:

- English For Writing Technical Documentation
- International Business Negotiation
- Global Business and The Sustainability Challenge
- Global Strategic Management
- Start-Up Lab
- International Sales Strategies

# CURRICULUM

## 1<sup>st</sup> year, 1<sup>st</sup> semester

### Compulsory subjects

#### OBJECT-ORIENTED SOFTWARE DESIGN

*6 credit points, 2 hours course, and 1 hour laboratory*

The course comprises topics related to the process of planning a system of interacting objects for the purpose of design, developing and maintenance software products. The students will learn: Object Oriented Design(OOD) – Basic Elements; OMT Methodology; Unified Modeling Language (UML); Instruments and Platform for software packages development; OOD Implementation Strategies and Testing Quality Assurance; System Security Assurance.

#### DATABASE APPLICATIONS DEVELOPMENT (ORACLE)

*6 credit points, 2 hours course, and 1 hour laboratory*

- Designing and developing information systems with databases managed by Oracle DBMS,
- Working and developing mode for applications using Oracle 10g DBMS,
- Communication language between database and SQL\*PLUS, SQL (Structured Query Language) application,
- PL / SQL overview.

#### ENGLISH FOR WRITING TECHNICAL DOCUMENTATION I

*6 credit points, 2 hour course, and 1 hours laboratory*

- Giving support on organizing, researching, writing, and revising complements, thorough treatment of grammar, usage, style, and punctuation to provide comprehensive help with writing skills.
- Including expanded advice for analyzing the context of different writing situations, using and integrating visuals, and dealing with ethical concerns in technical writing.
- Offering improved coverage of research by including guidelines for IEEE-style documentation as well as clearer explanations of copyright and plagiarism concerns.

#### COMPUTER NETWORKS INFRASTRUCTURE AND TECHNOLOGIES

*6 credit points, 2 hours course, and 2 hours laboratory*

- Proficiency of concepts and reference architectures computer networks,
- Acquiring knowledge about technology and computer networking standards,
- Acquiring knowledge about the design and implementation of computer networks.

#### ARTIFICIAL INTELLIGENCE

*6 credit points, 2 hours course, and 1 hour laboratory*

- Acquiring for the students the neural network algorithms
- Acquiring for the students the topology of neural networks

- Acquiring for the students the methodological approach of the expert systems
- Designing the expert systems & acquisition of the knowledge
- The designing, implementing and developing the methodology of expert systems
- Expert systems based on uncertain and vague (fuzzy) knowledge

## 1<sup>st</sup> year, 2<sup>nd</sup> semester

### Compulsory subjects

#### ENGLISH FOR WRITING TECHNICAL DOCUMENTATION II

*6 credit points, 2 hour course, and 1 hours laboratory*

- Giving support on organizing, researching, writing, and revising complements, thorough treatment of grammar, usage, style, and punctuation to provide comprehensive help with writing skills.
- Including expanded advice for analyzing the context of different writing situations, using and integrating visuals, and dealing with ethical concerns in technical writing.
- Offering improved coverage of research by including guidelines for IEEE-style documentation as well as clearer explanations of copyright and plagiarism concerns.

#### PROJECT MANAGEMENT

*6 credit points, 2 hours course, and 2 hours laboratory*

- Acquiring for the students of the methodology regarding the management of ICT projects,
- Acquiring for the students the methodology regarding the developing of the project proposals for domestic/international calls,
- Acquiring for the students the PMBOK guide and PRINCE 2 methodology,
- Acquiring for the students the methodology to manage ICT projects (plan and monitor) by using Microsoft Project.

#### COMPUTER NETWORKS SECURITY

*6 credit points, 2 hours course, and 1 hour laboratory*

- Proficiency of concepts and reference architectures computer networks,
- Acquiring knowledge about technology and computer networking standards,
- Acquiring knowledge about the design and implementation of computer networks.

#### METHODOLOGY AND ETHICS OF RESEARCH

*6 credit points, 1 hour course, and 2 hours laboratory*

### Elective Subjects

#### GLOBAL SUPPLY CHAIN

*5 credit points, 1 hour course, and 2 hours seminar*

#### INTERNATIONAL BUSINESS NEGOTIATION

*6 credit points, 1 hour course, and 2 hours seminar*

The discipline aims to identify steps, formalities and techniques specific to initiation, preparation, organization and conduct of international business negotiations, being addressed primarily, those who want a career

in international economic relations in order to become familiar with case examples addressing international business challenges.

## Compulsory subjects

### BUSINESS INTELLIGENCE

*6 credit points, 2 hours course, and 1 hour laboratory*

BI course ensures students acquiring a set of concepts, methods and sophisticated analytical techniques, complex and innovative, proactive, performance-oriented and extensible by exploring data warehouses that will reveal useful information relevant to strategic and business optimal decisions and maximum profitability. Students enhance their skills and knowledge to build business models to ensure effective management of business processes and business rules engine technologies, BI platforms and strategies to integrate them into the daily decisions of the firm.

### DECISION SUPPORT SYSTEMS

*6 credit points, 2 hours course, and 1 hour laboratory*

The course objective is to develop the ability to design and produce master decision support systems by integrating existing resources, thus creating new applications that contribute to economic efficiency of specific management activities. Learning to master the concepts and methods used in management decision-making, design and implementation of decision support systems using the Visual Studio IDE. DSS exploitation facilities.

### ENTERPRISE RESOURCE PLANNING

*6 credit points, 2 hours course, and 2 hours laboratory*

- Training and familiarize students with business software in the context of the modern enterprise of new information technologies and globalization.
- Defining and applying new concepts of modern systems: virtual enterprise, intelligent enterprise FGMS (Future Generation of Manufacturing Systems).
- Modeling company.
- Requirements and specifications of ERP, CRM, SCM, PDM, PLM, e-commerce and e-banking.
- Modeling the enterprise through events and processes. Case studies.

### SOFTWARE QUALITY MANAGEMENT

*6 credit points, 2 hours course, and 1 hour laboratory*

Introducing students to advanced topics related to the impact of software quality to develop the tools and methodologies to produce low-cost, high-quality software. Offering the students, the necessary knowledge regarding the software quality and testing research that must strive to be practical for industry consumers, in order to overcome the potential gap between the testing skills needed in the industry and the theory. The course provides the students the fundamental developments in software quality assurance, testing theory and common testing practices in the industry, issues regarding the testing and quality assurance. The study of software quality assurance, testing theory and practice will enable the students to understand and develop quality procedures and testing practices for complex systems.

## Elective Subjects

### CUSTOMER EXPERIENCE MANAGEMENT

*6 credit points, 1 hour course, and 2 hours seminar*

The course of Global Business and the Sustainability Challenge teaches about keeping a company sustainable while growing business across national borders. This growth indicates the economic consequences of widening value propositions to larger segments of customers. Such growth perspective can easily come in conflict with a proportional use of natural resources or become the source of waste of all kinds. Nowadays, discussions of decoupling economic growth and environmental degradation have become key political, economic and social issues.

### INTERNATIONAL BUSINESS ETHICS AND LEADERSHIP

*6 credit points, 1 hour course, and 2 hours seminar*

The discipline emphasizes the fundamental core of knowledge that comprises the content of modern management. It aims to facilitate knowledge, understanding and contextual use of concepts, models and specific methods of strategic management in international contexts. The course will help students to develop a systemic thinking and will facilitate the creation of a modern managerial conception, useful in managing knowledge based organizations in a globalized economy. It also helps in forming and developing of rational, ethical and moral abilities, skills and managerial conducts.

## 2<sup>nd</sup> year, 2<sup>nd</sup> semester

### Compulsory subjects

#### SOFTWARE ENGINEERING

*6 credit points, 2 hours course, and 2 hours laboratory*

The topic subject "Software Engineering" is oriented to embrace both the fundamental techniques of developing algorithms, techniques designed to provide optimal solutions for programming, as well as of the latest programming concepts in order to open new horizons graduate research students.

#### SPECIALIZED SCIENTIFIC RESEARCH

*7 credit points, 2 hours course*

- To develop business ideas, working on known business models or creating new concepts (niche businesses)
- To ascertain that the entrepreneurial opportunity are optimally linked with the available resources and test the business idea.
- To understand the importance of constant innovation and to commit to a permanent analysis of the internal and external environment and their impact on the company
- To understand and to work with business plans, marketing analyses, financial statements, etc.

#### SPECIALIZED INTERNSHIP

*10 credit points*

- To introduce students to the concepts, methods and techniques used in scientific research
- Provide students with the skills Scientific research fundamental and applied
- Acquiring skills to achieve themes / research projects
- Development projects / research topics and scientific articles

#### STAGE FOR DRAFTING DISSERTATION PAPER PROJECT

*8 credit points*

- Provide students with the skills Scientific fundamental and applied research
- Development projects / research topics and scientific articles
- Learning methodologies development and drafting of dissertation work
- Technical assistance in the completion of dissertation work

### Elective Subjects

#### DOING BUSINESS WITH ASIAN COUNTRIES

*5 credit points, 1 hour course, and 2 hours laboratory*

This subject guides the student to explore and understand national and international successful sales and sales strategies behaviors. The course objective is to study the various aspects of the sales management process.

Specific activities of interest will be how sales managers develop and execute plans for creating customer satisfaction by developing the selling function, strategic sales planning, building a sales program, and controlling the sales force.

## **INTERNATIONALIZATION OF SME'S**

*5 credit points, 1 hour course, and 2 hours laboratory*