THE ROMANIAN- AMERICAN UNIVERSITY

The School of Computer Science for Business Management

Specialization: Computer Science for Business

Program: Computer Science for Business

MASTER STUDIES PROGRAM

GUIDELINES FOR THE DRAFTING AND THE PRESENTATION OF THE MASTER PROJECT

Academic year 2019 – 2020

GUIDELINES FOR THE DRAFTING AND THE PRESENTATION OF THE MASTER PROJECT

The completion of the university studies involves the organization of the master examination by the institutionally accredited higher education institutions. The **master examination** organized by The School of Computer Science for Business Management comprises one exam organized according to the methodology approved by the **Senate of the Romanian - American University**. This exam consists of a *master project* prepared by the graduate students, under the supervision of a teacher and defended before a master examination committee (*Presentation and defending of the master project*).

The master project is a written, extensive paper, drafted by the graduate with a clear purpose, based on a predetermined and rigorous plan, on a topic chosen from the list of topics proposed by the departments or the Schools or a topic proposed by the graduate and accepted by the scientific coordinator. **The application form** requesting approval of the topic and of the master project coordinator **will be approved by the Department** and approved by the **Dean of the School** (Annex 1).

Being an elaborate synthesis, **of applicative character**, the master project has the role of demonstrating **the general and specialized skills** acquired by graduates of The School of Computer Science for Business Management, from the B.A. domain **Cybernetics, Statistics and Economic Informatics**, specializing in **Computer Science for Economics**.

The present guidelines for the drafting and the presentation of the master project from The School of Computer Science for Business Management of the Romanian - American University aims to present some guidelines on choosing the topic, establishing the scientific coordinator, stages of drafting and writing the project.

1. CHOICE OF THE TOPIC AND ESTABLISHING THE SCIENTIFIC COORDINATOR

The activity of drafting the project should be a natural continuation of the academic activity and professional training of students. The aim of these projects is the completion of studies and reaching quality standards in the chosen profession. On the other hand, the master project must represent and demonstrate consistency in the specialization studied over the academic years. To meet these requirements, first, students need to be concerned with delineation of the topic or establishing the title of the project. This activity can be achieved by knowing and using the offer of topics of the Departments and faculty members of our School, and through the proposals made by the students.

The title of the project should cover the studies of the respective domain and economics. One cannot choose a title for the master project which refers to or is found in the domain of investigation of the sciences and/or non-economic disciplines. Interdisciplinary topics can be addressed, but which have as object of analysis the business environment. The title of the project may be preceded by a pre-title or followed by a subtitle through which the author delineates, more specifically, the scope of his/her investigation.

The scientific coordinator can be any of the teachers of the undergraduate study program, who have the following scientific titles: Professor, PhD; Associate Professor, PhD; Lecturer, PhD. Assistant lecturers, PhDs, may coordinate under exceptional circumstances master projects only in co-tutorship with higher ranking faculty members.

If the student follows, at our School, two or more majors, he/she cannot opt for the same topic and to elaborate a single master project. This aspect is also valid if studies are performed, at undergraduate level, at another college/School with or without economic profile. The undergraduate can, however, use the Information and documentation basis or subject and may develop interdisciplinary research, multidisciplinary, pluri-disciplinary and trans-disciplinary research. This provides a degree of integration between different fields of knowledge and use of a common language, but also an exchange of ideas, information, notions, concepts, methods and research techniques. In this context, the title and content of the project can be adapted and refined, without presenting overlaps, duplication or some repetitions or

rephrasing contrary to the requirements of scientific and academic ethics. Once chosen the topic, depending on the requirements of the academic leadership of the School, the Departments and teachers, the preliminary documents will be prepared, and the necessary approvals shall be obtained for the registration and the acceptance thereof.

2. DRAFTING OF THE PRELIMINARY STRUCTURE OR THE PLAN OF THE MASTER PROJECT

After the establishment and acceptance of the topic, the student should take into consideration the drafting and presentation of the structure or the plan of the master project to the coordinator or scientific advisor. This structure must include, in a distinct way, the following elements:

- Introduction into the topic of the master project;
- Motivation, importance and research methodology used ;
- Proposals regarding the structure of the project and sequence of chapters and subchapters;
- The conclusions arising from the work to be performed;
- Highlights or known bibliographical references and which are to be consulted in order to document and draft the project.

The structure or content of the master project is in fact the preliminary and/or provisory content of the project. The choice of this approach is based on previous research, the bibliography consulted for guidance, the suggestions of the scientific coordinator, the importance and novelty of the topic, concern or preference of the author for certain parts of the topic under discussion etc. This structure has a provisory character and may change depending on the information obtained, the possibilities of documentation, the changes and novelties in the field of scientific research, opinions and conclusions of the authors, interventions of the scientific coordinator, circumstantial and temporal limits and constraints under the influence of which future activities takes place.

3. DOCUMENTATION, PROCESSING, AND ORDERING OF DATA AND INFORMATION

Documentation

This step is devoted to the work of documentation by identifying and compiling the bibliography for the chosen topic by consulting the latter and the information provided by other sources: official documents, information and economic elite and unique documents, media, reviews and specialist publications, websites, etc. It is the most complex step, but also the most important work that provides the substantiality of the project. The activity of documentation provides knowledge of results and scientific debates on the topic discussed and the basis for a future work.

The activity of documentation must be selective, but as representative as possible, by reviewing and consulting data and information with the highest relevance for the topic. As the documentation activity is unfolding, the selection, ordering and processing of data and information becomes mandatory.

Writing the master project

After the documentation activity for the master project, the paper should be drafted. It is an important operation which in its turn requires several steps. Firstly, one must ensure a consistency between the preliminary structure and the documentary basis and to make the necessary corrections and changes. The next phase is that of separation and editing of the text into chapters, subchapters, case studies, conclusions, annexes, graphs, images, bibliography. There is no single recipe in writing a text, but it requires some aspects that provide consistency and relevance to the work:

- concise rendering of ideas;
- clarity,
- logical sequence of ideas,
- critical addressing of the issues ,
- originality,

- compliance with the rules of grammar and spelling and punctuation.

Ideas, opinions, statements in the text of the project should be based on the bibliography consulted on the student's own analyses. It is preferable to distinguish between previous results and those of the graduate, and the student's contribution in the field of economic research should be easily detected through the work undertaken.

An important aspect is to respect *copyright* governed by international, European and Romanian law. To maintain the law and protection of authors in our country we have the: "Romanian Copyright Office." During the work of drafting the project, in the specialized literature, the formula *RARS* was imposed, meaning *Remove Add Reorganize Substitute*. This requires constant adaptation of the text function of the documentation performed, research developments in the field, the scientific coordinator's demands, requirements and importance of the topic, etc. *Removal* is necessary when information about the topic abounds and/or overlaps and are already extremely popular. *Additions* are necessary for arguing opinions and strengthening text and conclusions. *Reorganization* is necessary towards the end of the project in order to establish the final structure, depending on the data and information submitted, the logical sequence of the scientific discourse. *Substitution* does not mean elimination or replacement of texts with others, but rather identifying information and arguments supporting research and abandoning the superfluous or the well-known ones and the ones which are less necessary in building the text.

Some master projects have a more theoretical character, others, a more applicative one, function of the studied topic, case studies can be inserted according to the theme therein. Sometimes the project itself is a **case study**. Whatever the case, **case studies** are necessary, required and useful to scientific approaches. In order to illustrate them, one can use the structuring of the information presented in the project. A text for a master project can be illustrated with **tables, graphs, images**, etc. Using tables and graphs is more than necessary because they express the evolution in time of economic trends and are indispensable for economic research. For better efficiency, the structure or the project may have a section called *List of tables, graphs and images.* If the project presents evolutionary elements of economic phenomena and processes, a chronology of the latter can be performed.

4. RECOMMENDATIONS AND SUGGESTIONS

The following structure should be observed for a master project:

INTRODUCTION

- The objectives and usefulness of the proposed theme

The current status of the theme in the scientific literature and highlighting the personal contribution in addressing the issue.

Chap. 1. THE STUDY AND ANALYSIS OF THE EXISTING SYSTEM 1.1. The brief presentation of the socio-economic unit

1.2. The activities of the economic unit (the general characteristics of the economic system of the unit)

1.3. The study of the management system

1.4. The study of the led system

1.5. The study of the information system

1.5.1. Identifying the information flows within the system

1.5.2. Designing the information flow diagram

1.5.3. Identifying the documents that are used within the system

1.5.4. Identifying the procedures that are used within the system

1.5.5. The analysis of the current system and the identification of its weaknesses (critical points)

1.5.6. Directions for improving the current system

Chap. 2. THE OVERALL DESIGN OF THE COMPUTER BASED INFORMATION SYSTEM (This chapter exists only when developing complex software applications or computer based information systems)

2.1. Defining the objectives and opportunity of the system/software application

2.2. Defining the output reports
2.3. Defining the encoding system
2.4. Data modeling and process modeling (conceptual, logical and physical models)
2.5. The entity-association diagram
2.6. Defining the data collections
2.7. Choosing the processing technology (the hardware, software and communications platform)
2.8. Estimating the necessary resources and the development timeframe

Chap. 3. THE DETAILED DESIGN OF THE SOFTWARE APPLICATION 3.1. Details regarding the software application
3.2. The logical and physical design of the inputs
3.2.1. The list of the input documents
3.2.2. The layout of the interface for data acquisition
3.3. The logical and physical design of the outputs
3.3.1. The output reports list
3.3.2. The layout of the output reports
3.4. The detailing of the codes' structure (code type, length, the significance of the code)
3.5. The logical and physical design of the database
3.6. Designing the user interface
3.7. The information flow diagram of the new system
3.8. Estimating the economic efficiency of the new system

Chap. 4. PRESENTING THE SOFTWARE APPLICATION, ITS IMPLEMENTATION AND EXPLOITATION
4.1. The system requirements of the software application
4.2. The installation and launching of the software application
4.3. The description of the application's functions
4.3.1. Presenting the main menu
4.3.2. The input data interface
4.3.3. The reports menu
4.3.4. The error handling messages
4.4. The operation of the software application
4.5. The efficiency and usefulness of the software application

Appendixes
- Appendix 1: The source code listing
- Appendix 2: The layout of the user interface
- Appendix 3: The list of the input test data
- Appendix 4: Output reports based on test data

It is advisable to size the project optimally in order to avoid on the one hand an excessive segmentation of the project and, on the other hand, oversized chapters. A number of **4-5 chapters** is considered optimal.

The size of the master project must be **maximum 50 pages** (without annexes and references). It does not mean restricting the size of the project, the decision belonging to the scientific chief. The **applicative part** of the project must represent at least **50%** of its structure.

The introduction must give a brief image of the current stage of the information in the area of the approached topic, the student's scientific approach and the results obtained, either conceptual or practical. In this first part, the **motivation, significance and research methodology** must be clearly stated.

If the scientific approach is mainly practical, it is required to indicate clearly and distinctly the stage carried out to prepare the project.

The essence and contents of the research carried out by the student must also be included in **each chapter**. The actual contents of the chapters and their sizes will be established together with the project's scientific chief.

The last chapter of the project should include the **conclusions** of the research and the **proposals** of the student arising from the said conclusions.

The master project must have a solid, real, authentic and relevant substantiation bases on the **references.** The references will include at least **15 specialized works from the national and international literature** and will be ordered according to the name of the first author. The name of the author, the first latter of the first name, the title of the project, the path/link (full address of the webpage) will be indicated. The references listed at the end of the project must be fully found in the text of the prepared material.

If deemed appropriate, **annexes** can be attached to support the scientific approach. It is advisable for their weight in the total number of the pages to be **maximum 10%.** Moreover, any graphs, tables, images must not replace the text, but only to supplement and support it.

5. RULES FOR THE PREPARATION OF THE PROJECT

The preparation of the master project must be prepared in order to indicate its scientific nature. To this end, it is advisable to observe the following **writing rules:**

- The page format is A4 and the margin will be 2.5 cm on the left and 1.5 cm on the top, left and bottom side
- The font will be Times New Roman 12, 1.5 lines
- The fond for the notes on the footer and/or sources will be Times New Roman 10, 1.0 line
- The font used for tables, graphs, figures will be Times New Roman 11, 1.0 lines
- The project will be written in English and paged on the bottom of page, right);
- The contents of the project must be paged and present at the beginning of the master project
- The annexes (numbered and named) and the references will be at the end of the project (according to the suggested structure)

The preparation of the chapter and sub-chapters will observe the following format:

1. CHAPTER TITLE (14pt, bold, capitals, center/left) (12pt)

1.1. SUB-CHAPTER TITLE (12pt, bold, capitals, left) (12pt)

- The titles of the chapters must be continually numbered and the sub-chapters will be numbered according to the number of the chapter, without using more than 3 digits to number them (e.g. 1.2.1)
- The footnotes and the sources cited in the project will indicate the name of the author, the letter of the first name, the title of the work, the publisher, the year of publishing and the page(s) where the citation or reference can be found;
- The pages will be continually numbered, starting with 1, on the first page of the first chapter
- The tables, figures and graphs are mandatory, will named and numbered separately. If they do not belong to the author, the source must be mandatory indicated
- REFERENCES (12pt, bold, capitals, left) must include only those sources indicated in the text and the works will be ordered alphabetically, as per the name of the author. If there are several authors without coordinator, the version of the three stars 1 can be used and then the title of the work. If the work has a coordinator on the title page, their name will be indicated and in brackets (coord.)
- It is indicated to use the same type of bullets throughout the entire text to point out or list certain elements

6. SUBMISSION OF THE PROJECT FOR EVALUATION PURPOSES

- The master project will be enveloped, respecting the model from **annex 2**
- The project will be submitted at the faculty secretary , within the set deadline, accompanied by the approval of the scientific chief
- The master project filed in writing will be mandatory accompanied by a CD with its electronic contents, which will be checked by the members of the master exam commission
- The CD will be attached to the hard copy inside in an envelope. The full name of the author and the class will be written on the CD with a marker
- The scientific chief has the right to not accept a project which does not observe the rules from the Preparation Guidelines and the requirements of the departments and the professor

7. PUBLIC PRESENTATION OF THE PROJECT BEFORE THE MASTER EXAM COMMISSION

- The master project is presented in public session before the master exam commission (expert commission endorsed by the Senate of the Romanian-American University)
- The presentation of the project will be in English, in PowerPoint
- Term of presentation: 7-10 minutes
- The multimedia electronic means (computer, laptop, video projector) are offered by the University. In the day of the presentation, students must only bring the PowerPoint presentation saved on magnetic format
- The coordinator will also attend the presentation if they are not member of the commission

The graduate will come before the commission, will indicate the title and objective of the master project and its structure, indicating briefly the specific objectives per chapters (with short remarks)

- The members of the commission can ask the student to waive the details if they are rather interest in the conclusions of the approach, the designed solutions, the personal contribution of the graduate, the economic effort, the implementation of the proposed solutions and the estimation of the economic effects

8. THE ESTABLISHMENT OF THE GRADE

The grade is established by all the members of the commission taking into account the following assessment **criteria**:

- Complexity of the project's scientific contents
- The capacity of the student to synthesize and the skills proven the student
- The structure of the analyzed project
- The value and relevance of the studied references
- The existence of the research methodology and the research's motivation
- The value of the results of such research
- The capacity to present the project before the commission
- The degree and capacity to answer all the questions addressed by the commission members

Observance of the provisions hereby and the requirements indicated by the departments and coordinating professors

Annex 1 - APPLICATION SAMPLE FOR REQUESTING THE TOPIC OF THE MASTER PROJECT

APPROVED
DEAN
Professor George CARUTASU, PhD

Head of Department Approval

DEAR MR. DEAN,

The undersigned_____student of the Romanian - American University, School of Computer Science for Business Management**, form of education _F _T, 3rd year, group_____,** major COMPUTER SCIENCE FOR ECONOMICS would kindly like to ask you to endorse my chosen topic for the master project _____ elaborated under the scientific supervision of: _____

Supervisor Approval
Signature Date

For the Dean of the School of Computer Science for Business Management

Annex 2 -THE COVER OF THE MASTER PROJECT

THE ROMANIAN- AMERICAN UNIVERSITY
The School of Computer Science for Business Management

Master Project

Scientific Coordinator(s):
Academic title, last name, first name

Graduate: Last name, the initial of the father's first name, first name

Bucharest
2020

Annex 3 -THE COVER OF THE MASTER PROJECT

THE ROMANIAN- AMERICAN UNIVERSITY
The School of Computer Science for Business Management

The Title of the MASTER Project / The Topic

Scientific Coordinator(s):
Academic title, last name, first name

Graduate: Last name, the initial of the father's first name, first name

Bucharest
2020