SYLLABUS

1. Information regarding the programme

1.1 Higher education institution	**Babes-Bolyai University**
1.2 Faculty	**Faculty of Mathematics and Computer Science**
1.3 Department	**Department of Computer Science**
1.4 Field of study	**Computer Science**
1.5 Study cycle	**Master**
1.6 Study programme / Qualification	**Cyber Security**

2. Information regarding the discipline

2.1 Name of the discipline	**Strategic Business Process Automation (Automatizarea strategică a proceselor de afaceri)**						
2.2 Course coordinator	**Lecturer PhD Camelia Chisăliţă-Creţu**						
2.3 Seminar coordinator	**Lecturer PhD Camelia Chisăliţă-Creţu**						
2.4. Year of study	**1**	2.5 Semester	**1**	2.6. Type of evaluation	**E**	2.7 Type of discipline	**Optional**
2.8 Discipline Code	**MME8203**						

3. Total estimated time (hours/semester of didactic activities)

3.1 Hours per week	4	Of which: 3.2 course	2	3.3 seminar/laboratory	1 lab + 1 project
3.4 Total hours in the curriculum	56	Of which: 3.5 course	28	3.6 seminar/laboratory	28

Time allotment:	Hours
Learning using manual, course support, bibliography, course notes	10
Additional documentation (in libraries, on electronic platforms, field documentation)	24
Preparation for seminars/labs, homework, papers, portfolios and essays	20
Tutorship	5
Evaluations	10
Other activities:	-

3.7 Total individual study hours	69
3.8 Total hours per semester	125
3.9 Number of ECTS credits	5

4. Prerequisites (if necessary)

4.1. curriculum	● OOP, Programming Fundamentals, Advanced Programming Methods
4.2. competencies	● Good programming skills in at least one of the programming languages Java, C#

5. Conditions (if necessary)

5.1. for the course	● Course hall with projector
5.2. for the seminar /lab activities	● Laboratory: computers and use of a programming language environment

6. Specific competencies acquired

Professional competencies	● **C4.2** Explaining the role, interaction and operation patterns of software system components ● **C4.4** Managing the life cycle of hardware, software and communications systems based on performance evaluation ● **C4.5** Developing, implementing and integrating software solutions
Transversal competencies	● **CT1** Honorable, responsible, ethical behavior, in the spirit of the law, to ensure the professional reputation ● **CT3** Demonstrating initiative and pro-active behavior for updating professional, economical and organizational culture knowledge

7. Objectives of the discipline (outcome of the acquired competencies)

7.1 General objective of the discipline	● Enhance the students understanding on business process identification and its automation. ● Provide the students with an environment in which they can explore the usage and usefulness of software development to increase efficiency in business processes. ● Induce a realistic and industry driven view of software development for business process automation related concepts and their inherent benefits.
7.2 Specific objective of the discipline	● Give students the ability to explore various ways to automate business processes. ● Improve the students' abilities to tackle on goal driven process automation. ● Enhance the students understanding of process automation value in business. ● Students will be able to use various tools, e.g., UiPath Studio, in order to provide a process automation solution. ● Students will be able to design and develop a business process automation solution following specific requirements and real world case studies.

8. Content

8.1 Course	Teaching methods	Remarks
1. Robotic Process Automation (RPA) 1.1. **Business Process Identification** 1.2. **Introduction to UiPath Studio** 1.2.1. Basics concepts 1.2.2. UiPath Platform Architecture	● Interactive exposure ● Explanation. Conversation ● Didactical demonstration	
2. Data manipulation 2.1. Variables. Data types 2.2. Control flow structures 2.3. Scalar variables. Collections. Tables 2.4. Text manipulation	● Interactive exposure ● Explanation. Conversation ● Didactical demonstration	
3. User Events. Recorder 3.1. **User Events** 3.2. **Recorder** 3.2.1. Basic recording 3.2.2. Desktop recording 3.2.3. Web recording	● Interactive exposure ● Explanation. Conversation ● Didactical demonstration	

4. Advanced UI Interaction 4.1. Input/output methods 4.2. Screen scraping 4.3. Data scraping	• Interactive exposure • Explanation. Conversation • Didactical demonstration	
5. Selectors 5.1. Definition and access 5.2. Customization and debugging 5.3. Dynamic selectors	• Interactive exposure • Explanation. Conversation • Didactical demonstration	
6. Image and Text Automation 6.1. Keyboard Automation 6.2. Information Retrieval	• Interactive exposure • Explanation • Conversation • Didactical demonstration	
7. Excel. Data Tables 7.1. Basic Interactions 7.2. Data Processing	• Interactive exposure • Explanation. Conversation • Didactical demonstration	
8. PDF Automation 8.1. Data Extraction 8.2. Anchor base Activity	• Interactive exposure • Explanation. Conversation • Didactical demonstration	
9. E-mail Automation 9.1. E-mail interaction 9.2. E-mail sending	• Interactive exposure • Explanation. Conversation • Didactical demonstration	
10. Orchestrator 10.1.Basic Features 10.2.Jobs. Scheduler 10.3.Assets. Queues	• Interactive exposure • Explanation. Conversation • Didactical demonstration	
11. Debugging and Exception Handling 11.1.UiPath debugging tools 11.2.Input issues 11.3.Error catching	• Interactive exposure • Explanation. Conversation • Didactical demonstration	
12. Robotic Enterprise Framework 12.1.ReFramework Architecture 12.2.Examples	• Interactive exposure • Explanation. Conversation • Didactical demonstration	
13. Testing. Deployment 13.1.Testing the RPA Solution 13.2.Deploying an RPA Solution	• Interactive exposure • Explanation. Conversation • Didactical demonstration	
14. RPA Security Related Topics 14.1.Security Challenges 14.2.IDE Security 14.3.Robot Security 14.4.Orchestrator Security	• Interactive exposure • Explanation. Conversation • Didactical demonstration	

Bibliography

Institute for RPA, An Introduction to RPA. A primer, http://irpaai.com/wp-content/uploads/2015/05/Robotic-Process-Automation-June2015.pdf
Steve Kaelble, RPA, https://www.nice.com/websites/rpa/assets/robotic_process_automation_for_dummies.pdf
KPMG, RPA, https://home.kpmg/content/dam/kpmg/jp/pdf/jp-en-rpa-business-improvement.pdf
Assurity, Introduction to RPA, https://assurity.nz/assets/290a244552/An-Introduction-to-RPA.pdf
UiPath, https://www.uipath.com/developers/video-tutorials
UiPath Academy, https://academy.uipath.com/

8.2 Seminar / laboratory	Teaching methods	Remarks
1. Laboratory 1 UiPath Studio installation RPA project setup	Presentation, Conversation, Dialogue, Case studies	
2. Laboratory 2 Sequences. Flowcharts	Presentation, Conversation, Dialogue, Case studies	

3. Laboratory 3 Custom activities. Data processing	Presentation, Conversation, Dialogue, Case studies	
4. Laboratory 4 Excel Automation	Presentation, Conversation, Dialogue, Case studies	
5. Laboratory 5 PDFs Automation	Presentation, Conversation, Dialogue, Case studies	
6. Laboratory 6 E-mail Automation	Presentation, Conversation, Dialogue, Case studies	
7. Laboratory 7 Project turn-in/Demo	Evaluation	
References: See references from Lectures.		

9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

- Students will know how to design and develop an automation solution for a repetitive business process, considering an identified flow.
- Students will know the components of the UiPath platform and to use them properly.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Seminar/laboratory activities	**Three out of six lab activities** are mandatory and will be graded. The arithmetic average of the grades is denoted by **L**.	Laboratory Activity	30%
10.5 Exam	Design and develop a solution for business process automation in UiPath Studio. The grade is denoted by **E**.	Exam grading	70%
10.6 Minimum performance standards			
● The final grade (M) is computed as follows: M = 30%L+70%E. ● At least M >= 5.00 is favourable to pass this course exam.			

Date | Signature of course coordinator | Signature of seminar coordinator

16.05.2022 | **Lect. PhD. Camelia Chisăliţă-Creţu,** | **Lect. PhD. Camelia Chisăliţă-Creţu,**

Date of approval | Signature of the head of department

Prof. PhD. Laura Dioșan