SYLLABUS

1. Program Information

1.1 Higher education institution	Technical University of Cluj-Napoca
1.2 Faculty	Faculty of Automation and Computer Science
1.3 Department	Department of Automation
1.4 Field of study	Automation, Applied Informatics and Intelligent Systems
1.5 Cycle of studies	Bachelor
1.6 Study Programme/Qualification	Intelligent Automation Systems (dual, in English language)
1.7 Form of education	IF – full-time education
1.8 Course code	54.00

2. Course information

2.1 Course title	**Automation of Administration Tasks**				
2.2 Course lecturer	*Conf.Dr.Ing. Szilárd Enyedi – Szilard.Enyedi@aut.utcluj.ro*				
2.3 Seminar / Laboratory / Project Lecturer	*Ing. Darius Duta (Emerson)* *Ing. Diana Jiga (Emerson)*				
2.4 Year of study	4	2.5 Semester	2	2.6 Type of assessment	E
2.7 Course status	Formative category *(DF, DS, DC)*				DS
	Optionality *(DOB, DOP, DFac)*				DOB

3. Total estimated time

3.1 Number of hours per week	4	of which:	HEI	Lecture	2	Seminar	0	Laboratory	0	Project	0
			CO		0		0		2		0
3.2 Number of hours per semester	56	of which:	HEI	Lecture	28	Seminar	0	Laboratory	0	Project	0
			CO		0		0		28		0

3.3 Distribution of time allocation (hours per semester) for:	HEI	CO
(a) Study based on textbook, course support, bibliography, and notes	14	0
(b) Additional documentation in library, specialized electronic platforms, and fieldwork	10	14
(c) Preparation of seminars/laboratories, assignments, papers, portfolios and essays	14	0
(d) Tutoring	6	4
(e) Examinations	3	2
(f) Other activities:	0	0
3.4 Total individual study hours (sum (3.3(a)… 3.3(f)))	47	22
3.5 Total hours per semester (3.2+3.4)	75	50
3.6 Number of credits per semester	3	2

(HEI = Higher Education Institution, CO = Company)

4. Prerequisites (where applicable)

4.1 Curriculum Prerequisites	• Computer Programming and Algorithm Design • Computer Architecture, Operating Systems and Fundamentals of Computer Networking • Software Engineering and Databases • Computer Networks
4.2 Competency Prerequisites	• Basic knowledge of information systems and operating systems, familiarity with programming and scripting logic, understanding of data structures and common data formats.

5. Conditions (where applicable)

5.1. Course Organization Conditions	• Course attendance is compulsory.

5.2. Seminar / Laboratory / Project organization conditions	• Laboratory attendance is compulsory. Preliminary reading for laboratories is indicated.

6. Specific Competencies Acquired

Professional Competencies	• PC06 Define technical requirements • PC07 Demonstrate disciplinary expertise • PC17 Operate open source software • PC23 Synthesise information • PC24 Think abstractly • PC26 Use information technology tools
Transversal Competencies	• TC02 Think analytically • TC03 Demonstrate responsibility

7. Learning outcomes

Knowledge:	• The student/graduate is able to describe fundamental concepts related to the automation of administrative processes, including data handling, system interoperability, and the integration of automated routines into recurring reporting workflows.
Skills:	• The student/graduate is able to develop and apply automated solutions for collecting, transforming, and generating administrative reports, by utilizing appropriate tools for data import, export, and processing within structured operational contexts.
Responsibility and autonomy:	• The student/graduate is able to design, implement, and evaluate automated administrative systems independently, ensuring data accuracy, information security, and compliance with ethical and legal standards in the context of regular reporting activities.

8. Course Objectives

8.1 General objective of the course	• Enable students to understand the importance and benefits of applying scripting and automation techniques to optimize administrative workflows, to explore the practical use of various scripting languages and data management methods, to investigate automated reporting and communication processes, and to recognize the critical role of data security and regulatory compliance in the design and implementation of effective administrative automation solutions.
8.2 Specific objectives	• Design and execute automation scripts to streamline everyday administrative activities such as file handling and system configuration. • Develop processes for importing and exporting administrative data between various standardized formats, ensuring data integrity and interoperability. • Apply data processing techniques within scripts to clean, filter, and transform administrative datasets for further analysis or reporting. • Construct automated reporting pipelines that generate, format, and distribute reports through electronic communication channels.

	• Configure task scheduling mechanisms to run automated scripts reliably at predetermined intervals or triggers. • Incorporate automated communication features into administrative workflows. • Implement security best practices within automation processes to protect sensitive data and adhere to legal and ethical standards. • Combine multiple scripting tools and platforms to build comprehensive automation workflows that improve efficiency and reduce manual effort in administrative tasks.

9. Contents

9.1 Lectures	No. of hours	Teaching methods	Obs.
Introduction to Automation of Administration Tasks	2	Presentation from course notes and references, case studies, questions and answers face-to-face and online.	
Identifying Repetitive Tasks and Mapping Workflows	2		
Automation Principles and Strategy Design	2		
Introduction to Scripting for Automation	2		
Task Automation Techniques	2		
Processing Structured and Semi-Structured Data	2		
Data Hierarchies for Automated Processing	2		
Sanitizing and restructuring data for automated use	2		
Automation in Report Generation	2		
Communication Automation	2		
Logging, Monitoring, and Error Handling	2		
Security and Ethical Considerations	2		
Integration with Existing Systems	2		
AI Tools in Automation of Administration Tasks	2		

Bibliography
- Sweigart, A. *Automate the Boring Stuff with Python: Practical Programming for Total Beginners*; 2nd edition.; No Starch Press: San Francisco, 2020; ISBN 978-1-59327-992-9.
- Buelta, J. *Python Automation Cookbook: 75 Python Automation Ideas for Web Scraping, Data Wrangling, and Processing Excel, Reports, Emails, and More*, Second Edition; 2nd ed.; Packt Publishing: Birmingham, 2020; ISBN 978-1-80020-708-0.
- Holmes, L. *PowerShell Cookbook: Your Complete Guide to Scripting the Ubiquitous Object-Based Shell*; Fourth edition.; O'Reilly: Beijing : Boston, 2021; ISBN 978-1-0981-0160-2.
- Blum, R.; Bresnahan, C. *Linux Command Line and Shell Scripting Bible*; 4th edition.; John Wiley and Sons: Indianapolis, 2020; ISBN 978-1-119-70091-3.
- Kim, G.; Humble, J.; Debois, P.; Willis, J. *The DevOps Handbook: How to Create World-Class Agility, Reliability, & Security in Technology Organizations*; Second edition.; IT Revolution Press: Portland, OR, 2021; ISBN 978-1-950508-40-2.

9.2 Laboratory	Hours HEI	Hours CO	Teaching methods	Obs.
Tools and Environments	0	4	Exemplification, guided practical learning, individual exercises, problem solving within a team.	
Basic Scripting Practice	0	4		
Creating Scheduled Tasks	0	4		
Automating processing of raw administrative data	0	4		
Errors, Logs and Reports	0	4		
Security	0	4		
Data Source Integration	0	4		
Bibliography				

- Sweigart, A. *Automate the Boring Stuff with Python: Practical Programming for Total Beginners*; 2nd edition.; No Starch Press: San Francisco, 2020; ISBN 978-1-59327-992-9.
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10. Correlation of course content with the expectations of the epistemic community representatives, professional associations, and major employers in the field related to the program

The course content is aligned with the skill expectations of professional associations and employers, addressing key competencies such as scripting, data interoperability, workflow automation, and compliance with security and operational standards in modern administrative and IT environments.

11. Evaluation

Activity Type	Evaluation criteria	Evaluation methods	Weight in final grade
11.1 Lecture	Questions from the material presented at the course.	Written exam	60%
11.2 Laboratory	Theoretical and practical questions from the material presented at the laboratories.	Written laboratory project / colloquium	40%
11.3 Minimum Performance Standard			
Grade G>=5; G=0,6*E+0,6*C, where E=exam, C=colloquium/lab project. Passing requirements: E≥5 and C≥5			

Date of completion: 15.09.2025	Lecturers		Signature
	Course	Conf.Dr.Ing. Szilárd ENYEDI	
	Applications		

Date of approval by the Department of Automation Council 24.11.2025 _____	Director of the Department of Automation Prof.dr.ing. Honoriu VĂLEAN
Date of approval by the Faculty of Automation and Computer Science Council 28.11.2025 _____	Dean Prof.dr.ing. Vlad MUREȘAN