



## Alexandra-Veronica LUCA

### WORK EXPERIENCE

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07/2025–Present **Bioprocess Engineer**  
Lonza, Visp (Switzerland)

- Timely independent review of paper-based and electronic manufacturing protocols
- Verify approved materials and completion of Filter Integrity Tests (FIT)
- Perform Audit Trail and Logbook reviews for data integrity
- Check process trends and critical process parameters within defined limits
- Confirm correct LIMS labeling in manufacturing protocols
- Author Batch Lifecycle Documents and compile cleaning report data
- Contribute to continuous improvement initiatives in the BRR area
- Support QA, BPE, and participate in cross-department meetings

06/2024–06/2025 **Automation Engineer**  
Lonza, Visp (Switzerland)

- Develop, test and validate DeltaV control strategies for GMP-compliant systems
- Design and implementation of HVAC and BAS DeltaV automation
- Configured control modules, equipment modules, and system layouts in DeltaV
- Generate and validate technical documentation using Comos, Kneat, and Ubik
- Ensure automation compliance with GMP through documentation and validation
- Collaborate with cross-functional teams to align automation with process needs

01/2023–05/2024 **Industrial Automation Trainer**  
Emerson, Cluj-Napoca (Romania)

*European Learning & Development Center*

- Provide extensive DeltaV software training sessions for international students
- Expertise in continuous and batch process design and operation
- Present automation solutions tailored to client needs
- Troubleshoot and optimize processes during live training
- Adapt training content for diverse technical backgrounds
- Deliver customer experience courses for customer-facing staff on multiple company sites

10/2022–12/2022 **Assistant project manager**  
Babes-Bolyai University - UBB Tech Transfer / Endava Romania SRL, Cluj-Napoca (Romania)  
*Integrated system for automating business processes using artificial intelligence program - POC/163/1/3/121075*

- Creating integrated project plans to align technical and business goals
- Implementing proactive solutions for technology development
- Coordinate project tasks, timelines, and resources to support on-time and on-budget delivery
- Monitoring project progress with a focus on efficient management
- Communicate with stakeholders to ensure alignment on project goals

09/2022–12/2022 **Technical consultant**  
Babes-Bolyai University - UBB Tech Transfer, Cluj-Napoca (Romania)

- Selecting and evaluating early-stage technologies for feasibility and market potential
- Managing patent filing and attainment processes
- Provide technical consulting to support decision-making across teams
- Reviewing and assessing prior financed projects
- Coordinating project planning and timelines to support strategic milestones
- Preparing technical reports and presentations for internal and external stakeholders

09/2017–09/2019 **Chemical engineer**  
Terapia - a SUN PHARMA Company, Cluj-Napoca (Romania)

- Conducted GMP-compliant qualitative and quantitative analysis of finished products
- Managed division and recording of reference substances
- Supported validation, qualification, and calibration of lab equipment, including IQ, OQ, and PQ
- Assisted with FATs to ensure equipment met required specifications before delivery
- Supported audits by providing documentation and ensuring regulatory compliance
- Forecasted material requirements to support seamless production and testing

## EDUCATION AND TRAINING

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02/2022 **International Winter School Smart Feed**  
Smart Feed-Sustainable Model for Agroenergy and Feed production by Urban Waste Recycling and Treatment, Milan (Italy)  
*Insect and microalgae as novel feed for sustainable livestock production*

05/2021–04/2022 **Entrepreneurship for Innovation and Innovation Management Program**  
Institute of Advanced Studies in Science and Technology - STAR-UBB Institute, Cluj-Napoca (Romania)  
*Entrepreneurship for innovation through doctoral and postdoctoral research program - POCU/380/6/13/123886*

10/2019–Present	<b>Ph.D. candidate</b> Babes-Bolyai University - Doctoral School of Chemical Engineering, Cluj-Napoca (Romania) <i>Ph.D. subject: Operation and automatic control of the wastewater treatment plant using artificial intelligence tools</i>
10/2017–07/2019	<b>Master's degree - Advanced Chemical Engineering</b> Babes-Bolyai University - Faculty of Chemistry and Chemical Engineering, Cluj-Napoca (Romania) Specialization: Advanced Process Chemical Engineering Dissertation subject: Modelling and simulation of carbon dioxide capture from steel production using gas-liquid absorption and membrane technologies (Examination grade: 9.75/10)
10/2013–07/2017	<b>Bachelor's degree - Chemical Engineering</b> Babes-Bolyai University - Faculty of Chemistry and Chemical Engineering, Cluj-Napoca (Romania) Specialization: Engineering and Informatics of Chemical and Biochemical Processes Thesis subject: Modelling and simulation of a steel making plant (Examination grade: 9.40/10)
07/2016–08/2016	<b>Internship</b> S.C. Carbochim S.A., Cluj-Napoca (Romania)
10/2010–07/2013	<b>Graduate - Journalism</b> Babes-Bolyai University, Cluj-Napoca (Romania)

#### PERSONAL SKILLS

Mother tongue(s)	Romanian				
Foreign language(s)	<b>UNDERSTANDING</b> Listening      Reading      Spoken interaction      Spoken production				
English	C2	C2	C2	C2	C2
Italian	A2	A2	A1	A1	A1
German	A2	A2	A1	A1	A1

#### Technical skills

- Configuring and administering DeltaV continuous and batch processes
- Developing intuitive displays for process control
- Identifying and resolving DeltaV system issues
- Extensive experience with Microsoft Office products
- Good command of engineering and documentation software:
  - Process Control & Automation: DeltaV, LabView
  - Modeling & Simulation: MATLAB, ChemCAD, Aspen Plus
  - Engineering Data & Documentation Management: COMOS, Kneat, Ubik, SAP
  - Design & CAD: Solid Edge, Visio, DWG True View, Drawio
  - Learning Management Systems: Cornerstone

Organisational/ managerial skills	<ul style="list-style-type: none"> <li>Efficient resource planning</li> <li>Maintaining organized and detailed documentation materials</li> <li>Implementing technical and soft skill assessments of course participants</li> <li>Mentoring by facilitating knowledge transfer and skill development of future trainers</li> <li>Effective continuous improvement based on feedback and industry advancements</li> </ul>
Driving licence	B

## ADDITIONAL INFORMATION

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**Scholarships** World Federation of Scientists, 2019-2020

**Prizes**

- Business plan (team leader) awarded with the first prize under the Human Capital Operational Program – “From Research to Start-Up” POCU/380/6/13/123886, April 2022
- Business plan awarded under the Human Capital Operational Program - POCU/380/6/13/123886, January 2022
- Science article awarded under National Project PRECISI-2021, November 2021
- Science article awarded under National Project PRECISI-2020, December 2020

**Publications**

- A.-V. Luca, M. Simon-Varhelyi, N.-B. Mihaly, V.-M. Cristea, 2025, Fault detection and diagnosis of the wastewater nitrate and nitrite sensors using PCA and FDA combined with assessment of the economic and environmental impact of the faults, *Environmental Monitoring and Assessment* (IF = 3.00), 197, 121. DOI: <https://doi.org/10.1007/s10661-024-13593-z>
- A.-V. Luca, M. Simon-Varhelyi, N.-B. Mihaly, V.-M. Cristea, 2023, Fault type diagnosis of the WWTP dissolved oxygen sensor based on Fisher Discriminant Analysis and assessment of associated environmental and economic impact, *Applied Sciences* (IF = 2.50), 13(4), 2554. DOI: <https://doi.org/10.3390/app13042554>
- A.-V. Luca, M. Simon-Varhelyi, N.-B. Mihaly, V.-M. Cristea, 2021, Data driven detection of different dissolved oxygen sensor faults for improving operation of the WWTP control system, *Processes* (IF = 2.80), 9(9), 1633. DOI: <https://doi.org/10.3390/pr9091633>
- N.-B. Mihaly, A.-V. Luca, M. Simon-Varhelyi, V.-M. Cristea, 2023, Improvement of air flowrate distribution in the nitrification reactor of the waste water treatment plant by effluent quality, energy and greenhouse gas emissions optimization via artificial neural networks models, *Journal of Water Process Engineering* (IF = 6.70), 54, 103935. DOI: <https://doi.org/10.1016/j.jwpe.2023.103935>
- M. Simon-Varhelyi, V.-M. Cristea, A.-V. Luca, 2020, Reducing energy costs of the wastewater treatment plant by improved scheduling of the periodic influent load, *Journal of Environmental Management* (IF = 8.40), 262, 110294, 1-10. DOI: <https://doi.org/10.1016/j.jenvman.2020.110294>
- M. Simon-Varhelyi, V.-M. Cristea, A.-V. Luca, M.A. Brehar, 2019, Optimization and control of aeration distribution in the WWTP nitrification reactor, *Revue Roumaine de Chimie* (IF = 0.60), 65(6), 601-609. DOI: <https://doi.org/10.33224/rrch.2020.65.6.11>
- A.-V. Luca, L. Petrescu, 2021, Membrane technology applied to steel production: investigation based on process modelling and environmental tools, *Journal of Cleaner Production* (IF = 10.00), 294, 126256. DOI: <https://doi.org/10.1016/j.jclepro.2021.126256>
- A. Mio, L. Petrescu, A.-V. Luca, S.T. Galusnyak, M. Fermeglia, C.C. Cormos, 2022, Carbon dioxide capture in the iron and steel industry: thermodynamic analysis, process simulation and life cycle assessment, *Chemical and Biochemical Engineering Quarterly* (IF = 1.60), 36(4), 255-271. DOI: <https://doi.org/10.15255/CABEQUATION2022.2123>

**Conferences**

1. A.-V. Luca, M. Simon-Varhelyi, N.-B. Mihaly, M.A. Brehar, V.M. Cristea, *Fault diagnosis of the WWTP dissolved oxygen and nitrates sensors*, 11<sup>th</sup> International Conference on Environmental Engineering and Management (ICEEM 11), Muttenz (Switzerland), 8-10 September 2021
2. N.-B. Mihaly, A.-V. Luca, M. Simon-Varhelyi, V.-M. Cristea, *Artificial Neural Networks-based identification of the WWTP DO sensor types of faults*, 33<sup>rd</sup> European Symposium on Computer-Aided Process Engineering (ESCAPE 33), Athens (Greece), 18-21 June 2023
3. N.-B. Mihaly, M. Simon-Varhelyi, A.-V. Luca, V.-M. Cristea, *Optimization of the wastewater treatment plant recycle flowrates using artificial neural networks*, IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), Cluj-Napoca (Romania), 19-21 May 2022
4. M. Simon-Varhelyi, V.-M. Cristea, A.-V. Luca, M.A. Brehar, *Performance comparison of different optimization methods for the wastewater treatment plant model based on the activated sludge model no. 3 and design of the plant control*, 31<sup>st</sup> European Symposium on Computer-Aided Process Engineering (ESCAPE 31), Istanbul (Turkey), 6-9 June 2021
5. M. Simon-Varhelyi, A.-V. Luca, M.A. Brehar, V.-M. Cristea, *Calibration of the wastewater treatment plant model based on the activated sludge model no. 2d - case study of a municipal WWTP*, World Congress on Civil, Structural, and Environmental Engineering (CSEE' 20), Lisbon (Portugal), 18-20 October 2020
6. D. Cristiu, M. Simon-Varhelyi, A.-V. Luca, M.A. Brehar, V.M. Cristea, *Augmenting heat balance of the wastewater treatment plant model and improving plant control by counteracting temperature disturbances*, 30<sup>th</sup> European Symposium on Computer-Aided Process Engineering (ESCAPE 30), Milan (Italy), 24-27 May 2020