

EMANUEL ARTURO RENTERÍA DEL REAL

Science and Technology Specialist | STEM Educator | Python Web Development

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Portfolio: <https://arturylab.dev/>

PROFESSIONAL SUMMARY

Science and Technology Specialist, Engineer, and Ph.D. Candidate in Nanotechnology with nearly a decade of teaching experience in higher and upper-secondary education. With a strong background in STEM pedagogy, I combine active learning methodologies with interactive digital solutions to maximize student engagement and outcomes. My profile integrates scientific research, computational modeling, and Python web development aimed at building scientific tools and educational platforms. Recognized for academic leadership, assertive communication, analytical thinking, and the ability to translate complex mathematical and scientific challenges into functional, accessible technology.

CORE SKILLS

- **Education:** Instructional Planning | Competency-Based Assessment | In-Person and Online Education | Educational Resource Design
- **Scientific Research:** Scientific Research | Computational Chemistry | Statistical Analysis | Computational Modeling | Density Functional Theory
- **Technology:** Python | Flask | Django | PyQt | Linux | Git | Docker | SQL/NoSQL Databases | Web Development | High-Performance Computing | SLURM
- **Data & Computing:** NumPy | pandas | Scikit-learn | Data Analysis | Numerical Methods | Scientific Computing
- **Professional Skills:** Communication | Academic Leadership | Problem Solving | Planning & Organization | Continuous Learning | Multidisciplinary Collaboration

SELECTED PROJECTS

- **ClusterWebLab**
 - Web application developed to visualize, generate, and optimize molecular XYZ structures using computational tools for nanotechnology research.
 - <https://clusterweblab.arturylab.dev/> | <https://github.com/arturylab/clusterWebLab/>
- **Password Generator**
 - Secure and customizable password generator application.
 - <https://password-generator-app.arturylab.dev/> | <https://github.com/arturylab/password-generator/>
- **DumpMyCash**
 - Simple and efficient web application for personal finance tracking.
 - <https://dumpmycash.arturylab.dev/> | <https://github.com/arturylab/dumpmycash/>
- **Sudoku Web App**
 - Responsive web-based Sudoku application featuring a modern video-game-inspired interface.
 - <https://sudoku.arturylab.dev/> | <https://github.com/arturylab/sudoku-webapp/>
- **Finance Web App**
 - Personal finance application that allows users to manage their financial accounts, track income and expenses, and view their overall financial status on a dashboard.
 - <https://finance-app.arturylab.dev/> <https://github.com/arturylab/finance-app-frontend/>
<https://github.com/arturylab/finance-app-backend/>

PROFESSIONAL EXPERIENCE

University Lecturer

Universidad del Valle de México (UVM), Mexico | Feb 2026 – Present

- Taught, designed, and evaluated undergraduate courses in Descriptive Statistics, Numerical Methods, Operating Systems, and Systems Modeling and Simulation, Advanced Programming (C++), Vector Calculus, Algebra.
- Designed instructional materials and learning activities using digital tools and active learning methodologies.
- Evaluated student learning and provided academic guidance throughout the courses.

University Lecturer

Universidad Estatal de Sonora (UES), Mexico | Aug 2024 – Dec 2024

- Taught, designed, and evaluated undergraduate courses in Integral Calculus and Numerical Methods.
- Developed instructional activities and learning resources to support mathematical and numerical problem-solving skills.

University Lecturer

Instituto Tecnológico Superior de Cajeme (ITESCA), Mexico | Aug 2019 – Jul 2020

- Taught, designed, and evaluated courses in Differential, Integral and Vector Calculus, Algorithms and Programming Languages (Python), Material Properties, Systems Engineering, and Industrial Safety and Hygiene.
- Developed academic materials and evaluated student performance.

High School Teacher – Mathematics & Computer Science

Colegio de Bachilleres del Estado de Sonora (COBACH), Mexico | Aug 2017 – Jan 2024

- Taught and evaluated courses in Computer Science, Analytic Geometry, Differential and Integral Calculus, and Probability and Statistics.
- Served as the person responsible for coordinating students' Social Service activities.
- Supported students through academic guidance and educational activities.

IT Systems Manager

Secretaría de Desarrollo Social – PROSPERA Program, Mexico | Jul 2013 – Jan 2018

- Managed and maintained the program's information systems and technology infrastructure, including hardware, software, networks, and databases.
- Provided technical support to users and resolved operational incidents.
- Managed technological resources and generated technical and analytical reports to support decision-making.
- Contributed to data protection and compliance with operational requirements.
- Monitored the proper operation and continuity of information systems.

EDUCATION

- **Ph.D. (C) in Nanotechnology**
 - **University of Sonora, Hermosillo, Mexico** | Aug 2022 – Jul 2026
 - Thesis: *Structural, Electronic, and Magnetic Properties of $Fe_lCo_mNi_n$ Clusters ($l+m+n=38$) Using Density Functional Theory (DFT).*
- **M.Sc. in Nanotechnology**
 - **University of Sonora, Hermosillo, Mexico** | Aug 2020 – Jul 2022
 - Thesis: *Potential Energy Surface Analysis and Transition State Search in Bimetallic Nanoalloy Clusters $Pd_{12}Pt_1$.*
- **B.Sc. in Industrial and Systems Engineering**
 - **University of Sonora, Hermosillo, Mexico** | Aug 2000 – May 2005

CERTIFICATIONS & COURSES

- Exploration of Teaching Skills in Upper Secondary Education – SEP, 2026
- Management and Mastery of Language and Digital Culture – SEP, 2026
- Microsoft Python Development Professional Certificate – Coursera, 2025
- Meta Back-End Developer Professional Certificate – Coursera, 2025
- Meta Front-End Developer Professional Certificate – Coursera, 2025
- Training Workshop for End Users of Scientific Applications – University of Sonora, 2025

AWARDS & ACHIEVEMENTS

- Member of the Organizing Committee, Nanotechnology Conference Sonora 2025 – University of Sonora
- Conference Speaker, Nanotechnology Conference Sonora 2025 – University of Sonora
- STEM Merit Recognition 2021 – COBACH
- Recognition for participation in the Regional Tournament at PrepaTec Monterrey 2018 – WER Mexico, World Educational Robotics Tournament

LANGUAGES

Spanish: Native

English: B2 – TOEFL ITP