

Kariluz Dávila Díaz, Ph.D.

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EDUCATION

Ph.D. Universidad de Puerto Rico, Río Piedras Campus. Analytical Chemistry, May 2006.
Thesis Topic: Method Development for Analysis of Sweat, Advisor: Osvaldo Rosario, Ph.D.

B.S. Universidad de Puerto Rico, Río Piedras Campus. Chemistry, May 2000.

POSTGRADUATE TRAINING

University of Arizona, Tucson, AZ, Summer 2007
Chemical Education, Internship Topic: Alternative Concepts, Development of Didactic Material,
and Analysis of End of Chapter Problems. Advisor: Vicente Talanquer, Ph.D.

PROFESSIONAL EXPERIENCE

University of Puerto Rico, Río Piedras Campus August 2006 - present
Assistant Professor, Chemistry Department

- *Lecture at least 160 students per semester teaching mostly General Chemistry.*

University of Puerto Rico August 2022 – present
Associate Director, PR Space Grant Consortium and PR NASA EPSCoR

- *Assist the Director and Co-Director of the programs in the timely implementation of the Consortium's agenda and follow up with the students that are part of the program.*

University of Puerto Rico, Río Piedras Campus January 2022 – present
Resource Center for Remote Learning (CRAR) Coordinator, Chemistry Department

- *Build up the CRAR*
- *Coordinate all the logistics for the CRAR*
- *Prepare the students, resources and seminar for the program.*

University of Puerto Rico, Río Piedras Campus January 2022 – present
Academic Coordinator, STEM Academy, Profesionalización Acelerada Departamento de Educación (PADE) - Divisiones de Educación Continua y Estudios Profesionales (DECEP)

- *Coordinate the STEM Academy that served 40 teachers from the Department of Education of Puerto Rico. The coordination included but was not limited to, coordinating professors, their contracts, syllabus, and academic calendar, among others.*

University of Puerto Rico, Río Piedras Campus June 2021 – December 2021
Academic Coordinator, Science Area, UPR-Estudia Contigo, Divisiones de Educación Continua y Estudios Profesionales (DECEP)

- *Coordinate and advise 10 science teachers in the development of 24 lessons for each grade (3-12) for tutoring public school students.*

University of Puerto Rico, Río Piedras Campus August 2014 – December 2019
General Chemistry Coordinator, Chemistry Department

- *Coordinate the General Chemistry course (approximately 700 students and 10 professors).*
- *The coordination includes, but is not limited to, the preparation, the dates, and the reproduction of the exams, work situations with students, etc.*

University of Puerto Rico, Río Piedras Campus August 2014 – May 2019
General Chemistry Mentoring Coordinator, Chemistry Department

- *Coordinator for the component of Pre-MARC in the MARC Program (NIH grant).*

University of Puerto Rico, Río Piedras Campus August 2006 – May 2019
Tutoring/Mentoring Coordinator, Chemistry Department

- *Coordinate a course with at least 14 teacher assistants that serve freshmen students.*
- *Meet weekly with TAs to prepare them for their sections of classes.*
- *Submit the grades of the students enrolled in the course, over 150 students.*

University of Puerto Rico, Río Piedras Campus August 2000 – May 2007
Mentor, Chemistry Department

- *Mentoring first-year students about research and their general chemistry class.*

University of Puerto Rico, Río Piedras Campus August 2000 – May 2002
Teacher Assistant, Chemistry Department

- *Offer laboratory sections as needed*

University of Puerto Rico, Carolina Campus September 2005 – June 2006
Instructor, Natural Science Department

- *Lecture at least 60 students per trimester teaching mostly General Chemistry.*

RESEARCH EXPERIENCE

University of Puerto Rico - Río Piedras Campus, Chemistry Department

Research - Chemical Education 2006 - present
Development of strategies and educational digital resources that promote active learning and conceptual understanding of central ideas in chemistry applying the Universal Design of Learning

University of Arizona, Tucson, AZ, Summer 2007
Chemical Education, Internship Topic: Alternative Concepts, Development of Didactic Material, and Analysis of End of Chapter Problems. Advisor: Vicente Talanquer, Ph.D.

University of Puerto Rico - Río Piedras Campus, Chemistry Department

Graduate Research August 2001 to April 2006
Thesis Research on Method Development for Non-Invasive Analysis for Exogenous Substances
- The sweat as the biological matrix to perform the analysis of pesticides in the human body using analytical equipment such as Gas Chromatography-Mass Spectrometry

University of Puerto Rico - Río Piedras Campus, Chemistry Department

Undergraduate Research

Research Assistant, Biochemistry – January 1998 – June 2000

Biochemistry Laboratory, UPR-RP. Advisor: Reginald Morales, Ph.D.

Work using snake venom type Phospholipase A2 (sPLA2) to study the interaction of amphipathic peptides with natural membranes. The results of this project were presented in different scientific meetings.

Undergraduate Research

Research Assistant, Biochemistry – August 1998 – Jan 2000

Biochemistry Laboratory, UPR-RP. Advisor: Reginald Morales, Ph.D.

Work on the characterization of different snake venom types Phospholipase A2 (sPLA2) on the red cell (red cells of human blood) surface through kinetic studies, lipid extraction, TLC, GC

SOCIETIES/MEMBERSHIPS

American Chemical Society (ACS) 2002 to 2016 and 2022 - present

COMMITTEES

University of Puerto Rico, Río Piedras Campus 2015 - present
Academic Affairs Committee, Chemistry Department

University of Puerto Rico, Río Piedras Campus 2015-2016
Systemic Committee for the Improvement of Programs Related to Chemistry of the University of Puerto Rico, General Chemistry Sub-Committee, UPR

University of Puerto Rico, Río Piedras Campus 2007 - 2012
Academic Affairs Committee, Chemistry Department

University of Puerto Rico, Río Piedras Campus August 2007 – June 2009
Chemistry Department Homepage development, Chemistry Department

PUBLICATIONS

•Dávila-Díaz, K. “Using Integrative Activities to Reinforce Stoichiometry, Solutions, and Aqueous Reactions Concepts as a Review Technique for Exams”. American Journal of Science Education Research. 2023

<https://doi.org/10.47378/2835-6764/AJSER-120>.

• Díaz-Vázquez, L.M., **Dávila-Díaz, K.**, Ortiz-Andrade, B.M., Alfonso-Cano, D.J., Zuluaga-Gómez, C.C., 2023 “Constelación de Latinas”, Publicaciones Puertorriqueñas, Inc. San Juan, PR ISBN: 978-1-62537-661-9

- K. Davila. “From an Emergency Pandemic Course to an Online Course: A General Chemistry case study in a Resource-constrained Hispanic Serving Institution”. *Journal of Chemical Education*. 2022, 99, 2913–2918, <https://doi.org/10.1021/acs.jchemed.2c00111>
- K. Dávila, L. Muñoz, L. Díaz, U. Rivera, M. Torres, C. Malca, R. Mahomedova, 2022 “Manual Química Divertida para Maestros de Octavo Grado”, Publicaciones Puertorriqueñas, Inc. San Juan, PR. ISBN: 978-1-62537-622-0
- K. Dávila, “Incluyendo la tecnología en el salón de clase para facilitar la integración de las actividades de GK12”, *El Sol*, 1, 26-28 (2015).
- Dávila, K.; Talanquer, V. Classifying End-of-Chapter Questions and Problems for Selected General Chemistry Textbooks Used in the United States. *J. Chem. Educ.* **2010**, 87 (1), 97–101. <https://doi.org/10.1021/ed8000232>.

Editor

- Díaz, L., Zuluaga-Gómez, C. Alfonso-Cano, D., 2023 “La mujer Latina en la ciencia – Tomo 2” Publicaciones Puertorriqueñas, Inc. San Juan, PR. ISBN 978-1-62537-625-1

OTHER PRODUCTS & DIGITAL RESOURCES DEVELOPMENT

“Talleres Química-HSS” Chemistry Department, University of Puerto Rico-Río Piedras Campus, June 2022. This webpage includes activities focused on giving high school students fun laboratory experiences that expand their knowledge in chemistry. (<https://sites.google.com/view/talleresquimica-hss>)

“Repaso de matemáticas para Química General” Chemistry Department, University of Puerto Rico-Río Piedras Campus, January 2022. This is a module to review the mathematical concepts students need to remember for General Chemistry. (<https://sites.google.com/view/repasomatequimicageneral>)

“CyberCamp”, Virtual Computer Sciences Department Camp, University of Puerto Rico-Río Piedras Campus, Summer 2020. Consultant and Designers of Online Practices. (<https://sites.google.com/upr.edu/cybercamp>)

Videos: Explanatory videos of topics in General Chemistry hosted on Youtube.

Inorganic Nomenclature Game: This game helps the student practice learning about inorganic nomenclature, acids nomenclature, and writing formulas for inorganic compounds, among other things. (<http://cerlab.hpcf.upr.edu/pyjamas-0.4/examples/ing/output/ing.html>)

Gases Tutorial: This tutorial helps students to understand the gases in a micro way. It helps them to derive the Ideal Gas Law. (<http://cbc.arizona.edu/chemt/gases/>)

Buffer Systems Tutorial: This tutorial explains the basis for buffer systems and allows them to practice, receive feedback and see how to do the exercise. (<http://cerlab.hpcf.upr.edu/downloads/Amortiguadores.swf>)

Knochem: A LiveDVD dedicated to chemistry based on Knoppix. Programs open source can be installed in this system, allowing the free distribution of this tool. Programs in chemistry like

ChemCal, ChemTool, Avogadro, RasMol, and Xmakemol, among others, are installed.
(<http://cerlab.hpcf.upr.edu/Knochem.html>)

GRANTS

University of Puerto Rico, Río Piedras Campus, 2021 - 2024
“Center for the Advancement of Hybrid Research Experiences for Underrepresented Students (CAHREUS), Competitive Preference Priority: Building Capacity for Remote Learning”, USDE-MSEIP Award P120A210035, **Co-PI**

University of Puerto Rico, Río Piedras Campus, 2016 - 2017
“REU –Site: PR- CLIMB (Puerto Rico-Chemical Learning in Materials and Biomolecular Applications)”, NSF Award 1560278, Co-PI

University of Puerto Rico, Río Piedras Campus, 2014 - 2015
“From Hectares to Nanometers: GK-12 Multidisciplinary Explorations of Functional Nanoscience and Tropical Ecosystems”, NSF Award 0841338, Co-PI

DISTINTIONS AND RECONGNITIONS

2022-2023 Excellence in Teaching Award, Department of Chemistry, University of Puerto Rico, Río Piedras Campus, June 2023

AWARDS

Pre-MARC Summer Fellowship, University of Puerto Rico-Rio Piedras Campus - Research in Chemical Education 2007 and 2008

GAANN Fellowship, Department of Federal Education - University of Puerto Rico- Rio Piedras Campus as graduate student 2003 - 2006

LICENCES/CERTIFICATIONS

“Certification of Development of Virtual Learning Environments (UPR)”, Digital Citizen , Centro para la Excelencia Académica, University of Puerto Rico, Río Piedras Campus
May 2023

The Inclusive STEM Teaching Project Course – The Inclusive STEM Teaching Project, edx.org
December 2021

Puerto Rico (Explosive License – Puerto Rico Police Department) Exp 30-01-2021
License # 030-335-100

Mental Health First Aid USA, National Council for Behavioral Health, Universidad de Puerto Rico, Rio Piedras Campus, Exp 6 – 28 -2023

Mental Health First Aid USA, National Council for Behavioral Health, Universidad de Puerto Rico, Rio Piedras Campus, Exp 6 – 4 -2021

PROFESSIONAL DEVELOPMENT

- “Química para pequeños científicos”, Centro de Desarrollo Preescolar de la UPR, June 2023
- “Química Divertida”, IV Simposio El Poder de la Mujer en las Ciencias, University of Puerto Rico – Río Piedras Campus, Workshop leader, March 2023
- “El poder de las niñas y mujeres en STEM”, Escuela Elemental UPR, February 2023
- “The Transformation of the General Chemistry Course in the University of Puerto Rico, Río Piedras Campus from Face-to-face to an Online Course”, Poster Presentation, 2022 Southeastern Regional Meeting ACS, San Juan, PR, October 19 – 22, 2022
- “Best Practices for Online Teaching”, Universidad de Puerto Rico, September 2022
- “From an Emergency Pandemic Course to an Online Course: A Case Study of a General Chemistry Course in a Resource-Constrained Hispanic Serving Institution”, Oral Presentation, Biennial Conference in Chemical Education 2022, Purdue University, Indiana, July 31 - August 4, 2022
- “III simposio El Poder de la Mujer en las Ciencias”, University of Puerto Rico – Río Piedras Campus, Panelist, March 2022
- “Química a tu alcance”, Escuela Elemental UPR, April 2022
- “Química a tu alcance”, Escuela Elemental UPR, March 2022
- “CyberCamp 2021”, Virtual Computer Sciences Department Camp, University of Puerto Rico-Río Piedras Campus. Consultant and Designers of Online Practices. Summer 2020
- “El agua es especial”, Escuela Elemental UPR, April 2021
- “Acidos-Bases: Lo que debemos saber”, Workshops for Eighth grade teachers from “Departamento de Educación de Puerto Rico”. December 11, 2020
- “Reacciones en nuestro contorno”, Workshops for Eighth grade teachers from “Departamento de Educación de Puerto Rico”. December 17, 2020
- “Acidos-Bases: Lo que debemos saber”, Workshops for Eighth grade teachers from “Departamento de Educación de Puerto Rico”. December 11, 2020
- “CyberCamp 2020”, Virtual Computer Sciences Department Camp, University of Puerto Rico-Río Piedras Campus. Consultant and Designers of Online Practices. Summer 2020
- “Química Escolar”, Sacred Heart School, March 2020.
- “Química Escolar”, Sacred Heart School, November 2018.
- “Química Preescolar”, Centro de Desarrollo Preescolar, Universidad de Puerto Rico, Río Piedras Campus, April 2018.
- cCWCS Distance Learning & Hybrid Teaching Workshop, Denver, Colorado, May 4th – 7th, 2017

- “Química Preescolar”, Centro de Desarrollo Preescolar, Universidad de Puerto Rico, Rio Piedras Campus, April 2016.
- “Nanotecnología en el salón de clases”, Primer Encuentro IDEA-STEAM, Universidad de Puerto Rico, Rio Piedras, Octubre 2014.
- “Uso mis cinco sentidos en la Química”, Centro de Desarrollo Preescolar, Universidad de Puerto Rico, Rio Piedras, Octubre 2014.
- "Química Preescolar", Centro de Desarrollo Preescolar, Universidad de Puerto Rico, Rio Piedras Campus, April 2013.
- "Cloud Technology Tools to Assist Teachers Inside and Outside the Classroom", University of Puerto Rico-Rio Piedras Campus, February 2013.
- 41st ACS Junior Technical Meeting 26th Puerto Rico Interdisciplinary Scientific Meeting, University of Puerto Rico, Cayey Campus, March 11, 2006.
- Extech 2006, York, United Kingdom, February 5-8, 2006
- 229th ACS National Meeting, San Diego, CA, March 13-17, 2005.
- 40th ACS Junior Technical Meeting 25th Puerto Rico Interdisciplinary Scientific Meeting, University of Puerto Rico, Mayagüez Campus, March 12, 2005.
- 38th ACS Junior Technical Meeting 23th Puerto Rico Interdisciplinary Scientific Meeting, University of Puerto Rico, Ro Piedras Campus, March 8, 2003.
- 32th International Symposium on the Environmental and Analytical Chemistry, Plymouth, UK, June 17-21, 2002.
- 35th ACS Junior Technical Meeting 20th Puerto Rico Interdisciplinary Scientific Meeting, University of Puerto Rico, Ro Piedras Campus, March 11, 2000.
- National Minority Research Symposium, Crowne Plaza Phoenix, November 10 - 13th, 1999, Phoenix Arizona.
- 34th ACS Junior Technical Meeting 19th Puerto Rico Interdisciplinary Scientific Meeting, University of Puerto Rico, Mayagüez Campus, March 13, 1999
- National Minority Research Symposium, November 1998, New York.

Book appearances

- Alfonso, D., Díaz, L. 2023 “La mujer Latina en la ciencia” p. 21, 38. Publicaciones Puertorriqueñas, Inc. San Juan, PR. ISBN 978-12537-620-6
 - Dr. Kariluz Dávila appears as one of the Latina scientists who were profiled in the book.
- Díaz, L., Zuluaga-Gómez, C. Alfonso-Cano, D., 2023 “La mujer Latina en la ciencia – Tomo 2” p. 6, 77, 138. Publicaciones Puertorriqueñas, Inc. San Juan, PR. ISBN 978-1-62537-625-1
 - Dr. Kariluz Dávila appears as one of the Latina scientists who were profiled in the book.

TECHNICAL SKILLS

Laboratory Techniques: Gas Chromatography, Thin Layer Chromatography, Lipid Extraction, Atomic spectroscopy, Ultraviolet/Visible Molecules Absorption Spectroscopy, Mass Spectroscopy, High-Performance Liquid Chromatography, Supercritical Fluid Extraction, Thermal Desorption Extraction, Ultrasonic Probe Extraction, Solid Phase Microextraction (SPME).

Course Management Systems: Blackboard, WebCT, Moodle, ARIS

Chemistry Applications: HP ChemStation, AMDIS, NIST/EPA/NIH Spectra Libraries

Internet Applications: Chrome, Outlook, Thunderbird, IM, Mail, Google Sites, Google Slide, Google Docs, Google Sheet, OneDrive

Productivity Applications: OBS Studio, TEX, LATEX, BibTEX, Microsoft Office, Open Office, and other common productivity packages for Windows, OS X, and Linux platforms

Operating Systems: MacOS, Microsoft Windows, Linux, and other UNIX variants.

EXTRACURRICULAR

University of Puerto Rico, Río Piedras Campus October 2020 - Present

Mentor of Health Occupations Students of America - UPRRP

University of Puerto Rico, Río Piedras Campus October 2020 - Present

Mentor of American Medical Women's Association - UPRRP

SKILLS

Excellent written and oral skills in Spanish and English

Strong work ethics

Responsibility

Work under pressure

Analytical reasoning and skills

SUBMITTED BUT DECLINED PROPOSALS

IUSE:HSI: Building Capacity: Overcoming Critical Transition in STEM through Computational Thinking (CT4CT) 2019

IUSE:EHR: Educational Materials for a CS1 Course for the Next Generation of Science Majors 2017

STEM+C EI: Chem10(1|2)+C and CS1+Science: Training the next generation of STEM teachers in Puerto Rico 2016

IUSE:EHR: Development Educational Materials to Integrate Computing in the

