Elizabeth Rubio

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Education

PhD Mathematics; The University of Texas at Arlington (In Progress) — *Aug '23 - Present*
M.S. Mathematics; The University of Texas at Arlington — *Aug '23 - Dec '25*
B.A. Mathematics; California State Polythechnic University Humboldt — *Aug '21 - Dec '22*
A.S. Mathematics; Los Angeles Valley College — *Feb '10 - Jun '18*
High School Diploma; John F. Kennedy High School — *Sept '05 - Jun '09*

Teaching Experience

University of Texas at Arlington, Mathematics Department — *Arlington, TX*
Graduate Teaching Assistant — *Aug '23 - Present*

- Lesson Plan for 4 instruction periods per week with enrollment capped at 75 per semester. Issue quizzes, create rubric and grade quizzes and other weekly assignments.
- **Courses:** Pre-Calculus, Calculus I

Simons Laufer Mathematical Sciences Institute — *Berkeley, CA*
MSRI Undergraduate Program (MSRI-UP) Graduate Teaching Assistant — *Summer 2026*

- Provide research and career mentorship for undergraduate students by working closely with them throughout summer research program.
- **Research Topic:** Numerical Methods for Differential Equations

Cal Poly Humboldt, Mathematics Department — *Arcata, CA*
Student Assistant - Grader — *Jan '22 - Dec '22*

- Create solutions for problem sets and grade paper and electronic submissions for 50 students per semester.
- **Courses:** Calculus I, Calculus III, Calculus for the Biological Sciences & Natural Resources.

Cal Poly Humboldt, School of Education — *Arcata, CA*
Student Assistant — *Jan '22 - Dec '22*

- Collect and proofread submissions for Critical Race and Gender Studies Journal.
- Lesson plan in english and spanish about critical race theory. Implement cultural microaffirmations with high school students.

Research Experience

Dynamics of PD-1, PDL-1 and Immunotherapy in an Esophageal Cancer Microenvironment — *Arlington, TX, USA*
University of Texas at Arlington — *Aug 2024 - Present*

- **Advisors:** Dr. Souvik Roy, Dr. Hristo Kojouharov, Dr. Erika Gallo
- **Collaborators:** Darsh Gandhi, Austin Carlson
- Performed extensive literature review of math and biology research papers
- Creating and analyzing Ordinary Differential equation (ODE) models incorporating biomarkers of Esophageal Adenocarcinoma
- Utilize optimal control methods and our model to determine best patient-specific treatment schedules

Modeling Viability of M13 Bacteriophage in Starvation Conditions for K-12 Escherichia Coli — *Arlington, TX, USA*
University of Texas at Arlington — *Jan 2025 - Present*

- **Advisors:** Dr. Christopher Kribs, Dr. Erika Gallo, Dr. Hristo Kojouharov, Dr. Keaton Hamm
- **Collaborators:** Emma Slack, Amira Claxton, Austin Brown, Kaylea Arif, Ryan Arif, Abdurrahman Himawan
- Developed a mathematical model incorporating possible consumption of bacteriophage by bacteria.
- Collect data in a biology lab setting by plating and counting bacterial culture with bacteriophage and isolated bacteriophage under varying conditions.

A Mathematical Model of Oropouche Virus in the Amazon *Arlington, TX, USA*

University of Texas at Arlington *Nov 2024 - May 2025*

- **Advisor:** Dr. Christopher Kribs
- **Collaborators:** Carli Peterson, Darsh Gandhi, Emma Slack, Amira Claxton, Austin Carlson
- Developed a novel mathematical model of Oropouche virus transmission dynamics in the Brazilian Amazon using non-autonomous ODEs.
- Performed qualitative analysis on the autonomous ODE model.
- Used a least squares data fitting approach to numerically estimate unknown model parameters.
- Propose various seasonal forcing functions and compare numerical results of each.
- Submitted for publication

Scholarships

$200	Graduate School Writing Group Grant	*UT Arlington '26*
$5,000	Graduate School Graduate Student Organization Grant	*UT Arlington '25-'26*
$1,500	Alan Amaya Memorial Scholarship for mentoring and service in the math department	*UT Arlington '25-'26*
$2,500	Benny M. McCarley Scholarship for exceptional academic achievement and dedication	*UT Arlington '25-'26*
$34,000	Graduate Research Fellowship at UTA RTG: Mathematical Biology for Human Health	*NSF '24-'25*
$1,500	Stephen R. Bernfeld Memorial Scholarship	*UT Arlington '24-'25*
$4,000	Michael & Wanda Ray Scholarship, Mathematics Department	*UT Arlington '23-'24*
$2,000	Travis Jepsen Memorial Scholarship, Mathematics Department	*Cal Poly Humboldt '21-'22*
$1,000	Dr. Orval M. Klose Scholarship, Mathematics Department	*Cal Poly Humboldt '21-'22*

Presentations

Presentations

- **"Modeling Tumor-Immune Dynamics in Esophageal Cancer"**, (Feb 2026) Poster Presenter at Mathematics of Cancer Workshop at Institute for Pure and Applied Mathematics in Los Angeles, CA
- **"Modeling Tumor-Immune Dynamics in Esophageal Cancer"**, (Jan 2026) Speaker at Tea Time seminar at UTA
- **"Modeling Seasonality in the Transmission of Oropouche Virus"**, (Sept 2025) Mini-Symposium Presenter at SIAM Texas-Louisiana Sectional at The University of Texas at Austin in Austin, TX
- **"Modeling Seasonality in the Transmission of Oropouche Virus"**, (Aug 2025) Poster Presenter at National Institute for Theory and Mathematics in Biology MathBio Convergence Conference in Chicago, IL
- **"Optimization of Cancer Treatment Using a Mathematical Model of Tumor Immune Dynamics"**, (May 2025) Invited Speaker at Escuela de Modelación Matemática (School of Math Modeling) at Universidad del Estado de Hidalgo in Hidalgo, Mexico
- **"Modeling Seasonality in the Transmission of Oropouche Virus"**, (May 2025) Invited Speaker at Escuela de Modelación Matemática (School of Math Modeling) at Universidad del Estado de Hidalgo in Hidalgo, Mexico
- **"A Novel Mathematical Model of Seasonality in Oropouche Virus Transmission"**, (April 2025) Poster Session at Infinite Possibilities Conference at the Institute for Mathematical and Statistical Innovation in Chicago, IL
- **"Navigating Graduate School in STEM Panel"**, (April 2025) Panelist at UTA College of Science and SACNAS chapter event
- **"UNIV" Course for transfer students**, (Feb 2025) Invited Speaker at UTA
- **"A Novel Mathematical Model of Seasonality in Oropouche Virus Transmission"**, (Feb 2025) Poster Session at Gulf States Math Alliance at Southern University at New Orleans (SUNO) in New Orleans, Louisiana
- **"Graduate School Panel"**, (Nov 2024) Panelist at NSF Funded Mathposium conference at UTA
- **"Charlas Entre Amigos"**, (Nov 2024) Guest on the US Department of Education funded Empowerment, Development and Growth in Education Center's Podcast for graduate students
- **"What Is Math Research?" Panel**, (Oct 2024) Organizer and Moderator at UTA AMS Graduate Student Chapter general body meeting
- **STEM Panel**, (June 2024) Panelist at LULAC National Educational Service Centers Upward Bound event for local high school students

Service and Outreach

Student and Community Organizations

- **Association for Women in Mathematics chapter at UTA** Social Media (Aug 2026 - Present), increase the prescence and visibility of women in the mathematical sciences.
- **Society for the Advancement of Native Americans/Chicanos in Science chapter at UTA** Vice President (Aug 2025 - Present), Foster true diversity in STEM starting at the campus level by connecting members to each other and to resources.
- **American Mathematical Society, UTA Graduate Student Chapter** President, Vice President (Aug 2024 - May 2026), Support the recruitment, retention, and success of Latinx and other historically underrepresented graduate students at UTA.
- **Latinx Graduate Student Association, UTA** Vice President, President (Jan 2024 - Present), Foster community among graduate students in mathematics, promote personal and professional development. Connect students with potential mentors, collaborators, colleagues, peers and friends.
- **Dogwood Canyon Audubon Society** Volunteer (Jul 2024 - Present), Protect birds and their habitats using science, advocacy, education, and on-the-ground conservation.
- **TRIO Educational Talent Search** Mentor (Aug 2022 - Dec 2022), Create and present workshops to middle schoolers that encourage students to pursue higher education.
- **Jardin Santuario (Sanctuary Garden)** Volunteer (Sep 2020 - Dec 2022), Create and Protect a Safe Space for immigrants, open to all community members. Harvest and share edible vegetation, native plants, and plants to attract pollinators. Educate members about seasonality and sustainability.
- **Students for Quality Education, CalPoly Humboldt** Member (Aug 2021 - Dec 2022), Work to make sure that education is accessible to all and free of harassment and discrimination. Recruit members, plan and promote events.
- **Danza Azteca Mexica Club** Member (Aug 2021 - Dec 2022)

Other Conferences and Workshops

SACNAS National Diversity in STEM Conference *Oct '25*
Colombus, OH

Early Graduate Research in Applied Mathematics Workshop *Jun '25*
American Institute of Mathematics (AIM) in Pasadena, CA

SIAM Conference on Computational Science and Engineering (CSE25) *Mar '25*
Fort Worth Convention Center in Forth Worth, TX

Southwest Local Algebra Meeting (SLAM) *Mar '25*
Arizona State University in Phoenix, AZ

PODERISTAS Latinas Make A Difference: The Power Up Summit *Aug '24*
Loews Arlington Hotel & Convention Center in Arlington, TX

Pa' Lante Conference for First Generation Students *Aug '24*
University of Texas at Arlington in Arlington, TX

Southwest Local Algebra Meeting (SLAM) *Feb '24*
Univeristy of Oklahoma in Norman, OK

Modern Mathematics Workshop at SACNAS National Diversity in STEM Conference *Oct '23*
Portland, OR

Math Alliance Field of Dreams Conference *Nov '22*
University of Minnesota in Minneapolis, MN

Work Experience

Luminarias Institute, Inc. *Sylmar, CA*
Administrative Assistant and Medical Billing *Sept '20 - June '21*

- Coordinate between trainees and supervisors. Communicate new or updated protocols to all staff. Onboarding and training of new interns.
- Manage reporting logs of therapist Trainees. Present data to school sites and board members.
- Monthly insurance billing. Internal audits of logs against billed session dates.
- Organization of virtual and paper files for all staff. Organization of all provider documentation including insurance contracts, session notes, employee files and financial documents.
- Software used: Office Ally, Optum, Microsoft Excel, Google Sheets, Apple Numbers, Zoho Mail and Dropbox.

Exact Staff *Santa Clarita, CA*

Staffing Supervisor *Dec '16 - Oct '20*

- Document start dates, termination dates, and pay rates for temporary assignments in employee management system (eEmpAct) and timekeeping systems (AMG and PayCom).
- Daily communication with up to 175 temporary employees.
- Submit employee requests for paid sick time, changes in direct deposit accounts or payroll discrepancies. Submit employee time cards weekly after reviewing for any meal penalties, unapproved overtime or missing punches. Coach employees and supervisors as needed.
- Ensure clients were in compliance before sending employees to their site. Ensure agency was in compliance through annual audits of digital and paper employee files.

Starbucks *Van Nuys, CA*

Barista *July '14 - July '16*

- Food service and cleaning. Training of new partners. Update in-house communications regarding new promotions, employee policy updates and announcements.

Boost Mobile *Van Nuys, CA*

Sales Representative *July '16 - Dec '16*

- Accept bill payments, process device activations, activate new prepaid plans, and answer general customer questions. Weekly inventory and ordering of product and office supplies.

Los Angeles Mission College Foundation *Sylmar, CA*

Communication Coordinator *Aug '12 - Dec '14*

- Managed communication between board members, donors and students in regards to board meetings, fundraising events, scholarship opportunities and events. Responsible for website, social media, campus boards and community postings.

Check 'N Go *North Hollywood, CA*

Customer Service Representative *Jan '11 - Apr '11*

- Process customer applications for loans. Review, process and file customer contracts. Accept bill payments. Balance cash drawers and safe.

Other Skills

Coding R Studio, LaTeX, MatLab, C++

Miscellaneous Microsoft Office Suite, Google Suite, Typing: 70wpm, Bilingual: spanish

References available upon request.