ISABEL BARRIO SANCHEZ

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EDUCATION

University of Pittsburgh.   **Ongoing, expected completion May 2026**
Ph.D. in Mathematics.
Research area: Numerical Analysis and Scientific Computing.
Areas of Interest: Fluid Structure Interaction, Computational Fluid Dynamics.

West Virginia University Institute of Technology   **2017-2021**
Bachelor of Science in Mathematics.
Cumulative GPA: 4.0/4.0.
Minors: Computer Science, Economics.

COMPUTER SKILLS

Languages: Python, MatLab, Java, C++.
Research: FreeFem++, AMReX.
Other: HTML/CSS, UNIX.

WORK EXPERIENCE

Graduate Teaching Assistant - University of Pittsburgh   **2021-present**

- Led recitations and held office hours for various courses in the Mathematics department.

- Was the main instructor for Business Calculus in Summer 2022.

- Graded upper-level undergraduate courses: Numerical Mathematical Analysis and Modeling in Applied Math.

Student Assistant – Lawrence Berkeley National Lab   **Summer 2023**

- 10-week research internship under Dr. Ann Almgren and Dr. John Bell at the Applied Mathematics and Computational Science Division of the Lawrence Berkeley National Lab.

- Culminated with a research paper "A New Re-redistribution Scheme for Weighted State Redistribution with Adaptive Mesh Refinement". Submitted for publication to the Journal of Computational Physics.

- Contributed to the repository AMREX-Fluids/CAMR.

Assistant for the Computer Science Department – WVU Tech 2018-2021

- Developed and led STEM camps and after-school programs for rural and high-poverty girls in Southern West Virginia. Presented my work at the 2020 ASEE Conference.

- Received grants from NCWIT to develop these programs.

- Assisted Dr Afrin Naz on her Computer Science classes and labs.

TRIO Peer Tutor – WVU Tech 2018-2020

- Tutored math courses to low-income and first-generation college students.

- Courses tutored: College Algebra, Trigonometry, Calculus 1, 2, and 3, Differential Equations, and Probability and Statistics.

- Included online tutoring through Spring 2020.

Fall Orientation Leader – WVU Tech 2018, 2019,2020

- Lead Orientation Leader the two last years (led the other OLs).
- Included virtual orientation in Fall 2020 having to manage big groups and events online.

RESEARCH

- I. Barrio Sanchez, A. S. Almgren, J. B. Bell, M.T. Henry de Frahan, W. Zhang, "A new Re-redistribution Scheme for Weighted State Redistribution with Adaptive Mesh Refinement", 2024, Journal of Computational Physics.

- Working on a project on partitioned methods for two-domain problems with Dr. Catalin Trenchea and Dr. Rebecca Durst.

- A. Naz, M. Lu, C. Broyles, I. Barrio Sanchez, "Competition of VEX Educational Robotics to Advance Girl's Education (COVERAGE)", June 2020, 2020 ASEE Virtual Annual Conference.

PRESENTATIONS

- "Second-order partitioned algorithms with subiterations." 11th Graduate Student Conference, Clemson University, April 20th, 2024.

- "A new Re-redistribution Scheme for Weighted State Redistribution with Adaptive Mesh Refinement." AWM Student Seminar, November 10, 2023. (Link)

- "A new Re-redistribution Scheme for Weighted State Redistribution with Adaptive Mesh Refinement." Computing Sciences Summer Program Poster Session, August 10, 2023.

- "Competition of VEX Educational Robotics to Advance Girl's Education (COVERAGE)." 2020 ASEE Virtual Annual Conference, Computers in Education Division Technical Session 10: STEM Outreach, June 2020.

TEACHING

University of Pittsburgh

Year	Term	Type	Class
2024	Spring	Grading	Numerical Linear Algebra (MATH 1080, 20 students)
		Grading	Numerical Linear Algebra (MATH 1080, 14 students)
2023	Fall	Grading	Ordinary Differential Equations 2 (MATH 1280, 17 students)
		Grading	Numerical Mathematical Analysis (MATH 1070, 29 students)
		Grading	Numerical Mathematical Analysis (MATH 1070, 11 students)
		Grading	Modeling in Applied Math 1 (MATH 1360, 20 students)
	Spring	Recitation	Calculus 1 (MATH 0220, 32 students)
		Recitation	Calculus 2 (MATH 0230, 25 students each) x2
2022	Fall	Recitation	Business Calculus (MATH 0120, 25 students)
		Recitation	Calculus 2 (MATH 0230, 22 students)
		Recitation	Calculus 2 (MATH 0230, 18 students)
	Summer	**Lecture**	Business Calculus (MATH 0120, 15 students)
2021	Fall	Recitation	Calculus 1 (MATH 0220, 25 students)
		Recitation	Calculus 1 (MATH 0220, 22 students)
		Recitation	Calculus 2 (MATH 0230, 24 students)

HONORS AND ACTIVITIES

2021 Graduated Summa Cum Laude.

2018-2021 Outstanding Freshman, Sophomore, Junior, and Senior for the Mathematics Department.

2017-2021 Intercollegiate women's basketball student-athlete at WVU Tech.

Four-time Conference Champions and three National Appearances.

River States Conference scholar-athlete award every semester.

2019 Successful Participant – The Interdisciplinary Contest in Modeling, COMAP.

2018 Successful Participant – The Mathematical Contest in Modeling, COMAP.

PROFESSIONAL ORGANIZATIONS

- Society for Industrial and Applied Mathematics.
- American Mathematical Society.
- Association for Women in Mathematics.