

## Alexandra Cuadra

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### EDUCATION

**Doctor of Philosophy in Mathematics** (Expected August 2025) Purdue University, West Lafayette, IN

**Dissertation:** *STUDENTS' UNDERSTANDING OF PARTIAL DERIVATIVES THROUGH THE LENS OF MATH LITERACY*

**Advisors:** *Dr. Rachael Kenney and Dr. Monica Torres*

**Master of Arts in Mathematics** (2016); Eastern Michigan University, Ypsilanti, MI

**Bachelor of Science in Mathematics** (2014); Florida International University, Miami, FL

**Associate of Arts in Mathematics** (2010) Miami Dade College, Miami, FL

### TEACHING EXPERIENCE

**PURDUE UNIVERSITY, West Lafayette, IN**

**1. Apprentice – Mathematics Department; Fall 2023, Fall 2024**

- Subject: Seminar On Teaching College Algebra and Trigonometry (MA 48400)
- Provided support and mentorship to pre-service teachers who were teaching their first course (in the college setting) in classroom management, delivering material, department policies, etc.
- Supervised pre-service teachers in their teaching
- Assisted in facilitating discussions about applying pedagogical practices in the pre-service teachers' classrooms
- Designed activities to help pre-service teachers plan their lessons.

**2. Instructor – Mathematics Department; August 2020– May 2024**

- Subject(s): Applied Calculus I & II (MA 16010 & MA 16020)
- Designed and implemented course curriculum, and assessments
- Assessed students' progress in the course
- Wrote online content including notes, quizzes, and exams
- Tutored students with specific math homework problems
- Maintained a website with class materials
- Taught with Concept Definition/Image and Writing To Learn Mathematics strategies

**3. Instructor – Pre-College Pathways; Summer 2023, Summer 2024**

- Subject(s): Easy as PI (GS 22200) [a Pre-Calculus course]
- This course is designed for students who will be taking their first high school pre-calculus course in the fall and are not advanced in math
- Designed and implemented course curriculum and assessments using student-centered projects allowing students to explore mathematics

A. Cuadra

**4. Course Coordinator – Math Department; Summer 2023**

- Subject: Applied Calculus II (MA 16020)
- Designed and implemented course curriculum and assessments
- Assessed students' progress in the course
- Wrote online content including notes, quizzes, and exams
- Tutored students with specific math homework problems
- Maintained a website with class materials
- Taught classes via Zoom

**5. Recitation Instructor – Math Department; August 2019 – May 2020**

- Subject(s): Plane Analytic Geometry and Calculus I (MA 16100)
- Designed and implemented course curriculum, and assessments
- Assessed students' progress in the course
- Tutored students with specific math homework problems

***UNIVERSITY OF MICHIGAN – FLINT, Flint, MI***

**6. CEO Summer Math Instructor – Office of Educational Opportunity Initiatives (EOI); Summer 2018**

- Subject(s): Calculus, Trigonometry, and Algebra
- Committed to Excellence & Opportunity (CEO) is a pre-college program that provides high school students with a wide range of academic workshops and leadership and cultural opportunities to increase college access, retention, and completion
- Designed and implemented course curriculum, and assessments
- Assessed students' progress in the course

***UNIVERSITY OF TOLEDO; Toledo, OH***

**7. Instructor – Math Department; Spring 2017**

- Subject(s): Trigonometry (MATH 1330)

**8. Teaching Assistant – Math Department; Fall 2016**

- Subject(s): Calculus For The Life Sciences With Applications I (MATH 1750)

***EASTERN MICHIGAN UNIVERSITY; Ypsilanti, MI***

**9. Lecturer – Math Department; September 2015 – December 2016**

- Subject(s): Intermediate Mathematics (MATH 104)

***FLORIDA INTERNATIONAL UNIVERSITY; Miami, FL***

**10. Learning Assistant – Math Department; August 2011 – May 2014**

- Subjects: Developmental Mathematics II, Business Calculus, Calculus I, Calculus III, Intermediate Algebra, and College Algebra
- Met weekly with faculty to plan for the upcoming week, reflect and analyze from the previous week
- Facilitated collaboration among students by assessing student understanding and asking guiding questions
- Assisted with the admission of a group of students called the Golden scholars [<https://sas.fiu.edu/golden-scholars/>] and their learning of math
- Mentored students with questions about college life at Florida International University

## A. Cuadra

- Co-created, graded, and administrated students' homework (online software), quizzes, exams, and finals

### **OTHER PROFESSIONAL EXPERIENCE**

- 1. Textbook Editor – Mathematics Department; Purdue University, May 2024 – Present**
  - Subject(s): Applied Calculus II (MA 16020)
  - Edited the new e-text in the Achieve and Variate online platform by updating the e-text and inserting and labeling new videos into the platform
  - Added contextual word problems that match the curriculum into the homework system
- 2. Assistant Curriculum Developer – Mathematics Department, Purdue University; June 2022 – Present**
  - Subject(s): Applied Calculus II (MA 16020)
  - Helped redesign this course's content, homework assignments, quizzes, exams, and structure of the given material
- 3. Instructional Designer – Curriculum & Instruction Department, Purdue University; Spring 2024**
  - Created a template to support pre-service teachers to unpack state math standards by considering different conceptions/visuals/understandings of children's mathematics/informal vocabulary/formal vocabulary they are using.
- 4. Proctor – Mathematics Department, Purdue University; Spring 2023, Fall 2023, Spring 2024, Fall 2024**
  - Proctor Mathematics Advanced Credit Exam, and Accommodations for Students with Disabilities Exams
- 5. Senior TA for TA Screening – Mathematics Department, Purdue University; August 2023, August 2024**
  - Evaluated new graduate students for placement as a teaching assistant or grader
- 6. Math Resource Room Supervisor – Mathematics Department, Purdue University; Summer 2020**
  - Tutored students with specific math homework problems
  - Subject(s): Precalculus – Functions and Trigonometry, Plane Analytic Geometry and Calculus I-II, Applied Calculus I-II, Multivariate Calculus
- 7. Graduate Assistant – Ronald E. McNair Program, Eastern Michigan University; May 2015 – December 2015**
  - Assisted with the collection, creation, and analysis of GRE Prep Workshops and Weekly Seminars
  - Tutored students in their mathematics courses and the quantitative portion of the GRE
  - Analyzed information on students who have participated in the program
  - Created 2007-2015 McNair Report in support of a grant proposal
  - Assisted students in analyzing quantitative and qualitative components of their research projects.
  - Advisor for McNair Organization of Students (MOST)

## A. Cuadra

8. **Tutor – Holman Success Center, Eastern Michigan University; September 2014 – May 2015**
  - Subjects tutored range from Developmental Mathematics to Calculus 3
  - Tutored students with specific math homework problems, students studying for the math placement exams, and students studying for standardized tests such as the GRE or GMAT
  - Assisted in the creation of a Drop-In Tutor Manual
9. **Graduate Assistant – Mathematics Department, Eastern Michigan University; September 2014 – August 2016**
  - Tutored in the Math Lab in subjects ranging from Finite Mathematics to Calculus 3 and Differential Equations.
  - Tracked student attendance, test corrections, and media checkout in the Math Lab
  - Collaborate with faculty on research projects
  - Graded for professors
  - Proctored Math Exams

## RESEARCH EXPERIENCE

### CONFERENCE PRECEEDINGS

1. Cuadra, A. and Kenney, R. (March, 2025). *Using Math Literacy Strategies in Calculus: Amplifying Undergraduates' Understanding of Partial Derivatives*. Alexandria, VA: SIGMAA on RUME.

### INVITED TALKS

1. Cuadra, A. (November, 2024). *Using Concept Mapping To Explore Students' Understanding of Partial Derivatives*. Presented at Graduate Research Day – Department of Mathematics at Purdue University, West Lafayette, IN.
2. Cuadra, A. (October, 2024). *Using Writing To Learn Mathematics (WTLM) Activities at the Collegiate Level*. Presented at Innovative Teaching Seminar– Department of Mathematics at Purdue University, West Lafayette, IN.
3. *Finding an Advisor*, Basic Skills Workshop at Purdue University. September 2024. [Panel Presentation]
4. Cuadra, A. (April, 2024). *Staying Math-y While Doing Math Education Research*. Presented at Second Annual AWM Purdue Chapter Symposium in West Lafayette, IN.
5. *Honest Talk*, McNair Research Seminar at Eastern Michigan University. October 3, 2014. [Panel Presentation]

### PRESENTATIONS

1. Cuadra, A. (April, 2025). *Does Students' Understanding of Partial Derivatives Evolve When Learning Related Topics?* Presented at 14th Annual Meeting of the Indiana Mathematics Education Research Symposium (IMERS) in Indianapolis, IN.
2. Cuadra, A and Kenney, R. (April, 2025). *Unpacking the Use of a Math Literacy Activity For Formative Assessment in Calculus*. Presented at 14th Annual Meeting of the Indiana Mathematics Education Research Symposium (IMERS) in Indianapolis, IN.

## A. Cuadra

3. Aje, C., Cuadra, A. and Kenney, R. (April, 2025). ***Preservice Secondary Teachers' Learning to Position Their Students As Problem-Posers in Algebra***. Presented at 14th Annual Meeting of the Indiana Mathematics Education Research Symposium (IMERS) in Indianapolis, IN.
4. Cuadra, A. and Kenney, R. (March, 2025). ***Using Math Literacy Strategies in Calculus: Amplifying Undergraduates' Understanding of Partial Derivatives***. Presented at The 27<sup>th</sup> Annual Conference on Research on Undergraduate Mathematics Education (RUME) in Alexandria, VA.
5. Cuadra, A (September, 2024) ***Unpacking Students' Understanding of Partial Derivatives Through Math Literacy Activities***. Presented at National Council of Teachers of Mathematics (NCTM) 2024 Annual Meeting & Exposition at Chicago, IL.
6. Cuadra, A. (September, 2024). ***Using Different Qualitative Data Analysis Techniques on the AMP - Chart***. Presented at Mathematics Education Seminar at Purdue University, West Lafayette, IN.
7. Cuadra, A. (August, 2024). ***Using Writing To Learn Mathematics (WTLM) Activities To Unpack Students' Understanding***. Presented at Math Fest 2024 in Indianapolis, IN.
8. Cuadra, A. (March, 2024). ***Students' Understanding of Partial Derivatives Through the Lens of Math Literacy***. Presented at 13th Annual Meeting of the Indiana Mathematics Education Research Symposium (IMERS) in Indianapolis, IN.
9. Cuadra, A. (February, 2024). ***Evolution of My Frayer Model***. Presented at Mathematics Education Seminar at Purdue University, West Lafayette, IN.
10. Cuadra, A. (October, 2023). ***Student's Understanding of Partial Derivatives in Calculus***. Presented at Mathematics Education Seminar at Purdue University, West Lafayette, IN
11. Fernandez<sup>1</sup>, A. (November, 2016). ***"What Becomes a Fraction, the Power or the Result?" : An Investigational Study on the Strength of Concept Image versus Concept Definition***. Presented at the Graduate @ the Podium (GaP) at Eastern Michigan University, Ypsilanti, MI.
12. Fernandez<sup>1</sup>, A. (October, 2016). ***Using Concept Images to Reinforce Concept Definitions***. Presented at the 34<sup>th</sup> Annual MTA Connections Conference at University of Michigan, Ann Arbor, MI.
13. Fernandez<sup>1</sup>, A. (November, 2015). ***Elliptic Curves and Their Applications To Cryptography***. Presented at the Graduate Research Conference (GRC) at Eastern Michigan University, Ypsilanti, MI.
14. Cuadra, A. (March, 2014). ***Determining which Placement Tool is best for Students Entering Calculus 2 and Calculus 3***.  
Presented at the Annual Advanced Research and Creativity in Honors Conference (ARCH) at Florida International University, Miami, FL.  
Presented at Florida International University Math Club Student Colloquium Meeting at Florida International University, Miami, FL.

## OTHER RESEARCH EXPERIENCE

1. **Master Program, Eastern Michigan University, Ypsilanti, MI; January 2015 – 2016**

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<sup>1</sup> From August 2014 – January 2021, full name was Alexandra Cuadra Fernandez.

## A. Cuadra

- a. Research Project 1: Conducting an experimental lesson to intermediate algebra students with concept images for the negative exponent and the rational exponent rules to strength students' understanding of those rules to avoid further confusion of those rules
  - b. Research Project 2: Determine what statistical distribution, if any, corresponds with the behavior of these random fluctuations that grant the Helmut Hasse Theorem true.
2. **Assistant Researcher and Ronald E. McNair Fellow – Office of Retention and Graduation Success, Florida International University** Miami, FL; May 2012 – August 2014
- a. Research Project 1: To find vital markers (i.e. courses students do poorly in) in all the engineering tracks, and determining if those vital markers are a cause for the low numbers of engineering students at FIU.
  - b. Research Project 2: Determining if AP scores or AP course grades can be used as a placement tool for Calculus 2 or 3.

## DEPARTMENTAL & UNIVERSITY SERVICE

1. **Math Ed Graduate Student Community Development Committee**, August 2023 – Present, Purdue University
2. **Purdue Graduate Student Government (PGSG) Senator for the Mathematics Department**, April 2022 – December 2022, Purdue University
3. **Committee Member**, FIU iREAL (Integrating Research Engagement Assessment Learning) Commission, 2013; College of Arts & Sciences, Florida International University
  - Collaborated with professors, faculty/staff, and undergraduate students to prepare for the strategic plan for the university which focused on: “What are the major drivers of change, now and in the foreseeable future, in the delivery of educational services, and how will they likely impact FIU and our predominantly minority and non-traditional (working) students who have been shown to have a greater need for high-touch educational experiences?”
  - Helped complete a draft vision white paper
4. **Member**; Math Club at Eastern Michigan University (September 2014 – August 2016)
5. **Advisor**; McNair Organization of Students (MOST) at Eastern Michigan University (November 2015 – May 2016)
6. **Treasurer** (2012 – 2014); Delta Epsilon Iota: Academic Honor Society, Florida International University  
**Member** (2011 – 2014); Delta Epsilon Iota: Academic Honor Society, Florida International University
7. **Events Coordinator** (2013 – 2014), Florida International University Math Club

## AWARDS, SCHOLARSHIPS, AND FELLOWSHIPS

### **PURDUE UNIVERSITY; West Lafayette, IN**

1. Department of Mathematics at Purdue University: Excellence in Service TA Award (Recipient 2025)
2. Merrill E. Shanks Memorial Award (Recipient 2024)
  - Annual award that goes to the best student in mathematics education
3. Department of Mathematics at Purdue University: Excellence in Teaching TA Award (Recipient 2022)
4. Purdue Teaching Academy at Purdue University: Graduate Teaching Award (Recipient 2022)
5. Barbra A. Kunze Scholarship (Recipient, August 2016)
6. **Graduate Assistance in Areas of National Need (GAANN) Fellowship Recipient**; August 2017- July 2020
  - Supported by the Department of Education and Purdue University

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***EASTERN MICHIGAN UNIVERSITY; Ypsilanti, MI***

7. Department of Mathematics at Eastern Michigan University: Outstanding Achievement Award for Excellence in Graduate Studies (Recipient, April 2016)
8. Department of Mathematics at Eastern Michigan University: Graduate Research Conference Participation Award (Recipient, April 2016)
9. Department of Mathematics at Eastern Michigan University: Recognition for Outstanding Service as a Graduate Assistant (Recipient, April 2015, and April 2016)
10. Department of Mathematics at Eastern Michigan University: Recognition for Outstanding Service as a Mathematics Tutor (Recipient, April 2015 and April 2016)
11. Latino Advisory Council of Staff and Faculty & Latino Students Association: EMU Latino Alumni Network Award (Recipient, September 2015)
  - To assist Latino students in their pursuits of academic excellence
  - Awarded to a graduate student who has demonstrated active involvement in the Latino and/or university community
12. Commission on Women Eastern Michigan University: Women's Commission Scholarship (Recipient, August 2015)
13. Latino Advisory Council of Staff and Faculty & Latino Students Association: Committed Latino Leader Award (Recipient, March 2015)

**LANGUAGES**

Spanish, English

**SKILLS**

- Computer Skills: LaTeX, Beamer, Microsoft Office, Python, SQLite, GeoGebra
  - Course Management: Blackboard, Canvas, Brightspace
  - Homework programs: ALEKS, Wiley Plus, CourseCompass, MyMathLab, MyLab Math, LON-CAPA, Achieve
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**REFERENCES**

1. Dr. Rachael Kenney
2. Mr. Dave Norris
3. Dr. Monica Torres