JOHAN CRISTOBAL

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https://johanmcs.github.io/johanc

EDUCATION

Ph.D. in Mathematics *expected* May 2025
University of Nebraska-Lincoln (UNL)
Advised by:

M.S. in Mathematics received December 2021
University of Nebraska-Lincoln (UNL)

B.S. in Mathematics of Computation received June 2020
University of California, Los Angeles (UCLA)

RESEARCH

I am interested in partial differential equations with applications and formulations in machine learning. I am also interested in mathematics education research in the effects of virtual learning on student motivation, how community is built in distance, and equity.

POSITIONS

Graduate Teaching Assistant August 2020 - Present
Mathematics Department at UNL

As a Recitation Leader, I ran recitations twice a week to review the lectures and hold guided problem-solving sessions. I addressed questions on the homework and workbook materials. As the Instructor of Record, I designed lectures to address student concerns during on the pre-lecture materials. I implemented mastery-based grading and helped update the lectures.

Graduate Research Assistant Summer 2021
Center for Science, Mathematics, and Computer Education at UNL

We conducted guided interviews of the CSForAll: Adapt, Implement and Research at Nebraska cohort. We wrote drafts for curriculum overviews to advertise the CS curricula to prospective instructors. We learned codes and directed research questions to summarize and organize interview excerpts.

Peer-Learning Facilitator September 2019 - June 2020
Academic Advancement Program at UCLA

Peer-Learning Facilitator ran study sessions per week in a specific course with weekly designed worksheets. We implemented pedagogical theory to highlight and combat societal power dynamics in education that allows students from marginalized communities to feel comfortable and to thrive as scholars.

Independent Contract / Research Assistant October 2017 - September 2019
Easter Island Statue Project

I worked under Dr. Jo Anne Van Tilburg to assist in her research of the Easter Island statues, its archaeological and geographical aspects. I wrote a research article about the sustainability of a long held archaeological categorization (set for publication within Dr. Van Tilburg's next publication). I learned Geographical Information Systems (GIS) to make digital maps of the statue locations. I transcribed and normalized data from previous researchers for ease-of-access and query requests.

TEACHING

◇ = Instructor of Record , ⋆ = Recitation Leader , † = Teaching Assitant , ‡ = Grader

1. ◇ Math 101 - College Algebra — Spring 2022
2. ◇ Math 100A - Intermediate Algebra — Fall 2021
3. † Math 804T - Experimentation, Conjecture, and Reasoning — Summer 2021
   for K-12 service teachers
4. ⋆ Math 107 - Calculus II — Spring 2021
5. ‡ Math 104 - Applied Calculus — Spring 2021
6. ⋆ Math 106 - Calculus I — Fall 2020
7. Math Resource Center Counselor — Fall 2020, Fall 2021
8. Peer Learning Facilitator (UCLA) — Fall 2019 - Spring 2020
   for Physics 1A - Physics for Scientists and Engineers: Mechanics

PAPERS

[1] Disjoint Paths and Matrix Determinants:
A Survey on Lindström-Gessel-Viennot Theorem
Written for: Final project in Math 852 Discrete Mathematics II
Status: Published on website: `LGV Theorem.pdf`

[2] Rock Art Sample Evalutation:
The taŋata manu motif, Rapa Nui, Chile
Advised by: Dr. Jo Anne Van Tilburg, as part of my time as her student research assistant
Status: Submitted, awaiting for publication in Dr. Van Tilburg's work

TALKS

[1] Weather and 3-D Euler Equations — April 20, 2021
Students Partially in Differential Equations Reading Seminar (SPiDERS) — 50 minutes

> "... We will explore the homogoneous, nondimensional, and incompressible Navier-Stokes equations and what its individual parts mean... We look at 3-D Euler Equations: its local solutions and its breakdown."

[2] Home Base for Space Camp — September 8, 2020
Students Partially in Differential Equations Reading Seminar (SPiDERS) — 50 minutes

> "We'll start with introducing what makes a space... a space. Then work our way through adding structures and rules to end the talk on Continuous Function spaces."

AFFILIATIONS

(Pacific) (Great Plains) Math Alliance — June 2019 - Present
Graduate Member, previously Undergraduate Member/Mentee

> Participated in the Facilitated Graduate Applications Process (F-GAP), under the guidance of William Ott from University of Houston.
>
> Attended the Field of Dreams Conference 2020 as a representative of the UNL Mathematics Department.

CONFERENCES

◇ = Spoke , ⋆ = Invited , † = Department Volunteer

1. Pacific Math Alliance Conference | California State University at East Bay — October 2019
2. Field of Dreams Conference | St. Louis, Missouri — November 2019
3. † Field of Dreams Conference | Virtual — November 2020
4. Joint Mathematics Meetings | Virtual — January 2021
5. KUMUNI-ISU Conference on PDE, Dynamical Systems, and Applications | UNL — October 2021
6. paraDIGMS 2021 Fall Conference | Virtual — October 2021
7. Field of Dreams Conference | Virtual — November 2021

AWARDS

1 Dean's Honor List | Awarded Winter 2018 and Spring 2018 by UCLA.

2 Walter Mientka Teaching Award | Awarded 2021 by the UNL Math Department.

"The Walter Mientka Award is given to students who demonstrate exceptional promise as a teacher based on their work during their first one or two years as a graduate teaching assistant in our department."

SKILLS

Mathematics LaTeX, curriculum development

Programming C, C++, Python, Matlab, LISP, SQL, and HTML/CSS (Web-design)

Archaeological Studies ArcGIS, text processing, georeferencing

Languages English (fluent), Filipino/Tagalog (fluent), Spanish (beginner)

Content Creation

- Videos: `https://www.youtube.com/user/johanmode`
- Graphics: `https://johanmcs.github.io/johanc/design`
- Writing: `https://johanmcs.github.io/johanc/writings`