

## Alexander Vázquez Marín

e-mail: alexander.vazquez@uabc.edu.mx

Phone: +52 686 110 8864

Page: <https://sucrose17.github.io/alexandervazquez.github.io/>

## Personal Profile

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I am a passionate undergraduate mathematics student in my final year at the Autonomous University of Baja California, currently participating in an exchange program at the National Autonomous University of Mexico. My academic focus lies in algebraic and analytic number theory, with a particular interest in modular forms and elliptic curves. I am committed to advancing pure mathematics, driven by a desire to solve complex problems and contribute to the academic community. In addition to research, I am passionate about the divulgation of higher mathematics to the general public, aiming to make complex mathematical ideas more accessible.

## Education

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*2021 – Present*

**BSc in Applied Mathematics**, Autonomous University of Baja California (UABC)

*Current GPA: 92%*

*August 2024 - present*

**Academic Exchange Program**, National Autonomous University of Mexico (UNAM)

Participating in advanced coursework and research in mathematics, focusing on areas that complement my ongoing studies in algebra and number theory.

## Relevant Modules

Group Theory, Ring and Field Theory, Modules, Categories, Galois Theory, Algebraic Geometry, Number Theory, Analytic Number Theory, Real Analysis, Measure Theory, Complex Analysis I & II, Topology.

## Additional Education

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- *Summer school at the Center for Mathematical Research, Morelia*, Courses: Geometric Group Theory, Garside Theory, and Introduction to 3-Manifolds (July 2024).
- Training sessions for the Ibero-American Mathematics Competition (October 2024).

## Research Experience

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### Summer Research Program (Delfín Program)

*June – August 2024*

University of Colima

- Selected to research modular forms and elliptic curves.
- Studied relevant results and techniques used in these fields.
- Conducted experiments in elliptic curves using SageMath.

## Thesis

*September 2024 – Present*

Currently working on my bachelor's thesis exploring polygons, lattices, and the number 12, with a focus on algebraic geometry, Noether's formula, and automorphic forms.

## Conference Presentations and Posters

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- *Modular Curves* – Poster, International Congress of Scientific and Technological Research of the Pacific (August 2024).
- *Primes from Euclid to Riemann* – Seminar, Autonomous University of Baja California (May 2024).
- *Modular Curves* – Presentation, National Congress of the Mexican Mathematical Society (October 2024).

## Additional Experience

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**Math Olympiad Trainer** Mexican *Math Olympiad* (2024 Spring)

- Provided theoretical training, corrected solutions, and guidance to students.

## Teaching Assistant

- Group Theory (Fall 2023)
- Mathematical Analysis (Spring 2024)

Assisted in preparing course materials, feedback on assignments and conducted meetings with students to review material, address questions, and solve problems.

## Achievements

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- **Bronze Medal**, first National University Mathematics Olympiad (2024)
- **Honorable Mention** Iberoamerican Math University Competition (2024)
- **Founder and President**, “*Orden de Lagrange*”, a university group affiliated to the Mexican Mathematical Society, with the mission promoting the study of Mathematics (Spring 2024 - present)
- **Elected Mathematics Student’s Representative**, Mathematics Major, Technical Council (Fall 2022 – Spring 2023). Actively represented peers and contributed to Faculty decisions.
- **Organizer**, Research Experiences Students Seminars at the UABC Faculty of Science (2023)
- **Workshop Creator**, "Introduction to Proofs," directed at Math and Physics majors in their first semester (Spring 2024)
- **Organizer**, Mathematician’s Day (2023) and Pi Day Events (2023, 2024). Raised over 20,000 MXN for math outreach activities.
- **Presenter**, High School Mathematics Outreach Campaigns (Spring 2024)
- **Presenter**, Annual Science Week of the Faculty of Science, UABC (2021, 2023)
- **Collaborator**, Optics Room Project for the Caracol Museum (2022)

## Skills

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### Technical Skills

- **Programming Languages:** Python, LaTeX, C, C++, Arduino
- **Mathematical Software:** SageMath for algebraic and number-theoretic computations
- **Research Analysis:** Experienced in reading and interpreting mathematical research papers and literature
- **Mathematical Modeling:** Familiar with numerical methods and problem-solving techniques in applied mathematics
- **Languages:**  
Spanish (Native), English (Fluent), French (Conversational)

### Soft Skills

Leadership, Problem Solving, Commitment and Hard Work, Communication, Team Collaboration, Adaptability,

### Professional Memberships

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- Mexican Mathematical Society
- *Orden de Lagrange*
- UABC Math Olympiad Team

## References

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Brenda de la Rosa Professor of Mathematics, Autonomous University of Baja California  
[brenda.delarosa@uabc.edu.mx](mailto:brenda.delarosa@uabc.edu.mx)