

# RYAN WEIGHTMAN

*PhD Student in Computational Biology*

## CONTACT DETAILS

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## DESCRIPTION

I am a PhD Student currently studying at Rutgers University–Camden. I am a dedicated instructor and student of mathematics with experience using a variety of methods to teach mathematics in a myriad of classroom settings. I am continuing my education in the form of pursuing a PhD in computational biology in the hopes of some day make a contribution to a scientific field through the lens of mathematics.

## EDUCATION

**Rutgers University–Camden Graduate School of Arts & Sciences: Camden, NJ**  
PhD in the Center for Computational and Integrative Biology: Current

**Rutgers University–Camden Graduate School of Arts & Sciences: Camden, NJ**  
M.S in Pure Mathematics: May 2020

**Rutgers University–Camden Institute for Effective Education: Camden, NJ**  
Teacher Preparation Program: Mathematics (P-12)  
Teaching Certification: Awarded Jan. 2019, CEAS

**Rutgers University–Camden College of Arts & Sciences: Camden, NJ**  
B.A in Mathematics: Awarded May 2018  
Minor: Spanish

**The University of Salamanca: Salamanca, Spain**  
Study Abroad: June 2016-Aug. 2016

## HONORS AND AWARDS

**Camden Graduate Scholarship recipient** (Jan. 2018-May 2020)

**Meritorious Achiever Award recipient** (Sept. 2014- May 2018)

**Academic Excellence Scholarship recipient** (Sept. 2014-May 2018)

**Mathematical Sciences Career Motivation Award recipient** (May 2018)

**Phi Beta Kappa Honor Society**

**International Mathematics Honor Society (Pi Mu Epsilon of New Jersey Gamma)**

**The National Leadership Honor Society (Omicron Delta Kappa)**

**Rutgers University–Camden Athenaeum Honor Society**

**Rutgers University–Camden Civic Scholar Scholarship recipient** (Sept. 2014- May 2018)

**Rutgers University–Camden Honors College** (Sept. 2014-May 2018)

## TEACHING EXPERIENCE

### **Rutgers University–Camden: Camden, New Jersey**

Part Time Lecturer  
Jan. 2019-present

- Assigned to teach courses covering topics in elementary/intermediate algebra, basic set theory and basic logic
- Plan and execute algebra lessons based on student need
- Develop materials to be used as assessment, homework, and supplementary materials for students

Teaching Assistant (TA)  
Jan. 2020-2022

- Assigned to grade homework assignments, answer student questions, and assist in the administration of exams for courses such as Calculus II, Calculus III, and Differential Equations
- Assisted various professors in the development and implementation of their remote courses including but not limited to: assisting in development of lecture videos, attending virtual lectures for technical support, assisting in the development of virtual learning resources, assisting in communication between professor and students

Course Developer  
Sept. 2020

- Assigned to develop the online section of an introductory algebra course for Rutgers University–Camden
- Involving but not limited to creating: lecture videos, syllabus, course schedule, exams and homework, grading scale, and course expectations for a partially asynchronous version of the course

### **Collingswood High School: Collingswood, New Jersey**

Long-Term Substitute Teacher  
Sept. 2016-June 2019

- Possess a State of New Jersey Substitute Teacher Certification
- Long-term substitute for AP Calculus and Honors Trigonometry (April 2018-June 2018)
- Instruct 80 sophomore, junior, and senior year students in the absence of the classroom teacher
- Help to prepare AP Calculus students for the College Board AP exam
- Create, implement and manage online resources for students participating in a Twilight program
- Substitute in the absence of cross-disciplinary teachers and student aids in grades 6-12
- Implement classroom management strategies in the absence of the regular classroom teacher

## TEACHING EXPERIENCE CONTINUED

### **Cinnaminson Middle School: Cinnaminson, New Jersey**

Student Teacher  
Sept. 2018-Dec. 2018

- Plan and execute Common Core-aligned pre-algebra lessons for 90 seventh grade students of varying skill-levels
- Participate in parent-teacher conferences, staff meetings, and department meetings
- Implement classroom management strategies

### **First Korean United Methodist Church (FKUMC): Cherry Hill, NJ**

Pre-Calculus and AP Calculus Instructor  
June 2018-Sept. 2018

- Teach 12 students in Pre-Calculus and 4 in AP Calculus during a summer enrichment program (totaling 45 hours per class)
- Prepare curriculum and materials
- Grade assignments
- Administer assessments

### **Self-Employed: Collingswood, NJ**

Math Tutor  
June 2013-present

- Tutor 15 students ranging from 4th grade math to college calculus including ESL and ELL students
- Prepare grade-level curriculum

## RESEARCH EXPERIENCE

### **Rutgers University-Camden: Camden, New Jersey**

Masters Thesis in Pure Mathematics  
Fall 2020

- Supervisor: Dr. Siqi Fu
- Topic of study: Properties of bounded domains and minimizing the first Dirichlet Laplacian Eigenvalue.

Research Assistant for the Center for Computational and Integrative Biology  
Fall 2020

- Supervisors: Dr. Beneddetto Piccoli and Dr. Sean McQuade
- Topic of Study: Developing extended SIR model coupled with Optimal Control Scheme in order to shed light on COVID-19 impact on the state of New Jersey

## RESEARCH EXPERIENCE CONTINUED

### **Rutgers University–Camden: Camden, New Jersey**

Graduate Researcher for the Center for Computational and Integrative Biology  
Fall 2021-Present

- Principal Investigator: Dr. Benedetto Piccoli
- Topics of Study:
  - Apply systems of ordinary differential equations to various biological problems.
  - Develop models in order to quantify biological systems and provide a pipeline for future computational research.

### **Yale University: New Haven Connecticut**

Student Facilitator  
Spring 2021-Fall 2021

- Receive grant funding for work on projects relating to high performance computing
- Present goals of the proposed project
- Give weekly project updates to project facilitators.
- Present the progress made on the proposed project over the lifetime of the grant (6 months)

## RESEARCH PRODUCTS

1. Weightman, R. (2021). Steiner symmetrization and the eigenvalues of the Laplace operator on polygons (Masters dissertation, Rutgers University-Camden Graduate School).

2. McQuade, S. T., Weightman, R., Merrill, N. J., Yadav, A., Trélat, E., Allred, S. R., & Piccoli, B. (2021). Control of COVID-19 outbreak using an extended SEIR model. *Mathematical Models and Methods in Applied Sciences*, 1-26.

3. Luo, Q., Weightman, R., McQuade, S. T., Díaz, M., Trélat, E., Barbour, W., ... & Piccoli, B. (2022). Optimization of vaccination for COVID-19 in the midst of a pandemic. *arXiv preprint arXiv:2203.09502*.

## Competency in the Following Programs:

MATLAB

C++

Python

HTML

Canvas

Youtube (for creating educational content)