

NATHAN FONTES

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EDUCATION

Master of Science, Mathematical Sciences Clemson University	August 2022 <i>Clemson, SC</i>
Graduate Certificate, Engineering and Science Education Clemson University	August 2022 <i>Clemson, SC</i>
Master of Arts, Mathematics University of North Carolina at Greensboro (UNCG)	May 2018 <i>Greensboro, NC</i>
Bachelor of Science, Mathematics. Minor in Physics University of North Carolina at Chapel Hill (UNC-CH)	May 2016 <i>Chapel Hill, NC</i>

TEACHING EXPERIENCE

Lecturer <i>Department of Mathematics, Pennsylvania State University</i>	August 2022 - Present <i>State College, PA</i>
<ul style="list-style-type: none">• Develop guided notes and lecture videos to teach 45-person sections of courses in calculus.• Design learning activities to support content mastery and student learning techniques.• Collaborate with other instructors to iterate upon course delivery and learning activities.• Adapt pedagogy on engagement, metacognition, and curiosity to provide formative feedback to students.• Utilize learning management systems such as Canvas, Gradescope, and Achieve.• Supervise learning assistants and graders in grading, communication, and academic support roles.	
Graduate Teacher of Record <i>School of Mathematical and Statistical Sciences, Clemson University</i>	August 2018 - August 2022 <i>Clemson, SC</i>
<ul style="list-style-type: none">• Developed lesson plans to teach 40-120-person sections of courses in precalculus and calculus.• Designed learning activities to support content mastery and student learning techniques.• Collaborated with other instructors to iterate upon course delivery and learning activities.• Adapted pedagogy on engagement, metacognition, and curiosity to provide formative feedback to students.• Implemented research-based techniques to teach in-person, hybrid, and online modalities.• Utilized learning management systems such as Canvas, Gradescope, MyLab Math, and WebAssign.• Supervised teaching assistants in grading, communication, and academic support roles.• Provided academic support to math courses each semester by assisting with the “Math-in,” a department-sponsored drop-in tutoring session on the Saturday before finals week.• Assisted with student-led calculus drop-in tutoring sessions before each test.	
Graduate Teaching Assistant <i>Department of Mathematics and Statistics, UNCG</i>	August 2017 - May 2018 <i>Greensboro, NC</i>
<ul style="list-style-type: none">• Instructed 40-100-person sections of College Algebra and Contemporary Topics in Mathematics.• Revised and edited a new course guide for Contemporary Topics in Mathematics that guided students through an overview of cryptography.• Developed summative assessments for Contemporary Topics in Mathematics.• Graded paper problem sets for several sections of precalculus and business calculus.	

TEACHING EXPERIENCE (CONTINUED)

- Mathematics Tutor** August 2016 - May 2017
Department of Mathematics and Statistics, UNCG Greensboro, NC
- Provided academic support for college students in math classes ranging from college algebra to multi-variable calculus through in-person and online assistance in a mathematics tutoring center.
 - Addressed questions from algebra and precalculus students in a dedicated computer lab for classes using the ALEKS online learning program.
 - Proctored exams for large in-person sections of precalculus and business calculus.

RESEARCH EXPERIENCE

- Master's Thesis** January 2021 - August 2022
School of Mathematical and Statistical Sciences, Clemson University Clemson, SC
- Title: Classes of Lyubeznik and Non-Lyubeznik Ideals
- Worked with Dr. Keri Sather-Wagstaff to classify examples of Lyubeznik monomial ideals.
 - Coordinated theory from several sources on Lyubeznik free resolutions and Lyubeznik monomial ideals to determine sufficient and necessary conditions for an ideal to be a Lyubeznik ideal.

- Master's Project** August 2017 - May 2018
Department of Mathematics and Statistics, UNCG Greensboro, NC
- Title: Explicit Computations of Higher Weight Modular Forms
- Worked with Dr. Dan Yasaki to examine computations of higher weight modular forms and highlight their difference from computations with weight 2 modular forms.
 - Built upon theory suggested by Stein, Serre, Manin, and others to construct computational examples.

- Research Assistant** August 2013 - May 2014
Global Research Institute, UNC-CH Chapel Hill, NC
- Researched economic, environmental, and community effects from ports and the Panama Canal with Dr. Rachel Willis.
 - Created new solutions to arising problems with a small team, including a detailed system for current ports to upgrade to new competitive levels, to be ready for the Panama Canal expansion, and to combat problems related to global warming.
 - Presented solutions at the Global American South Conference at UNC-CH, NC.

PROFESSIONAL DEVELOPMENT

- Portfolio in STEM Education** January - May 2022
Engineering and Science Education Department, Clemson University Clemson, SC
- Created a portfolio of activities that were implemented in a business calculus course.
 - Assessed the effectiveness of the activities using quantitative and qualitative research methods.
 - Discussed implications and further studies for future teaching based on the activities.

- Owner of "Clemson Math Corner" Discord Server** August 2021 - May 2022
Clemson University Clemson, SC
- Helped to found and advertise an online community with more than 1200 mathematics students and instructors at Clemson University.
 - Implemented communication channels and events for collaboration between peers and with instructors.
 - Provide online academic support for students in a variety of Clemson math courses.

PROFESSIONAL DEVELOPMENT (CONTINUED)

Table Leader May 2016, May 2017
Julia Robinson Mathematics Festival, UNC-CH *Chapel Hill, NC*

- Supported K-12 students to work on thought-provoking logic and critical thinking problems.

Mathematics Tutor August 2015 - May 2016
Carolina Math Club, UNC-CH *Chapel Hill, NC*

- Implemented higher-level undergraduate mathematics tutoring sessions for courses such as discrete mathematics, linear algebra, abstract algebra, and real analysis.
- Tutored STEM students in higher-level undergraduate mathematics.

Teacher's Aide August 2015 - May 2016
Chapel Hill Math Circle, UNC-CH *Chapel Hill, NC*

- Instructed K-12 students about new and stimulating mathematical ideas alongside professors from UNC-CH and instructors from the North Carolina School of Science and Math.
- Challenged K-12 students to think more conceptually about games, puzzles, and conundrums.

Technical Support Intern June - July 2015
Free Geek *Portland, OR*

- Diagnosed software problems on Linux-based operating systems.
- Determined and found solutions for hardware problems on customers' computers.

Teacher June - July 2015
Woodmere Elementary School *Portland, OR*

- Taught elementary school students basic thought processing, problem solving, and programming ideas through MindStorm Lego robotics.
- Collaborated with teachers to support students during group activities.

PRESENTATIONS AND TALKS

Explicit Computations of Higher Weight Modular Forms March 2018
Southeastern Regional Meeting on Numbers (SERMON) XXXI *Johnson City, TN*

Global Changes in Commerce, Climate, and Culture February 2014
Global American South Conference *Chapel Hill, NC*

MEMBERSHIPS AND ASSOCIATIONS

Society for Industrial and Applied Mathematics (SIAM), Member	2019 - Present
American Mathematical Society (AMS), Member	2018 - Present
Mathematical Association of America (MAA), Member	2015 - Present
Sigma Alpha Lambda Honor Society, Member	2014 - Present
National Honor Society, Member	2010 - Present
NC Order of DeMolay, Member	2008 - 2016
State Master Councilor	2010 - 2012
<ul style="list-style-type: none">• Facilitated an increase in membership by threefold in North Carolina DeMolay.• Organized community service and leadership activities at local and state levels.• Presented at service and leadership events around North Carolina.	
Delegate to DeMolay International	June 2010, June 2012
<ul style="list-style-type: none">• Collaborated with delegates from around the world on international goals and improvements.• Passed new ideas to improve awareness of DeMolay and promote community service and leadership.	
Illustrious Knight Commander	2015 - 2016
<ul style="list-style-type: none">• Developed a program for character development among senior DeMolay members.	

RELEVANT COURSEWORK

Engineering and Science Education

Practicum in STEM Education; Teaching STEM Through e-Learning; Action Research in STEM Education; Seminar in Engineering, Science, and Mathematics Education; Teaching Undergraduate Science

Algebra

Algebraic Topology, Combinatorial Free Resolutions, Homology and Resolutions, Cryptography, Homological Ring Properties, Commutative Algebra, Advanced Homological Algebra, Free Resolutions, Matrix Analysis, Abstract Algebra I & II, Computational Algebraic Geometry

Operations Research

Advanced Linear Programming, Mathematical Programming

Probability and Statistics

Data Analysis, Probability

Analysis

Measure and Integration Analysis, Linear Analysis

Computational Mathematics

Data Structures, Introduction to Scientific Computing

COURSES TAUGHT

MATH 141: Calculus with Analytic Geometry II <i>Department of Mathematics, Pennsylvania State University</i>	Spring 2023 State College, PA
MATH 140: Calculus with Analytic Geometry I <i>Department of Mathematics, Pennsylvania State University</i>	Fall 2022 State College, PA
MATH 1020: Business Calculus I <i>School of Mathematical and Statistical Sciences, Clemson University</i>	Spring 2022 Clemson, SC
MATH 1080: Calculus of a Single Variable II <i>School of Mathematical and Statistical Sciences, Clemson University</i>	Fall 2021, Spring 2021 Clemson, SC
MATH 1060: Calculus of a Single Variable I <i>School of Mathematical and Statistical Sciences, Clemson University</i>	Fall 2020, Fall 2019 Clemson, SC
MATH 1040: Precalculus and Differential Calculus <i>School of Mathematical and Statistical Sciences, Clemson University</i>	Spring 2020, Spring 2019, Fall 2018 Clemson, SC
MAT 112: Contemporary Topics in Mathematics <i>Department of Mathematics and Statistics, UNCG</i>	Spring 2018 Greensboro, NC
MAT 115: College Algebra <i>Department of Mathematics and Statistics, UNCG</i>	Fall 2017 Greensboro, NC

TECHNICAL SKILLS

Learning Management Systems: Canvas, MyLab Math, WebAssign, WebWork, Achieve

Supplementary Learning Systems: Gradescope, Perusall

Collaboration Tools: Discord, Overleaf, Slack, Box, Google Drive

Conferencing Tools: Zoom, WebEx, Skype, Teams

Typesetting and Formatting Tools: L^AT_EX, Microsoft Office Suite

Programming Languages: MATLAB; Elementary proficiency: Python, Macauley2, R

Languages: English; Elementary proficiency: German, Latin