

DR. JONATHAN P. KEITER

EDUCATION

Wittenberg University, Springfield Ohio

B.A. 1995 Major: Mathematics

Departmental Honors

Summa Cum Laude

University of Connecticut, Storrs Connecticut

M.S. 1999 Mathematics

Ph.D. 2003 One Vertex Triangulations and Heegaard Splittings

PROFESSIONAL EXPERIENCE

1996–2002 University of Connecticut, Department of Mathematics

Graduate Assistant: Taught one or two courses each semester

2002–2005 King's College, Department of Mathematics

Assistant Professor: Courses Taught:

Quantitative Reasoning Core 1205; Business Calculus I, Math 121; Complex Analysis, Math 420; Calculus for the Sciences, Math 125; Analytic Geometry and Calculus III, Math 231; **Developed** and taught: Mathematics for the Physical Science (Linear Algebra and Differential Equations for Chemistry Majors). Math 233

2005–current East Stroudsburg University, Department of Mathematics

Assistant Professor: Courses Teaching:

- Math 090: Intermediate Algebra
- Math 100: Numbers, Sets, and Structures
- Math 101: Excursions in Mathematics
- Math 105: Mathematical Problem Solving for Pre-K to Grade 8 Education Majors
- Math 130: Applied Algebraic Methods
- Math 135: Pre-Calculus
- Math 140: Calculus I
- Math 141: Calculus II
- Math 205: Geometry for Pre-K to Grade 8 Education Majors
- Math 220: Discrete Mathematical Structures
- Math 240: Multivariate Calculus
- Math 280: Mathematics of Finance
- Math 320: Linear Algebra
- Math 360: Introduction to Combinatorics
- Math 351: Modern Geometry
- Math 421: Abstract Algebra
- Math 485: Independent Study – Geometry and Topology
- Math 485: Independent Study – Topology
- Math 485: Independent Study – Abstract Algebra II

Using Inquiry Learning Techniques in Math 141

Developed a Topology/Geometry Course taught as an independent study

NON-CLASSROOM RESPONSIBILITIES

- Coordinator of the Mathematics Competency Requirement for East Stroudsburg University 2010-Present
- Summer advising and checking schedules Summer 2009 and 2010
- COAR Advisor Summer 2011

SCHOLARSHIP

PAPERS

- *The Projection Sphere: A Different View of Normal Surfaces in a One-Vertex Triangulated 3-Manifold*, **Visual Mathematics Vol. 10 No.3 2008**, the electronic quarterly of the ISIS-Symmetry (International Society for the Interdisciplinary Study of Symmetry), a Peer-Reviewed Journal
- *One-Vertex Genus Two Heegaard Splittings Through Layering*, **Lehigh University Geometry and Topology Conference**, 2006
- *One Vertex Triangulations and Heegaard Splittings*, **Georgia Topology Conference**, 2008
- *An Inquiry Learning Approach to Calculus*, **PASSHEMA**, 2009
- *Anamorphic Art and Mathematics*, **MAA Session on Mathematics and the Arts**, 2015
- *Models for Teaching Non-Euclidean Geometries*, **PASSHEMA**, 2015
- *Using Inquiry-Based Learning to Explore Applications to Integration*, **Joint Mathematics Meetings**, 2017
- *Teaching Contour Diagrams Using 3D Models*, **Joint Mathematics Meetings**, 2017

WORKS IN PROGRESS

- *Using Anamorphism to Teach Projective Geometry*. I am writing a paper that details the lessons to teach projective geometry by creating anamorphic images by hand and with technology.
- *Calculus I and II Inquiry Based Learning Activities*. I am continuing to design and implement IBL lessons in the Calculus sequence.
- *Using and creating 3D models for use in teaching mathematics*. I am continuing to design and create 3D models for use in my Calculus classes and Geometry class.

ART AND MATHEMATICS

- During spring 2014, learned about anamorphic art and mathematics to **create** the **Einstein Mural** on display in the Innovation Center.
I presented my preliminary research at the PASSHEMA conference in April 2014. I presented at the Joint Mathematics Meetings in January 2015, the world's largest gathering of mathematicians.
- With David Mazure, we received an **Entrepreneurship Across the Colleges Grant** to fund the project. I involved students on this project during several math club meetings.
- Incorporated projective art topics in Math 351, Modern Geometry.
- Collaborated with the CREATE Lab and Dr. Mazure on a project for students in Math 351 and Art and Design to create three large string art displays on campus.
- Sabbatical in the spring 2019 semester to develop lesson plans using 3D objects
 - Investigated the historical and recent connections between math and art
 - **Created** 3D objects to assist in teaching Calculus and Geometry
- Two pieces "Limits" and "Sinusoidal Wave" displayed at the Construct3D Art Showcase during the Construct3D Conference held at Rice University, TX, Feb. 2020
- Two pieces "Limits" and "Sinusoidal Wave" displayed at the Sigma Xi Art and Film Festival during the Sigma Xi Annual Meeting, Nov. 2020

ABSTRACTS

- *Anamorphic Art and Mathematics Abstracts of Papers Presented to the American Mathematical Society*; Vol. 36, No. 1 (2015) 371.
- *Using Inquiry-Based Learning to Explore Applications to Integration Abstracts of Papers Presented to the American Mathematical Society*; Vol. 38, No. 1 (2017).
- *Teaching Contour Diagrams Using 3D Models Abstracts of Papers Presented to the American Mathematical Society*; Vol. 38, No. 1 (2017).

INTERNATIONAL CONFERENCES/MINI COURSES

- May 21 – June 1, 2001 **Georgia International Topology Conference**
- June 2010 Attended the International Symposium on Geometry & Topology
- May 6-10, 2013 Mini-Courses at the Centre De Recherches Mathematiques (CRM):
 - Three-Manifold Groups by Ian Agol (UC Berkeley)
 - Heegaard Splittings by Tao Li (Boston College)
 - The First Eigenvalue of the Laplacian and the Topology of Hyperbolic 3-Manifolds by Juan Souto (Univ. of British Columbia)
- May 12-17, 2013 Participated in the Centre De Recherches Mathematiques: **The Topology of 3-dimensional Manifolds Workshop**, University De Montreal, Montreal, Canada
- June 23-27, 2014 Attended “What’s Next: The Legacy of William Thurston,” Cornell University, Ithaca, NY. One of my images of projections spheres displayed in a slideshow.

NATIONAL CONFERENCES

- July 2005 Attended a Computational Topology **Workshop** at Denison University
- June 2006 **Presented paper** at Lehigh Geometry/Topology Conference (Lehigh University) “One-Vertex Genus Two Heegaard Splittings Through Layering”
- October 2007 **Presented paper** at Lehigh Geometry/Topology Conference (Lehigh University) “Views of Normal Surfaces as Tracks in the Vertex-Linking Sphere”
- May 14-18, 2008 **Invited talk** at The Georgia Topology Conference “One Vertex Triangulations and Heegaard Splittings” Received an **FDR** grant for this conference
- June 2009 Attended the Lehigh Geometry/Topology Conference
- June 2013 Attended the Lehigh Geometry/Topology Conference
- January 2015 **Presented paper** at the Joint Mathematics Meetings “Anamorphic Art and Mathematics” for the MAA Session on Mathematics and the Arts, San Antonio, TX
- June 2015 Attended the Lehigh Geometry/Topology Conference
- June 2016 Attended the Lehigh Geometry/Topology Conference
- January 2017 **Presented paper** at the Joint Mathematics Meetings “Using Inquiry-Based Learning to Explore Applications of Integration” for the Inquiry Based Teaching and Learning Session, Atlanta, GA
- January 2017 **Presented paper** at the Joint Mathematics Meetings “Teaching Contour Diagrams Using 3D Models” for the MAA Session on Teaching and Learning Calculus, Atlanta, GA
- June 2018 Attended the Lehigh Geometry/Topology Conference
- June 2019 Attended the Lehigh Geometry/Topology Conference

- July 2019 **Presented poster** at the MAA Mathfest “Mathematics and Art,” Cincinnati, OH
- February 2020 Two of my art/math sculptures were on display at Construct3D Conference Art Showcase, Rice University, TX
- November 2020 Two of my art/math sculptures were on display at the **Sigma Xi Art and Film Festival** during the **Sigma Xi Annual Meeting**
- January 2021 **Presented paper** at the Joint Mathematics Meetings “Using 3D Slices to Explore Partial Derivatives and Directional Derivatives” for the MAA Session on Inquiry Based Learning

STATE/REGIONAL CONFENCES

- March 2006 Lafayette/Lehigh Geometry and Topology Seminar
- March 2007 **Presented paper** at PASSHEMA conference at Bloomsburg University: “Viewing Minimally Triangulated 3-Manifolds Via a 2-Sphere”
- March 2009 **Presented paper** at PASSHEMA conference at Mansfield University: “My Favorite Project: Roller Coasters”
- April 2010 **Presented paper** at PASSHEMA conference at West Chester: “Can Students Teach Each Other Calculus? An Inquiry Learning Approach”
- April 2014 **Presented paper** at PASSHEMA conference at Lock Haven: “Anamorphic Art and Mathematics”
- April 2015 **Presented paper** at PASSHEMA conference at Kutztown: “Using Models for Teaching Non-Euclidean Geometries”
- October 2016 **Presented paper** at SENCER: STEM and the Arts at Penn State University Lehigh Valley Campus: “Anamorphic Art and Mathematics”
- March 2017 **Presented paper** at PASSHEMA conference at Indiana University of Pennsylvania: “Constructing and Using 3D Models to Explain Contour Diagrams”
- November 2018 **Presented paper** at PASSHEMA conference at East Stroudsburg University: “Mathematical art projects on ESU’s Campus”
- April 2019 **Presented poster** “Mathematics and Art” at Regional MidAtlantic SENCER Meeting @The New School STEM, Humanities, & Justice
- Attended the Moravian College Undergraduate Mathematics Conference in 2009, 2012, 2015, 2016, 2017, 2018, 2019, 2020, and 2021.

LOCAL TALKS

- October 2005 Euclid’s Elements Club Meeting “Mathematics and Wordplay”
- January 2006 Euclid’s Elements Club Meeting “Surfaces and their One-vertex Triangulations”
- March 2009 Euclid’s Elements Club Meeting “Using Tools in Geometer’s Sketchpad”
- October 2010 Euclid’s Elements Club Meeting “A Brief Introduction to Topology”
- October 2011 Euclid’s Elements Club Meeting “MC Escher and Mathematics”
- March 2012 Euclid’s Elements Club Meeting “Taxicab Geometry”
- September 2012 Euclid’s Elements Club Meeting “Bezier Curves”
- January 2014 Euclid’s Elements Club Meeting “Anamorphic Art”
- September 2015 Euclid’s Elements Club Meeting “Mathematics of Spirographs”
- October 2015 Euclid’s Elements Club Meeting “Mathematics and Wordplay”
- March 2016 Euclid’s Elements Club Meeting “Three-way Light Switches”

- October 2016 Euclid's Elements Club Meeting "Mathematics and Voting"
- February 2018 Euclid's Elements Club Meeting "Method to turn a Recursive formula into an Explicit formula"
- October 2018 Euclid's Elements Club Meeting "Taxicab Geometry"
- November 2018 Euclid's Elements Club Meeting "Fractals"
- November 2019 Euclid's Elements Club Meeting "The Many Digits of Pi"
- February 2020 Euclid's Elements Club Meeting "The Traveling Salesman Problem"

WEBINARS AND LECTURE SERIES ATTENDED

- March 2015 Attended 3D Printing Workshop at ESU
- April 2015 Participated in the webinar, "Making Calculus Fun" by Colin Adams.
- February 2014 MAA Distinguished Lecture Series, "Knot Theory, Experimental Math, and 3D Printing" by Laura Taalman
- April 2015 MAA Distinguished Lecture Series, "Soap Bubbles and Mathematics" by Frank Morgan
- September 2016 MAA Distinguished Lecture Series, "Visualizing Hyperbolic Geometry" by Evelyn Lamb
- October 2016 MAA Distinguished Lecture Series, "Gems of Ramanujan and Their Lasting Impact on Mathematics" by Ken Ono
- October 2016 MAA Distinguished Lecture Series, "Math and the Vote" by Moon Duchin
- March 2019 Pearson Webinar "Online Learning Programs and Developmental Math Students"
- March 2019 Pearson Webinar "Corequisite Courses Integrating Developmental Math Support"
- March 2019 Pearson Webinar "Bringing Calculus to Life with Real Applications"
- October 2019 Pearson Webinar "Moving Visions of Mathematics"
- March 2020 Cengage Webinar "Strategies for Quickly Transitioning Courses to Online"
- March and May 2020 ESU D2L and Zoom

COURSE DEVELOPMENT

- Created and implemented an inquiry based learning Calculus II course.
- Created many activities for an inquiry based learning Calculus I course.
- Developed an on-line resource for help with the Math Competency material
- Developed a Geometry and Topology course. Taught it as an independent study, Math 485.

FUNDED GRANTS

- ESU FDR Travel Grant to attend the Georgia Topology Conference, 2008, \$800.
- ESU's Entrepreneurship Across the Colleges Grant to fund the installation of the Einstein Mural, 2014, \$2418.
- ESU FDR Major Grant: Co-PI of the Data Visualization Summer Institute, \$10,000.
 - Helped promote and organize the events for the summer of 2019
 - Taught the sessions on R Plotting with ggplot2, 3D Visualization in R, and Creating Animated Graphics

MEMBERSHIPS IN PROFESSIONAL ORGANIZATION

- Member of the Mathematical Association of America (MAA) Fall 1998 – present
- Member of Special Interest Group of the MAA (SIGMAA-ARTS) Fall 2015 – present
- Member of Special Interest Group of the MAA (IBL – Inquiry Based Learning) Fall 2017 – present

SERVICE

CAMPUS WIDE SERVICE

- **Awarded ESU's APSCUF Outstanding Service Award for 2018**

Significant Contributions to University Committees

- Main organizer of the PASSHEMA Math Conference hosted by ESU on November 2018
- Member of Tenure Committee, elected in 2020 for the 2020-2022 term
- Member of APSCUF's Meet and Discuss Team, 2020 – present
- Member of ESU APSCUF Executive Committee Fall 2009 – present
- Elected ESU APSCUF Membership Chair Fall 2009 – present
 - Attend semi-annual meetings in Harrisburg
- Compile the list of students to be recognized at the annual Honors Convocation , Spring 2012, Spring 2013, Spring 2014, Spring 2015, Spring 2016, Spring 2017, Spring 2018, Spring 2019, and Spring 2020
- Chair of the Senate's Orientation Committee 2012 – 2017
- Member of the Ad-Hoc Senate Committee on the Evaluation of the Senate 2015 – 2017
 - Revised and updated the Constitution and By-Laws
- University Senate President Fall 2010 – Fall 2013
 - Ran the monthly meetings of the University Wide Senate
 - Maintained the Senate Membership List
- Chair of the University Senate's Academic Affairs Committee Fall 2008 – 2010
 - Helped craft the Posthumous Degree Policy
 - Helped craft the policy to participate in commencement

Other Important Contributions to the University

- One Book faculty facilitator 2014, 2015, 2016, 2017, 2018, and 2019
- Member of the University Senate's Academic Affairs Committee Fall 2008 – 2012
- Member of the University Senate's Information and Technology Committee 2015 – 2017
- Webmaster for the University Senate 2010 – 2016
- Member of the Senate's Orientation Committee Fall 2013 – 2016
- Member of the COAR (Collaborative Orientation, Advising and Registration) Committee Fall 2010 – Summer 2011

- The Barry Goldwater Scholarship Faculty Representative for ESU Spring 2008 – present
- Member of Faculty Participation Sub-Committee of the Presidential Inauguration Committee December 2012–March 2013
- Presented at the ESU Success Summit, January 26, 2013
- Summer 2007 Assisted Prof. Gene White with the math testing for the Wiley Partnership Program
- Volunteered for the National Public Lands Day in the Delaware Water Gap, September 2015

SERVICE TO THE DEPARTMENT OF MATHEMATICS

- ESU's representative for the PASSHE Mathematics organization, PASSHEMA
- Attend ESU's weekend open houses to represent the Math Department Fall 2005 – present
- Attend ESU's weekend Accepted Student Days, Spring 2011–2018
- Attend the Majors/Minor Fair, Fall 2017 – present
- Committee member for the selection of the Calculus textbook Spring 2009, 2013, and 2017
- Chair of Committee for the selection of the Calculus textbook Spring 2013
- Search committee member for the Mathematics department searches
 - Co-Chair of the searches in 2010/11, 2012/13, and 2013/14
- Senator in the University Senate representing the Math Department Fall 2008 – 2017
- Faculty Committees for tenure, five year reviews, adjunct observations: Every Semester
- Committee member for the Calculus Gateway Assessment Team

SERVICE TO EUCLID'S ELEMENTS (MATH CLUB)

- Faculty advisor to the math club: Euclid's Elements Fall 2006 – present
- Took a group of students to the Museum of Mathematics in NYC in Spring 2016, Spring 2017, and Spring 2018.
- Took four students to the PASSHEMA conference at Bloomsburg University to participate in a math competition in March 2007. They won third place for the Math Brain Teaser Competition
- Took four students to the PASSHEMA conference at Mansfield University to participate in a math competition in March 2009
- Took students to the Moravian Undergraduate Mathematics Conference in 2012, 2015, 2016, 2017, 2018, 2019, and 2020
- Taught club members the techniques and mathematics of anamorphic art

SERVICE TO PROFESSION

- Created the activities for the math table at the International Women in the Sciences Day, 2019
- PASSHEMA President of the State Systems Mathematics Organization 2017 – Present
- Poster Session Judge at the January 2005 Joint Mathematics Conference, Atlanta, Georgia
- Poster Session Judge at the January 2015 Joint Mathematics Conference, San Antonio, Texas

- Poster Session Judge at the January 2017 Joint Mathematics Conference, Atlanta, Georgia
- Poster Session Judge at the January 2021 Joint Mathematics Conference, Denver, Colorado (Virtual)

ESU WORKSHOPS

- STEM/SCALE-UP Presentation Dr. Beichner NCSU STEM Education Initiative March 24, 2008
- Critical Thinking and Student Learning July 15, 2008
- Using Rubrics Oct 7, 2010
- Critical Thinking Workshop May 11, 2011
- University Assessment Retreat January 22, 2013
- Strategic Planning Roundtable Discussion January 30, 2014
- Direct and Indirect Measures of Student Learning February 24, 2014
- Ken Bain Professional Development Day May 18, 2015

HONORS SOCIETIES

- Phi Eta Sigma 1992
- Wittenberg Scholar (1991–1995)
- Phi Beta Kappa 1994
- Omicron Delta Kappa 1994
- Pi Mu Epsilon 2000