

Maria Zack

Department of Mathematical, Information and Computer Sciences
Point Loma Nazarene University
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EDUCATION

University of California, San Diego, San Diego, CA

Ph.D. in Mathematics

1989

Dissertation: "Convergence to Uniform on the Finite Heisenberg Group and Applications to Random Number Generators"

University of California at San Diego, San Diego, CA

B.A. in Mathematics

1984

GRANTS AND AWARDS

- Grant to participate in SAUM (Supporting Assessment in Undergraduate Mathematics) sponsored by the NSF/MAA
- Wesleyan Center Research Grant
- Council of Independent Colleges, NetVUE Grant

2003-2004

2006-2007

2014-2015

TEACHING EXPERIENCE

Point Loma Nazarene University, San Diego, CA

Professor and Chair – Mathematical, Information and Computer Sciences

2002-Present

Point Loma Nazarene University, San Diego, CA

Professor – Mathematics

2000-2002

Point Loma Nazarene University, San Diego, CA

Associate Professor – Mathematics

1996-2000

Point Loma Nazarene University, San Diego, CA

Assistant Professor – Mathematics

1994-1996

Texas Tech University, Lubbock, TX

Assistant Professor – Mathematics

1989-1990

RELATED EXPERIENCE

Institute for Defense Analysis Center for Communications Research, La Jolla, CA

Consultant

1995-2007

Institute for Defense Analysis Center for Communications Research, La Jolla, CA

Research Staff Member

1991-1995

IDA is a interdisciplinary research facility that works on classified projects that involve techniques from mathematics computer science and engineering.

PAPERS OR TALKS

- M. Zack, January 2014, "John Wallis' Computations on the Cycloid," Joint Mathematics Meetings, Baltimore, MD.
- M. Zack, August 2013, "The Geometric Algebra of John Wallis," Joint Meeting of CSHPM and MathFest, Hartford, CT.
- G. Crow and M. Zack, May 2013, "Delaware, Dickeson, Assessment and How You Can Help," Conference of the ACMS at Bethel, Minneapolis, MN.
- M. Zack, May 2013, "Panel on Scholarly Work in a High-Teaching University," Conference of the ACMS at Bethel, Minneapolis, MN.
- M. Zack, May 2012, "Through the Looking Glass: Dodgson's View of Determinants," CSHPM Conference, Waterloo, ON.
- M. Zack, June 2011, "Using Original Historical Mathematics Texts in the Classroom," Conference of the ACMS at Westmont College, Santa Barbara, CA.
- M. Zack, June 2011, "Divide and Conquer or Merge and Maximize?," Conference of the ACMS at Westmont College, Santa Barbara, CA.
- K. Fulcher, M. Paul and M. Zack, March 2011, "The Role of Local and Global Service in the Discernment of Vocation," CIC NetVUE Conference on Vocation in Undergraduate Education, Indianapolis, IN.
- M. Zack, January 2011, "Mathematics as Architecture: The Built Geometry of Christopher Wren and Robert Hooke," ACMS Banquet Lecture, Joint Mathematics Meetings, New Orleans, LA.
- M. Zack, October 2010, "A Layman's Experience with Using Original Texts in the Classroom," International Group on the History and Pedagogy of Mathematics Americas Section, Pasadena, CA.
- M. Zack, June 2010, "The Catenary in England," Nexus 2010: Relationships Between Architecture and Mathematics, Porto, Portugal.
- M. Zack, March 2010, "Women in Leadership in a Church-Affiliated University," Oxford Roundtable at Lincoln College, Oxford, UK.
- G. Crow and M. Zack, January 2010, "Undergraduate Research and Service Learning Projects Developed from Institutional Research Questions," Joint Mathematics Meeting, San Francisco, CA.
- M. Zack, June 2009, "Robert Hooke and *An Attempt to Prove the Motion of the Earth from Observation*," Joint Conference of the Canadian Mathematical Society and the Canadian Society of the Philosophy and History of Mathematics, St. Johns, Canada.
- M. Zack, May 2009, "Discussing Vocation as Part of a Senior Capstone Class," Conference of the ACMS at Wheaton College, Wheaton, IL.
- M. Zack, June 2008, "Robert Hooke's Fire Monument, Architecture as a Scientific Instrument" Nexus 2008: Relationships Between Architecture and Mathematics, San Diego, CA.
- M. Zack, April 2008, "Creating a Culture of Evidence: Gathering Data and Making Meaning", Western Association of Schools and Colleges Academic Resource Conference, San Diego, CA.
- G. Crow and M. Zack, May 2007, "Vocation," Conference of the ACMS at Messiah College, Grantham, PA.
- M. Zack, June 2006, "Are There Connections Between the Mathematical Thought and Architecture of Sir Christopher Wren?," Nexus 2006: Relationships Between Architecture and Mathematics, Genoa, Italy.
- M. Zack, June 2005, "Integrating the Teaching the History of Mathematics Using Architecture and Art," Conference of the ACMS at Huntington University, Huntington, IN.
- J. Jimenez and M. Zack, January 2004, "Assessment of Student Learning in Undergraduate Mathematics: Work In Progress," Joint Mathematics Meetings, Phoenix, AZ.
- M. Zack, May 2003, "Staying Alive in a Teaching University," Conference of the ACMS at PLNU, San Diego, CA.
- M. Zack, August 2002, "Mathematics and Architecture," The Conference Honoring Audrey Terras, San Diego, CA.

- M. Zack, January 2002, "Using Architecture to Teach the History of Mathematics," Joint Mathematics Meeting, San Diego, CA.
- M. Zack, May 2001, "Mathematics Study Abroad Trips," Conference of the ACMS at Calvin College, Grand Rapids, MI.
- M. Zack, May 1999, "A Review of 'the Man Who Loved Only Numbers'," Conference of the ACMS at Gordon College, Waltham, MA.
- M. Zack, November 1998, "An Introduction to Cryptography," Sonia Kovalesky Mathematics Day, San Diego, CA.
- M. Zack, November 1996, "Excel, Labs and Projects in an Introductory Statistics Course," Ninth Annual Conference on Technology in Collegiate Mathematics, Reno, NV.
- M. Zack, January 1994, "Convergence to Uniform on the Finite Heisenberg Group," American Mathematical Society Meeting, Cincinnati, OH.
- M. Zack, January 1990, "Representations of the Affine Group and Random Number Generators," 4th Annual Workshop on Automorphic Forms and Related Topics, Hanover, NH.
- M. Zack, July 1989, "Measuring Randomness and Evaluating Random Number Generators Using the Finite Heisenberg Group," Janos Bolyai Mathematics Society's 3rd Annual Colloquium on Limit Theorems, Pecs, Hungary.
- M. Zack, March 1989, "Random Number Generators," NSF-CBMS Regional Conference on Discrete Groups, Expanding Graphs and Invariant Measures, Norman, OK.
- M. Zack, January 1989, "Convergence to Uniform on the Finite Heisenberg Group," American Mathematical Society Meeting, Phoenix, AZ.

PUBLICATIONS

- M. Zack, 2014, "Rebuilding Mathematically: London and Lisbon," Nexus Network Journal, to appear.
- G. Crow and M. Zack, 2013, "Service Learning Projects Developed from Institutional Research Questions," PRIMUS Problems, Resources, and Issues in Mathematics Undergraduate Studies, New York, Taylor and Francis.
- J. Barnett, G. Bezhaniashvili, H. Leung, J. Lodder, D. Pengelley, I. Pivkina, D. Ranjan, and M. Zack, 2013, "Primary Historical Sources in the Classroom: Discrete Mathematics and Computer Science," Loci: Convergence (July 2013), Mathematical Association of America, DOI:10.4169/loci003984.
- M. Zack, 2013, "Computing the Determinant Through the Looking Glass," Loci: Convergence (July 2013), Mathematical Association of America. DOI:10.4169/loci003992.
- M. Zack and M. Ford, 2011, "Huygens' Five Problems and the History of Probability," The Proceedings of the Canadian Society of the Philosophy and History of Mathematics, Vancouver, CA, CSHPM.
- M. Zack, 2011, "The Geometry of Christopher Wren and Robert Hooke, a Walking Tour of London," Mathematical Intelligencer, Volume 33 Number 1, Springer Verlag, New York.
- M. Zack, 2010, "Robert Hooke and *An Attempt to Prove the Motion of the Earth from Observation*," The Proceedings of the Canadian Society of the Philosophy and History of Mathematics, New York, CSHPM.
- M. Zack, 2009, "Discussing Vocation as Part of a Senior Capstone Class," The Journal of the Association of Christians in the Mathematical Sciences (to appear), <http://www.acmsonline.org/journal.htm>, Wheaton, Association of Christians in the Mathematical Sciences.
- G. Crow and M. Zack, 2008, "Vocation," The Journal of the Association of Christians in the Mathematical Sciences, <http://www.acmsonline.org/journal.htm>, Wheaton, Association of Christians in the Mathematical Sciences.
- M. Zack, 2008, "Robert Hook's Fire Monument, Architecture as a Scientific Instrument," *Nexus VII: Architecture and Mathematics*, Turin, Kim Williams Books.
- M. Zack, 2006, "Are There Connections Between the Mathematical Thought and Architecture of Sir Christopher Wren?," *Nexus VI: Architecture and Mathematics*, p171-180, Turin, Kim Williams Books.
- J. Jimenez and M. Zack, 2006, "Keeping Assessment Simple," Supporting Assessment In Undergraduate Mathematics, p 163-170, Washington, DC, Mathematical Association of America.
- J. Jimenez and M. Zack, 2006, "General Education Mathematics: A Problem Solving Approach," Current Practices in Quantitative Literacy, p 119-123, Washington, DC, Mathematical Association of America.

	<p>M. Zack, 2006, "Teaching the History of Mathematics Using Architecture and Art," The Journal of the Association of Christians in the Mathematical Sciences, http://www.acmsonline.org/journal.htm, Wheaton, Association of Christians in the Mathematical Sciences.</p> <p>G. Crow and M. Zack, Editors, 2003, Proceedings of the Fourteenth Conference of the Association of Christians in the Mathematical Sciences, Wheaton, Association of Christians in the Mathematical Sciences.</p> <p>M. Zack, 2002, "How I came to Love the History of Math," Bulletin of the Canadian Society for the History and Philosophy of Mathematics, p. 13, Toronto, Canadian Society for the History and Philosophy of Mathematics.</p> <p>M. Zack, 2001, "Mathematics Study Abroad Trips," Proceeding of the Thirteenth ACMS Conference on Mathematics from a Christian Perspective, p. 91-96, Wheaton, Association of Christians in the Mathematical Sciences.</p> <p>M. Zack, 1999, "A Review of 'The Man Who Loved Only Numbers,'" Proceedings of the Meeting of the Association of Christians in the Mathematical Sciences, Wheaton, Association of Christians in the Mathematical Sciences.</p> <p>M. Zack, 1989, "Measuring Randomness and Evaluation Random Number Generators Using the Finite Heisenberg Group," Colloquia Mathematica Societatis Janos Bolyai, North Holland Publishing.</p> <p>My consulting work for the Institute for Defense Analyses Center for Communications Research has been one of my key research outlets. The work I did for IDA is classified so I cannot describe it or list publications (from 1991-2007).</p>
CONSULTING	
	<ul style="list-style-type: none"> • Western Association of Schools and Colleges (WASC) Accreditation Team Member (2008-present) • Consultant, Institute for Defense Analyses Center for Communications Research (1995-2007) • Reviewed the California Mathematics Framework (1997)
MEMBERSHIPS	
	<ul style="list-style-type: none"> • American Mathematical Society • Mathematical Association of America • British Society of the History of Mathematics • Canadian Society for History and Philosophy of Mathematics • History of Mathematics Special Interest Group of the Mathematical Association of America • Association of Christians in Mathematical Sciences • Association of Women in Mathematics
CONFERENCES ORGANIZED	
	<ul style="list-style-type: none"> • Annual Meeting of the CSHPM held jointly with MathFest, Hartford, CT, August 2013. • Annual Meeting of the CSHPM, Waterloo, ON, Canada, May 2012. • HPM-Americas, San Diego, CA, October 2012 • Nexus VII: International Conference on Mathematics and Architecture, San Diego, CA, June 2008. • Consortium for Computing Sciences in Colleges, Inaugural Southwestern Regional Conference, Los Angeles, CA, April 2008. • Second Annual Undergraduate Computer Science and Information Sciences Conference, San Diego, CA, April 2006. • Undergraduate Computer Science and Information Sciences Conference, San Diego, CA, April 2005. • Association of Christians in the Mathematical Sciences, San Diego, CA, May 2003. • Institute for Defense Analyses, La Jolla, CA, August 2002. • Conference Honoring Audrey Terras, La Jolla, CA, August 2002. • Medical Benevolence Foundation Conference on Medical Missions, Solana Beach, CA, April 2001.
UNDERGRADUATE RESEARCH PROJECTS SUPERVISED	
	<ul style="list-style-type: none"> • Amy Hinds, "A Statistical Analysis on Chapel Attendance," PLNU 2013-14 • Catherine Quimby, "John Wallis and Quadratures," PLNU 2012-13 • Olivia Heunis, "The History and Mathematics of Perspective Devices," PLNU 2012-13 • Kassandra Ham, "An Analysis of the Effects of PLNU's Enrollment Cap on Student Values," PLNU 2012-13

- Chanell Anderson and Lauren Waggoner, "An Analysis of Trends in Chapel Attendance Patterns," PLNU 2011-12
- Megan Ford, "History of the Development of Probability," PLNU 2010-11
- Emily Haberstroh, "Piano Sight-Reading: A Musical Topic from a Computer Science Perspective ," PLNU 2010-11
- Natasha Jundt, "Generating a Model for Predicting the Academic Success of Incoming Freshmen", PLNU 2009-10
- Marilee Rickett, "An Analysis of Chapel Attendance", PLNU 2009-10
- David Vandebroek, "Reaction Kinetics Involving Chlorosulfony Isocyanate and Some Monoflouralkenes and the History of the Relevant Differential Equations", PLNU 2009-10
- Sarah Lauff, "Institutional Research: Freshmen Retention and Cafeteria Patterns", PLNU 2008-09
- Alana Nichol, "Student Entry, Exit and Reentry Points at PLNU", PLNU 2008-09
- Rachel Shibley, "Indicators of Persistence to Graduation", PLNU 2008-09
- Stefanie Mooney, "Teach, Shape and Send: a Statistical Analysis of Student Data to Assess PLNU Core Values", PLNU 2007-08
- Lauren Nelson, "Analysis of Disease in Sub-Saharan Africa", PLNU 2007-08
- Kaitlin Wilcox, "Calculus Then and Now", PLNU 2007-08
- Brandon Edgebert, "Predicting the Educational Needs of Pastors for the Center for Pastoral Leadership", PLNU, 2006-07.
- Tyler Gray, "Quantitative Analysis of Alumni Survey Data", PLNU, 2006-07.
- Heather Lausch, "Merging Faith and Mathematics: Quantitative Analysis in Aid of PLNU Institutional Research", PLNU, 2006-07.
- Amy Swen, "Analysis of Survey Data on Student Spiritual Disciplines", PLNU, 2006-07.
- Rebecca Price, "Some Applications of Number Theory to Games and Puzzles", PLNU, 2005-06.
- Christine Todd, "The Four Color Theorem", PLNU, 2004-05.
- Sarah Richardson, "Data Mining Using Weka", PLNU, 2004-05.
- Jedidiah Butler, "The Calculus of Newton", PLNU, 2004-05.
- Sarah Littler, "A Mathematical Perspective on Art", PLNU, 2003-04.
- Catherine Pfeiffer, "How Do Graphs Sound?", PLNU, 2001-02.
- Keith Hubbard, "An Investigation of Random Number Generation", PLNU, 1999-2000.

PLNU COMMUNITY SERVICE

University at Large:

- Special Assistant to the President for Planning (2006 – present)
- Co-Chair of the Strategic Planning Committee (2006- present)
- WASC CPR and EER (2004-2007)
 - Chaired CPR Data Committee and wrote report
 - Wrote CPR Strategic Planning report
 - Built and maintained University Data Tables
 - Webmaster for entire WASC report website (CPR and EER)
- Chair of the task force that redesigned the faculty salary algorithm (1999)
- Annually compute the faculty salary target for the Vice President for Finance and Administration (1999 – present)
- I have also served on several university committees including: Faculty Status Committee, Faculty Council, Spiritual Development Committee, Teacher Education Committee, Media Board, ISPS Advisory Board, and Faculty Workshop and Retreat Committee.
- Regular speaker at the New Faculty Orientation and New Faculty Seminar.
- Helped with organizational tasks (presiding over sessions, etc) for most of the Wesley Center Conferences.
- Served on student honors thesis committees outside of my department.
- Have spoken in a number of PLNU events including: Heritage Day chapel, Psychology 101 convocation and Faculty Workshop.
- Coordinator and co-leader for a Theology/Biology study abroad trip to Kenya (1998)

	<p>Within the MICS Department:</p> <ul style="list-style-type: none"> • Wrote both Department Reviews • Wrote the Mathematics Single Subject Program certification documents for the State of California and created the template used by other PLNU departments for their single subject documents. • Organized annual trips to take students to the Mathematical Association of America Southern California Section meeting. Students presented posters of their research at these meetings. • Designed our departments study abroad experience. This is a course in the history of mathematics. Lead trips in 2000, 2002, 2004, 2006, 2008, 2012, 2014.
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COMMUNITY INVOLVEMENT

	<p>Production Editor for the Newsletter of the Canadian Society for the History and Philosophy of Mathematics (2008-present)</p> <p>Editorial Board Member, Nexus Network Journal, (2014-present)</p> <p>Accreditation Evaluator for the Western Association of Schools and Colleges (2008-present)</p> <p>Board Member for Association of Christians in the Mathematical Sciences (2009-present)</p> <p>Medical Benevolence Foundation:</p> <ul style="list-style-type: none"> • Interim Executive Director of the Medical Benevolence Foundation (March – December 2007, April 2011 – January 2012) • Trustee of the Medical Benevolence Foundation (1997 – 2012) • Treasurer of the Medical Benevolence Foundation (1999-2002) • Vice President of the Medical Benevolence Foundation (2005-2006) • President of the Medical Benevolence Foundation (2007-2008) • Past President of the Medical Benevolence Foundation (2009-10) • Coordinator for the construction of a maternity ward at Tumutumu Hospital in Karatina, Kenya (1998-2003) <p>Assistance provided to a number of community groups in the areas of:</p> <ul style="list-style-type: none"> • Strategic planning • Financial management • Facilitation of the development of multi-day consultations • Facilitation of gatherings to create theological documents
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COURSES TAUGHT AT PLNU 2011-2014

- CSC496 Service Learning In Computer Science I
- ISS472 Internship In Computer Information Systems
- ISS496 Service Learning In Cis I (Computer Information Systems I)
- MTH213 Fundamentals Of Elementary Mathematics I
- MTH233 Linear Algebra
- MTH242 Number Theory With Proofs
- MTH274 Calculus III
- MTH343 Discrete Mathematics
- MTH352 History Of Mathematics
- MTH382 Mathematical Statistics
- MTH471 History Of Mathematics Study Tour
- MTH491 Independent Studies In Mathematics
- MTH496 Service Learning In Mathematics I