Jyoti Champanerkar

Mathematics

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CURRENT POSITION

Professor (since 9/1/2018) Department of Mathematics William Paterson University Faculty Appointment Date: 9/1/2008

EDUCATION

- Ph.D., Applied Mathematics, New Jersey Institute of Technology, Aug 2004. *Thesis Title:* Pitchfork Bifurcations of Invariant Manifolds *Thesis Advisor:* Professor Denis Blackmore
- M.S, Applied Mathematics, New Jersey Institute of Technology, Jan 2004.
- M. Sc., Mathematics, Bombay University, Aug 1998.
- B. Sc., Mathematics, Bombay University, Aug 1995.

POSITIONS

- Professor, Department of Mathematics, William Paterson University, NJ, September 2018 present.
- Assistant to Chairperson, Department of Mathematics, William Paterson University, NJ, September 2015-August 2017.
- Associate Professor, Department of Mathematics, William Paterson University, NJ, September 2014 August 2018.
- Assistant Professor, Department of Mathematics, William Paterson University, NJ, September 2008 August 2014.
- Assistant Professor, Department of Mathematics & Statistics, University of South Alabama, AL, August 2005 August 2008.
- Assistant Professor, Department of Mathematics, William Paterson University, NJ, September 2004 June 2005.

RESEARCH INTERESTS

Dynamical systems, Bifurcations, Mathematical Biology

GRANT ACTIVITY

PRINCIPAL INVESTIGATOR ON NSF PROPOSAL • Principal Investigator on Mathematics and Computer Science Scholars (MaCS), National Science Foundation S-STEM, March 2020. (FUNDED) NSF GRANT#: 2028011, AY 2020-2025) (with co-PIs P. von Dohlen, C. Kyu, W. Liu, D. Hill)

\$1 Million S-STEM Program 2020-2025

- Principal Investigator on Mathematics and Computer Science Scholars (MaCS), National Science Foundation S-STEM, (with co-PIs P. von Dohlen, C. Kyu, W. Liu, D. Hill), March 2019. (Not funded)
- Co-Principal Investigator on National Science Foundation grant proposal, Robert Noyce Teacher Scholarship Program at WPU, (PI D. Hill), March 2015. (FUNDED) NSF GRANT#: 1540694, AY 2015-2021)

CO-PRINCIPAL INVESTIGATOR ON NSF GRANT

\$1 Million Robert Noyce Teacher Scholarship Program 2015-21

- Principal Investigator on National Science Foundation grant proposal, Robert Noyce Teacher Scholarship Program at WPU, (co-PI D. Hill), March 2014. (Not funded)
- Project Developer_on Dual Enrollment Initiative, proposal to NJ State Department of Education, June 2012. (Not funded)
- Principal Investigator on National Science Foundation grant proposal, *Mentoring Through Critical Transition Points in Mathematical Sciences*, (co-PIs M. Zeleke, P. Chen), July 20, 2011. (Not funded)
- Project Coordinator for Dual Enrollment Initiative (PI S. DeYoung), 2010-12. (Funded by NJ State Department of Education)

RESEARCH / SCHOLARLY ACTIVITIES

I. <u>Research Publications</u>

- *Property of the largest roots of a family of monic polynomials* (Solution to 2051), Mathematics Magazine, (Submitted March 2019)
- Using a Card Trick to Illustrate Fixed Points and Stability, 2015, PRIMUS 25(5), pp. 473-483. (with M. Jani)
- Stable Fixed Points of Card Trick Functions, 2013, Math arXiv, <u>www.arXiv.org</u>, arXiv:1302.3396[math.HO] (with M. Jani).
- *Mathematics and the Heart: Understanding Cardiac Output*, 2013, PRIMUS, 23(10), pp. 906-920.
- Using spreadsheets to visualize virus concentration, 2011, Journal of Computational Science Education, 2(1), pp. 1-8 (with C. Dizzia).
- *Modeling Sampling Distributions of Similarity Measures*, 2011, JSM Proceedings, Statistical Computing Section, Miami, FL: American Statistical Association, pp. 4763-4777, (with M. Mulekar).
- *How Useful are Approximations to Mean and Variance of the Index of Dissimilarity?*, 2007, Computational Statistics and Data Analysis 52(4), pp. 2098-2109, (with M. Mulekar and J. Knuston).
- *Pitchfork Bifurcations of Invariant Manifolds*, 2007, Topology and its Applications, 154(8), pp. 1650-1663, (with D. Blackmore).
- *Periodic and quasiperiodic motion of point vortices*, 2005, Vortex dominated flows, World Sci. Publ., Hackensack, NJ, pp.21-42, (with D. Blackmore).
- A generalized Poincare-Birkhoff theorem with applications to coaxial vortex ring motion, 2005, Discrete and Continuous Dynamical Systems Series B, Volume 5, Number 1, pp. 15-33, (with D. Blackmore and C. Wang).
- *Extensions and applications of the Poincare-Birkhoff theorem*, 2003, Proc. Conf. on Dynamical Systems Theory and Applications, Lodz, Poland, pp. 13-24, Dec 8-11, (with D. Blackmore).

II. <u>Research Presentations</u>

- *"The Twenty-One Card Trick: An Application of Discrete Dynamical Systems"*, (with M. Jani), MAA-NJ Spring Sectional Meeting, April 16, 2016.
- *"Modeling Sampling Distributions of Similarity Measures of Normally Distributed Populations"*, (with M. Mulekar), talk presented at: University Research & Scholarship Day, WPU, April 4, 2013.
- "Fixed Points of Card Trick Functions" (with M. Jani), poster presented at: 57th Annual Meeting of New Jersey Academy of Science, Seton Hall University, South Orange, New Jersey, April 21, 2012.
- *"Competition models describing tumor-host populations"* (with A. Eladdadi), talk presented at: Casablanca International Workshop on Mathematical Biology, Casablanca, Morocco, June 20-24, 2011.
- *"Mathematical Modeling of Cancer"* (with A. Eladdadi), poster presented at: Frontiers in Applied and Computational Mathematics 2011, New Jersey Institute of Technology, June 9-11, 2011.
- *"Mathematical Modeling of Cancer"* (with A. Eladdadi), poster presented at: University Research and Scholarship Day, WPU, April 7, 2011.
- "*Phase resetting and Entrainment in Cardiac Cells*" (with T. Foster, R. Miura), poster presented at: Frontiers in Applied and Computational Mathematics 2009, New Jersey Institute of Technology, June 1-2, 2009.

- *"Modeling Electrical Activity of the Heart"* (with R. Miura), talk presented at: Departmental Colloquium, Department of Mathematics, William Paterson University, NJ, October 22, 2008.
- "*Optimal Control in Chemotherapy*" (with S. Palanki), talk presented at: Mathbiology seminar, University of South Alabama, AL, October 5, 2007.
- *"Continuous mathematical model of Tumor-induced angiogenesis"*, talk presented at: Mathbiology seminar, University of South Alabama, AL, October 12, 2006.
- "Complexity Measures for Ecological Assemblages" (with M. Levandowsky, D. Blackmore), talk presented at: Forum for Interdisciplinary Mathematics XII, Auburn University, AL, December 2-4, 2005.
- *"Mathematical Modeling and Applied Mathematics"*, talk presented at: Departmental Colloquium, Department of Mathematics, Mumbai University, Mumbai, July 22, 2005.
- *"Pitchfork Bifurcations of Invariant Manifolds"* (with D. Blackmore), talk presented at: AMS Central Sectional Meeting, Lubbock, Texas, April 8-10, 2005.
- *"Pitchfork Bifurcations of Invariant Manifolds"* (with D. Blackmore), talk presented at: Departmental Seminar, Department of Mathematics, William Paterson University, September 22, 2004.
- "*Pitchfork Bifurcations of Invariant Manifolds*", (with D. Blackmore), talk presented at: AIM's Fifth International Conference on Dynamical Systems and Differential Equations, Pomona, California, June 16-19, 2004.
- *"Applications of Pitchfork Bifurcations"*, Frontiers in Applied and Computational Mathematics 2004, New Jersey Institute of Technology, May 21-22, 2004.
- "Global Hopf and Pitchfork Bifurcations", First Joint Conference of AWM, SIAM and CAIMS Montreal, Canada, Jun 16-20, 2003.
- "Global Hopf and Pitchfork Bifurcations", talk presented at: Departmental Summer Project Presentation, NJIT, NJ, May 2003.
- *"Hopf Bifurcation in Stomatal Oscillators"*, talk presented at: Mathematical Biology Project Presentation, NJIT, NJ, April 2002.
- "Shooting Method", talk presented at: Departmental Summer Project Presentation, NJIT, NJ, June 2001.

III. Continued Learning

- Successfully completed Vanderbilt University's offering *Introduction to Programming with MATLAB*, May 2018.
- Successfully completed Stanford University's offering *Introduction to Mathematical Thinking*, November 2017.
- Successfully completed Johns Hopkins University's offering of *The Data Scientist's Toolbox*, July 2015.

IV. <u>Workshops</u>

- A. Workshops Taught
- Population Estimation with Capture Recapture, Lakeland High School, NJ, June 8, 2016.
- Cardiac Output, Lakeland Regional High School, NJ, June 8, 2016.
- Applications of Mathematics, a 5-day PSE&G workshop for high-school students, July 13-17, 2015. Modules taught:

Drug Filtering by the Kidneys (exponential decay)

Virus Concentration (exponential growth) Crows & Seagulls (Rational functions, linear functions) Caesar and Vigenere Ciphers (cryptography) Capture-Recapture (Ratios & Proportions)

- Applications of Mathematics to Biology, Cognitive Science CGSI 2000-01 (Dr. M. Gordon), November 6, 2015
- Applications of Mathematics to Biology, Lakeland High School, NJ, June 6, 2014.
- Origami, A. P. Terhune Elementary School, Wayne, NJ, Oct 18, 2013.
- Math and Art, Workshop for teachers, Public School 7, Paterson, NJ, Jan 4& 7, 2013.
- *Mathematics and the Heart*, 2011 NHLBI-VCU World Congress on Mathematical Modeling and Computational Simulation of Cardiovascular and Cardiopulmonary Dynamics, College of William and Mary, VA, May 31, 2011.
- *Geometry*, Mathematics & Science Teachers (MAST) Professional Development In-Service Workshop, Eastside High School, NJ, March 2-4, 2010.
- *Geometry*, Reforms Summer Workshop 2009, WPU, New Jersey, Aug 17-21, 2009.
- *Probability and Statistics & Euclidean Geometry*, Reforms Summer Workshop 2008, WPU, New Jersey, August 18-22, 2008.
- B. Mathematics Workshops Attended
- Casablanca International Workshop on Mathematical Biology, Casablanca, Morocco, June 20-24, 2011. (Co-chaired a special session)
- NIMBioS Investigative Workshop: Tumor Modeling, Knoxville, TN, January 19-21, 2011.
- Got Manipulate? Webinar presented by Paul Wellin, Wolfram Research, April 7, 2010.
- Modeling Neuromuscular Control of the Cardiovascular and Cardiopulmonary Systems, VCU, Richmond, Virginia, March 17-21, 2010.
- NIH-NHLBI Workshop on Biological and Biomedical Signals: Where Do They Come From & How Do You Analyze Them? VCU, Richmond, Virginia, March 12-16, 2009.
- NIH-NHLBI Workshop on Differential Equation Models in Cardiovascular and Cardiopulmonary Modeling and Simulations, VCU, Richmond, Virginia, October 15-18, 2008.
- Mathematical Systems Biology of Cancer, MSRI, CA, May 3-5, 2006.
- One-week Intensive Workshop on Complex Dynamical Systems, Participated in the workshop organized by NECSI, held at MIT, Cambridge, MA, Jan 5-9, 2004.
- Mathematics Talent and Training Search, Participated in the MT & TS workshops in May 1995 (IIT, Bombay) and May 1996 (Ferguson College, Pune).
- C. Education / Math Education Workshops Attended
- NSF IUSE Program, Exploration & Design Track, with a Focus on Pre-service Teacher Education Webinar, December 4, 2017.
- Minority University Research and Education Project (MUREP) Educator Institute, NASA Goddard Space Flight Center, MD, June 12-16, 2017.
- Pioneer Success Seminar Faculty Training, May 16, 2017.
- Tree-Ring Expeditions (TREX), William Paterson University, May 12, 2017.

- Pioneer Success Seminar Faculty Training, May 17-18, 2016.
- First-Year Seminar Instructor Training, May 7-8, 2015.
- Quality Matters: Independent Applying the QM Rubric, William Paterson University, Feb 20, 2015.
- Redesigning Developmental Mathematics, Webinar presented by The National Center for Academic Transformation, November 11, 2014.
- Global Mathematics Symposium, William Paterson University, July 13-14, 2010. (Planning and participation)
- Technology in Mathematics Instruction, CUNY Graduate Center, NY, June 8, 2010.
- An Overview of Mathematica for Education, Webinar presented by Michael Morrison, Wolfram Research, October 7, 2009.
- Blackboard Institute, William Paterson University, NJ, January 15-16, 2009.
- Classroom Assessment and Evaluation, Organized by Program for Enhancing Teaching and Learning, University of South Alabama, March 29, 2006.
- Problem Solving and Critical Thinking, Organized by Program for Enhancing Teaching and Learning, University of South Alabama, March 9, 2006.
- Class Management and Plagiarism, Organized by Program for Enhancing Teaching and Learning, University of South Alabama, February 8, 2006.
- Course Design and Development, Organized by Program for Enhancing Teaching and Learning, University of South Alabama, September 15, 2005.
- D. Grant-writing Workshop Attended
- Master Course: Professional Program Development and Funding Certification, North American Program Planning and Policy Academy, Pace University, NY, June 28-30, 2011.

V. Awards and Honors

- WPU Assigned Release Time (ART), Fall 2017-Spring 2019 (12 credits).
- Dean's Funds to Support a student assistant for research Fall 2012, (\$360 student stipend for Brian Foulds)
- WPU Center for Research (CfR) Faculty Summer 2012 Research Award; *Modeling Sampling Distributions of Similarity Measures of Normally Distributed Populations* (\$4000).
- WPU Assigned Release Time (ART), Fall 2012-Spring 2014 (12 credits).
- Research and Travel Incentive (RTI) Award, Provost's office, WPU, June 2011 (\$300).
- National Science Foundation (NSF) supported Travel Award, June 2011 (\$1218.55).
- WPU Assigned Release Time (ART), Fall 2010-Spring 2012 (12 credits).
- WPU Center for Research (CfR) Faculty Summer 2010 Research Award; *Mathematical Modeling in Chemotherapy* (\$4000).
- USA Research Council Award, Summer 2008; Optimal Control in Chemotherapy (\$5000).
- Undergraduate Research Program, Summer 2008; Modeling the Electrical Activity of the Heart (\$1900 student stipend for Andy Tucker).
- Arts and Sciences Summer Professional Development Award, Summer 2007; Modeling the Electrical Activity of the Heart (\$6500).

- ASSDA (with X. Zhang), Jan 2007; Visiting Researchers in Mathematical Biology and Dynamical Systems (\$550).
- ASSDA (with M. Mulekar), Dec 2005; Visiting Researchers in Mathematical Biology and Statistical Modeling (\$1500).
- The Late Shri Waman Deshpande Award for securing second highest in M.Sc (Math), Aug 1998.
- Honors Certificate for Mathematics at undergraduate level, St. Xavier's College, Bombay, July 1995.

VI. <u>Miscellaneous</u>

- A. Other Related Publications
- "Dealing with student expectations" (preprint available).
- VCU/NHLBI Spring 2010 Conference Report, (with A. Eladdadi), The Society for Mathematical Biology Newsletter, Volume 23, Number 2, May 2010.
- "My Teaching Challenge: Math Phobia", Th'Ink Well, Quarterly Newsletter from Center for Teaching Excellence, WPU, Fall 2009, Issue 2, pp.5.
- "Tips to Succeed in a Math Class", a hand-out for freshman and sophomores taking mathematics classes in William Paterson University, October 2009.

B. Other Related Presentations

- "Mathematics of Cryptography" Honors Thesis presented by undergraduate advisee Natasha Cunha-Lopes, at Honors night, December 4, 2019.
- "Mathematics of Cryptography", poster presented by undergraduate advisee Natasha Cunha-Lopes, at Explorations 2019, April 4, 2019.
- "How Long will your iPod Last?", poster presented by undergraduate advisee Allison Salehi, at Explorations 2018, April 2018.
- "Robert Noyce Teacher Scholarship Program at WPU, Phase II", co-presented (with D.Hill), at 2016 Noyce Summit, Washington D.C., July 20-22, 2016.
- "Pharmacokinetics", poster presented by undergraduate advisee, Megan Baird, at MAA-NJ Spring Sectional Meeting, April 16, 2016 and at Explorations 2016, April 19, 2016.
- "Water Clocks", talk presented by undergraduate advisee Nicolette Sebes, at Math Fair, WPU, November 20, 2015.
- "Roller Graphicoaster", talk presented at: Math Fair, WPU, November 14, 2014.
- "Mathematics of Card Tricks", talk presented at: Math Fair, William Paterson University, November 16, 2012.
- "Will this Heart Skip a Beat?" talk presented at: Math Fair, William Paterson University, November 18, 2011.
- "Geometry Applied To Designing Soda Cans", talk presented at: Math Fair, William Paterson University, November 19, 2010.
- "Tips to succeed in a math class", talk presented at: MAST workshop on How to Study for Mathematics and Science?, WPU, October 6, 2010.
- "Identifying Key Elements for Improving Classroom Teaching and Learning" participated in: Global Mathematics Symposium Panel Discussion, William Paterson University, July 14, 2010.

- "Radars within Air-Traffic Control", Capstone Poster with A. Christopher, presented at: Pi Mu Induction and Alumni Reunion, WPU, May 7, 2010.
- "Selection in Genetics", Capstone Poster with K. Tucker, presented at: Pi Mu Induction and Alumni Reunion, WPU, May 7, 2010.
- "Tips to succeed in a math class", talk presented at: MAST workshop on How to Study for Mathematics and Science?, WPU, February 9, 2010.
- "Decoding a Barcode", talk presented at: Math Fair, William Paterson University, November 13, 2009.
- "Why become a math teacher and How?", presented a talk (with E. Antoniou) at a MAST event: Seniors Day for future Math teachers, WPU, October 28, 2009.
- "Tips to succeed in a math class", talk presented at: MAST workshop on How to Study for Mathematics and Science?, WPU, October 13, 2009.
- "Value of Higher Education" presented at, Freshman Seminar (M. Villar), WPU, October 7, 2009.
- "Best Practices in Teaching Calculus", presented at: Department of Mathematics Retreat, WPU, May 20, 2009.
- "Computing Areas of Lattice Polygons: Pick's Theorem", talk presented at: Math Fair, William Paterson University, November 14, 2008.
- "Balancing Work and Family", participated in the Women in Science and Engineering Panel Discussion, William Paterson University, November 13, 2008.
- "Symmetry", talk presented at: AWM Sonia Kovalevsky High School Mathematics Day, William Paterson University, April 14, 2005.

C. <u>Reviews</u>

- "Activation of the Immune Response by Cytokines and its Effect on Tumor Cells: A Mathematical Model", (blind review) for Letters in Biomathematics, Apr 2018.
- "Direct and Indirect Least Squares Approximating Polynomials for the First Derivative Function", T. Van Hecke, for Applied Numerical Mathematics, Sep 2016.
- "Timing and Effectiveness of Disease Intervention Mechanisms for Vector-Borne Diseases in the Presence of Human Population Movement in Africa", S. Kim, D.E. Chang, A. Tridane, for special proceedings of a mathematical biology journal, Mar 2014.
- "Canine Distemper Virus (CDV): Preliminary methods for modeling spillover infections for African Wild Dogs in a multi-host community", Harigua S. Nadolny R., Wylie K., for special proceedings of a mathematical biology journal, July 2013.
- Reviewer for NJ Edge Faculty Best Practices Showcase submissions, March 2012.
- External Reviewer for College Research Advisory Committee, College of Science and Health, William Paterson University, NJ, Mar 2008.
- "Choosing Alternative Bicycle Wheels", Reed M, Herve S, Cai Y R, March 2007 (Problem Number 20090) for www.mathmodels.org
- External Reviewer for College Research Advisory Committee, College of Science and Health, William Paterson University, NJ, Dec 2005.

TEACHING EXPERIENCE

I. <u>Curriculum Development</u>

- Developed a course: Selected Topics in Computer Assisted Mathematical Modeling (Math 3990), Summer 2017.
- Developed internship experience for math majors: Mathematics Internship Experience (Math 4950), Spring 2017.
- Co-developed course outline for Principles of Mathematical Analysis (Math 5100), Fall 2016. *(pending university approval)*
- Took PRAXIS exam and redesigned (with C. Mouser and V. Vega) Contemporary Mathematics (Math 1100) and Algebra and Geometry with Applications (Math 1110), Spring 2016.
- Developed online course: College Algebra (Math 1150), Spring 2016.
- Developed course outline for Graduate Seminar in Mathematics 5900, Fall 2015. *(pending university approval)*
- Developed a course: Selected Topics in Partial Differential Equations (Math 3990), Spring 2013.
- Developed a course: Mathematical Modeling in Biological Sciences (Math 3720/Bio 3720/Bio 5720), Spring 2010 (with E. Antoniou and S. Vail).
- Revised course outline of Mathematics Seminar (Capstone Experience) (Math 4900), to be designated as a *Writing Intensive* course.
- Revised course outlines of Precalculus (Math 1160), Algebra, Trigonometry & Functions (Math 1350) and Calculus I (Math 1600), and submitted these to be accepted as UCC course. (with Mathematics Department Curriculum Committee)
- Modified Statistics minor, created Statistics Seminar (Math 4800) (with Mathematics Department Curriculum Committee)

II. <u>Funded Undergraduate Projects Supervised</u>

- "Mathematical Modeling of the Spread of COVID-19", supervised Abryanna Hernandez (UG- math major) supported by NSF GS-LSAMP Summer Research Internship, Summer 2020.
- "Bayes' Theorem", supervised Shanaida Garcia (HS) and Gina Magarelli (UG math major), supported by Roche Grant, Summer 2013.
- "Mathematics of card tricks", supervised Brian Foulds (UG math & cs major), supported by Dean's funds, Fall 2013.
- "Uniform Circular Motion and Projectile Motion", supervised Sudipta Chowdhury (HS) and Brian Foulds (UG math & cs major), supported by Roche Grant, Summer 2012.
- "Mathematical Biology", supervised Tamanna Murshed (HS) and Keith Malinak (UG bio major), supported by Roche Grant, Summer 2011.

III. Independent Studies

- The Simplex method & Its Applications, Abdus Salam, Summer 2020
- (Honors) Mathematics of Cryptography, Natasha Cunha-Lopez, Fall 2019
- Partial Differential Equations, Hubert Jorahua, Spring 2017

- (Honors) An Overview of Pharmacokinetics Field, Megan Baird, Spring 2017
- Partial Differential Equations, Lauren Barnes, Fall 2016.
- Applications of Mathematics to Life Sciences, Tara Ghahari, Summer 2010.
- DNA Topology, Sarah Gelsinger, Fall 2007.

IV. <u>Capstone Projects</u>

- Lina Falah, Dividing a Circle into n parts, Spring 2021
- Abryanna Hernandez, Mathematical Modeling of Spreading of the Coronavirus, Fall 2020
- Gwendolyn Lee, Interlace Polynomial, Spring 2020
- Natasha Cunha Lopes, Mathematics of Cryptography, Spring 2019
- Nataly Gaspar, Cycloids, Fall 2018
- Allison Salehi, How Long will Your iPod Last ?, Spring 2018
- Nawal Mahmoud, Mathematics of Student Loans, Spring 2018
- Victoria Lalama- Cabrera, The Math of Space Travel: Orbits & Conic Sections, Summer 2017
- Paul Perville, Planimeter an application of Stokes' theorem, Spring 2017
- Dana Sastre, Spherical Geometry with Examples, Fall 2016
- Ryan Burger, Bridge Analysis, Fall 2016
- Megan Baird, Pharmacokinetics Drug Metabolism, Spring 2016
- Nicolette Sebes, Designing a Water Clock, Fall 2015
- Lori Quail, The World As We Know It (Mercator Projections), Spring 2015
- Cherilyn Conner, How a Lens Works, Spring 2015
- Parul Begum, Polar Art, Fall 2014
- Rita vanderStad, Mathematics of the CD Player, Spring 2014
- Lisa Aanonsen, Geometric Probability, Fall 2013
- Brian Foulds, Spherical Geometry, Fall 2013
- Nicolle Keleman, Properties of Ellipses & their Applications, Spring 2013
- Casey McGuigan, Somewhere Within A Rainbow, Spring 2013
- Janet Arslanbeck, Geometrical Optics, Fall 2012
- Laura Jo Rieske, Mathematics and Card Tricks, Spring 2012
- Esmeralda Cabrera, Patterns in Pascal's Triangles, Fall 2011, Spring 2012
- Brian Brotherton, Special Functions, Spring 2011
- Tatiana DaSilva, Mathematics of Marriage, Spring 2011
- Rebecca Anderson, Partial Differential Equations, Fall 2010
- Janelle Ortiz, Dye Dilution method for Cardiac Output, Fall 2010
- Adam Christopher, Radars Within Air-Traffic Control, Spring 2010
- Christina Dizzia, Using Spreadsheets to Predict Virus Concentration, Spring 2010
- Kristine Tucker, Selection in Genetics, Spring 2010

ADVISED MATH READINGS

5 UG projects7 Independent Studies38 Capstone projects

- Kristy Csigi, Arrangements of Tatami Mats, Fall 2009
- Stavroula Ploumtsakos, It's a Small World After All, Fall 2009
- Dana Bertoli, Bungee Jumping, Spring 2009
- Nevrie Dauti, Swimming the Salmon River, Spring 2009
- Robert Ruinge, What is Just?, Spring 2009
- Thomas Fein, Failure of the Tacoma Narrows Bridge, Spring 2005
- Jayme Palmero, Mathematical Functions of the Pacemaker, Spring 2005

V. <u>Courses Taught at WPU</u>

- Math 111-Algebra & Geometry with Applications, Fall 2004
- Math 115, 1150 College Algebra, Spring 2005, Spring 2012, Spring 2013, Fall 2013, Fall 2014, Spring 2015, Fall 2015, Spring 2016, Fall 2016, Spring 2017, Fall 2017, Spring 2018, Fall 2018, Spring 2019, Fall 2019, Spring 2020, Fall 2020, Spring 2021, Fall 2021, Spring 2022
- Math 116, 1160 Precalculus Fall 2004, Spring 2005, Spring 2017
- Math 135-Algebra, Trigonometry & Functions, Fall 2008
- Math 140 Quantitative Math I, Fall 2009, Spring 2010, Fall 2010
- Math 145 Quantitative Math II, Fall 2004, Fall 2008, Spring 2009
- Math 160, 1600 Calculus I, Spring 2009, Spring 2010, Fall 2010, Fall 2011, Fall 2012, Fall 2013
- Math 1610 Calculus II, Spring 2014
- Math 2000 Logic and Methods of Higher Mathematics, Fall 2017, Fall 2018, Fall 2019
- Math 2020 Linear Algebra, Spring 2022
- Math 2120 Mathematics for High School Teachers, Fall 2011
- Math 311, 3110 Number Theory, Fall 2011, Fall 2012, Fall 2013
- Math 322 Ordinary Differential Equations, Spring 2005
- Math 323, 3230 Foundations of Geometry, Spring 2011, Spring 2012, Spring 2013, Spring 2015, Spring 2016, Spring 2017, Spring 2018, Spring 2019, Spring 2020
- Math 325 Topics in Applied Mathematics, Spring 2005, Spring 2009, Fall 2009, Spring 2010
- Math 372, 3720 Mathematical Modeling in Biological Sciences, Fall 2010, Fall 2011, Fall 2012
- Math 3990 Selected Topics: Partial Differential Equations, Spring 2013
- Math 3990 Selected Topics: Computer Assisted Mathematical, Summer 2017
- Math 422, 4220 Complex Analysis, Spring 2011, Spring 2012, Spring 2015
- Math 4230 Real Analysis, Fall 2014, Fall 2015, Fall 2016
- WPU 1010 First Year Seminar (Math/CS cohort), Peer Leader: Dana Sastre, Fall 2015
- WPU 1011 Pioneer Success Seminar (Math/CS cohort), Peer Leader: Dana Sastre, Fall 2016; Peer Leader: Nestor Lewis, Fall 2017; (Math/CS Learning Community) Peer Leader: Amanda Rodriguez, Fall 2018

COURSES TAUGHT AT WPU

21 distinct courses

SERVICE

I. <u>Department Level</u>

- A. Academic Year 2021-22
 - Director of Math Learning Center (Spring 2022)
 - Departmental Assessment Committee (DAC) (Spring 2022)
 - Math Awareness Week coordinator (April 2022)
 - Co-organizer Mathematics Graduation Reception (May 2022)
 - Recording Secretary

B. Academic Year 2020-2021

- Council Member
- Director of (Online) Math learning Center
- Math Department Webmaster

C. Academic Year 2019-2020

- Director of Math learning Center (Spring 2020)
- Resource person for colleagues transitioning to online teaching (Spring 2020)
- College Algebra Taskforce Committee
- Math Department Webmaster
- D. Academic Year 2018-2019
 - Math Club Advisor
 - Co-organizer Math Majors' Day (April 16, 2019)
 - Co-organizer Mathematics Graduation Reception (May 10, 2019)
 - Math Department Webmaster
- E. Academic Year 2017-2018
 - Assistant to the Chairperson
 - Co-organizer Mathematics Graduation Reception (May 11, 2018)
 - Co-organizer Mathematics Awareness Week
 - In-person Registration (Jan 9, 2018)
 - Math Department Webmaster
- F. Academic Year 2016-2017
 - Assistant to the Chairperson
 - Co-organizer Mathematics Graduation Reception (May 12, 2017)
 - Curriculum Committee
 - Hiring Committee
 - In-Person Registration (Jan 10, 2017)
 - Math Department Overview at Math Fair (Nov 18, 2016)
 - Math Department Webmaster
 - Scholarship Brunch (March 3, 2017)
- G. Academic Year 2015-2016
 - In-Person Registration (Aug 16, 2016)
 - Advisement & Registration for transfer students (July 26, 2016)
 - Commencement (May 20, 2016)

- Co-organizer Mathematics Graduation Reception (May 13, 2016)
- Co-organizer (local), Spring MAA-NJ Meeting and 2016 GSUMC (April 16, 2016)
- Co-organizer Math Majors' Day (March 31, 2016)
- Advisement & Registration for transfer students (Jan 11, 2016)
- Curriculum Committee
- Math Department Webmaster
- H. Academic Year 2014 2015
 - Co-organizer Mathematics Graduation Reception (May 8, 2015)
 - Fall Open House (Nov 16, 2014)
 - Organizer 1st Hands-On Math Fair with exhibits from Math Museum (Nov 14, 2014)
 - Evaluated the Math Fair for the first time in 16 years
 - Math Department Webmaster
- I. <u>Academic Year 2013 2014</u>
 - In-person registration (Aug 19, 2014)
 - Co-organizer Mathematics Graduation Reception (May 9, 2014)
 - Co-organizer Math Majors' Day (April 10, 2014)
 - Math Major Advisor (Fall 2013)
 - Designed and administered online advisement assessment for Mathematics using *Qualtrics*
 - Math Department Webmaster
- J. Academic Year 2012 2013
 - Calculus Coordinator
 - Co-organizer Math Majors' Day (Nov 20, 2012)
 - Curriculum Committee
 - Math Major Advisor
 - Math Department Webmaster
- K. <u>Academic Year 2011 2012</u>
 - Calculus Coordinator
 - Curriculum Committee
 - Math Major Advisor
 - Math Department Webmaster
- L. <u>Academic Year 2010 2011</u>
 - Calculus Coordinator
 - Curriculum Committee
 - Math Major Advisor
 - Math Department Webmaster
 - Departmental Representative at Spring Open House (April 10, 2011)
- M. Academic Year 2009 2010
 - Calculus Coordinator
 - Curriculum Committee
 - Seminar Coordinator
 - Math Department Webmaster
- N. <u>Academic Year 2008 2009</u>
 - Math Awareness Week coordinator

- Recording Secretary
- Seminar Coordinator
- Math Department Webmaster

II. <u>College Level</u>

- A. Academic Years 2018-22
 - College of Science & Health (COSH) Assessment Coordinator
 - Goldwater Campus Representative
- B. Academic Year 2017-2018
 - College of Science & Health (COSH) Curriculum Committee
- C. Academic Year 2015-2016
 - College of Science & Health (COSH) Professional Advisor *Search Committee* (Spring 2016)
- D. <u>Academic Year 2011 2012</u>
 - Dual Enrollment Program Coordinator
- E. <u>Academic Year 2010 2011</u>
 - Dual Enrollment Program Coordinator

III. <u>University Level</u>

- A. Academic Year 2021-2022
 - Director MaCS (Mathematics and Computer Science) Scholars Program
 - Academic Assessment Committee
 - Senate Assessment Council (ex-officio member)
- B. Academic Year 2020- 2021
 - Director MaCS (Mathematics and Computer Science) Scholars Program
 - Program co-Director stem4ed (Robert Noyce Teacher Scholarship Program Phase II)
 - Academic Assessment Committee
 - Senate Assessment Council (ex-officio member)
- C. Academic Year 2019-2020
 - Program co-Director stem4ed (Robert Noyce Teacher Scholarship Program Phase II)
- D. Academic Year 2018-2019
 - Program co-Director stem4ed (Robert Noyce Teacher Scholarship Program Phase II)
 - Assessment of UCC Area 3e (with P. von Dohlen)
- E. Academic Year 2018-2019
 - Program co-Director stem4ed (Robert Noyce Teacher Scholarship Program Phase II)
- F. Academic Year 2017-2018
 - Program co-Director stem4ed (Robert Noyce Teacher Scholarship Program Phase II)
 - *Hidden Figures: Real Life Stories*, panel member, part of common experience for first year students, Nov 2, 2017
- G. Academic Year 2016 2017

- Program co-Director stem4ed (Robert Noyce Teacher Scholarship Program Phase II)
- Introduced Women of Vision Award recipient Dr. D. Hill at the Women's History Celebration Luncheon (March 23, 2017)
- College of Science & Health (COSH) Dean Search Committee
- Director First Year Foundation Search Committee
- H. Academic Year 2015 2016
 - Program co-Director stem4ed (Robert Noyce Teacher Scholarship Program Phase II)
- I. Academic Year 2014 2015
 - Student Success Team
- J. <u>Academic Year 2013 2014</u>
 - Advisement & Registration Senate Council (Secretary)
 - Ad-Hoc Committee on Administrator Evaluations
 - Student Success Team (Spring 2014)
- K. Academic Year 2012 2013
 - Advisement & Registration Senate Council
 - Ad-Hoc Committee on Administrator Evaluations (Spring 2013)
- L. Academic Year 2011 2012
 - Advisement & Registration Senate Council
 - Technology Across the Curriculum Committee
- M. <u>Academic Year 2010 2011</u>
 - Advisement & Registration Senate Council
 - Technology Across the Curriculum Committee
- N. Academic Year 2008 2009
 - Marshall for Mathematics department during May 2009 commencement exercises

IV. Other Professional Service

- NASA Goddard 2018 MEI Steering Committee
- External member on thesis committee
 - Peer Mohammed, MS in Chemical Engineering, Apr 30, 2008.
 - Stephen Richardson, Undergraduate Honors Thesis, Apr 11, 2008.
 - Phani Vinod Sukhavasi, MS in Chemical Engineering, Dec 3, 2007.
 - Mithat Can Kisacikoglu, MS in Electrical Engineering, Mar 13, 2007.
- Secretary for the USA Chapter of Sigma Xi, Spring 2006-Spring 2008.