

Curriculum vitae of Tom Cuchta

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EDUCATION	Missouri University of Science and Technology	<i>Rolla, MO</i>
	Ph.D. Mathematics	(2011 Fall–2015 Fall)
	– Advisor: Dr. Martin Bohner – Thesis: Discrete analogues of some classical special functions – Award: Chancellor’s Fellowship	
	Marshall University	<i>Huntington, WV</i>
	M.A. Mathematics	(2009 Fall–2011 Spring)
	B.S. Mathematics, B.S. Applied Mathematics	(2006 Fall–2009 Spring)
	– Advisor: Dr. Bonita Lawrence – Thesis: Infinitesimal Time Scale Calculus	
POSITIONS	Fairmont State University	<i>Fairmont, WV</i>
	Assistant Professor of Mathematics	(2016 Fall–present)
	Missouri S&T	<i>Rolla, MO</i>
	Instructor	(2016 Spring)
	Graduate Teaching Assistant	(2011 Fall–2015 Fall)
	Marshall University	<i>Huntington, WV</i>
	Instructor	(2011 Summer)
	Graduate Teaching Assistant	(2009 Fall–2011 Spring)

- PUBLICATIONS**
- [1] Martin Bohner, Tom Cuchta, Sabrina Steipert. Delay dynamic equations on isolated time scales and the relevance of one-periodic coefficients. *Math. Meth. Appl. Sci.* To appear, 2022.
 - [2] Tom Cuchta, David Grow, and Nick Wintz. Divergence criteria for matrix generalized hypergeometric series. *Proc. Am. Math. Soc.*, 150(3):1235–1240, 2022.
 - [3] Tom Cuchta and Sabrina Streipert. A discrete SIS model of fractional order. *Int. J. Dyn. Syst. Differ. Equ.* 11(3/4):275–286, 2021.
 - [4] Tom Cuchta and Svetlin Georgiev. Analysis of the bilateral Laplace transform on time scales with applications. *Int. J. Dyn. Syst. Differ. Equ.* 11(3/4):255–274, 2021.
 - [5] Tom Cuchta and Rebecca Luketic*. Discrete Hypergeometric Legendre Polynomials. *Mathematics* 9(20), 2021. 2546.
 - [6] Tom Cuchta, Robert Jon Niichel, and Sabrina Streipert. A Gompertz distribution for time scales. *Turk. J. Math.*, 45(1):185–200, 2021.
 - [7] Tom Cuchta and Brooke Fincham*. Some new Gompertz fractional difference equations. *Involve*, 13(4):705–719, 2020.
 - [8] F. Ayça Çetinkaya and Tom Cuchta. Sturm–Liouville and Riccati Conformable Dynamic Equations. *Adv. Dyn. Syst. Appl.*, 15(1):1–13, 2020.
 - [9] Samer Assaf, Tom Cuchta, and Matt Insall. Binary metrics. *Topol. Appl.*, 274, 2020. 107116.
 - [10] Tom Cuchta, Michael Pavelites*, and Randi Tinney*. The Chebyshev Difference Equation. *Mathematics*, 8(1), 2020. 74.
 - [11] Tom Cuchta and Sabrina Streipert. Dynamic Gompertz Model. *Appl. Math. Info. Sci.*, 14(1):1–9, 2020.

- [12] Tom Cuchta, David Grow, and Nick Wintz. A dynamic matrix exponential via a matrix cylinder transformation. *J. Math. Anal. Appl.*, 479(1):733–751, 2019.
- [13] Tom Cuchta, et al. Human risk factors in cybersecurity. In *Proceedings of the 20th Annual SIG Conference on Information Technology Education, SIGITE 19*, pages 87–92, New York, NY, USA, 2019. ACM.
- [14] Martin Bohner and Tom Cuchta. The generalized hypergeometric difference equation. *Demonstr. Math.*, 51:62–75, 2018.
- [15] Martin Bohner and Tom Cuchta. The Bessel difference equation. *Proc. Am. Math. Soc.*, 145(4):1567–1580, 2017.
- [16] Abigail Bishop, Tom Cuchta, Kathryn Lokken, and Oliver Pechenik. The nilradical and non-nilradical graphs of commutative rings. *Int. J. Algebra*, 2(17-20):981–994, 2008.
- [17] Tom Cuchta, Kathryn Lokken, and William Young. Zero-divisor graphs of localizations and modular rings. *Rose-Hulman Undergrad. Math. J.* 9(2), 2008. 3.

(* denotes undergraduate coauthors)

GRANTS

- (pending, 2022–2025) **Principal Investigator**
NSF Research Experience for Undergraduates grant
“*Discrete and Continuous Analysis in Appalachia*”
- (2022–2028) **Senior Personnel**
NSF S-STEM Track 1 Institutional Capacity Building grant
“*Bridging the STEM Gap in Appalachia: Engaging with students to iteratively improve faculty practices in support of student success*”
- (2019 Apr) Fairmont State University Foundation Grant Award
- (2018 Nov–2019 May) **Principal Investigator**
NASA Software Assurance Research Program grant
“*Human Hazards in Cybersecurity*”
- (2017 Nov) Grant from NVIDIA Corporation for a GPU
- (2017 Aug–2018 Jul) TMC² Technologies
Undergraduate machine learning training grant

WV NASA Space Grant Consortium Awards

- (2021 Nov–2022 Jul)
“*Periodic carrying capacity in Gompertz dynamic equations*”
- (2021 Mar–2021 Jul)
“*Multi-valued Matrix Logarithm and Matrix Inverse Trigonometric Functions on Time Scales*”
- (2020 Nov–2021 Jul)
“*Discrete Meijer G*”

Student WV NASA Space Grant Consortium Awards Mentored

- (2021 Nov–2022 Jul) Jacob Branch
“*Monodiffic extensions of discrete special functions*”
- (2020 Nov–2021 Jul) Rebecca Luketic
“*Discrete Legendre polynomials*”

- (2020 Nov–2021 Jul) Dallas Freeman
“Discrete polylogarithm functions”
- (2019 Nov–2020 Jul) Brooke Fincham
“Discrete fractional population models”

**TEACHING
EXPERIENCE &
PROFESSIONAL
DEVELOPMENT**

Fairmont State University		(2016 Fall–2022 Spring)	
Course	# sections	Course	# sections
Undergraduate Research	6	Real Analysis	3
Complex Variables	1	Differential Equations	2
Linear Algebra	2	Calculus 3	3
Calculus 2	6	Mathematical Logic	5
Calculus 1	3	Applied Calculus 2	1
Intro to Programming	2	Trigonometry	9
Applied Statistics	3	College Algebra	2
Applied Tech Math I	1	Pre-College Algebra	1

Missouri S&T (2011 Fall–2016 Summer)	
Course	# sections
Linear Algebra	4
Differential Equations	1
Calculus 3	8
Calculus 1	2
“Problem Solving Workshop”	2
“Hit the Ground Running”	3

Marshall University (2009 Fall–2011 Summer)	
Course	# sections
Trigonometry	3
College Algebra	2
Finite Math	1
Basic Skills in Mathematics II	1

Section NExT teaching workshops attended

- (2021 Sep) sustainability quantitative literacy course & teaching lower-level courses Triadelphia, WV
- (2020 Sep) resampling in basic stats & activity-based learning online (virtual)
- (2019 Sep) mastery based grading Slippery Rock, PA
- (2018 Sep) student issues and concerns & using the instructional practices guide California, PA
- (2017 Sep) engagement and grading Grove City, PA
- (2017 Apr) expository writing Pittsburgh, PA
- (2016 Oct) teaching statistics Wooster, OH
- (2016 Sep) teaching math to liberal arts majors Indiana, PA

SERVICE

To profession

Peer Review

- (2022) 3 papers
- (2021) 13 papers
- (2020) 30 papers
- (2019) 15 papers
- (2018) 3 papers
- (2017) 4 papers
- (2016) 2 papers

Writer for *Mathematical Reviews*

- (2022) 1 review
- (2021) 6 reviews
- (2020) 6 reviews
- (2019) 6 reviews

Reviewer for

- Advances in Continuous and Discrete Models: Theory and Applications
- Advances in Difference Equations
- Advances in the Theory of Nonlinear Analysis and its Application
- AIMS Mathematics
- Analysis: International Mathematical Journal of Analysis and its Applications
- Axioms
- Differential Equations and Dynamical Systems
- Filomat
- International Journal of Dynamical Systems and Differential Equations
- Journal of Classical Analysis
- Journal of Difference Equations and Applications
- Journal of Fixed Point Theory and Applications
- Journal of Inequalities and Special Functions
- Journal of Mathematics and Computer Science
- Journal of Mathematics and Statistics
- Journal of Nonlinear Sciences and Applications
- Journal of the Egyptian Mathematical Society
- Malaysian Journal of Mathematical Sciences
- Mathematical Biosciences and Engineering
- Mathematical Population Studies
- Mathematics
- Nonlinear Dynamics and Systems Theory
- Nonlinearity
- Numerical Methods for Partial Differential Equations
- Real Analysis Exchange
- Symmetry
- Turkish Journal of Mathematics
- TWMS Journal of Applied and Engineering Mathematics

To Mathematical Association of America

1. (2022 Apr) Host organizer of Spring 2022 Allegheny Mountain Section conference (virtual)
2. (2022 Spr) Nominating Committee (chair)
3. (2021 Spring–present) Colloquium Committee (chair)
4. (2021, 2020 Springs) Nominating Committee
5. (2018 Apr–present) Allegheny Mountain Section Director of E-Communications
6. (2018 Spring) Allegheny Mountain Section 2018 Teaching Award Committee

Other Service to Profession

- Maintainer of an open source Python project on GitHub for time scale calculus
<https://github.com/tomcuchta/timescalecalculus>
- Maintainer of a solutions manual to Rainville's *Special Functions*
<https://github.com/tomcuchta/rainvillesfsolutions>

Owner and operator of...

- Time Scale Wiki <http://timescalewiki.org>
- Special Functions Wiki <http://specialfunctionswiki.org>
- Hyperspace Wiki <http://hyperspacewiki.org>

To Fairmont State University

Undergraduate researchers mentored

- (2022) Zack Linger (domain colorings software)
- (2022) Richard Williams (calculus of variations)
- (2021–2022) Jacob Branch (monodiffic functions)
- (2020–2021) Rebecca Luketic (discrete Legendre polynomials)
- (2020–2021) Dallas Freeman (discrete polylogarithms)
- (2019–2020) Brooke Fincham (discrete fractional Gompertz models)
- (2019) Michael Pavelites (discrete Chebyshev polynomials)

NASA IV&V SARP grant (2019)

- Kristina Daniels
- Caleb Lutjens
- Sydney Maibach
- Ryan Stephenson
- (2018–2019) Matthias Baur (`timescalecalculus` package)
- (2018) Randi Tinney (discrete Chebyshev polynomials)

TMC² Technologies grant (2017–2018)

- Mattison Johnson
- Dawn Sargent
- Carl Wahler
- Anna Westfall
- (2017–2018) Zack Linger (zeta functions on time scales)
- (2017) Treston Brown (discrete special functions)
- (2016) Antonietta Bonanno (educational methods in geometry)

Wrote letters of recommendation for...

- (2022) 1 individual
- (2021) 7 individuals
- (2020) 6 individuals
- (2019) 9 individuals
- (2018) 3 individuals
- (2017) 1 individual

Organized student trips

- (2020) Pi Mu Epsilon conference; Youngstown, OH
- (2019) Marshall University differential analyzer; Huntington, WV
Pi Mu Epsilon conference; Youngstown, OH
Miami University of Ohio Annual Conference; Oxford, OH
- (2018) Allegheny Mountain MAA conference; Erie, PA
Pi Mu Epsilon conference; Youngstown, OH
- (2017) Ohio MAA conference; St. Clairsville, OH
- (2017) Marshall University differential analyzer; Huntington, WV
- (2017) Pi Mu Epsilon conference; Youngstown, OH

Faculty Senate

- (2021, 2020 Springs) FS Committee on Committees (chair)
- (2021 Spring) Executive Committee Provost Interviews and Faculty Forums
- (Fall 2020–present) FS Bylaws Committee
- (2019 Fall–2021 Spring) FS Executive Committee (Webmaster)
- (2019, 2018 Springs) FS Committee on Committees (member)
- (2018 Fall–2019 Spring) FS Executive Committee (at large member)
- (2017 Spring–present) Senator for Dept. Comp. Sci. & Math.

Other Service

- (2021 Dec–2022 Aug) Host of Visiting Fulbright Scholar Alexander Lyapin
- (2021 Fall–present) Honors Council
- (2021 Spring) University website vendor procurement committee
- (2020 Fall–present) Operator of the `csmath.fairmontstate.edu` server, providing WeBWork and RStudio for math classes
- (2019 Spring–present) Creative Sustainability Council
- (2018 Fall–present) Coordinator of calculus assessment
- (2018 Fall–present) Technology Committee
- (2017 Fall–present) Student Publications Board
- (2018 Fall–2020 Spring) Institutional Review Board
- (2017 Spring) Mathematics program advisory board committee
- (2016–2019) Organized visiting lecturers for department seminars

CONFERENCES AND SEMINAR TALKS Research Conferences

- (2022 Apr) *Special Session on Analysis of and Recent Advances in Difference, Differential and Dynamic Equations with Applications, Joint Math Meetings; Seattle, WA* (**invited**, virtual)
- (2021 Aug) Dynamic equations on time scales workshop, Mathematical conference centre; Będlewo, Poland (**invited**, virtual)
- (2021 Jul) International Conference on Difference Equations and Applications, University of Sarajevo; Sarajevo, Bosnia & Herzegovina (virtual)
- (2020 Aug) Dynamic equations on time scales workshop, Mathematical conference centre; Będlewo, Poland (**invited**, virtual)
- (2020 May) 95th Annual WV Academy of Sciences Meeting; Fairmont, WV (**invited plenary speaker**) cancelled
- (2019 Sep) Miami University 47th Annual Math Conference: Differential Equations and Dynamical Systems and their Applications; Oxford, OH
- (2019 Jul) International Conference on Differential & Difference Equations and Applications; Lisbon, Portugal
- (2019 Jun) Dynamic equations on time scales workshop, Mathematical conference centre; Będlewo, Poland (**invited plenary speaker**)
- (2019 Jan) Joint Math Meetings; Baltimore, MD
- (2018 Aug) International Workshop on Nonlinear Dynamical Systems and Functional Analysis, University of Brasília; Brasília, Brazil.
- (2017 Jul) International Conference on Difference Equations and Applications, West University of Timișoara; Timișoara, Romania
- (2014 May) Conference on Partial Differential Equations, Abbazia di Novacella; Neustift, Italy

MAA Conferences

- (2021 Apr) Allegheny Mountain MAA Meeting; Edinboro, PA (virtual)

- (2019 Apr) Allegheny Mountain MAA Meeting; Shepherdstown, WV
- (2018 Apr) Allegheny Mountain MAA Meeting; Erie, PA
- (2017 Oct) Ohio MAA Meeting; St. Clairsville, OH
- (2017 Apr) Allegheny Mountain MAA Spring Meeting; Pittsburgh, PA
- (2016 Oct) Ohio MAA Fall Meeting; Wooster, OH
- (2015 Mar) Missouri MAA Spring Meeting; Rolla, MO

Seminar and Colloquium Talks

- (2021 Oct) WVU Math Colloquium; Morgantown, WV (virtual)
- (2020 Mar) WVU Math Colloquium; Morgantown, WV
- (2019 Nov) WVU Math Colloquium; Morgantown, WV

MEMBERSHIPS

- American Mathematical Society
- International Society of Difference Equations
- Mathematical Association of America
- Society of Industrial and Applied Mathematics
- West Virginia Academy of Sciences

**OTHER
ACADEMIC
ACTIVITIES**

- (2021 Nov) Volunteer judge at Fairmont State honors quiz bowl
- (2021 Jul) Volunteer judge at WVU Undergraduate Culminating Symposium
- (2019 Oct) Volunteer judge at Fairmont State honors quiz bowl tournament
- (2019 Apr) Exam writer and grader for WV Math Field Day
- (2018 Apr) Volunteer scorer at WV Math Field Day