

Robert Drew Wooster III

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Mathematician and Data Scientist with 10+ years academic and industry experience

GitHub page/Portfolio
<https://bobwooster.github.io>

Employment

- August 2022 - Present *Lecturer of Statistics & Data Science*, Yale University
- Oct 2021 - Present *Senior Data Scientist*, Wavicle Data Solutions LLC
- Sep 2020 - Oct 2021 *Senior Data Scientist*, Ancera LLC
- Aug 2016 - present *Owner/Principal Data Science Consultant*, Analytix LLC, a data science and mathematical modeling consulting business
- July 2017 - June 2019 *Visiting Professor*, Department of Mathematical Sciences, Central Connecticut State University, New Britain, CT
- July 2012 - June 2016 *Assistant Professor*, Department of Mathematics and Computer Science, College of Wooster, Wooster, OH
- July 2009 - June 2012 *Assistant Professor* (post-doc), Department of Mathematical Sciences, United States Military Academy, West Point, NY

Education

- *Ph.D. Mathematics*, University of Connecticut, May 2009
Dissertation: *Evolution Systems of Measures for Non-autonomous Stochastic Differential Equations with Lévy Noise*, Advisor: Professor Maria Gordina.
My research was in the field of probability theory and stochastic differential equations. Since stochastic differential equations involve randomness, they are used in a variety of applications including mathematical finance, biology, communications, and physics. My work involved proving the existence and uniqueness of so-called *evolution systems* of measures, an analog of steady-state or invariant measures, for non-autonomous equations. These systems of measures play a large part in understanding the properties of solutions and determine their long term behavior.
- *M.S. Mathematics*, University of Connecticut, December 2004
- *B.S. Natural Resources*, University of Connecticut, Spring 1999

Research interests

Data science, probability theory, Markov processes, Lévy processes, stochastic differential equations, applications of stochastic processes

Publications

- M.K. Smith et al., *Automated enumeration of Eimeria oocysts in feces for rapid coccidiosis monitoring*, Poultry Science, October 2022.
- P. Pierce, R. Wooster, *Conquer the World with Markov Chains*, Math Horizons, April 2015.

- G. Nguyen, J. Kedia, R. Snyder, R.D. Pasteur, R. Wooster, *Sales Forecasting using Regression and Artificial Neural Networks*, Proceedings of Midstates Conference For Undergraduate Research in Computer Science and Mathematics 2013.
- B. Thirey, R. Wooster *The Touchy-Feely Integral: Using Manipulatives to Teach the Basic Properties of the Definite Integral*, PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies, Vol. 23, Issue 7, Special Issue on Tactile Learning Activities, 2013, pp. 605-616.
- R. Wooster, *Evolution Systems of Measures for Non-autonomous Ornstein-Uhlenbeck Processes with Lévy Noise*, Communications on Stochastic Analysis, Vol. 5, No. 2, June 2011, pp. 353-370.
- R. Wooster, *Evolution Systems of Measures for Non-autonomous Stochastic Differential Equations with Lévy Noise*. Ph.D. Thesis, University of Connecticut, 2009. Advisor: Professor Maria Gordina.

Talks/Presentations

- *Parameter Estimation and the German Tank Problem*, September 2018, Central Connecticut State University
- *Martingales: for fun and (non)-profit*, April 2018, Central Connecticut State University
- *Introduction to Pricing Financial Options*, Ohio Speaker Circuit, April 2015, Ohio Wesleyan University
- *Introduction to Black-Scholes options pricing*, Ohio Speaker Circuit, April 2014, Oberlin College
- *Numerical Methods for Stochastic Differential Equations*, Joint Mathematics Meeting, January 2012, Boston, MA.
- *The Touchy-Feely Integral*, Joint Mathematics Meeting, January 2012, Boston, MA.
- *Brownian motion: Its history and properties*, Seminar, April 2011, Central Connecticut State University, CT
- *Brownian motion II: Applications and introduction to stochastic calculus*, Research seminar, November 2010, West Point, NY
- *Brownian motion I: History, Lévy's L^2 -construction, and properties*, Research seminar, November 2010, West Point, NY
- *Evolution Systems of Measures for Non-autonomous Ornstein-Uhlenbeck Processes with Lévy Noise*, Joint Mathematics Meeting, January 2009, Washington DC.
- *Invariant Measures for Ornstein-Uhlenbeck Processes with Lévy Noise*, Northeast Probability Seminar, November 2008, NYC, NY

Awards and Honors

- Nominated for Excellence in Teaching Award, Central Connecticut State University, 2018, 2019
- Commander's Award for Civilian Service, Department of the Army, West Point, 2012
- Travel support to research at University of Bielefeld, Germany, PI - Michael Röckner, June 2008
- Research support under NSF Grant DMS-0706784, PI - Maria Gordina, Summer 2007, Spring-Summer 2008
- Louis J. DeLuca Memorial Award for Outstanding Teaching Assistant, 2005
- Summer Predoctoral Fellowship, 2004

Teaching

- 2017 - 2019 **Central Connecticut State University**, New Britain, CT
Visiting Professor, Department of Mathematical Sciences
Courses taught: Pre-Calculus with Trigonometry Applied, Calculus with Trigonometry, Introduction to Differential Equations with Applications, Introduction to Real Analysis
- 2012 - 2016 **College of Wooster**, Wooster, OH
Assistant Professor, Department of Mathematics and Computer Science
Courses taught: Calculus and Analytic Geometry II, Calculus for Social Science, Differential Equations, Functions of a Complex Variable, Multivariate Calculus, Numerical Analysis, Partial Differential Equations, Probability and Statistics I, Probability and Statistics II, Real Analysis I, Real Analysis II, Transitions to Advanced Mathematics
- 2009 - 2012 **United States Military Academy**, West Point, NY
Assistant Professor, Department of Mathematical Sciences
Courses taught: Advanced Multivariable Calculus, Differential Equations, Engineering Mathematics, Foundations of Mathematics, Mathematical Modeling and Introduction to Calculus, Numerical Analysis, Real Analysis I, Real Analysis II
- 2002 - 2009 **University of Connecticut**, Storrs, CT
Graduate Teaching Assistant, Department of Mathematics
Courses taught: Basic Algebra with Applications, Calculus I, Calculus II, Differential Equations, Introductory Calculus 1, Introductory Calculus 2, Multivariable Calculus, Precalculus

Research, Independent Study, and Experiential Learning Advising

- *Applied Methods and Research Experience:* Advised teams of three students working for clients from local business and industry solving real world problems using data analytics and mathematical modeling, clients include Goodyear Tire and Rubber Company, Progressive Insurance, and Kent Displays (link: [AMRE](#)), summer 2013, 2014, 2016
- Independent Study advisor (College of Wooster):
 - Katelyn French, *Bees in the Trap: A Mathematical Approach to Modeling the Mutualism between Flowering Plants and Honey Bees*, 2015-2016
 - Adam Coppock, *Applying Modern Portfolio Theory to Optimal Portfolio Construction*, 2015-2016
 - Jeffrey Giegold, *Shooters vs Goalies: Analyzing Shootouts in the NHL with Game Theory*, 2015-2016
 - Anqi Huang, *Matrix-Analytic Methods in Queueing Theory*, 2014-2015
 - Amanda Steinhebel, *Solitons and Their Symmetries: A Mathematical Analysis*, 2014-2015
 - Ian Vernier, *The Mental Game: An Analysis of Game Theory and Baseball*, 2014-2015
 - Elliot Wainwright, *Avalanches on a Critical Conical Bead Pile: Exploration of Tuning Parameter Space and Mathematical Foundations*, 2014-2015
 - Mary Sefcik, *Clarifying Chaos: An Introduction to Chaotic Dynamical Systems*, 2013-2014
 - Michael Ries, *Ranking Systems and Their Applications to Sports*, 2013-2014
 - Ryan Snyder, *Keeping your Options Open: An Introduction to Options Pricing*, 2013-2014
 - Cal Thomay, *Markov Chain Theory with Applications to Baseball*, 2013-2014
 - Joseph Wilch, *Insights into the tectonic evolution of the northern Snake Range metamorphic core complex from $^{40}\text{Ar}/^{39}\text{Ar}$ thermochronologic results, northern Snake Range, Nevada*, 2012-2013

- Senior thesis advisor (West Point), CDT Joe Lucas, *Retirement Benefit Impacts on Officer Retention*, 2011-2012

Service at the Central Connecticut State University

- Coordinator for annual *Integration Bee* calculus competition, 2017-2018

Service at the College of Wooster

- Elected to and served on Strategic Planning and Priorities Committee, 2015-2016
- Served on Campus Council committee, 2014-2015
- Mathematical Contest in Modeling, organized and advised teams of three students, 2013, 2014, 2015, 2016
- Department colloquium coordinator, 2012-2015
- Faculty advisor for numerous student groups: Young Americans for Liberty, Board Gaming Club, Chess Club, WooUndead, Xi Chi Psi

Service at the United States Military Academy

- Mathematical Contest in Modeling, organized six teams of cadets, faculty advisor, spring 2011
- Chess club faculty advisor, 2009-2011
- Sponsor and mentor of two cadets through the Cadet Sponsorship Mentor Program, 2009-2012

Service at the University of Connecticut

- Graduate Student Representative - elected by mathematics graduate students, 2004-2006
- TA Network member - mentor incoming teaching assistants, participate in panel discussions, observe and provide feedback for TA-taught classes, 2004-2009
- TA Network Coordinator, 2008-2009
- Teaching Assistant orientation workshop speaker, 2005