Curriculum Vitae

Flavia Sancier-Barbosa

Experience

ACADEMIC

2018–present **Assistant Professor of Mathematics**, *Colorado College*.

2014–2018 **Assistant Professor of Mathematics and Statistics**, *Antioch College*.

2011–2014 **Visiting Assistant Professor of Mathematics**, *Wittenberg University*.

2004–2011 **TA, DRA Fellow, Research Assistant**, *Southern Illinois University Carbondale*.
- Teaching Assistant: 2010–2011, 2006–2009, 2004–2005;
- Dissertation Research Award (DRA) Fellow: 2009–2010;
- Research Assistant: 2005-2006.

2001 **Teaching Assistant**, *Universidade Estadual de Campinas*, Brazil.

CONSULTING

2017 Aug–Dec **Consultant**, *Ka Wa Mamua*.
Data analytics and mathematical modeling for a history app.

2017 Apr–May **Consultant**, *RapidSOS*.
Predictive analytics for emergency response management, US Patent Application

Education

2006–2011 **Ph.D.**, *Southern Illinois University Carbondale*.
Dissertation: Closing the Memory Gap in Stochastic Functional Differential Equations.

2004-2006 **M.S.**, *Southern Illinois University Carbondale*.
Thesis: Stochastic Systems with Delayed Memory in Mathematical Finance

2000-2004 **B.S.**, *Universidade Estadual de Campinas*.
Project (funded by FAPESP): Monte Carlo Method and Stochastic Simulations

Awards and Grants

Summer 2020 **Mrachek Fellowship Program**, *Colorado College*.

Spring 2020 **Community-Engaged Research (CER) Course Development Cohort**, *Colorado College*.

Summer 2019 **Norman B. Smith Curriculum Development Grant**, *Colorado College*.

2017-2018 **SOCHE Excellence in Research Award**, *Southwestern Ohio Council for Higher Education*.

2011-2014 **Professional Enrichment Grant**, *Wittenberg University*.

2012-2013 **MAA Project NExT Fellow**, *Mathematical Association of America*.

2009-2010 **Dissertation Research Award**, *Southern Illinois University Carbondale*.

2009 **John M. H. Olmstead Outstanding Ph.D. Teaching Assistant Scholarship**, *Southern Illinois University Carbondale*.

2003 **FAPESP Scientific Initiation Scholarship**, *The Sao Paulo Research Foundation*.

Research Interests

Applied statistics, data science, probability, stochastic processes, mathematical finance, games, and interdisciplinary collaborations.

Publications

Submitted J. Clelland, H. Colgate, D. DeFord, B. Malmskog, **F. Sancier-Barbosa**. Colorado in Context: Congressional Redistricting and Competing Fairness Criteria in Colorado. ArXiv: arxiv.org/abs/2011.06049

Accepted S. Flicker, **F. Sancier-Barbosa**, A. Moors, and L. Browne. A Closer Look at Relationship Structures: Relationship Satisfaction and Attachment among People who Practice Hierarchical and Non-Hierarchical Polyamory. *Arquives of Sexual Behavior*.

2020 S. Flicker, **F. Sancier-Barbosa**, F. Afroz, F. Mohsin, and S. Saif. Marital Quality in Arranged and Couple-Initiated Marriages: The Role of Perceived Influence over Partner Selection. *International Journal of Psychology*, vol. 55, no.4, pp 629–637. DOI: doi.org/10.1002/ijop.12622.

2020 S. Flicker, **F. Sancier-Barbosa**, F. Afroz, F. Mohsin, and S. Saif. Attachment Hierarchies in Bangladeshi Women in Couple-Initiated and Arranged Marriages. *International Journal of Psychology*, vol. 55, no.4, pp 638–646. DOI: doi.org/10.1002/ijop.12619.

2019 **F. Sancier-Barbosa**, M. McDevitt, L. Siriwardena, D. Ellsworth. Empirical Testing of an Option Pricing Model with Memory. *Proceedings of the Joint Statistical Meetings*, pp 1575-1579, American Statistical Association, 2019.

2019 **F. Sancier-Barbosa**. Defending with Two or Three Dice: What are the RISKs? *Proceedings of the Recreational Mathematics colloquium VI*, Ludus Association, 2019.

2018 M. Martin, N. Horelik, C. Hombaker, **F. Sancier-Barbosa**, A. Mehta. Predictive Analytics for Emergency Detection and Response Management. U.S. Patent Application Publication, US 2018/0053401 A1. International (PCT) Application Publication WO 2018/039142 A1. Link: appft.uspto.gov

2018 R. Scaife, A. Katz, A., **F. Sancier**. Quality Care at the End of Life: the PHAIM Approach. Abstracts from Center to Advance Palliative Care National Seminar. *Journal of Palliative Medicine*. DOI: doi.org/10.1089/jpm.2018.29007.abstract.

2017 **F. Sancier**, S. Mohammed. On the Solution of Stochastic Functional Differential Equations via Memory Gap. *Theory of Stochastic Processes*, vol. 22, no. 2, 2017. Link: http://tsp.imath.kiev.ua/files/2220/art2220 07.pdf

2017 **F. Sancier**, S. Mohammed. An Option Pricing Model with Memory. *Communications on Stochastic Analysis*, vol. 11, no. 4, 2017. DOI: doi.org/10.31390/cosa.11.4.07

2015 S. Marchal, A. Mehta, V.K. Gurbani, R. State, T.K. Ho, **F. Sancier**. Mitigating mimicry attacks against the Session Initiation Protocol (SIP). *IEEE Transactions on Network and Service Management*, Vol. 12, No. 3, 2015. DOI: doi.org/10.1109/TNSM.2015.2459603

2012 A. Mehta, N. Hantehzadeh, V.K. Gurbani, T.K. Ho, and **F. Sancier**. On using multiple classification systems for Session Initiation Protocol (SIP) anomaly detection. *Proceedings of IEEE International Conference on Communications (ICC)*, Ottawa, Canada, 2012. DOI: doi.org/10.1109/ICC.2012.6364010

2011 **F. Sancier**. Closing the Memory Gap in Stochastic Functional Differential Equations. *OpenSIUC (Dissertation)*.

2006 **F. Sancier**. Stochastic Systems with Delayed Memory in Mathematical Finance. *OpenSIUC (Thesis)*.

2003 **F. Sancier**, A. Davolio, P. Ruffino. Metodo Montecarlo e Aplicacoes. *Congresso Nacional de Matematica Aplicada e Computational*, XXVI, Sao Jose, do Rio Preto, Resumos, no.1, 2003.

2003 A. Davolio, **F. Sancier**, P. Ruffino. Simulacoes de Sistemas Dinamicos Estocasticos. *Congresso Nacional de Matematica Aplicada e Computational*, XXVI, Sao Jose, do Rio Preto, Resumos, no.1, 2003.

Mentored Theses, Capstone Projects, and Summer Research

In progress **Senior Thesis in Mathematics**, *Karston Barney*, Colorado College.
Title TBD.

In progress **Senior Thesis in Mathematics**, *Scott Shen*, Colorado College.
Title TBD.

2020 **SCoRe Summer Research Project**, *Rujun Xu, Yinting Zhong, and John Koerner (Euclid funded)*, Colorado College.
Empirical Testing of Option Pricing Models.

2020 **Senior Thesis in Mathematics**, *Xinling Dai*, Colorado College.
Topic Modeling via LDA.

2019 **SCoRe Summer Research Project**, *Makayla McDevitt*, Colorado College.
Empirical Testing of an Option Pricing Model with Memory for Various Stocks and Time Frames.

2017 **Senior Project in the Sciences**, *Roland Scaife*, Antioch College.
The Impact of the Premier Health Advance Illness Management (PHAIM) Program on Readmission Rates of End-of-life Patients: A Retrospective Study.

2017 **Senior Project in the Sciences**, *Rian Lawrence*, Antioch College.
A Microcosm Experiment to Assess Atmospheric Deposition Effects on Nitrogen and Phosphorus Retention in Northern Ohio Soils.

2017 **Senior Project in the Sciences**, *Nathan Chou*, Antioch College.
An Empirical Assessment of the Black-Scholes Model on SPY Options.

2017 **Senior Project in the Sciences**, *Keenan Grundy*, Antioch College.
Complex Robotic Ecology: A Behavioral Study of Embodied Cognition in Photovoric Analog Automatons.

2016 **Senior Project in the Sciences**, *Nzinga Jones*, Antioch College.
The Role of Vitamin A on Mother to Child Transmission of HIV.

2014 **University Honors in Mathematics**, *Emilie Larned*, Wittenberg University.
The Optimization of the Scheduling of Traffic Lights.

2014 **Mathematics Senior Thesis**, *Lisa Simpson*, Wittenberg University.
The Language of Nature: An Analysis of Ordinary and Partial Differential Equations in Physics.

2013 **Computational Science Capstone**, *Sarah Skidmore*, Wittenberg University.
An Investigation of Portfolio Optimization.

Presentations

Sep 2020 Conquering probabilities in the board game RISK with two and three defending dice, Fearless Friday talk in the Department of Mathematics and Computer Science, Colorado College, CO.

Jul 2019 Empirical Testing of an Option Pricing Model with Memory, Joint Statistical Meetings, Denver, CO.

Jan 2019 Defending with Two or Three Dice: What are the RISKs?, Recreational Mathematics Colloquium VI, Lisbon, Portugal.

Oct 2018 Testing an Option Pricing Model with Memory Against Large Market Data, Women in Statistics and Data Science, Cincinnati, OH.

May 2018 Testing a Generalized Black-Scholes Model with Hereditary Structure, Invited talk, Langehop Lecture and SIU Probability and Statistics Conference, Carbondale, IL.

Jan 2018 Testing Option Pricing Models with Memory, Joint Mathematics Meetings, San Diego, CA

Sep 2016 Defending with two or three dice: What are the RISKs?, Invited talk, Math Colloquium at Sinclair Community College.

Aug 2016 Risk and War: Is a good offense the best defense?, National MAA MathFest - Columbus, OH.

Jan 2016 Risk and War: Is a good offense the best defense?, Invited talk, SMACCM colloquium at the Department of Mathematics and Computer Science, Wittenberg University, Springfield, OH.

Apr 2015 Closing the Memory Gap in Option Pricing, Seminar on Stochastic Processes, University of Delaware, Newark, DE.

Jun 2014 Deriving Option Pricing Models with Memory, Probability on Algebraic and Geometric Structures Conference, Southern Illinois University Carbondale, Carbondale, IL.

Oct 2013 Stochastic Systems with Memory, Invited talk, Hispanic Heritage Month colloquium, Mathematics Department, Youngstown State University, Youngstown, OH.

Feb 2013 The mathematics of well-behaved and chaotic population growth, Science Outreach Program, Wittenberg University, Springfield, OH.

Mar 2012 Modeling financial markets with infinite dimensional stochastic systems, 36th Annual SIAM Southeastern Atlantic Section Conference, University of Alabama in Huntsville, Huntsville, AL.

Feb 2012 Modeling with Brownian Motion, SMACCM colloquium at the Department of Mathematics and Computer Science, Wittenberg University, Springfield, OH.

Mar 2011 An existence proof and approximation scheme for stochastic functional differential equations, Seminar on Stochastic Processes 2011, University of California, Irvine, CA.

Jan 2011 Stochastic Models with Memory in Mathematical Finance, Young Mathematicians Network and Project NExT Poster Session, Joint Mathematics Meetings, Marriot & Sheraton, New Orleans, LA.

Nov 2010 Stochastic Models with Memory in Mathematical Finance, Blackwell-Tapia Conference, Ohio State University, Columbus, OH.

Mar 2010 Stochastic Models with Memory in Mathematical Finance, Career Options for Underrepresented Groups in Mathematical Sciences, University of Minnesota, Minneapolis, MN.

Mar 2007 Option Pricing with Memory, Graduate Student Conference in Probability, University of Wisconsin, Madison, WI.

Nov 2006 Option Pricing with Memory, Blackwell-Tapia Conference, University of Minnesota, Minneapolis, MN.

Workshops

Organized

Apr 2016 Brownian Motion and Simulations of Stochastic Differential Equations (SDEs) using Python, Antioch College, Yellow Springs, OH.

Mar 2016 Modeling with Ordinary Differential Equations and Numerical Simulations using Python, University of Indianapolis, Indianapolis, IN.

Attended

Jun 2019 MAA StatPREP workshop, Highline College, Des Moines, WA.

Nov 2018 Good to Great: The Journey to Inclusion at CC, Colorado College, Col Spgs, CO.

Nov 2018 Toward A Daily Anti-Racist Agenda, Colorado College, Col Spgs, CO.

Sep 2018 EXCEL@CC - Your Role in Responding to Lived Experiences of Trauma, Colorado College, Col Spgs, CO.

Mar 2017 Ohio Project NExT (New Experiences in Teaching) workshop, Dayton, OH.

Oct 2016 GLCA Academic Leadership and Innovation (GALI) Institute, Ann Arbor, MI.

Apr 2016 CIC Workshop for Department and Division Chairs, Louisville, KY.

Nov 2014 Teaching the Statistical Investigation Process with Simulation and Randomization-Based Inference, Butler University Indianapolis, IN.

July 2013 MAA Project NExT Workshop, Mathfest, Hartford, CT.

Jan 2013 MAA Project NExT Workshop, Joint Mathematics Meetings, San Diego, CA.

Oct 2012 Project NExT Workshop, MAA Meeting of the Ohio Section, Baldwin-Wallace University, Berea, OH.

Jul 2012 MAA Project NExT Workshop, Mathfest, Madison, WI.

Apr 2012 Project NExT Workshop, MAA Meeting of the Ohio Section, Xavier University, Cincinatti, OH.

Oct 2011 Project NExT Workshop, MAA Meeting of the Ohio Section, University of Findlay, Findlay, OH.

Courses Taught

COLORADO COLLEGE (B_iX = Block i in the year $2000 + X$)

MA 117 **Probability and Statistics** – B_520, B_418

MA 217 **Probability and Statistical Modeling** – B_120, B_820, B_319, B_819, B_619

MA 313 **Probability** – B_220, B_119

MA 340 **Topics in Mathematics: Statistical Modeling Techniques** – B_419

MA 355 **Independent Study** – B_720 (Introduction to Stochastic Processes),B_720 (Applied Data Science)

MA 417 **Mathematical Statistics** – B_420, B_218

MA 455 **Independent Study** – B_319 (Data Analysis)

MA 499 **Senior Thesis** – B_120, B_219

ANTIOCH COLLEGE (F=Fall, W=Winter, Sp=Spring, Su=Summer)

GSQ 105 **Quantitative Seminar** – W16, F15, Su15, W15, F14, Su14

GS 170 **Global Seminar: Sustainability through Participatory Action Research** – Su17

GS 1xx **Discussion Leader in Global Seminar**, Education, Governance, Health, Water – W16, F15, Su15, W15, F14, Su14

MATH 090 **College Math Skills** – F17

MATH 105 **Introduction to Statistics** – F17, Sp17, F16, Sp16, F15, Su15, F14, Su14

MATH 205 **Intermediate Statistics** – Su17, Sp17, Sp16, W15

SCI 299 **Independent Study in Science: Linear Algebra** – F17

SCI 370 **Special Topics in Science: Computational Modeling and Simulation in the Sciences** – F16

SCI 397 **Advanced Scientific Research: Math Finance & Option Pricing** – Sp15

SCI 399 **Advanced Independent Study in Science: Stochastic Differential Equations** – Su16

WITTENBERG UNIVERSITY (F=Fall, Sp=Spring)

MATH 112 **The Language of Mathematics** – Sp14
MATH 120 **Elementary Functions** – F12, F11
MATH 201 **Calculus I** – Sp14, F13, Sp13, Sp12
MATH 202 **Calculus II** – F12
MATH 215 **Differential Equations** – F13, F12, F11
MATH 260 **Computational Models and Methods** – F13, Sp12
MATH 320 **Numerical Analysis** – Sp14, F11
MATH 345 **Optimization** – Sp13
MATH 490 **Independent Study: Measure Theory** – Sp14
MATH 490 **Independent Study: Option Pricing Theory** – F13
MATH 490 **Independent Study: Partial Differential Equations** – F12

SOUTHERN ILLINOIS UNIVERSITY CARBONDALE (F=Fall, Sp=Spring)

MATH 107 **Intermediate Algebra** – Sp11, F10
MATH 111 **Precalculus** – Sp09
MATH 139 **Finite Mathematics** – Sp08
MATH 140 **Short Course in Calculus** – F08, F07, Sp07, F06.

Memberships

ASA American Statistical Association
AMS American Mathematical Society
AWM Association for Women in Mathematics
CWS Caucus for Women in Statistics
SACNAS Society for Advancement of Chicanos/Hispanics & Native Americans in Science
LWV League of Women Voters of the Pikes Peak Region

Collegiate Citizenship

Service to the professional community

2018-present Reviewer for the Journal of Statistics Education (ASA), Taylor & Francis. Link: https://www.tandfonline.com/toc/ujse20/current
2015 Evaluated undergraduate research projects at the Young Mathematicians Conference, Ohio State University- Columbus, OH.
2014-2017 Served a three-year term on the MAA Committee on Section Activities (CONSACT).
2013 Session chair at the Spring MAA Meeting of the Ohio Section - Denison University, Granville, OH.
2012 Session chair at the Fall MAA Meeting of the Ohio Section - Baldwin-Wallace University, Berea, OH.

Service at Colorado College (F=Fall, Sp=Spring)

F20-present Search committee member for the macroeconomics search in the Economics & Business Department.

F20-present Search committee member for the statistics search in the Department of Mathematics and Computer Science.

F19-present Search committee (composed of all TT department members) for a senior hire in the Department of Mathematics and Computer Science.

F19-present Member of the Campus Design Review Board (DRB).

F18-present Assessment representative for the Dept. of Mathematics and Computer Science.

F19-present Advisor to 24 students: 4 math majors (2 graduated in 2020), two math minors, and 18 undeclared).

F19-Sp20 Member of the GenEd Scientific Analysis Taskforce

F18-Sp19 Search committee member for the applied mathematics search in the Department of Mathematics and Computer Science.

Service at Antioch College (F=Fall, W=Winter, Sp=Spring, Su=Summer)

F15-Sp18 Sciences Division Chair.

F14-Sp18 Advisor to an average of 10-12 students per term.

Su15-Su17 Curriculum Committee (co-chair in Su17).

Su14-17 Wrote advising documents for faculty and students regarding placement, math courses, and the quantitative requirement at Antioch college.

Sp16-W16 Global Seminar Working Group.

F14-16 Took students to three workshops and professional meetings.

F14-F15 Regular participant of the International Circle IG.

W15 Wrote a comprehensive report analyzing student success in math courses in order to verify the appropriateness of the math placement and recent changes.

W15 Environmental Science Tenure-Track search committee.

W15 Spanish Tenure-Track search committee.

Su14-F14 Faculty Personnel Review Committee (FPRC).

Service at Wittenberg University (F=Fall, Sp=Spring)

F12-Sp14 Acting Director of the Computational Science Minor.

F12-Sp14 Adivisor to two math majors.

Sp12-Sp14 Participation on five Honors Committees.