Brian K. Miceli

Curriculum Vitae

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Mathematics Department
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Education

- University of California, San Diego, 2006, Doctorate of Philosophy in Mathematics
- University of California, San Diego, 2003, Master of Science in Applied Mathematics
- California Polytechnic State University, San Luis Obispo, 2001, Bachelor of Science in Mathematics

Current Research Interests

- Algebraic and enumerative combinatorics: pattern avoidance in permutations and words, rook theory, generating functions, Stirling numbers, set partitions
- Sports analytics: rankings on networks, foresight predictions

Appointments

- Professor, Trinity University, 2018–present
- Associate Professor, Trinity University, 2012–2018
- Assistant Professor, Trinity University, 2006–2012
- Senior Teaching Assistant, University of California, San Diego 2005–2006
- Adjunct Professor, Miramar College, 2004–2005
- Teaching Assistant, University of California, San Diego, 2001–2005
- Workshop Facilitator, California Polytechnic State University, San Luis Obispo, 1999–2001

Publications (coauthors listed, * denotes a TU undergraduate)

- Thesis
  1. A Rook Theory Model for Product Formulas & Poly-Stirling Numbers, University of California, San Diego, 2006
- Refereed Journal Articles
  1. "Two Combinatorial Interpretations of Rascal Numbers," A. Gibbs*, *Journal of Integer Sequences*, **27** (2024), 24.8.2
  2. "Improving foresight predictions in the 2002–2018 NFL regular-seasons: A classic tale of quantity vs. quality," E. C. Balreira, *Journal of Advances in Mathematics and Computer Science*, **34(1-2)** (2019), https://doi.org/10.9734/jamcs/2019/v34i1-230203

3. "Shift equivalence in the generalized factor order," J. Fidler*, D. Glasscock, J. Pantone, & M. Xu, *Archiv der Mathematik* (2018). https://doi.org/10.1007/s00013-018-1170-4
4. "Generating functions and Wilf equivalence for generalized interval embeddings," R. Chamberlain, G. Cochran*, S. Ginsburg, M. Riehl, & C. Zhang, *Australasian Journal of Combinatorics*, **64(1)** (2016), pp. 44–60
5. "Connection coefficients between rising & falling factorial bases," J. Liese & J. Remmel, *Annals of Combinatorics*, **19.2** (2015), pp. 337–361
6. "A combinatorial proof of a theorem of Katsuura," *College Journal of Mathematics*, **45** (2014), No. 5, pp. 365–369
7. "An Oracle method to predict NFL games," E. C. Balreira & T. Tegtmeyer, *Journal of Quantitative Analysis of Sports*, **10** (2014), No. 2, pp. 183–196
8. "Minimal overlapping embeddings & exact matches in words," J. Remmel, *Pure Mathematics and Applications - Algebra and Theoretical Computer Science*, **23** (2012), No. 3, pp. 291-315
9. "Two q-analogues of poly-Stirling numbers," *Journal of Integer Sequences*, **14** (2011), 11.9.6
10. "m-partition boards & poly-Stirling numbers," *Journal of Integer Sequences* **13** (2010), 10.3.3
11. "Augmented rook boards & general product formulas," J. Remmel, *Electronic Journal of Combinatorics* **15** (2008), R85

- Articles in Preparation (tentative titles)
  1. "A Combinatorial Proof of Schläfli's Formula," with A. Gibbs*
- Other Articles
  1. "What I Learned from Being on Search Committees: Tips on Applying to *Teaching Schools*," MAA Focus, page 23, (2010), 30.4
- Undergraduate Publications
  1. "Wind In Their Wings: The California Condor Restoration Project," Thomas D. O'Neil, et al, *UMAP Journal: 22(2)*, 2001, 111–128
  2. "Soaring Again: The California Condor Restoration Project," Thomas D. O'Neil, et al, *UMAP Journal: 21(4)*, 2000, 443–456
  3. "Clutching For Survival: The California Condor Restoration Project," Thomas D. O'Neil, et al, *UMAP Journal: 20(4)*, 1999, 387–398

Presentations

- "A, B-minimal Stirling numbers," Permutation Patterns, July 2018, Dartmouth College, Contributed Talk
- "Statistics on Set Partitions," British Combinatorial Conference, July 2017, University of Strathclyde, Contributed Talk
- "Stirling Numbers & Euler's Finite Difference Theorem," Permutation Patterns, June 2017, Reykjavík University, Poster Presentation
- "Combinatorial Enumeration in Pascal's Triangle," Undergraduate Mathematics Colloquium, February 2017, Rice University, Invited Talk

- "generatingfunctionology," Mathematical Seminar Series, Southwest Research Institute, May 2016, Invited Talk
- "The Laplace Transform & Some Combinatorial Identities," AMS Fall Sectional Meeting, October 2015, Loyola University, Invited Talk
- "Shift Equivalence in Consecutive Pattern Avoidance," Permutation Patterns, June 2015, London, UK, Contributed Talk
- "Wilf-Equivalence in Consecutive Patterns," Combinatorics Seminar, April 2015, University of Florida, Gainesville, Invited Talk
- "Shift Equivalence in Consecutive Pattern Avoidance," AMS Fall Sectional Meeting, September 2014, University of Wisconsin, Eau Claire, Invited Talk
- "k-Embedding & Wilf Equivalence," Combinatorics Seminar, April 2014, Dartmouth College, Invited Talk
- "Wilf Equivalence of Interval Embeddings," Permutation Patterns, July 2013, University of Paris, Diderot, Contributed Talk
- "Poly-Rook & Stirling Numbers," AMS Fall Sectional Meeting, October 2012, Tulane University, Invited Talk
- "Generalized Interval Embeddings," Permutation Patterns, June 2012, University of Strathclyde, Contributed Talk
- "Minimal Overlapping Embeddings & Exact Matches in Words," CombinaTX, April 2012, Southwestern University, Contributed Talk
- "Minimal Overlapping Embeddings & Exact Matches in Words," Permutation Patterns, June 2011, Cal Poly, SLO, Contributed Talk
- "On Rook & Stirling Numbers," Discrete Math Seminar, April 2010, TX State, San Marcos, Invited Talk
- "Some Combinatorial Properties of Poly-Stirling Numbers," CombinaTX, April 2008, UTEP, Contributed Talk
- "x^m-Stirling Numbers," HMC Enumerative Combinatorics Conference, October 2006, Claremont, CA, Poster Presentation
- "General Rook Model for Product Formulas," FPSAC 2006, San Diego, CA, Poster Presentation

In-House Talks, Colloquia, & Seminars

- "Math in SF, or How We Live by Our Assumptions," Science Fiction FYE CLE, September 2023
- "The Science (Fiction?) of Dreams," Science Fiction FYE CLE, October 2018, October 2017
- "To Infinity & Beyond: How a 19th-Century Corruptor of Youth Taught Us How to Count," Trinity Towers Scholars Day, March 2018, March 2017, February 2016, February 2015, March 2014
- "Senior Project Topics in Algebraic Combinatorics," Majors' Seminar, January 2017
- "Combinatorial Enumeration in Pascal's Triangle," Majors' Seminar, March 2016

- "The Mathematics of Rankings (or, What Kind of Bear Is Best?)," Faculty Research Dinner, September 2014
- "Why Is There No y?," Majors' Seminar, March 2014
- "The Combinatorics of Pascal's Triangle," Majors' Seminar, March 2012
- "How Is Mathematical Research Done?," Majors' Seminar, February 2010
- "Problems in Rook Theory," Majors' Seminar, October 2008
- "Rook Boards & Stirling Numbers," Majors' Seminar, October 2006
- "General Rook Boards & Poly-Stirling Numbers," Combinatorics Colloquium, March 2005 (at UCSD)

Grants & Awards

- Academic Leave, Fall 2013, Spring 2021
- Trinity University Summer Stipend, Summer 2023, 2019, 2017, 2015, 2011, 2009, 2007
- Mathematics Department Instructor of the Year, 2022, 2014, 2012, 2010
- QEP Grant, Trinity University, Fall 2010
- Curriculum and Pedagogical Innovations Grant, Trinity University, June 2010
- Academy of Inquiry Based Learning Mini-Grant, Spring 2010
- Senior Teaching Assistant at the University of California, San Diego, 2005–2006
- Outstanding TA of the Year, University of California, San Diego, 2005–2006
- Teaching Assistantship with Fee Scholarship at the University of California, San Diego, 2001–2006
- Outstanding Mathematics Senior at California Polytechnic State University, San Luis Obispo, 2001

Mathematics Courses Taught

- Trinity University: Putnam Exam Seminar (1190), Mathematics for Business and Economics (1305), Calculus I (1311), Calculus II (1312), Introduction to Modern Mathematics (1330), Majors' Seminar (2094), Linear Algebra (3323), Introduction to Abstract Mathematics (2326/3326), Junior Writing Workshop (3194), Junior Technology Workshop (3195), Differential Equations & Linear Algebra (3336), Number Theory I (3341), Combinatorics I (3343), Modern Algebra I (3362), Special Topics in Combinatorics (4x90), Combinatorics II (4344), Modern Algebra II (4363), Senior Project (4394), Honors Thesis (4398/99)
- Miramar College (San Diego, CA): Intermediate Algebra, Introduction to Probability & Statistics, Calculus III

Non-Mathematics Courses Taught

- Trinity University: A Successful Life FYE (Fall 2024), Science Fiction FYE (Falls 2016–2018), Art & Ideas FYE (Fall 2015)

Classes Created

- Putnam Exam Seminar - MATH 1190

- Junior Technology Workshop - MATH 3195 - Created with N. Macura
- Combinatorics II - MATH 4344

Senior Projects (Honors Thesis denoted by $*$)

- Nicholas Demonteverde - Fall 2021 - *Exploring Rating Methods to Forecast Outcomes in Competitive Age of Empires II*
- Shealsy Nolasco - Spring 2020 - *Teaching Combinatorics in The International School of the Americas*
- Nicole Spooner - Spring 2019 - *An Exploration of Combinatorics and Implementation in Middle and High Schools*
- Reese Murphy - Spring 2018 - *Baseball Analytics*
- Zachary Moring - Fall 2017 - *A,B-Minimal Stirling Numbers*
- Matthew Bachmann - Spring 2017 - *Symmetric Functions & Brick Tabloids*
- D. Bennett Carter - Spring 2017 - *An Introduction to Combinatorial Game Theory*
- Joshua Ingram - Spring 2017 - *Sports Ranking in a High School Classroom*
- Eliza Wright - Spring 2017 - *Rook Theory*
- Tim Davison - Spring 2016 - *Markov Chain Models in Sports*, Joint advisor with C. Balreira
- Leah Wesselman - Spring 2014 - *The Art Gallery Problem*
- Garner Cochran* - Fall 2012/Spring2013 - *Generalized Interval Embeddings*
- Elana Edwards - Fall 2012 - *Teaching Combinatorics to High Schoolers Through a Constructivist Approach*
- Claire Baxter - Fall 2011 - *Ramsey's Theorem*
- Phillip Wolke - Spring 2011 - *Permutation Statistics*
- Bart Taylor - Spring 2010 - *Introduction to Combinatorial Proofs*
- Jennifer Emery - Fall 2008 - *Generating Trees & Classical Pattern Avoidance*
- Ryan Cook - Spring 2008 - *Wilf Equivalence*
- Travis Givens - Spring 2008 - *Designing Round Robin Tournaments*
- Anna Grossman - Fall 2007 - *High School Math Reform & Combinatorics*
- Kelly Petersen - Fall 2007 - *Combinatorial Games*
- Nick Purgason - Fall 2007 - *Mathematics & Gambling*

Secondary Advisor on Honors Thesis Projects

- Jordan Bush (MATH) - Fall 2013–Spring 2014 - *An Analysis of Social Dominance in the Green Anole*
- Xin Ma (MATH) - Fall 2010–Spring 2011 - *Measure Theory, Probability, & Martingale*

- Matt Maly (CSCI) - Fall 2009–Spring 2010 - *On the State Hierarchy of Exploding Automata*

NSF-REU

- Summer 2008: Advised research for three undergraduate students—Jennifer Fidler (née Emery) of Trinity University, Daniel Glasscock of Rice University, and Min Xu of UC, Berkeley—for 9 weeks; proving some open conjectures regarding the Wilf equivalence of words in the alphabet of positive integers with respect to the generalized factor order
- Summer 2007: Advised research for three undergraduate students—Alyssa Armstrong of Wittenberg University, Cordelia Csar of UC, Berkeley, and Linnea Haight of Washington State University—for 9 weeks; generalizing the idea of a q-hit polynomial to that of a q-file polynomial

Service

- University Service
  - Commission on Promotion & Tenure, Fall 2014–Spring 2015, Fall 2024–present
  - Council on Teacher Education, Spring 2017–present
  - External Member of Geosciences Search Committee, Fall 2024–Spring 2025
  - Administrative Review Oversight Committee (AROC), Fall 2021–Spring 2024
    1. Chair, Fall 2022–Spring 2024
  - FDC Academic Leaves & Summer Stipends, Alternate, Fall 2022–Spring 2024
  - Advising & Registration Committee, Vice-Chair, Fall 2021–Spring 2022
  - Faculty Senate, Spring 2016–Spring 2020
    1. Chair of the Faculty Senate, Spring 2018–Spring 2020
    2. Vice-Chair of the Faculty Senate, Spring 2016–Spring 2018
    3. Ad Hoc Committee to Revise Parental Leave Policy, Spring 2017–Fall 2017
  - Ad Hoc Committee to Consider Revisions to the Class Scheduling Grid, Fall 2014–Fall 2017
  - Employee Benefits Committee, Fall 2015–Summer 2017
  - VPAA Search Committee (Dee Jones), Fall 2015–Spring 2016
  - Ad Hoc Summer Session Enrollments Committee, Summer 2014
  - External Member of Compute Science Search Committee, Fall 2011–Spring 2012, Fall 2013–Spring 2014
  - Faculty Senate's Merit and Equity Subcommittee (External Member), Spring 2012–Spring 2013
  - Curricular Reform Committee, Summer 2012–Fall 2012
  - Curricular Models Ideas Lab Participant, Spring 2012
  - Faculty Senate, Spring 2009–Spring 2012
    1. Faculty Representation & Elections Committee, Spring 2009–Spring 2012
       (a) Chair of the Faculty Representation & Elections Committee, Spring 2010–Spring 2012
  - Employee Benefits Committee, Fall 2009–Spring 2010
  - Committee for The Student Evaluation of Courses & Faculty, Fall 2007–Spring 2009
  - Lecturers and Visiting Scholars Committee, Fall 2007–Spring 2008
- Departmental Service

- Semmes Scholar Representative, Fall 2021–present
- Putnam Exam Advisor, Fall 2006–Spring 2019, Fall 2024– present
- Trinity Problem of the Week, Fall 2009–Spring 2023
- Interim Department Chair, June 2015–August 2016
- Trinity New Student Orientation Academic Fair, various dates
- Trinity in Focus, various dates
- Trinity Towers Scholars Day Academic Fair, various dates
- Trinity 360, various dates
- Majors Meals, various dates
- Duke TIP Social, various dates
- Trinity Parent's Weekend, various dates
- Responsible for making the department's teaching schedule, Fall 2008–Fall 2011
- Streamlined departments in-person and phone interview sign-ups during the Assistant Professor search of 2010 by making a web entry sign-up sheet for applicants.
- Responsible, along with Ryan Daileda, for managing the department's web page, Fall 2008–Fall 2011
- Served on an ad hoc committee to revise curriculum: added multiple new courses to the major; restructured many current courses; updated course catalog, Fall 2007–Spring 2008
- COMAP MCM Advisor, Spring 2007
- The Math Modeling Group, Fall 2006

- Professional Service
  - Referee for *The American Mathematical Monthly*, *Annals of Combinatorics*, *The Australasian Journal of Combinatorics*, *Electronic Journal of Combinatorics*, *European Journal of Combinatorics*, *Journal of Combinatorics*, *Journal of Integer Sequences*, *Open Journal of Discrete Mathematics*
  - Reviewer for AMS Mathematical Reviews on MathSciNet
  - Member of the Mathematical Association of America
  - Member of the American Mathematical Society
  - Member of KME, the Mathematical Honor Society
  - Co-host, with alumna Ashley Taplin (née Davis) et al., of the Julia Robinson Math Festival, February 2016, November 2017, and February 2020
  - Host of AMS Special Session on Enumerative Combinatorics at the Central Sectional Meetings in San Antonio, September 2024
  - Host of AMS Special Session on Enumerative Combinatorics at the Joint Mathematics Meetings in San Antonio, January 2015
  - Mathematics Project Judge, Senior Division, ExxonMobil Texas State Science Fair, March 2014
  - Host of AMS Special Session on Patterns in Permutations and Words at the Joint Mathematics Meetings in San Diego, January 2013
  - Host of AMS Special Session on Enumerative Combinatorics at the Joint Mathematics Meetings in San Francisco, January 2010

  - Invited panelist at the 2010 Joint Mathematics Meetings in San Francisco to discuss the Trinity University Mathematics Department's capstone experience, hosted by Project NExT
  - Judge for the undergraduate poster session of the Joint Mathematics Meetings in San Diego, January 2008

- Community Service
  - Member of the Castle Hills Crime Control & Prevention District, August 2023–present
  - Snipsa Foster Parent, May 2024–present