Ivan Soprunov

Curriculum Vitae

November 2024

Work Address: Department of Mathematics and Statistics
Cleveland State University
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Cleveland, OH 44115
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Education

Ph.D. in Mathematics, University of Toronto, May 2002

Diploma in Mathematics and Applied Mathematics, Moscow State University, June 1996

Employment

Professor, Cleveland State University,
fall 2021-present

Professor and Chair, Cleveland State University,
summer 2017-summer 2021

Associate Professor, Cleveland State University,
fall 2010-spring 2017

Assistant Professor, Cleveland State University,
fall 2006-spring 2010

Visiting Assistant Professor, University of Massachusetts, Amherst
fall 2002-spring 2006

Research Interests

Toric varieties, sparse polynomial systems, residues, tame symbols, convex polytopes, coding theory, mixed volumes, geometric inequalities

Ph.D. Advisor

Askold Khovanskii

Honors & Fellowships

Blyth Fellowship, University of Toronto, 2001-2002

University of Toronto Fellowship, University of Toronto, 1997-2000

Grants & Awards

CSU Merit Award
Cleveland State University, 2008, 2012, 2013, 2014, 2016, 2023, 2024

Young Investigator Award
NSA grant H98230-13-1-0279, Awarded fall 2013 for 2 years

Young Investigator Award
NSA grant H98230-10-1-0163, Awarded fall 2010 for 2 years

The Malcolm S. Robertson Award
for excellence in research, University of Toronto, 2002

The Daniel B. DeLury Teaching Award
for outstanding performance as a teaching assistant, University of Toronto, 1999

Publications

Refereed research papers

1. Anderson, S. E., E. Camps-Moreno, H. H. López, G. L. Matthews, D. Ruano, and I. Soprunov (2024). Relative hulls and quantum codes. *IEEE Trans. Inform. Theory* **70**(5), 3190–3201.
2. Camps-Moreno, E., H. H. López, G. L. Matthews, D. Ruano, R. San-José, and I. Soprunov (2024a). An algebraic characterization of binary CSS-T codes and cyclic CSS-T codes for quantum fault tolerance. *Quantum Inf. Process.* **23**(6), Paper No. 230, 24.
3. Soprunov, I. and J. Soprunova (2024). The volume polynomial of lattice polygons. *Proc. Amer. Math. Soc.* **152**(12), 5313–5325.
4. Averkov, G. and I. Soprunov (2023). Plücker-type inequalities for mixed areas and intersection numbers of curve arrangements. *Int. Math. Res. Not. IMRN* (18), 16015–16050.
5. Meyer, K., I. Soprunov, and J. Soprunova (2022). F_q-zeros of sparse trivariate polynomials and toric 3-fold codes. *SIAM J. Appl. Algebra Geom.* **6**(3), 432–467.
6. Averkov, G., C. Borger, and I. Soprunov (2021). Classification of triples of lattice polytopes with a given mixed volume. *Discrete Comput. Geom.* **66**(1), 165–202.
7. Ball, T., E. Camps, H. Chimal-Dzul, D. Jaramillo-Velez, H. López, N. Nichols, M. Perkins, I. Soprunov, G. Vera-Martínez, and G. Whieldon (2021). Coding theory package for Macaulay2. *J. Softw. Algebra Geom.* **11**(1), 113–122.
8. López, H. H., I. Soprunov, and R. H. Villarreal (2021). The dual of an evaluation code. *Des. Codes Cryptogr.* **89**(7), 1367–1403.
9. Averkov, G., C. Borger, and I. Soprunov (2020). Inequalities between mixed volumes of convex bodies: volume bounds for the Minkowski sum. *Mathematika* **66**(4), 1003–1027.
10. López, H. H., G. L. Matthews, and I. Soprunov (2020). Monomial-Cartesian codes and their duals, with applications to LCD codes, quantum codes, and locally recoverable codes. *Des. Codes Cryptogr.* **88**(8), 1673–1685.
11. Bihan, F. and I. Soprunov (2019). Criteria for strict monotonicity of the mixed volume of convex polytopes. *Adv. Geom.* **19**(4), 527–540.
12. Saroglou, C., I. Soprunov, and A. Zvavitch (2019). Wulff shapes and a characterization of simplices via a Bezout type inequality. *Adv. Math.* **357**, 106789, 24.
13. Alilooee, A., I. Soprunov, and J. Validashti (2018). Generalized multiplicities of edge ideals. *J. Algebraic Combin.* **47**(3), 441–472.
14. Şahin, M. and I. Soprunov (2016). Multigraded Hilbert functions and toric complete intersection codes. *J. Algebra* **459**, 446–467.

15. Saroglou, C., I. Soprunov, and A. Zvavitch (2016). Characterization of simplices via the Bezout inequality for mixed volumes. *Proc. Amer. Math. Soc.* **144**(12), 5333–5340.
16. Soprunov, I. and J. Soprunova (2016). Eventual quasi-linearity of the Minkowski length. *European J. Combin.* **58**, 107–117.
17. Soprunov, I. and A. Zvavitch (2016). Bezout inequality for mixed volumes. *Int. Math. Res. Not. IMRN* (23), 7230–7252.
18. Celebi Demirarslan, P. and I. Soprunov (2015). On dual toric complete intersection codes. *Finite Fields Appl.* **33**, 118–136.
19. Gajula, S., I. Soprunov, and J. Soprunova (2015). Tropical determinant on transportation polytopes. *Linear Algebra Appl.* **475**, 28–44.
20. Soprunov, I. (2015). Lattice polytopes in coding theory. *J. Algebra Comb. Discrete Struct. Appl.* **2**(2), 85–94.
21. Soprunov, I. (2013). Toric complete intersection codes. *J. Symbolic Comput.* **50**, 374–385.
22. Soprunov, I. and J. Soprunova (2010). Bringing toric codes to the next dimension. *SIAM J. Discrete Math.* **24**(2), 655–665.
23. Soprunov, I. and J. Soprunova (2009). Toric surface codes and Minkowski length of polygons. *SIAM J. Discrete Math.* **23**(1), 384–400.
24. Beck, M., B. Nill, B. Reznick, C. Savage, I. Soprunov, and Z. Xu (2008). "Let me tell you my favorite lattice-point problem …". In: *Integer points in polyhedra—geometry, number theory, representation theory, algebra, optimization, statistics*. Vol. 452. Contemp. Math. Amer. Math. Soc., Providence, RI, pp.179–187.
25. Soprunov, I. (2007). Global residues for sparse polynomial systems. *J. Pure Appl. Algebra* **209**(2), 383–392.
26. Khetan, A. and I. Soprounov (2005). Combinatorial construction of toric residues. *Ann. Inst. Fourier (Grenoble)* **55**(2), 511–548.
27. Soprounov, I. (2005). Toric residue and combinatorial degree. *Trans. Amer. Math. Soc.* **357**(5), 1963–1975.
28. Soprounov, I. (2004). Residues and tame symbols on toroidal varieties. *Compos. Math.* **140**(6), 1593–1613.
29. Soprounov, I. (2003). "On combinatorial coefficients and the Gelfond-Khovanskii residue formula". In: *Topics in algebraic geometry and geometric modeling*. Vol. 334. Contemp. Math. Amer. Math. Soc., Providence, RI, pp.343–349.
30. Soprounov, I. (2002). *Parshin's symbols and residues, and Newton polyhedra*. Thesis (Ph.D.)–University of Toronto (Canada). ProQuest LLC, Ann Arbor, MI, p. 66.
31. Soprunov, I. A. (1997). "The localization principle in the quadratic Serre problem". In: vol. 3. 1. Functional analysis, differential equations and their applications (Russian) (Puebla, 1995), pp.255–261.

Submitted papers

1. Averkov, G., K. von Dichter, S. Richard, and I. Soprunov (2024). *Mixed volumes of zonoids and the absolute value of the Grassmannian*. arXiv: 2404.02842 [math.CO].
2. Averkov, G. and I. Soprunov (2024). *An algebraic-combinatorial proof of a Bezout-type inequality for mixed volumes of three-dimensional zonoids*. arXiv: 2409.18928 [math.CO]. https://arxiv.org/abs/2409.18928.

Papers in conference proceedings

1. Camps-Moreno, E., H. H. López, G. L. Matthews, D. Ruano, R. San-José, and I. Soprunov (2024b). *Binary Triorthogonal and CSS-T Codes for Quantum Error Correction*, 60th Annual Allerton Conference on Communication, Control, and Computing, Urbana, Illinois, September 25-27, 2024. arXiv: 2408.02916 [cs.IT].
2. Camps-Moreno, E., H. H. López, E. Sarmiento, and I. Soprunov (2024). *On the affine permutation group of certain decreasing Cartesian codes*, EEE ISIT 2024 International Symposium on Information Theory, Athens, Greece, July 7-12, 2024. arXiv: 2405.08112 [math.CO].

Other papers

1. Soprunov, I. (2001). "Symbols and residues on surfaces". preprint. https://academic.csuohio.edu/soprunov-ivan/wp-content/uploads/sites/93/2023/02/surface.pdf.
2. Soprunov, I. (1998). "A short proof of the Prime Number Theorem for arithmetic progressions". This paper was written in response to Don Zagier's paper "Newman's Short Proof of the Prime Number Theorem". https://academic.csuohio.edu/soprunov-ivan/wp-content/uploads/sites/93/2023/02/primes.pdf.

Invited Research Talks

1. *The Volume Polynomial and the Heine-Shephard Problem*, Colloquium at MUVa - Instituto de Matemáticas de la Universidad de Valladolid, Spain (June 2024)
2. *The volume polynomial of zonoids and the absolute value of the Grassmannian*, Pitt Mini-Workshop on Combinatorial Algebraic Geometry (April 2024)
3. *The volume polynomials of zonotopes* at Virginia Tech Algebra Seminar, Blacksburg VA (November 2023)
4. *Configuration spaces of mixed volumes*, SIAM Conference on Applied Algebraic Geometry (AG23) Eindhoven, The Netherlands (July 2023)
5. *Plücker-type inequalities for mixed areas and intersection numbers*, Colloquium, Tulane University, New Orleans (Dec 2022)
6. *Plücker-type inequalities for mixed areas and intersection numbers of curve arrangements*, Effective Methods in Algebraic Geometry (MEGA '22), Kraków, Poland (June 2022)
7. *Plücker-type inequalities for mixed areas and intersection numbers of tropical curves* Measure Theory Seminar, Kent State (Feb, Apr 2022)
8. *Evaluation codes and their duals*, Joint Mathematics Meetings, Seattle (April 2022), remote
9. *Mixed Volume Configuration Spaces* Université Gustave Eiffel, Séminaire informel analyse, Paris, France (Nov 2021)
10. *Zeros of sparse polynomials over finite fields* Institut für Mathematik – BTU Colloquium, Cottbus, Germany (Oct 2021)

11. *Zeros of sparse polynomials over finite fields* Institut für Algebra und Geometrie Semiar, Magdeburg, Germany (Oct 2021)
12. *Maximizing the volume of the Minkowski sum in terms of the mixed volume*, Annual Meeting of German Mathematical Society, remote (Sept 2020)
13. *Maximizing the volume of the Minkowski sum in terms of the mixed volume*, Measure Theory Seminar, remote (June 2020)
14. *Collections of lattice polytopes with a given mixed volume*, CMS Winter Meeting, Toronto, ON, Canada (Dec 2019)
15. *Triples of lattice polytopes with a given mixed volume*, Ideals, Varieties, and Applications, Amherst, MA (June 2019)
16. *On the maximum number of $\mathbf{F}_q$-zeroes of polynomials with a given Newton polytope*, Joint Mathematics Meetings, Baltimore MD (Jan 2019)
17. *Strict monotonicity of the mixed volume*, AMS Sectional Meeting, University of Michigan, Ann Arbor MI (Oct 2018)
18. *Toric codes and Minkowski length of polytopes*, CIMPA Summer School Zacatecas, Mexico (June 2018)
19. *Positivity and strict monotonicity of the mixed volume* Mini-Workshop: Lattice Polytopes: Methods, Advances, Applications, Oberwolfach, Germany (Oct 2017)
20. *Minkowski length of lattice polytopes*, the Einstein Workshop on Lattice Polytopes, Berlin, Germany (Dec 2016)
21. *Bezout inequality for mixed volumes*, AMS Central Sectional Meeting, North Dakota State University, Fargo ND (Apr 2016)
22. *Self-dual codes from Smooth Fano Polytopes*, AMS Central Sectional Meeting, Loyola University, Chicago IL (Oct 2015)
23. *On zero dimensional complete intersections in the torus* in Algebra Seminar, University of Kentucky KY (April 2015)
24. *Toric Geometry in Coding Theory* in Karatekin Mathematics Days International Mathematics Symposium, Turkey (June 2014), keynote speaker
25. *Toric Geometry in Coding Theory* in Algebra, Combinatorics, and Geometry Seminar, University of Pittsburgh PA (Feb 2014)
26. *Self-dual toric complete intersection codes*, AMS Southeastern Sectional Meeting, Louisville KY, (Oct 2013)
27. *Application of Toric Euler-Jacobi theorem to algebraic codes* in Algebraic Geometry Seminar, Ohio State University (May 2012)
28. *Toric Euler–Jacobi theorem and its application to algebraic codes* (Colloquium) Oakland University MI (March 2012)

29. *Minimum distance bounds for toric complete intersection codes*, AMS Southeastern Sectional Meeting, Tampa FL (March 2012)
30. *Toric codes on complete intersections*, SIAM Conference on Applied Algebraic Geometry, Raleigh NC (Oct 2011)
31. *Residues and lattice points in polytopes*, workshop on Harmonic Analysis in Convex Geometry, BIRS, Banff Canada (May 2011)
32. *On higher dimensional toric codes*, AMS Central Sectional Meeting, Waco TX (Oct 2009)
33. *Residues and Lattice points in Polytopes* (Colloquium) University of Akron (Mar 2008); Wright State University, (Nov 2007)
34. *Lower bounds for the minimum distance of a toric code*, AMS Eastern Section Meeting, New Brunswick NJ (Oct 2007)
35. *Lattice Points in Polytopes* (series of talks) Analysis Seminar, Case Western Reserve University, (Oct–Nov 2006)
36. *Duality and Toric Residues*, Kent Regional Algebra Weekend, Kent State University, Kent OH (Nov 2006)
37. *Duality and lattice polytopes*, (series of talks) Geometry and Topology seminar, John Carroll University, (Sept–Oct 2006)
38. *Residues and Newton Polytopes* (Colloquium) Kent State, (Sept 2006)
39. *Global residues and Minkowski sums of lattice polytopes*, AMS-IMS-SIAM summer research conference on "Integer points in polyhedra: Geometry, Number Theory, Representation Theory, Algebra, Optimization, Statistics", San Francisco, CA (June 2006)
40. *Residues and Newton Polytopes* (Colloquium) University of Wisconsin, Milwaukee; Penn State University, Altoona; University of Tennessee; Western Washington University; Georgia State University; Cleveland State University; University of Idaho, (Jan–Mar 2006)
41. *Global Residues and Sparse Polynomial Interpolation*, Valley Geometry Seminar, University of Massachusetts, Amherst, MA (Feb 2006)
42. *Global residues in the torus* Union College Mathematics Conference, Union College, Schenectady NY (Dec 2005)
43. *Global residues for sparse polynomial systems* AMS Eastern Section Meeting, Bard College, Annandale-on-Hudson, NY (Oct 2005)
44. *Combinatorial construction of toric residues*, Effective Methods in Algebraic Geometry (MEGA '05), Alghero, Italy (May–June 2005)
45. *Toric residues and partitions of polytopes* AMS Central Section Meeting, Evanston, IL (Oct 2004)

46. *Computing Toric Residues*, IAS/Park City Mathematics Institute, Research Program in Geometric Combinatorics, Park City, Utah (July 2004)
47. *Toric residue as combinatorial degree*, Effective Methods in Algebraic Geometry (MEGA '03), Univ Kaiserslautern, Germany (June 2003)
48. *How residues help in solving systems of polynomial equations*, workshop on "Computing in Algebra and Geometry", Univ Kaiserslautern, Germany (June 2003)
49. *Tame symbol and product of roots formula* Valley Geometry Seminar, University of Massachusetts, Amherst, (Oct 2002)
50. *Combinatorial coefficients*, workshop on "Algebraic Geometry and Geometric Modeling", Vilnius University, Lithuania (July 2002)
51. *Residues and tame symbols in toric geometry*, Meeting of Canadian Mathematical Society, Université Laval, Québec, Canada (June 2002)

Workshops Attended

- *Quantum Error Correction*, Collaborate at ICERM research program, Brown University (Aug 2022)
- *Algebraic Methods in Coding Theory and Communication*, BIRS-CMO workshop, Oaxaca Mexico (Apr 2022)
- *Coding Theory Package for Macaulay2*, Macaulay2 workshop M2@CSU, remote (May 2020)
- *Nonlinear algebra in applications*, workshop at ICERM, Brown University (Nov 2018)
- *Sections of convex bodies*, workshop at Amer Math Inst, Palo Alto, (Aug 2013)
- *Combinatorial Challenges in Toric Varieties*, workshop at Amer Math Inst, Palo Alto, (April 2009)
- *Algorithms in algebraic geometry*, workshop at IMA, Minneapolis, (Sept 2006)
- *Geometric Modeling and Algebraic Geometry*, workshop at MSRI Berkeley, (April 2004)
- *Topological Aspects of Real Algebraic Geometry*, workshop at MSRI Berkeley, (Jan 2004)
- *Computational Algebraic Geometry*, Oberwolfach-Seminar, Oberwolfach, Germany, (Nov 2003)

Conferences Co-organized

- Minisymposium *Toric geometry, Lattice points, and Applications*, SIAM Conference on *Applied Algebraic Geometry*, Colorado (Aug 2013)
- *Toric Algebraic Geometry and Beyond*, AMS Sectional Meeting, Akron OH (October 2012)
- International Conference *Algebra and Geometry*, Moscow, Russia (2012)

Student Advising

Graduate Projects

1. Cassandra Hyer, MS, Tropical Geometry, co-advisor (2021)
2. Sailaja Gajula, MS, Tropical Determinant in Transportation Polytopes (2014), resulted in a peer-reviwed publication
3. Pinar Celebi Demirarslan, MS, Dual Toric Complete Intersection Codes (2012-2013), resulted in a peer-reviwed publication
4. Ryan Vitale, MS, Algebraic music theory and compositional techniques (2011-2012)

Undergraduate Projects

1. Simon Richard, Independent Study, Inequalities between mixed volumes (2023-present)
2. James Iler, Senior project, The Weak Mordell-Weil Theorem (2022)
3. Elisabeth Helmick, Honors Senior project, Geometry of Numbers (2020)
4. Fadak Aldar, Senior project, The Pancake sorting Problem (2017)
5. Matt Perkins, Senior project, Ring of Invariants and Coding (2016)
6. Ian Roy, Senior project, Attacks on the RSA Cryptosystem (2015)
7. Hayden Julius, Senior project, Representations of finite groups and Young Tableaux (2016)
8. Matt Sims, Senior project, The Problem of the Pennies: Dyson's Method and its Variations (2015)
9. Blair Knauf, Senior project, The identity in Sn as a product of distinct transpositions (2015)
10. Bracha Greenfeld, Honors Senior project, Costas arrays and cyclotomic polynomials (2015)
11. Cameron Tuckerman, Senior project, Classifying Configurations for Toric Codes (2013)
12. Thomas Emery, Senior project, Ehrhart Polynomials in Several Variables (2012)

13. Chris Renner, Honors Senior project, Solving Finite Tiling Problems Using Group Theory (2012)
14. Candice Quinn, Senior project, Toric codes and Minkowski length (2011)
15. Stephen Hanawalt, Senior project, Ring of invariants of finite linear groups (2010-2011)
16. Vincent Cestaro, Senior project, Parameters of toric codes in small dimension (2010-2011)
17. Todd Angney, Senior project, Zeroes of the Riemann Zeta function and the Prime number theorem (2010-2011)
18. Brian Feister, Senior project, Euler's bricks and perfect cuboids (2010)
19. Garret Cahill, Undergraduate research project, Lattice points in Minkowski sums of polytopes, University of Massachusetts, (summer 2005)

Other Professional Activities

- Refereed for various journals in Mathematics, Applied Mathematics, and Information Theory
- Reviewer for Mathematical Reviews (2005–2020)
- Member of Ph.D. dissertation committee for Haitao Xu, Dept of Computer Science, CSU (fall 2023–present)
- Member of Ph.D. dissertation committee for Abdulrahman Alajmi, Dept of Mathematical Sciences, Kent State University (fall 2018–spring 2020)
- Member of Ph.D. dissertation committee for Anthony Harrison, Dept of Mathematical Sciences, Kent State University (fall 2016–spring 2018)
- member of American Mathematical Society (since 2005)
- member of Society of Industrial and Applied Mathematics (since 2022)

Teaching Talks

1. *Lines and Circles in the plane and in space*, Math Club, April 2024
2. *Geometry and Combinatorics of Zonotopes*, Junior Seminar, Feb 2024
3. *Counting intersections of tropical curves*, Junior Seminar, Sept 2023
4. *Euler's and Desargues' theorems for convex and non-convex polyhedra*, Junior Seminar, April 2023
5. *The area and the volume polynomials*, Junior Seminar, Sept 2022
6. *Tropical curves and their intersection numbers*, Junior Seminar, Feb 2022
7. *Roots of polynomials over finite fields*, Junior Seminar, Aug 2021
8. *Lattice point enumeration & Combinatorics*, Junior Seminar, Sep 2020

9. *Mixed Volumes in Algebra and Geometry*, Junior Seminar, Jan 2020
10. *The Discrete Gauss-Bonnet theorem*, Math Club, Jan 2020
11. *Mixed Volumes in Algebra and Geometry*, Junior Seminar, March 2018
12. *On the pancake sorting problem*, Junior Seminar, January 2017
13. *Lattice Point Enumerator*, Junior Seminar, September 2016
14. *Trees and Transpositions*, Junior Seminar, April 2016
15. *Mind-switching machine*, Junior Seminar, Sept 2015
16. *Trees and Transpositions*, REU Colloquium, July 2015 (Kent State)
17. *Costas arrays and Finite Fields*, Junior Seminar, Jan 2015
18. *Is there a formula for the n-th prime number?*, Math Club, Nov 2014
19. *Tropical Determinant: How* not *to solve a Rubik's cube*, Junior Seminar, Sept 2014
20. *Algebraic Coding Theory*, Junior Seminar, March 2014
21. *Can you see the forest through the trees?*, Math Club, Feb 2014
22. *Sequences and Polytopes*, REU Colloquium, July 2013 (Kent State)
23. *Lattice point enumeration and combinatorics*, Junior Seminar, Feb 2013
24. *Tilings by Polyominoes I-III*, Math Club, Jan-Feb 2013
25. *The Four Numbers Game I-III*, Math Club, Oct-Nov 2012
26. *Borsuk-Ulam Theorem and Its Applications*, Math Club, Oct 2012
27. *Lattice Polytopes*, Junior Seminar, Sept 2012
28. *Games with winning strategy*, Math Club, Sept 2012
29. *Ehrhart theory*, Junior Seminar, April 2012
30. *Mathematics behind college admission and stable marriages*, Math Club, Sept 2011
31. *Mathematics behind college admission and stable marriages*, CSU Open House April 2011
32. *Polynomials over Finite Fields*, Junior Seminar, Feb 2011
33. *Toric Codes and Lattice Polygons*, Junior Seminar, Oct 2010
34. *Ehrhart Theory*, REU Colloquium, July 2010 (Kent State)
35. *Coding and Lattice Polygons*, Junior Seminar, Feb 2010
36. *Discrete Gauss-Bonnet Theorem*, Math Club, Sept 2009
37. *Error-Correcting Codes*, Junior Seminar, Sept 2009
38. *Duality and the Number 12*, REU Colloquium, June 2009 (Kent State)

39. *Duality and the Number 12*, Junior Seminar, March 2009
40. *Is there a formula for the n-th prime number?*, Math Club, March 2007

Extracurricular activities for undergraduate and high school students

- Co-PI and instructor for *Summer Honors Institute* "Solving problems in 3 dimensions", CSU, (Summers 2007–2009), a program for gifted high school students, funded by Ohio Department of Education
- Co-organizer of The Annual CSU Freshman-Sophomore Mathematics Competition, (2007–2013, fall 2023–present)
- Faculty Advisor for CSU Math Club (fall 2012– Spring 2013)
- Problem Solving Sessions, CSU Math Club, (fall 2009– fall 2011
- Problems of the Week, CSU Math Club, (fall 2015–spring 2019)
- Co-organizer and lecturer of *Geometry SOAR 2001*, summer camp for high school students, University of Toronto, (summer 2001)
- Co-organizers of the Toronto sitting of *Tournament of Towns Mathematical Olympiad*, (1998–2001)

Teaching

Courses taught at Cleveland State University 2006-present

MTH 181 – Calculus I

MTH 182 – Calculus II

MTH 181H – Honors Calculus I

MTH 182H – Honors Calculus II

MTH 220 – Introduction to Discrete Mathematics

MTH 281 – Multivariable Calculus

MTH 288 – Linear Algebra

MTH 301 – Introduction to Number Theory

MTH 358 – Abstract Algebra

MTH 396 – Junior Seminar

MTH 496 – Senior Project

MTH 496H – Honors Project

MTH 415/515 – Real Analysis

MTH 416/516 – Complex Analysis

MTH 420/520 – Combinatorial Mathematics

MTH 458/593 – Abstract Algebra II

MTH 482/582 – Topics in Number Theory

MTH 493/593 – Special Topics In Mathematics: Galois Theory

MTH 493/593 – Special Topics In Mathematics: Algebraic Curves and Codes

MTH 497 – Readings in Mathematics (various topics)

MTH 697 – Readings in Mathematics (various topics)

MTH 696 – Mathematics Exit Project (various topics)

Service

Recent administrative and committee work at Cleveland State University (fall 2014–present)

Administrative positions

- Department Chair (summer 2017-summer 2021)
- Associate Chair (fall 2016-spring 2017)
- Graduate Program Director (summer 2015-spring 2017)

University committee work

- College of Grad Studies: Grad Student Awards Committee (fall 2022-spring 2024)
- CSU/Shorelight - Academic Quality Assurance Committee - Undergraduate (spring 2019-spring 2020)
- Strong Start to Finish project, Ohio Dept of Education (fall 2018-summer 2020)
- College of Grad Studies: Petitions Committee (fall 2014-spring 2016)

College committee work

- College Peer Review Committee, Tenure and Promotion (fall 2015-spring 2016)

Department committee work

- Department Peer Review Committee, Promotion to Full Professor, Chair (fall 2022-present)
- Department Peer Review Committee, Tenure and Promotion (fall 2014-spring 2016)
- Undergraduate Program Committee (fall 2022-present)
- Graduate Assessment Committee, Chair (fall 2022-present)
- Math Placement Committee (fall 2018-spring 2021)
- Faculty Awards/Nominating Committee, Chair (fall 2014-spring 2016, fall 2022-present)