ETHAN D. BLOCH
Professor of Mathematics
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Education:

- 1983   Ph.D.   (mathematics)   Cornell University, Ithaca, NY
- 1981   M.S.   (mathematics)   Cornell University, Ithaca, NY
- 1978   B.A.   (mathematics)   Reed College, Portland, OR

Academic Positions:

Bard College:
- 2003 - 2007 Chair, Division of Science, Mathematics, & Computing
- 2001 -   Professor of Mathematics
- 1993 - 1995 Associate Dean for Academic Services
- 1991 - 2000 Associate Professor of Mathematics
- 1986 - 1991 Assistant Professor of Mathematics

Hebrew University of Jerusalem:
- 2007 - 2008 Visiting Professor of Mathematics

University of Utah:
- 1983 - 1986 Instructor of Mathematics

Cornell University:
- 1978 - 1982 Teaching Assistant

Grants and Awards:

- Asher Edelman Released-Time Fellow, Bard College, Fall 1988, Spring 1990, Fall 1992.
- National Science Foundation Grant DMS-8503388, 7/85 - 12/87.
- Hutchinson Fellowship, Cornell University, 1982 - 1983.

Memberships:

American Mathematical Society, Phi Beta Kappa

Citizenship:

U.S.A.

Publications:

Books:

1. *A First Course in Geometric Topology and Differential Geometry*, Birkhäuser, Boston, 1996.

2. *Proofs and Fundamentals: A First Course in Abstract Mathematics*, Birkhäuser, Boston, 2000.

3. *Proofs and Fundamentals: A First Course in Abstract Mathematics*, 2nd edition, Springer, New York, 2010.

4. *The Real Numbers and Real Analysis*, Springer, New York, 2011.

Papers:

1. (with R. Connelly and D. W. Henderson) The space of simplexwise linear homeomorphisms of a convex 2-disk, *Topology* 23 (1984), 161-175.

2. Simplexwise linear near-embeddings of a 2-disk into R^2, *Trans. Amer. Math. Soc.* 288 (1985), 701-722.

3. Strictly convex simplexwise linear embeddings of a 2-disk, *Trans. Amer. Math. Soc.* 288 (1985), 723-737.

4. Simplexwise linear near-embeddings of a 2-disk into R^2, II, *Topology Appl.* (1987), 93-101.

5. Simplexwise linear and piecewise linear near self-homeomorphisms of surfaces, *Fund. Math.* 132 (1989), 151-162.

6. Complexes whose boundaries cannot be pushed around, *Discrete Comput. Geom.* 4 (1989), 365-374.

7. A combinatorial Chern-Weil theorem for 2-plane bundles with even Euler characteristic, *Israel J. Math.* 67 (1989), 193-216.

8. The angle defect for arbitrary polyhedra, *Beitrage Algebra Geom.* 39 (1998), 379-393.

9. Critical points and the angle defect, *Geom. Dedicata* 109 (2004), 121-137.

10. The angle defect for odd-dimensional simplicial manifolds, *Discrete Comput. Geom.* 35 (2006), 311-328.

11. Mod 2 degree and a generalized no retraction theorem, *Math. Nachr.* 279 (2006), 490-494.

12. A simple proof of a generalized no retraction theorem, *Amer. Math. Monthly 116 (2009), 342-350.*

13. A characterization of the angle defect and the Euler characteristic in dimension 2, *Discrete Comput. Geom.* 43 (2010), 100-120.

14. Polyhedral representation of discrete Morse functions, *Discrete Math.*, 313 (2013), 1342-1348.

15. Combinatorial Ricci curvature for polyhedral surfaces and posets, submitted for publication.

16. Locally determined functions of finite simplicial complexes that are linear combinations of the numbers of simplices in each dimension, submitted for publication.

Courses Taught at Bard:

- Elementary Topics in Mathematics
- Topics in Geometrical Mathematics
- Space and Geometry
- Mathematical Patterns in Art and Nature
- Essential Mathematics
- Precalculus
- Calculus I
- Calculus II
- Calculus III
- Ordinary Differential Equations
- Linear Algebra and Ordinary Differential Equations
- Vector Calculus
- Proofs and Fundamentals
- Linear Algebra
- Abstract Algebra
- Real Analysis
- Complex Analysis
- Point Set Topology
- Algebraic Topology
- Differential Geometry
- Modern Geometry
- Knot Theory
- First Year Seminar: Spring 1989, Spring 1997, Spring 2001

Senior Projects:

- There and Back Again: Geometries to Fields to Geometries, 1990
- Stress Analysis of Axisymmetric Shells, 1990
- An Investigation into the Construction of Arithmetic, 1993
- Electricity and Magnetism: A Low-Dimensional Analysis, 1993
- The Classification of Discrete Patterns, Monohedral Tilings and some thoughts about k-anisohedral Tiles, 1994
- On the Curvature of Polyhedra, 1995
- Smooth Surfaces for Computer Aided Geometric Design, 1995
- Uniform Approximation of Continuous Functions Using Artificial Neural Networks, 1997
- Geodesics on a Type of Singular Surfaces, 1999
- Cutting out the Junk: Breaking up Surfaces with Isolated Singularities, 2000
- Combinatorial Laplacians of Simplicial Complexes, 2002
- Robots' Motion on a Graph: Configuration Spaces for a 2-Robot System, 2005
- Closure Operators on Lattices and Boolean Algebras, 2005
- Mathematical Implementations: Modeling Folds in a Real Coordinate Space, 2010
- Square Peg Problem on Lattice Plane, 2011
- Sprouts Game Study, 2012
- Squares on Lattices: an Investigation Inspired by the Square Peg Problem, 2012
- Mod 2 Homology of Posets, 2013
- Inscribed Squares in Taxicab Polygons, 2013
- Counting the Votes: Exploring a Partially Ordered Borda Count, 2013
- Robots Switching Positions on Graphs, 2014
- Social Choice Theory and an Exploration of Partial Borda Count, 2014
- A Dinner for Two: Winning the Ethiopian Dinner Game, 2014

Committees:

- Planning and Appointments Committee (chair 2012/13 — 2013/14)
- Visiting Appointments Working Group
- Faculty Evaluation Document Review Committee (chair)
- Faculty Executive Committee (chair 2005/06 — 2006/07)
- Faculty Senate (chair 1997/98 — 1999/00)
- Committee on General Education
- Faculty Evaluation Committee
- Presidential Commission on the Curriculum
- Campus Center Planning Committee
- Computer Committee
- Research and Travel Committee
- Various Hiring Committees