

David Clark Marshall

Curriculum Vitae

Monmouth University
Department of Mathematics
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EMPLOYMENT

- **2009- present** Associate Professor, Department of Mathematics, Monmouth University, West Long Branch, NJ
- **2004-2009** Assistant Professor, Department of Mathematics, Monmouth University, West Long Branch, NJ
- **2002-2004** Research Lecturer, Department of Mathematics, University of Texas at Austin
- **2000-2002** Postdoctoral Fellow, Department of Mathematics and Statistics, McMaster University, Canada

EDUCATION

- **1994-2000** Department of Mathematics, University of Arizona; Ph.D. in Mathematics
Thesis: *Galois Groups and Greenberg's Conjecture*
Advisor: William G. McCallum
- **1989-1994** California State University at Fullerton; B.A. in Mathematics, Minor in Philosophy

SCHOLARLY INTERESTS

- **General:** Number Theory, Bilinear and Quadratic Forms, Undergraduate Mathematics Curriculum and the Mathematical Preparation of Teachers
- **Specifics:** algebraic and elementary number theory; bilinear and quadratic forms in characteristic 2; the mathematical preparation of elementary school teachers.

PAPERS/PUBLICATIONS/WORK IN PROGRESS

- (with Starbird, Odell) *Number Theory Through Inquiry*, **MAATEXTBOOK** series, Mathematical Association of America, November 2007.
- Greenberg's Conjecture and Cyclotomic Towers, *Acta Arithmetica*, **113**, no.1, 1-14, 2004.
- (with An, Kim, Marshall, McCallum, Perlis) Jacobians of Genus One Curves, *Journal of Number Theory*, **90**, 304-315, 2001.
- (with Martelli) Stability and Attractivity in Discrete Dynamical Systems, *Math.Biosci.*, **128**, no.1-2, 347-355, 1995.

- Galois Groups and Greenberg's Conjecture, Ph.D. Thesis, 2000.
- Symmetry in Numbers (manuscript in preparation).
- (with A. Perlis) Arf Invariants of Multiplicative Refinements (work in progress).

SELECTED TALKS

- *Reflections in Geometry*
MAA Contributed Paper Session, MAA MathFest, Portland, OR, August 2013
- *Reluctantly Creating a First Year Seminar*
MAA Contributed Paper Session, MAA MathFest, Pittsburgh, PA August 2010
- *A Two-Step Transition to Higher Mathematics*
MAA Contributed Paper Session, AMS-MAA Joint Meetings, San Diego, CA January 2008
- *Search Engine Mathematics: An Application For All Levels*
MAA-NJ Contributed Paper Session, NJ Section Meeting, Rowan University, March 2007
- *The Role of Content in Countering Math Anxiety*
MAA Contributed Paper Session, AMS-MAA Joint Meetings, San Antonio, TX January 2006
- *Symmetry in Numbers*
Franklin and Marshall College Mathematics Colloquium, Spring 2005
- *Cup Product Computations in the Galois Cohomology of Number Fields*
CNTA 7, Montreal, May 2002
- *Galois Groups and Iwasawa Modules*
Quebec-Vermont Number Theory Seminar, Montreal, January 2002
- *Etale Fundamental Groups and Cohomology of Number Rings*
McMaster University Number Theory Seminar, Hamilton, Fall 2001
- *Some Relationships Between Galois Group and Iwasawa Module Structures*
University of Texas at Austin Number Theory Seminar, Fall 2001
- *Galois Groups and Greenberg's Conjecture* (3 lectures)
McMaster University Number Theory Seminar, Hamilton, Fall 2000
- *Poncelet's Closure Theorem*
University of Arizona Graduate Colloquium, Tucson, Fall 1999
- *On Greenberg's Conjecture*
AMS Special Session on Number Theory, Providence College, October 1999
- *Jacobians of Genus 1 Curves*
AMS Special Session on Arithmetic Geometry, University of Arizona, November 1998
- *Computing Ranks of Elliptic Curves*
Arizona Winter School on the *ABC* Conjecture, Tucson, March 1998

SUPPORT/HONORS

- Grant-in-Aid of Creativity, Monmouth University, 2008
- New Jersey Project NExT Fellow, 2004-2005
- AMS Travel Grant, Summer 2000
- NSF VIGRE Graduate Fellowship, Spring/Summer 2000
- Outstanding TA Award, University of Arizona, Fall 1999
- Summer Research Support, NSF Group Infrastructure Grant, 1999
- Summer Research Support, NSF Group Infrastructure Grant, 1998
- First Place, California State Undergraduate Research Competition, Math and Science Division, 1994
- Outstanding Math Scholar, CSUF, 1993-1994

TEACHING EXPERIENCE

- Fifteen years experience teaching a wide variety of mathematics courses at the University level.
- Experience teaching both small (10-40 students) and large (120-160 students) classes, independent directed studies, and freshman seminars.
- **Courses Taught** Duties for each include preparing and delivering all lectures; designing, administering and grading all exams; holding weekly office hours.
 - Liberal Arts Mathematics (mathematics for non-science majors)
 - Freshman Seminars (topics: (1) Cryptography and (2) Infinity)
 - Mathematics for Elementary School Teachers
 - Finite Mathematics
 - Calculus (applied, differential, integral, and vector)
 - Linear Algebra (elementary and advanced)
 - Discrete Mathematics/ Introduction to Proof
 - Number Theory
 - Geometry (Euclidean and non-Euclidean)
 - Topology (point-set)
 - Abstract Algebra (groups, rings, and fields)
- Extensive interest and experience in teaching and designing mathematics survey courses for non-science/non-engineering majors, including future elementary school teachers.

TEACHING WORKSHOPS

- **Organized:**

- Co-director of an MAA PREP (Professional Enhancement Program) Workshop on *Inquiry Based Learning with a Focus on Number Theory, a Transitions-to-Proof Course*, The University of Texas at Austin, June 1-6, 2008
- Co-organized the Southwest Regional Institute in Mathematical Sciences *One Day Cryptography Workshop for High School Teachers and Students*, University of Arizona, Fall 1997

- **Lectured:**

- *The Mathematics of Internet Search Engines*
Lecture delivered at Monmouth University's Spring Symposium Professional Development Workshop for Inservice and Preservice Teachers, March 2007
- *Modular Arithmetic and Caesar Shifts; Public-Key and the Diffie-Hellman Key Exchange*
Lectures delivered at the Southwest Regional Institute in Mathematical Sciences One Day Cryptography Workshop for High School Teachers and Students, University of Arizona, Fall 1997

- **Attended:**

- MAA PMET (Preparing Mathematicians to Educate Teachers) Workshop on the Mathematical Preparation of Elementary Teachers, Kent University, June 12-24, 2005
- Workshop on Teaching Consortium Calculus, University of Arizona, August 1996

PANEL PARTICIPATION

- Invited Panelist, "Postdoctoral Exposure to Inquiry Based Teaching", MAA PREP Workshop on IBL, The University of Texas at Austin, May 2010
- Invited Panelist, "New Experiences in Inquiry Based Learning", AMS-MAA Special Session on IBL, Joint Mathematics Meetings, Washington, D.C., January 2009
- Invited Panelist, "Innovative Teaching Techniques", NJ-NExT Workshop, MAA-NJ Section Meeting, Fairleigh Dickinson University, Fall 2008
- Invited Panelist, "Balancing Responsibilities: Finding Your Niche", NJ-NExT Workshop, MAA-NJ Section Meeting, St. Peter's College, Fall 2007

UNDERGRADUATE HONORS THESES

- Lauren Halton (*Magic Squares of Squares*, Monmouth University, 2012)
- Joseph York (*Investigations into the Geometry of Heronian Tetrahedra*, Monmouth University, 2008-2009)
- Meghan Moratelli (*One and Two Dimensional Crystallographic Groups in Spanish Architecture*, Monmouth University, 2006-2007)

- Krystle Hinds (*The Mathematics of Information Retrieval*, Monmouth University, 2006-2007, awarded \$1000 Jane Freed Grant, Co-Supervised with Joseph Coyle)
- Danielle DePasquale (*The Search for Transcendental Numbers*, Monmouth University, 2005-2006, awarded \$1000 Jane Freed Grant)

SERVICE

- **Monmouth University Service:**

- Chair, Undergraduate Studies Committee, 2014-present
- Provost Search Committee, 2014
- Academic Standards and Review Committee, 2013-present
- Provost Task Force on Course Capacities, 2012-2013
- Department Internship Coordinator, 2012-2013
- Chair, Department of Mathematics, 2010-present
- Roles and Responsibilities of Department Chairs Taskforce, 2010
- Department Adviving Coordinator, 2008-2012
- Co-Chair, Department of Mathematics, 2008-2010
- Chair, Tenure Track Hiring Committee, 2007-2008
- Freshman Advisor, 2007-2009
- Kappa Mu Epsilon Faculty Advisor, 2007-2010
- Webmaster, Department of Mathematics Website, 2006-2010
- Tenure Track Search Committee, 2006-2007
- University Discipline Committee, 2005-2013
- University Teacher Education Advisory Council, 2005-2011
- Lecturer Search Committee, 2005-2006
- Various Department Committees, 2004-present

- **Professional Service:**

- Vice Chair for Innovations, Mathematical Association of America, New Jersey Section, 2014-present
- Workshop Coordinator, Mathematical Association of America, New Jersey Section, 2009-2015
- Consultant, NJ-NE \times T, 2007-present
- Program Editor, Mathematical Association of America, New Jersey Section, 2007-2009
- Judge, Undergraduate Research Poster Session, Annual Joint Meetings of the AMS and MAA (2001, 2004, 2005, 2006, 2008)

- Organized Mathematics Colloquium, Monmouth University, 2006-2010
- Organized Number Theory Seminar, University of Texas, 2002-2003
- Organized Algebra/Number Theory Seminar, McMaster University, Fall 2001
- Judge for the 47th International Science and Engineering Fair, Mathematics Division, Tucson, AZ, May 1996

MEMBERSHIPS

- American Mathematical Society; Mathematical Association of America; National Council of Teachers of Mathematics; Association of Mathematics Teachers of New Jersey.