

LEE STEMKOSKI

CURRICULUM VITAE

Department of Mathematics and Computer Science
Adelphi University – Garden City, NY 11530

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Experience

- Adelphi University
 - Professor Fall 2017 – Present
 - Associate Professor Fall 2012 – Spring 2017
 - Assistant Professor Fall 2006 – Spring 2012
- Dartmouth College
 - Lecturer Fall 2003 – Spring 2006
 - Teaching Assistant Fall 2001 – Spring 2003

Education

- Dartmouth College
 - Ph.D. in Mathematics June 2006
 - M.A. in Mathematics June 2003
- Boston University
 - M.A. in Mathematics May 2001
 - B.A. in Mathematics May 2001

Scholarly Interests

- Three-Dimensional Computer Graphics
- Video Game Development
- History of Mathematics
- Number Theory

Publications

Books:

- Stemkoski, L. *Java Game Development with LibGDX*. (second edition)
New York: Apress, 2018. ISBN: 978-1484233245.
- Stemkoski, L. and Leider, E. *Game Development with Construct 2*.
New York: Apress, 2017. ISBN: 978-1484227831.

Refereed Articles:

- Stemkoski, L. "Introduction to JavaFX for Game Development".
GameDevelopment.TutsPlus.com (2015)
- Bloch, S. and Stemkoski, L. "Functional Game Programming in Java-Based CS1".
Journal of Computing Sciences in Colleges, Volume 29 (2), 2013
- Stemkoski, L. "How to Learn Three.js for Game Development".
GameDevelopment.TutsPlus.com (2013)
- Bradley, R. and L. Stemkoski, "When Nine Points are Worth But Eight: Euler's Resolution of Cramer's Paradox". *Convergence*, Volume 8 (2011).
- Klyve, D., Stemkoski, L., and E. Tou, "Teaching and Research Using Original Sources from the Euler Archive". *Convergence*, Volume 8 (2011).
- Stemkoski, L. "Parameterized Knots",
Loci: Featured Items, December 2010.
- Stemkoski, L., and C. Storm, "Applets and Activities for Real Analysis",
Loci: Resources, September 2009.
- Stemkoski, L. "Teaching Time Savers: The Homework Self-Evaluation Challenge",
FOCUS: The Newsletter of the Mathematical Association of America, Aug/Sept 2009, 13.
- Stemkoski, L. and E. Tou, "Explicit Constructions of Arithmetic Lattices in $SL(3, \mathbb{R})$ ",
International Journal of Mathematics and Computer Science 4 (2009), no. 1, 53 – 64.
- Stemkoski, L. "Investigating Euler's Polyhedral Formula Using Original Sources",
Convergence, Volume 6 (2009).
- Klyve, D. and L. Stemkoski, "Graeco-Latin Squares and a Mistaken Conjecture of Euler",
College Mathematics Journal, Volume 37 (2006), 2 – 15.
- Kim, P., L. Stemkoski, and C. Yuen, "Polynomial Knots of Degree Five",
MIT Undergraduate Journal of Mathematics, Volume 3 (2001), 125 – 135.

Book Chapters:

- Klyve, D. and L. Stemkoski, "The Euler Archive: Giving Euler to the World",
in *Euler at 300: An Appreciation*, Bradley et. al. (ed.), Mathematical Assoc. of America, 2007.
- Lathrop, C. and L. Stemkoski, "Parallels in the work of Leonhard Euler and Thomas Clausen",
in *Euler at 300: An Appreciation*, Bradley et. al. (ed.), Mathematical Assoc. of America, 2007.
- Klyve, D. and L. Stemkoski, "Graeco-Latin Squares and a Mistaken Conjecture of Euler",
in *The Genius of Euler: Reflections on his Life and Work*, W. Dunham (ed.), Mathematical Assoc. of America, 2007.

Book Reviews:

- Stemkoski, L., Review of [Geometry with an Introduction to Cosmic Topology](#), by M. Hitchman,
Reviewed in *The MAA Mathematical Sciences Digital Library*, December 2009.
- Stemkoski, L., Review of [In Search of the Riemann Zeros](#), by M. Lapidus,
Reviewed in *The MAA Mathematical Sciences Digital Library*, June 2008.
- Stemkoski, L., Review of [The Art of Mathematics](#), by J. P. King,
Reviewed in *The MAA Mathematical Sciences Digital Library*, January 2008.
- Stemkoski, L., Review of [The Early Mathematics of Leonhard Euler](#), by C. E. Sandifer,
Reviewed in *The MAA Mathematical Sciences Digital Library*, March 2007.

Theses:

- The Selberg Trace Formula for Cocompact Arithmetic Groups in $SL(3, \mathbb{R})$,
Ph.D. Thesis, Department of Mathematics, Dartmouth College (2006).
- The Rubik Groups of Polyhedra,
Senior Thesis, Department of Mathematics, Boston University (2001).

Additional Material:

- Co-Director, *The Euler Archive*. (Digital library and database for the works of Leonhard Euler, consisting of approx. one thousand web pages, <http://www.eulerarchive.org>), part of the Mathematical Association of America Digital Library. 2003 – 2010
- Interviewed for "The Euler Archive: An Interview with the Founders",
FOCUS: The Newsletter of the Mathematical Association of America, January 2007.

Software Development

Published Software

- *Koala's Quest* -- (collection-style platform game for Android tablets;
published in Google Play store April 2014; over 250,000 installations (as of August 2016)
- *Astrono Blast* -- published August 2014.

Presentations

- *Rendering Photorealistic Knots: Theory and Practice*
Contributer Paper Session, Joint Mathematics Meetings -- San Antonio, TX -- Jan. 2015
- *Leonhard Euler's Work in Number Theory and the Commentationes Arithmeticae*
Invited Talk, The Pohle Colloquium, Adelphi University -- Garden City, NY -- Apr. 2014
- *Classifying Families of Polynomial Knots.*
Contributed Paper Session, Joint Mathematics Meetings -- Baltimore, MD -- Jan. 2014
- *The Work of Leonhard Euler related to Fermat's Last Theorem*
Contributed Paper Session, Joint Mathematics Meetings -- San Diego, CA -- Jan. 2013
- *The Work of Leonhard Euler related to Fermat's Last Theorem*
Invited Talk, The Pohle Colloquium, Adelphi University -- Garden City, NY -- Dec. 2012
- *Number Theory and Quadratic Forms in the Work of Leonhard Euler*
Invited Talk, The Euler Society Conference, Adelphi University -- Garden City, NY -- Aug. 2012
- *The Coefficient Space of Polynomial Knots*
Contributed Paper Session, Joint Mathematics Meetings -- Boston, MA -- Jan. 2012
- *Applications of Calculus to Game Theory: The Prisoners' Dilemma*
Contributed Paper Session, Joint Mathematics Meetings -- New Orleans, LA -- Jan. 2011
- *Alternative Forms of Assessment in Mathematics*
Invited Panelist, Joint Mathematics Meetings -- San Francisco, CA -- Jan. 2010
- *Online Articles From J.O.M.A. to Loci*
Invited Panelist, Joint Mathematics Meetings -- San Francisco, CA -- Jan. 2010
- *Agent-Based Models of Population Segregation*
Faculty Works in Progress Seminar, Adelphi University -- Garden City, NY -- Oct. 2009

- *Analyzing Strategies for Interaction: Game Theory in a Calculus Course*
Contributed Paper Session, MathFest 2008 – Madison, WI – Aug. 2008
- *Agent-Based Models of Species Interaction and Reproduction*
Interdisciplinary Science Symposium, Adelphi University – Garden City, NY – Dec. 2007
- *The Unpublished Notebooks and Manuscripts of Leonhard Euler*
Invited Talk, The Pohle Colloquium, Adelphi University – Garden City, NY – Dec. 2007
- *Cataloging and Publishing Euler's Works: A History*
Invited Paper Session, MathFest 2007 – San Jose, CA – Aug. 2007
- *The Euler Archive: Illuminating the Life and Times of Leonhard Euler*
Invited Keynote Address, Embassy of Switzerland – Washington DC – Apr. 2007
- *Investigating Euler's Polyhedral Formula Using Original Sources*
Joint Mathematics Meetings – New Orleans, LA – Jan. 2007
- *The Fuss Index vs. the Enestrom Index: an Euler Archive Update*
Euler 2K+6 Conference – Albany, NY – Aug. 2006
- *The Prisoners' Dilemma and the Evolution of Cooperation*
Norwich University colloquium series – Northfield, VT – Feb. 2006
- *A Trace Formula for Compact Quotients of $SL(3, R)$ and Weyl's Law*
Joint Mathematics Meetings – San Antonio, TX – Jan. 2006
- *From the Riemann zeta function to the Selberg trace formula*
Middlebury College mathematics department seminar – Middlebury, VT – Oct. 2005
- *Simulating Evolution using the Iterated Prisoner's Dilemma*
Dartmouth graduate student seminar – Hanover, NH – July 2005
- *A Trace Formula for Cocompact Arithmetic Groups*
Automorphic Forms Workshop – Denton, TX – Mar. 2005
- *Thomas Clausen: Factoring Fermat Numbers and Generating Graeco-Latin Squares*
Invited speaker, special session, AMS sectional meeting – Pittsburg, PA – Nov. 2004
- *Reality Calculus: Critical Thinking and Organized Writing*
Contributed paper session, MathFest 2004 – Providence, RI – Aug. 2004
- *Hilbert's Tenth Problem and Number Theory*
Senior seminar in mathematics, Dartmouth College – Hanover, NH – May 2004
- *Why Graduate School and How to Get There*
Invited panelist, RUMBUS 2003 – Boston, MA – Mar. 2003
- *Complex Multiplication on Elliptic Curves*
Ten Reasons the p -adic Numbers are Cool
Applications of Hecke L -functions
Selected talks, Dartmouth College Number Theory Seminar – Hanover, NH – 2003 – 2005
- *Graeco-Latin Squares and a Conjecture of Euler*
Euler 2K+2 conference – Rumford, ME – Aug. 2002
- *The Rubik Groups of Polyhedra*
HRUMC VIII – Saratoga Springs, NY – Apr. 2001
- *An Ode to Polynomial Knots*
Boston University Masterclass series – Boston, MA – Mar. 2001
- *Polynomial Knots of Fifth Degree*
Poster session, Joint Mathematics Meetings – New Orleans, LA – Jan. 2001
- *Polynomial Knots*
MAA sectional meeting – Providence, RI – Nov. 2000

Teaching

(All courses taught at Adelphi University)

Computer Science:

- CS 137: Introduction to Video Game Programming
- CS 156: Discrete Structures
- CS 171: Introduction to Computer Programming (Java)
- CS 174: Computer Organization and Assembly Language
- CS 233: Graphical User Interfaces
- CS 237: Video Game Programming
- CS 270: Survey of Programming Languages
- CS 290: Software Seminar (Topic: Unity and C#)
- CS 290: Software Seminar (Topic: Interactive Fiction)
- CS 290: Software Seminar (Topic: JavaScript Game Development)
- CS 290: Software Seminar (Topic: Python Game Development)
- CS 302: Artificial Intelligence
- CS 333: Computer Graphics and Image Processing
- CS 387: Video Game Development Workshop
- CS 390: Special Topics: Cryptography

Mathematics:

- Math 141: Calculus 1 (Differential)
- Math 142: Calculus 2 (Integral)
- Math 190: Freshman Mathematics Seminar
- Math 243: Calculus 3 (Multivariable)
- Math 244: Differential Equations
- Math 250: Multivariable Mathematics
- Math 253: Linear Algebra
- Math 290: Math Honors Seminar (Topic: Mathematics of Origami)
- Math 290: Math Honors Seminar (Topic: Topics in Modern Algebra)
- Math 301: Proofs and Abstract Reasoning
- Math 321: Geometry (Euclidean and Non-Euclidean)
- Math 326: History of Mathematics
- Math 351: Number Theory
- Math 365: Advanced Mathematical Modeling
- Math 390: Special Topics: Mathematical Biology
- Math 390: Special Topics: Actuarial Science
- Math 431: Analysis
- Math 457: Abstract Algebra
- Math 490: Special Topics: Abstract Algebra 2 (Galois Theory)
- Math 656: History of Mathematics

Other:

- Honors 486: Liberal Arts Seminar: Complexity

Course Development:

- Math 365: Advanced Mathematical Modeling
Redesigned course to serve as a general education capstone experience; introduced intensive technology (usage and creation), writing, and presentation components.
- Various seminars and special topics courses taught: Math 290, Math 390, Math 490, CS 290, CS 390.
- Designed and created courses: CS 137, CS 237, CS 290, CS 387.
- Honors 486: Liberal Arts Seminar: Complexity
Designed and taught this interdisciplinary course, accessible to all majors.

Faculty Development Mini-Courses:

- Evolutionary Game Theory
American Mathematical Society, Short Course – New Orleans, LA – Jan. 2011
- The Great Books of Mathematics
American Mathematical Society, Short Course – San Francisco, CA – Jan. 2010
- Financial Mathematics
Mathematical Association of America, Short Course – Portland, OR – Aug. 2009
- Game-Theoretic Modeling: Techniques and Applications
Mathematical Association of America, Short Course – Madison, WI – Aug. 2008
- Biological Applications and Mathematical Modeling
Project NExT workshop – San Jose, CA – Aug. 2007
- Modeling Across the Curriculum
Project NExT workshop – Knoxville, TN – Aug. 2006
- Computation and Discovery in the Number Theory Classroom
Mathematical Association of America, Minicourse – Phoenix, AZ – Jan. 2004
- The Mathematics of Leonhard Euler
Mathematical Association of America, Minicourse – Phoenix, AZ – Jan. 2004
- The Mathematics of Cryptography
Mathematical Association of America, Short Course – Burlington, VT – Aug. 2002
- Methods of Proof in Group and Graph Theory
Mathematical Association of America, Minicourse – Los Angeles, CA – Aug. 2000

Undergraduate Research Directed:

¹ indicates project was basis for student's Honors College thesis

² indicates project was presented by students at a national conference

2017 – 2018

- "Interactive Literature: Creation and Context", with Caitlin Lenhan ⁽¹⁾
- "Adaptive Learning Technology in Mathematics Education", with Emily Harris ⁽¹⁾

2016 – 2017

- "Adelphi University: 3D Multiplayer Simulation",
with Mathew Mallory, Robert Monteleone, and Justin Pedowitz

2014 – 2015

- "Understanding the Fourth Spatial Dimension via Interactive Software", with Cécile Cornelus ⁽¹⁾
- "Creating a 3D Computer Graphics Engine", with Matthew Matero

2013 -- 2014 (none -- Sabbatical Leave of Absence)

2012 – 2013

- "Hyperbolic Geometry and the Art of M.C. Escher", with Julia Huntermark ⁽¹⁾
- "Generalized Self-Similar Curves", with Carissa Brtalik and Magdalena Mulvihill ⁽²⁾

2011 – 2012

- "Polynomial Knots", with Anthony Del Latto, Dayna Goeringer, and Steven Roveto ⁽²⁾
- "Evolution and Population Dynamics in Game Theory", with Tara Gangarossa ⁽²⁾
- "Efficiency of Algorithms for Solving Rubik's Cube with Abstract Algebra", with Nicolas Micelli ⁽²⁾
- "Hinton and the Fourth Spatial Dimension", with Samuel C. Herwood ^{(1),(2)}
- "Hyperbolic Curve Cryptography", with Katherine Weiss ⁽²⁾

2010 – 2011

- "Polynomial Knots of Degree Seven", with Salvatore Giunta and Kavi Gupta ⁽²⁾
- "Generalizations of the Prisoners' Dilemma", with Rachel Sherman ⁽²⁾
- "Rubik Groups of Dual Polyhedra", with Corinna Venezia ⁽²⁾

2009 – 2010

- "Telescopic Proofs and Fermat's Last Theorem", with Christopher Kirk
- "Group Structure of Rubik-like Puzzles (Octahedra)", with Shannon Zeckzer ⁽²⁾

2008 – 2009:

- "Agent-Based Simulations of the Anasazi Culture", with Nicole Alves ^{(1), (2)}
- "Group Structure of Rubik-like Puzzles (Prisms)", with Jaclyn Bogensberger ^{(1), (2)}
- "Geometry of the Parameter Space of Polynomial Knots", with Adam Schoepfin ⁽¹⁾

2007 – 2008:

- "Game-Theoretic Agent-Based Models and Evolution of Behavioral Strategies", with Edwin Chen⁽¹⁾
- "Many-Option Games and Genetic Algorithm-Based Simulation Models of Social Interaction", with Joseph Dilallo⁽¹⁾
- "A Comparative Analysis of Traditional Economic Theory and Complexity Economics", with Akhil Ketkar⁽¹⁾

2005:

- "Agent-Based Modeling", with six undergraduates in a term-long project. Investigated agent-based models of natural selection and the evolution of behavioral strategies using game theory and computer simulation. Students read research articles, presented in a weekly seminar, and created a simulation program for data generation.

Other Teaching-Related Activities:

- Project NEXt Fellow, 2006 – 2007
Project NEXt (New Experiences in Teaching) is a national professional development program for new and recent Ph.D.'s interested in improving the teaching and learning of undergraduate mathematics. It addresses the full range of faculty responsibilities in teaching, research, and service.
- Teaching Seminar, Dartmouth College, Summer 2003
Intensive ten-week seminar explored the theory and practice of teaching mathematics. Involved readings and discussions of different philosophies of teaching and problem solving. Topics included cooperative learning, using writing assignments, student evaluation, presentation styles, and designing curricula.
- Exploring Mathematics, Summer 2003
Co-taught two week-long workshops in number theory and group theory for high school students.

Grants

- Co-P.I., MSP-Start: Science and Math Applied Real-problem Teaching, with Sean Bentley (P.I.), Brumsic Brandon, and Elizabeth DeFreitas, Amount: \$299,012 – National Science Foundation – Awarded 2009
- P.I., Excelsior Scholars Program, with Beth Christensen, Gary Schecter, and Andrea Ward Amount: \$52,390 – New York State Department of Education – Awarded 2008
- P.I., Development of The Euler Archive, with Dominic Klyve, Amount: \$10,000 – Swiss House for Advanced Research and Education – Awarded 2007
Amount: \$10,000 – State Secretariat for Education and Research, Bern, Switzerland – Awarded 2005
Amount: \$5,000 – Swiss House for Advanced Research and Education – Awarded 2005
Amount: \$5,000 – Presence Switzerland – Awarded 2003

Service

Department/University:

- Adviser for Adelphi chapter of International Game Developers Association, Fall 2016 - Present
- Adviser for G.A.M.E.S. organization, Fall 2012 – Present
- Participation in nearly all university open houses and accepted student days, Fall 2007 - Present
- Academic Adviser, Fall 2006 – Present (approx. 30 advisees yearly)
- Department Faculty Search Committees, 9 total (7 tenure-track, 2 visiting positions)
- College of Arts and Sciences Academic Affairs Committee, Fall 2010 – Fall 2011
- Arts and Sciences Dean Search Committee, Summer 2010 – Fall 2010
- Arts and Sciences Dean Search Committee, Fall 2009 – Spring 2010
- Capstone Experience Committee, Fall 2007 – Spring 2008
 - Coordinator for mathematics major capstone experience
- Adviser for MAA Student Chapter at Adelphi, 2011
- Adviser for Putnam Examination Team, Fall 2010
- Adviser for Mathematics and Computer Science Club, Fall 2006 – Spring 2009

Local:

- Outreach to local area schools (presentations on topics in computer science):
 - Roslyn Middle School – Nov. 2017, Dec. 2017
 - Roslyn High School – Oct. 2017
 - Kellenberg High School – Feb. 2017
- CodeLL.org (organization for teaching children on Long Island how to code)
 - Workshop leader – Garden City, NY – Nov. 2014, Jan. 2016
- Greater Metropolitan New York Math Fair
 - Reader and Judge – Brooklyn, NY – Mar. 2009
- Co-Organizer, History of Mathematics, Special Session
 - AMS Eastern Section Fall Meeting – Middletown, CT – Oct. 2008
- Co-Organizer, History of Mathematics on Leonhard Euler's Tercentenary, Special Session
 - AMS Eastern Section Spring Meeting – Hoboken, NJ – Apr. 2007
- Long Island Junior Science and Humanities Symposium
 - Reader and Judge – Garden City, NY – Apr. 2007, Apr. 2008

National:

- Associate Editor, *Convergence*, Spring 2013 – Spring 2017
- MAA Liaison for Adelphi University, Fall 2009 – Fall 2015
- Reviewer for *Journal of Computational Science Education*
- Reviewer for *MAA Reviews*, Spring 2007 – Spring 2010
- Judge, Undergraduate Poster Session
 - Joint Mathematics Meetings – New Orleans, LA – Jan. 2007
- Co-Organizer, Special Session on Creating and Sustaining Active Mathematics Clubs
 - Joint Mathematics Meetings – New Orleans, LA – Jan. 2007

Awards

- Adelphi University Teaching Excellence Award (for tenured faculty), 2017
- Sabbatical Release Time (Fall 2014 semester)
Topic: Computer Graphics and Data Visualization
- Adelphi University Teaching Excellence Award (for tenure-track faculty), 2011
- Research Release Time (3 credits), Adelphi University, Spring 2011
Topic: Development of Agent-Based Modeling Software
- Funded participant, Computational and Mathematical Biology, Sweet Briar College, 2007
Participated in week-long workshop, part of the Mathematical Association of America's Professional Enhancement Program; funded by the National Science Foundation.
- Project NExT Fellow, 2006 – 2007
Sponsored by the Metropolitan New York Section of the Mathematical Association of America.
- Dartmouth College Graduate Teaching Award (college-wide award for teaching excellence), 2005
- Funded participant, Clay Mathematics Institute Summer School, the Fields Institute 2003
Topic: Harmonic Analysis, The Trace Formula and Shimura Varieties.
- GAANN Fellowship, Dartmouth College, 2004 – 2005
- Dartmouth College Graduate Fellowship 2001 – 2004
- Phi Beta Kappa (National Honor Society), Boston University, 2001
- Boston University College Prize in Mathematics, 2001
- Pi Mu Epsilon (National Mathematics Honor Society), 2000
- Funded participant, Research Experience for Undergraduates, Mount Holyoke College, 2000
Topic: Singularities and Knots in Real Algebraic Geometry.

Additional Information

- Mathematical Software: Maxima, Maple, GeoGebra, TeX, LaTeX
- Programming Languages: Java, JavaScript, OpenGL, HTML5, C++, C#, Python, Racket, Prolog, NetLogo
- Society of Actuaries examination # 1 passed
- Languages: French (read)