LEE STEMKOSKI
CURRICULUM VITAE

Department of Mathematics and Computer Science
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Experience

- Adelphi University, Department of Mathematics and Computer Science
  - Associate Chair 2023 – Present
  - Professor 2017 – Present
  - Associate Professor 2012 – 2017
  - Assistant Professor 2006 – 2012
- Dartmouth College, Department of Mathematics
  - Lecturer 2003 – 2006

Education

- Dartmouth College
  - Ph.D., Mathematics 2006
  - M.A., Mathematics 2003
- Boston University
  - M.A., Mathematics 2001
  - B.A., Mathematics 2001

Scholarly Interests

- Virtual Reality and Augmented Reality
- Computer Graphics and GPU Programming
- Multimedia and Video Game Development
- History of Mathematics and Digital Archiving
- Number Theory and its Applications

Publications

Books:

- Stemkoski, L. and Cona, J. *Developing Graphics Frameworks with Java and OpenGL*. Boca Raton, Florida: CRC Press, 2022. ISBN: 978-0367720698.
- Stemkoski, L. and Pascale, M. *Developing Graphics Frameworks with Python and OpenGL*. Boca Raton, Florida: CRC Press, 2021. ISBN: 978-0367721800.
- 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.

Articles:

- Abriata, Luciano, et. al. "MoleculARweb: a Website for Chemistry and Structural Biology Education Through Interactive Augmented Reality". *Journal of Chemical Education*, Volume 98, Issue 7 (2021)
- Giuffre, C. and Stemkoski, L. "Virtual Temari: Artistically Inspired Mathematics". *Journal of Humanistic Mathematics*, Volume 10, Issue 2 (2020)
- Bloch, S. and Stemkoski, L. "Functional Game Programming in Java-Based CS1". Journal of Computing Sciences in Colleges, Volume 29 (2), 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,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 and Additional Materials:

- Stemkoski, L. "Creating Platform-Style Video Games with Construct" (video series) New York: Springer, 2019. ISBN: 978-1484244463.
- 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.), MAA, 2007.

Presentations

- *Energy, Space, and Light: The Math and Science Behind the Art* Aug., Sep. 2019
  Nassau County Museum of Art (Gallery Talks) – Roslyn, NY
- *What's in a Game? The Art and Science of Video Games* May 2019
  Amity University 3Continent Lecture Series – Garden City, NY
- *Virtual and Augmented Reality Applications for Math Education*, Jan. 2018
  Contributed Paper Session, Joint Mathematics Meetings – Baltimore, MD
- *Rendering Photorealistic Knots: Theory and Practice* Jan. 2015
  Contributed Paper Session, Joint Mathematics Meetings -- San Antonio, TX
- *Leonhard Euler's Work in Number Theory and the Commentationes Arithmeticae* Apr. 2014
  Invited Talk, The Pohle Colloquium, Adelphi University -- Garden City, NY
- *Classifying Families of Polynomial Knots.* Jan. 2014
  Contributed Paper Session, Joint Mathematics Meetings -- Baltimore, MD
- *The Work of Leonhard Euler related to Fermat's Last Theorem* Jan. 2013
  Contributed Paper Session, Joint Mathematics Meetings -- San Diego, CA
- *The Work of Leonhard Euler related to Fermat's Last Theorem* Dec. 2012
  Invited Talk, The Pohle Colloquium, Adelphi University – Garden City, NY
- *Number Theory and Quadratic Forms in the Work of Leonhard Euler* Aug. 2012
  Invited Talk, The Euler Society Conference, Adelphi University -- Garden City, NY
- *The Coeffcient Space of Polynomial Knots* Jan. 2012
  Contributed Paper Session, Joint Mathematics Meetings – Boston, MA
- *Applications of Calculus to Game Theory: The Prisoners' Dilemma* Jan. 2011
  Contributed Paper Session, Joint Mathematics Meetings – New Orleans, LA
- *Alternative Forms of Assessment in Mathematics* Jan. 2010
  Invited Panelist, Joint Mathematics Meetings – San Francisco, CA
- *Online Articles From J.O.M.A. to Loci* Jan. 2010
  Invited Panelist, Joint Mathematics Meetings – San Francisco, CA
- *Agent-Based Models of Population Segregation* Oct. 2009
  Faculty Works in Progress Seminar, Adelphi University – Garden City, NY
- *Analyzing Strategies for Interaction: Game Theory in a Calculus Course* Aug. 2008
  Contributed Paper Session, MathFest 2008 – Madison, WI
- *Agent-Based Models of Species Interaction and Reproduction* Dec. 2007
  Interdisciplinary Science Symposium, Adelphi University – Garden City, NY
- *The Unpublished Notebooks and Manuscripts of Leonhard Euler* Dec. 2007
  Invited Talk, The Pohle Colloquium, Adelphi University – Garden City, NY
- *Cataloging and Publishing Euler's Works: A History* Aug. 2007
  Invited Paper Session, MathFest 2007 – San Jose, CA
- *The Euler Archive: Illuminating the Life and Times of Leonhard Euler* Apr. 2007
  Invited Keynote Address, Embassy of Switzerland – Washington DC
- *Investigating Euler's Polyhedral Formula Using Original Sources* Jan. 2007
  Joint Mathematics Meetings – New Orleans, LA

- *The Fuss Index vs. the Enestrom Index: an Euler Archive Update* Aug. 2006
  Euler 2K+6 Conference – Albany, NY
- *The Prisoners' Dilemma and the Evolution of Cooperation* Feb. 2006
  Norwich University colloquium series – Northfield, VT
- *A Trace Formula for Compact Quotients of SL(3,R) and Weyl's Law* Jan. 2006
  Joint Mathematics Meetings – San Antonio, TX
- *From the Riemann zeta function to the Selberg trace formula* Oct. 2005
  Middlebury College mathematics department seminar – Middlebury, VT
- *Simulating Evolution using the Iterated Prisoner's Dilemma* July 2005
  Dartmouth graduate student seminar – Hanover, NH
- *A Trace Formula for Cocompact Arithmetic Groups* Mar. 2005
  Automorphic Forms Workshop – Denton, TX
- *Thomas Clausen: Factoring Fermat Numbers and Generating Graeco-Latin Squares* Nov. 2004
  Invited speaker, special session, AMS sectional meeting – Pittsburg, PA
- *Reality Calculus: Critical Thinking and Organized Writing* Aug. 2004
  Contributed paper session, MathFest 2004 – Providence, RI
- *Hilbert's Tenth Problem and Number Theory* May 2004
  Senior seminar in mathematics, Dartmouth College – Hanover, NH
- *Why Graduate School and How to Get There* Mar. 2003
  Invited panelist, RUMBUS 2003 – Boston, MA
- *Complex Multiplication on Elliptic Curves* 2003 – 2005
  Ten Reasons the p-adic Numbers are Cool
  Applications of Hecke L-functions
  Selected talks, Dartmouth College Number Theory Seminar – Hanover, NH
- *Graeco-Latin Squares and a Conjecture of Euler* Aug. 2002
  Euler 2K+2 conference – Rumford, ME
- *The Rubik Groups of Polyhedra* Apr. 2001
  HRUMC VIII – Saratoga Springs, NY
- *An Ode to Polynomial Knots* Mar. 2001
  Boston University Masterclass series – Boston, MA
- *Polynomial Knots of Fifth Degree* Jan. 2001
  Poster session, Joint Mathematics Meetings – New Orleans, LA
- *Polynomial Knots* Nov. 2000
  MAA sectional meeting – Providence, RI

Teaching

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: C# and Unity Game Development
- CS 290: Software Seminar: Interactive Fiction
- CS 302: Artificial Intelligence
- CS 333: Computer Graphics and Image Processing
- CS 387: Video Game Development Workshop
- CS 390: Special Topics: Cryptography
- CS 633: Virtual Reality and Augmented Reality

Mathematics:

- Math 141: Calculus 1 (Differential)
- Math 142: Calculus 2 (Integral)
- Math 190: Mathematics Seminar
- Math 243: Calculus 3 (Multivariable)
- Math 244: Differential Equations
- Math 250: Multivariable Mathematics
- Math 253: Linear Algebra
- Math 290: Math Honors Seminar: The Mathematics of Origami
- 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: Galois Theory
- Math 601: Data Science
- Math 656: History of Mathematics

Other:

- Honors 486: Liberal Arts Seminar: Complexity

Course and Program Development:

- Designed and implemented interdisciplinary minor in Video Game Design
  with Department of Art and Art History and Department of Communications
- 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.
- Designed and taught courses in game design and development at all levels
- Honors 486: Liberal Arts Seminar: Complexity
  Designed and taught an interdisciplinary course, accessible to all majors.

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

2023 – 2024

- "Star-Shaped Regions in Non-Euclidean Geometries", with Matthew Klepadlo
- "Philosophy of Mathematics: Provability and Truth", with Tori de la Hoz
- "Advanced 3D Game Development", with Rousseau Francois, Ralph Garcia, and Larry Moreno
- "Machine Learning and Procedurally Generated Stories", with Norah Curran **(1)**
- "Interactive Web-Based Music Applications", with Tyler Reid

2022 – 2023

- "Procedurally Generated Music and Computer Graphics", with Christopher Benson and Faith Mock
- "Interactive Animations for Mathematics Education", with Faith Mock and Jarred Navarro

2021 – 2022 (none – Sabbatical Leave of Absence)

2020 – 2021

- "Computer Graphics and GPU Programming with Java", with James Cona

2019 – 2020

- "Agent-Based Models and Genetic Algorithms", with Jennefer Maldonado
- "Parameterizations of Fractal-like Curves", with Vincent Schinina **(2)**
- "3D Videography and Virtual Reality", with Paul Maurantonio
- "Psychological Effects of Loot Boxes in Video Games", with Thomas Dayton **(1)**
- "Computer Graphics and GPU Programming with Python", with Michael Pascale

2018 – 2019

- "Augmented Reality: Theory and Applications", with Ryan Barrett **(1)**
- "Virtual Reality Video Game Development", with Evan Leider
- "Python Algorithms for Constructive Solid Geometry", with Bradon Cortes and Maxwell Guarnieri

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.

Grants

- Developing 3D Graphics Frameworks in Python and OpenGL: An Open-Access Textbook,
  Amount: $25,000 – Epic Games Education MegaGrant
- Virtual Reality: Experiences and Education,
  with Cindy Maguire, Ann Holt, and John Drew
  Amount: $4,800 – Adelphi Collaborative Faculty Development Grant 2019
- 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 2009
- P.I., Excelsior Scholars Program, with Beth Christensen, Gary Schecter, and Andrea Ward
  Amount: $52,390 – New York State Department of Education 2008
- P.I., Development of The Euler Archive, with Dominic Klyve,
  Amount: $10,000 – Swiss House for Advanced Research and Education 2007
  Amount: $10,000 – State Secretariat for Education and Research, Bern, Switzerland 2005
  Amount: $5,000 – Swiss House for Advanced Research and Education 2005
  Amount: $5,000 – Presence Switzerland 2003

Service

College/University:

- Search Committee: Director of Undergraduate Research and Creative Works 2023
- Faculty Senate: Department Senator 2019 – 2023
- Committee: Arts and Sciences Strategic Plan Implementation 2020 – 2022
- Search Committee (Co-Lead): Provost 2021
- Committee: General Education 2020 – 2021
- Task Force: Applied Sciences and Engineering 2020 – 2021
- Faculty Senate: Vice-Chair 2019 – 2021
- Committee: Commencement (Faculty Representative) 2019 – 2020
- Committee: Faculty Excellence Award Selection 2018 – 2020
- Task Force: Test-Optional Policies 2020
- Committee (Chair): Admissions and Retention 2017 – 2020
- Search Committee: Associate Provost for Student Success 2018 – 2019
- Committee: College of Arts and Sciences Academic Affairs 2010 – 2011
- Search Committee: Dean, College of Arts and Sciences 2009 – 2010

Department:

- Task Force: Addressing Undergraduate Mathematics Preparation 2023 – Present
- Unit Peer Review Committee, Mathematics and Computer Science 2012 – Present
- Department Faculty Search Committees, 19 total (13 tenure-track, 6 visiting positions) 2007 – Present
- Unit Peer Review Committee (Chair), Mathematics and Computer Science 2020 – 2022
- Unit Peer Review Committee, Chemistry 2019 – 2020
- Various Curriculum Development, Assessment, and Revision Committees 2011 – Present
  (including BA, BS, MS programs in Mathematics and in Computer Science)

Advising:

- Academic Adviser, (approx. 40 advisees yearly) 2006 – Present
- Adviser for student chapter of International Game Developers Association 2016 – 2020
- Adviser for G.A.M.E.S. club 2012 – 2020
- Adviser for MAA Student Chapter at Adelphi 2011 – 2012
- Adviser for Putnam Examination Team 2010 – 2011
- Adviser for Mathematics and Computer Science Club 2006 – 2009

Local:

- Board of Advisers, Chimes Broadcasting, Inc. 2019 – 2021
- Long Island Children's Museum (STEM weekend outreach activity) Jan. 2019
- Outreach to local area schools (presentations on topics in computer science):
  - Ward Melville High School May 2019
  - Bayside High School May 2017, May 2018, May 2019
  - Roslyn Middle School Nov. 2017, Dec. 2017, Jan. 2019
  - Roslyn High School Oct. 2017
  - Kellenberg High School Feb. 2017
- CodeLI.org (organization for teaching children on Long Island how to code) Nov. 2014, Jan. 2016
  Workshop leader – Garden City, NY
- Greater Metropolitan New York Math Fair Mar. 2009
  Reader and Judge – Brooklyn, NY
- Co-Organizer, History of Mathematics, Special Session Oct. 2008
  AMS Eastern Section Fall Meeting – Middletown, CT
- Long Island Junior Science and Humanities Symposium Apr. 2007, Apr. 2008
  Reader and Judge – Garden City, NY
- Co-Organizer, Special Session, History of Math on Leonhard Euler's Tercentenary Apr. 2007
  AMS Eastern Section Spring Meeting – Hoboken, NJ

National:

- Reviewer for CRC Press 2020 – 2022
- Reviewer for *College Mathematics Journal* 2020
- Associate Editor, *Convergence* 2013 – 2017
- MAA Liaison for Adelphi University 2009 – 2015
- Reviewer for *Journal of Computational Science Education* 2009 – 2010
- Reviewer for *MAA Reviews* 2007 – 2009
- Judge, Undergraduate Poster Session, Joint Mathematics Meetings 2007
- Co-Organizer, Special Session, Joint Mathematics Meetings 2007
  Topic: Creating and Sustaining Active Mathematics Clubs

Awards

- Sabbatical Release Time (research in Computer Graphics) 2021
- Upsilon Pi Epsilon (National Computer Science Honor Society) 2019
- Adelphi University Teaching Excellence Award (for tenured faculty) 2017
- Sabbatical Release Time (research in Computer Graphics and Data Visualization) 2014
- Adelphi University Teaching Excellence Award (for tenure-track faculty) 2011
- Research Release Time (research in Agent-Based Modeling) 2011
- Project NExT Fellow 2006
- Dartmouth College Graduate Teaching Award 2005
- Funded participant, Clay Mathematics Institute Summer School, the Fields Institute 2003
- GAANN Fellowship, Dartmouth College 2004 – 2005
- Dartmouth College Graduate Fellowship 2001 – 2004
- Phi Beta Kappa (National Honor Society) 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