Craig Tennenhouse

University of New England
11 Hills Beach Rd.
Biddeford, ME 04005

www.une.edu/people/craig-tennenhouse
craigtennenhouse.uneportfolio.org
ctennenhouse@une.edu
207-602-2380

Professional Appointments

Eleanor DeWolfe Ludcke Professorship 2022-2023
Professor School of Math. and Phys. Sci., University of New England, Biddeford, ME 2022-Present
Interim Academic Director School of Mathematical and Physical Sciences, UNE 2021-2022
Associate Professor Mathematical Sciences, UNE 2016-2022
Assistant Professor Mathematical Sciences, UNE 2010-2016
Teaching Assistant University of Colorado Denver 2007-2010
Assistant Professor Mathematics, Simpson University, Redding, CA 2003-2007
Assistant Professor Mathematics, Jamestown College, Jamestown, ND 2002-2003
Teaching Assistant University of Colorado, Boulder, CO 1999-2002

Education

Ph.D. Applied Mathematics University of Colorado Denver
Some extensions of graph saturation to edge-colored, oriented, and subdivided graphs
Advisor: Michael S. Jacobson
M.A. Mathematics University of Colorado, Boulder
A.B. Mathematics, *with honors* University of Chicago
Junior Year Abroad University of Edinburgh, Scotland, UK

Awards, Grants & Honors

2022 - *Eleanor DeWolfe Ludcke Professorship*
presented annually in recognition of outstanding academic accomplishments
2019 - CETL Teaching Scholars Program, *Inquiry-Based Learning*, $5500
2017 - VPRS Faculty Mini-Grant, *Collaborative Research in Impartial Combinatorial Games*, $3252
2016 - Excellence in Academic Advising (awarded by students annually)
2013 - NSF S-STEM SUCCESS Grant, $620,788 *Co-PI*
2012 - Debra J. Summers Memorial Award for Teaching Excellence (awarded by students annually)
2008-2010 - NSF GK-12 Fellowship
2007-2008 - Bateman Teaching Assistantship
1999-2002 - UCB Teaching Assistantship

Teaching methodology experience

I have experience in developing and teaching using flipped classrooms, Inquiry-Based Learning, Question Formulation Theory, and teaching through game play. I am currently working on a qualitative research project on the use of IBL in an upper-level mathematics setting, and am in the early stages of a collaborative textbook project using inquiry and Combinatorial Game Theory to guide students through Discrete Mathematics.

Industry knowledge and experience

I am experienced with Python, in particular within the context of Jupyter Notebooks and Sagemath/CoCalc. I also recently worked on a contracted Data Science project using historical data on weather, soil composition, and crop yields from a dozen farms over a decade and employed a number of regression and classification methods (linear, tree-based, and neural nets) to predict future yield. I utilized the packages NumPy, Pandas, GeoPandas, GDAL, MatPlotLib, Pillow, and Scikit-Learn.

Research Interests

Graph and digraph saturation, structural properties of graphs, coloring, Combinatorial Game Theory

Major Academic Service

Interim Academic Director
Director for the School of Mathematical and Physical Sciences (Applied Mathematics, Data Science, Chemistry, Biochemistry, Lab Science, and Physics programs)
Core Curriculum Assessment Coordinator
Coordination of all assessment efforts in general education among faculty in the college. 2 years.
Curriculum development
Development of new courses and curricula
Core Area Coordinator for Mathematics
Coordination of **assessment** for the Core in CAS
Referee for multiple peer-reviewed academic journals
Host & organizer for multiple mathematics meetings

Courses taught

Mathematics for Liberal Arts
College Algebra
Math Applications for Management
Precalculus
Calculus I, II, III
Discrete Mathematics, Intro to Proofs
Graph Theory
Geometry (Euclidean and non-Euclidean)
Modern Algebra
Topology
Real Analysis
Complex Analysis
Network ecology (team-taught)
Mathematics research seminar
Mathematics of Games and Puzzles
Intro to Machine Learning

Undergraduate research advising

I have had the pleasure of serving as the research advisor for twelve undergraduate projects in mathematics, all involving original research and presentations. I have also served on a number of undergraduate research committees for students performing work outside of mathematics.

Peer-reviewed publications:

Author order alphabetized by convention

14. M. Huggan, **C. Tennenhouse**, "Genetically modified games", *Integers* **21b**, (2021)
13. K. Burke, M. Ferland, M. Fisher, V. Gledel, **C. Tennenhouse**, "The Game of Blocking Pebbles", *Integers* **21b**, (2021)
12. S. Heubach, M. A. Huggan, R.J. Nowakowski, and **C. Tennenhouse**, "Cyclic Subtraction Set Games", *Crux Mathematicorum*, Vol. **46:8**, (2020) 413 - 414.
11. J. McDonald, G. J. Puleo, **C. Tennenhouse**, "Packing and covering directed triangles", *Graphs & Comb.*, (2020) 1-5.
10. **C. Tennenhouse**, "Edge-critical G, H colorings", *Ars Combinatoria*, Vol. **138**, (2018) 403-413.
9. Hodgdon, C.T., **Tennenhouse, C.**, Koh, W., Fox, J., & Sulikowski, J. "Shortnose Sturgeon of the Saco River Estuary: Assessment of a Unique Habitat", *Journal of Applied Ichthyology*, (2018).
8. **C. Tennenhouse**, "Impartial poker nim", *Intern. J. of Game Th.*, Vol. **47:2**, (2016) 695-705.
7. **C. Tennenhouse**, "Induced subgraph-saturated graphs", *Th. and Appl. of Graphs*, Vol. **3:2**, (2016).
6. C. J. Byron, **C. Tennenhouse**, "Commonality in structure among food web networks", *Network Biology*, Vol. **5:4**, (2015) 146-162.
5. J. Quinlan, **C. Tennenhouse**, "Perceived utility of typesetting homework in post-Calculus mathematics courses", *PRIMUS*, Vol. **26:1**, (2015) 53-66.
4. **C. Tennenhouse**, "A new parameter on resolving sets with a realizable triple", *Australasian J. of Combin.*, Vol. **63:1**, (2015) 115-129.
3. M. Ferrara, M. Jacobson, K. Milans, **C. Tennenhouse**, and P. Wenger, "Saturation numbers for families of graph subdivisions", *J. Graph Theory*, Vol. **71:4**, (2012) 416-434.
2. M.S. Jacobson, **C. Tennenhouse**, "Oriented graph saturation", *JCMCC*, Vol. **80**, (2012) 157-169.
1. B. Flesch, **C. Tennenhouse**, "Edge maximal non-interval graphs", *JCMCC*, Vol. **77**, (2011) 33-44.

Popular

C. Tennenhouse, C. Byron, "Mathematical Examinations of Marine Food Webs", *Rising Tide, Research and Scholarship at the University of New England*, (2015) p17.

Books

K. Burke, **C. Tennenhouse**, "Playing Games with Discrete Math", *CC license*, (2021)

Conferences hosted/organized

5. *Sprouts* undergraduate combinatorial game theory conference – *virtual*, April 2022.
4. *Sprouts* undergraduate combinatorial game theory conference – UNE, Biddeford, ME, April 2019.
3. *Disc Math Days of the NE* – UNE, Biddeford, ME, May, 2018.
2. *Sprouts* undergraduate combinatorial game theory conference – PSU, Plymouth, NH, April, 2018.
1. *Sprouts* undergraduate combinatorial game theory conference – UNE, Biddeford, ME, April 2017.

Academic presentations (recent five years)

10. *Vexing Vexillological Logic*
    Combinatorial Game Theory Colloquium 4 –Ponta Delgada, Portugal, Jan 2023.
9. *Using Genetic Programming to inform conjectures in Combinatorial Game Theory*, West Chester University Mathematics Colloquium, Feb 2021.
8. *Genetic Programming for Genetic Algorithm Games*, Virtual Combinatorial Games Seminar, 2020
7. *Towards an impartial short Tafl variant*, Sprouts – UNE, Biddeford, ME, April 2019.
6. *Searching for Nessie and Viking Chess*, Sabbatical Presentation – UNE, Biddeford, ME, Dec 2018.
5. *CGSuite and Combinatorial Games*
    Sprouts Undergraduate Research Conference in CGT – Plymouth State U, Apr 2018.
4. *Three Graph Reduction Games*, Games and Graphs Workshop – Lyon, France, Oct 2017.
3. *Commonality in structure among food web networks*
    University of Stirling Mathematics Seminar – Scotland, UK, Oct 2017.
2. *Extremal Value Games*, Fundy and Games Workshop – St. John, New Brunswick, Jul 2017.
1. *A Two-Player Pebbling Game*
    Combinatorial Game Theory Colloquium 2 –Lisbon, Portugal, Jan 2017.