Curriculum Vitae

Charles David Leach

September 17, 2019

Teaching:

Date	Title	Institution and Department
2015-present	Professor	University of West Georgia
2008-2015	Associate Professor	University of West Georgia
2002-2007	Assistant Professor	University of West Georgia
Summer 1999	Adjunct Instructor	Auburn University Montgomery
1997-2002	Graduate Teaching Asst.	Auburn University

Service to Institution:

Committee Memberships:

Departmental Service, Department of Mathematics, University of West Georgia

- Director of Undergraduate Studies, 2016-present
- Director of Freshman Mathematics, 2008-2015
- Chair's Advisory Committee, member 2008-2014
- Department Liaison to Richards College of Business, 2013-2015
- Department Liaison to Ingram Library, 2013-present
- Freshman Math Committee, chair 2008-2013
- Student/Faculty Activities Committee, member 2003-2004, 2010-2013, chair 2004-2005
- Website Committee, chair 2002-2013
- Faculty Evaluations Policies Committee, 2011-present
- Tenure Committee, member since 2008, chair 2010-2011
- Search Committees, member of several, chair of two
- Technology Committee, member 2010-2011
- Colloquium/Seminar Committee, 2002-2005
- Graduate Committee, 2002-2003, 2004-2005
- Space/Facilities Committee member 2005-2007, 2013-2014, chair 2005-2007

College / University Service

- Search Committee for Director of Excel Center, member, 2013-2014
- Faculty Senate, member 2011-2013
- Academic Policies and Procedures, member 2011-2012, chair 2012-2013
- DFW Subcommittee, Spring 2011
- General University Matters, member 2007-2008
- COSM Curriculum Committee, 2013-2014
- COAS Dean's Advisory Committee, 2004-2006

Counseling Experience:

- Advisor to math majors since 2003
- Completed approximately 25 classroom observations of fellow faculty in math department
- Served as official faculty mentor for
    - Minzhi Xuan
    - Brian Brodsky
    - Wenyan Zhou
- Taught in UWISE program during summer 2011 and 2013.
- Spring Orientation Math Department Representative, January 3, 2014
- Fall Orientation, Math Department Representative, August 10, 2009
- Mardi Gras of Majors, Math Department Representative, Spring 2008
- Faculty Orientation Leader, Summer 2007
- Preview Day, Math Department Representative, Spring 2008
- Visitation Day, Math Department Representative, Spring 2005
- Served on four Master of Education Comprehensive Exam Committees:
    - Fall 2004 - Margaret Cade
    - Summer 2005 - Katie Cobbs
    - Summer 2006 - Barbara Spidahl-Kungu
    - Summer 2006 - Bonnie Perkins
- Served on one Education Specialist Committee:
    - Summer 2007 - Jamy Juhan

Advisement of Student Organizations:

- Advisor of Math Club, 2005-2008

Participation in educational activities:

- uCode@UWG volunteer, summer 2014-present
- Taught mathematics to in-service teachers during SMITE (Science and Math Institutes for Teacher Education) workshop, Summer 2014 and Summer 2013.
- UWISE Minigrant, "Video Solutions to the Math 1111 common final exam," $3700m funded 2012-2013.
- UWISE Minigrant, "Lecture Notes for Math 1111," $3000, funded 2013-2014, with Carrie Thielemier.
- Taught College Algebra course for UWISE, Summer 2013.
- Taught a course titled "Simple Lego Towers and Complex Numbers" at COSM's College For a Day 2012.
- Participated in hosting UWG Math Day, every year since 2003 except for 2005.
- Gave a talk at Columbus State University's Math Tournament, March 1, 2014.
- Participated in hosting INTEGERS Conference on Combinatorial Number Theory, 2003, 2005, 2007, 2009, 2011, 2013.
- Gave a talk on mathematical puzzles at Carrollton Junior High School, January 25, 2008.
- Taught UWISE Math course, summer 2011.
- Presented a poster titled "Using LEGO Bricks in the Mathematics Classroom" at USG Regional STEM Institute, held at UWG February 2010.

Academic Achievement:

Degree	School	Years
Ph.D. Mathematics	Auburn University	1999-2002
Master of Applied Math	Auburn University	1997-1999
B.S. Mathematics	Auburn University-Montgomery	1993-1997

Masters Project: A Lost Theorem of Shannon
Ph.D. Thesis: Hamilton Decompositions of Multipartite Graphs

Honors:
- Dr. Donald Wagner Honors College Professor of the Year Award from UWG Honors College, 2012.
- College of Science and Mathematics Excellence in Teaching Award, 2011.

Professional Growth:

Membership and offices in scholastic honoraries:
- Phi Kappa Phi National Honor Society, Lifetime member since 1997

Membership and offices in professional societies:
- Institute of Combinatorics and its Applications, Fellow 2007-present
- Institute of Combinatorics and its Applications, Associate Fellow 2002-2007
- Institute of Combinatorics and its Applications, Member 2001-2002
- Mathematical Association of America, member 2005-2006.

Publications
1. Abdollah Khodkar, Brandi Ellis, and David Leach, "Signed Magic Rectangles with Three Filled Cells in Each Column," preprint.
2. Abdollah Khodkar and David Leach, "Magic Rectangles with Empty Cells", preprint.
3. Abdollah Khodkar and David Leach, "Magic Squares with Empty Cells", preprint.
4. David Leach, "Chasing the lights in Lights Out", Mathematics Magazine, 90, no 2, 126-133 (2017).
5. David Leach, "Proof Without Words: Powers of Three and Triangular Numbers", The College Mathematics Journal, 46, no 2 (2016).
6. David Leach, "Modular Leech Trees of Order at Most 8," International Journal of Combinatorics, (2014).
7. David Leach and Matt Walsh, Generalized Leech Trees, *J. Combin. Math. Combin. Comput.* 78 (2011), 15–22.
8. Abdollah Khodkar and David Leach, "The Chromatic Number of K2(9,4) is 11, *J. Combin. Math. Combin. Comput.* 70 (2009), 217–220

9.   Atif Abueida, Sally Clark, and David Leach, "Multidecomposition of the complete graph into graph pairs of order 4 with various leaves", *Ars Combin.* 93 (2009), 403–407

10. Clay Culver and David Leach, "Equivalence Classes of 5-Bit Gray Codes", *Australas. J. Combin.* 39 (2007), 129–134

11. Matt Walsh and David Leach, "A characterization of lattice-ordered graphs", *Combinatorial number theory,* 327–332, *de Gruyter, Berlin,* 2007.

12. D.J. Ashe, David Leach, C. A. Rodger, "2-Regular Leaves of Partial 8-cycle Systems", *Australas. J. Combin.* 39 (2007), 3–17.

13. Abdollah Khodkar, David Leach, and David Robinson, "Every (2,r)-Regular Graph is Regular", *Util. Math.* 73 (2007), 169–172.

14. Abdollah Khodkar and C. D. Leach, "On (2,r)-Regular Graphs", Bulletin of the Institute of Combinatorics and its Applications, 46, 27-34 (2006).

15. C. D. Leach, Darryn Bryant, and C. A. Rodger, "Hamilton Decompositions of Complete Bipartite graphs with a 3-Factor Leave", Australasian Journal of Combinatorics, 31, 331-336 (2005).

16. C. D. Leach and C. A. Rodger, "Hamilton Decompositions of Complete Graphs with a 3-Factor Leave", Discrete Math 279: 337-344 (2004).

17. C. D. Leach and C. A. Rodger, "Hamilton Decompositions of Complete Multipartite Graphs with any 2-Factor Leave", Journal of Graph Theory, 44: 208-214 (2003).

18. C. D. Leach and C. A. Rodger, "Fair Hamilton Decompositions of Complete Multipartite Graphs", Journal of Combinatorial Theory Series B 85, 290-296 (2002).

19. C. D. Leach and C. A. Rodger, "Non-disconnecting Disentanglements of Amalgamated 2-factorizations of Complete Multipartite Graphs", Journal of Combinatorial Designs, 9 (2001).

20. Peter D. Johnson, Jr. and David Leach. Problem number 659 of "Problems and Solutions", The College Mathematics Journal. Vol.30, No.4 (September 1999). p. 319.

Presentations

1.   "Lights Out and Linear Algebra", Troy MathFest 2019, Troy University, April 2019.
2.   "Magic Rectangles with empty cells", 47th SEICCGTC, Florida Atlantic University, March 7, 2019.
3.   "Modular Leech Trees of Order at Most 9," 47th SEICCGTC, Florida Atlantic University, March 2016
4.   "Modular Leech Trees," UWG Discrete Math Seminar, Fall 2015
5.   Sines and Sounds: Musical Harmonics and Trigonometry," University of West Georgia Math Day, March 27, 2015
6.   Sines and Sounds: Musical Harmonics and Trigonometry, Columbus State University Math Tournament keynote talk, March 7, 2015.
7.   Modular Leech Trees, 56th Midwestern Graph Theory Conference, October 2014 (upcoming)
8.   "John Leech's Tree Labeling Problem and Some Variations," UWG Department of Mathematics Research Experience for Undergraduates, July 11, 2014.
9.   "Graphs and Legos: Fun Applications of Discrete Math," University of West Georgia's Math Day. March 7, 2014.
10. "Discrete Math in Everyday Life," Columbus State University Math Tournament keynote talk, March 1, 2014.
11. "Discrete Mathematics," University of West Georgia's Math Day, 2010.
12. "Z_2 Leech Trees", DANGER 2K9, Southern Polytechnic State University, July 18, 2009
13. "Some Results on the Watchman Number of Trees," 40th Southeastern International Conference

on Combinatorics, Graph Theory, and Computing, Florida Atlantic University, March 3, 2009

14. "Mathematical Puzzles," talk given at Carrollton Junior High School, January 25, 2008.
15. "The chromatic number of $K^2(9, 4)$", 38th Southeastern International Conference on Combinatorics, Graph Theory and Computing. Florida Atlantic University. March 2007.
16. Equivalence Classes of 5-Bit Gray Codes, DANGER 2K6, Huntingdon College, July 2006.
17. "Lattice-Ordered Graphs", Integers Conference 2005 Invited speaker, University of West Georgia, October 2005.
18. "Adjacency Matrices, Non-Adjacency Matrices, and (2,r)-Regular Graphs", IPFW Department of Mathematical Sciences Invited Colloquium, June 2005.
19. "Order 4 graph pair multidecompositions of K_n with various leaves". 36th Southeastern International Conference on Combinatorics, Graph Theory and Computing, Florida Atlantic University, March 2005.
20. "Hamilton Decompositions of Complete Bipartite Graphs with a 3-Factor Leave". 35th Southeastern International Conference on Combinatorics, Graph Theory and Computing. Florida Atlantic University. March 2004
21. "Fair Hamilton Decompositions." 33rd Southeastern International Conference on Combinatorics, Graph Theory and Computing. Florida Atlantic University. March 2002.
22. "Hamilton Cycles of Kn,n \ 2-factor". 31st Southeastern International Conference on Combinatorics, Graph Theory and Computing. Florida Atlantic University. March 2000.

Professional Service and other Related Activities:

- Refereed 16 journal articles for the following journals:
  Discrete Math, INTEGERS-Electronic Journal of Combinatorial Number Theory, Ars Combinatoria, JCMCC, Bulletin of the Institute of Combinatorics and its Applications, Tamkang Journal of Mathematics, Utilitas Mathematica, Australasian Journal of Combinatorics
- Helped to host the INTEGERS Conference here at UWG in 2003, 2005, 2007, 2009, 2011, and 2013.
- Midwest Conference on Combinatorics and Combinatorial Computing, organizing committee, 2017.
- AMS Special Session organizing committee, 2019.
- Reviewed the article "Even subgraphs of bridgeless graphs and 2-factors of line graphs." by Jackson, Bill; Yoshimoto, Kiyoshi, Discrete Math. 307 (2007), no. 22, 2775–2785.
- Scholar-in-Residence, Indiana University-Purdue University Fort Wayne, June 2005.

Grant Work:

- NSF RUI Grant Proposal number 055731, Some Graph Decomposition Problems, $67,260, not funded, submitted 2005.