

CURRICULUM VITAE

David E. Brown

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Education

Ph.D. Applied Mathematics, University of Colorado at Denver (UC-Denver), May 2004
B.S. Double Major: Pure Mathematics, Philosophy,
Metropolitan State College of Denver, May 1999

Employment

Summer 2011	Adjunct Professor, University of Colorado Denver
April 2010 - present	Associate Professor of Mathematics: Utah State University
August 2004 - April 2010	Assistant Professor of Mathematics: Utah State University
Summer of 2004	Honorarium Instructor of Mathematics: University of Colorado at Denver
1999 - 2004	Teaching Assistant, Department of Applied Mathematics: University of Colorado at Denver
1994 - 1999	Oil Pipeline Scheduler: Petro Source Corporation

Publications

IN PRINT

1. Brown, D. E., L. J. Langley, Forbidden subgraph characterization of bipartite unit probe interval graphs, *Australasian J. Combinatorics*, 52 (2012) 19 – 31.
2. Brown, D. E., S. M. Roy, J. R. Lundgren, D. Siewert, Boolean rank of upset tournament matrices, *Linear Algebra and its Applications*, December (2011) DOI: 10.1016/j.laa.2011.11.003.
3. Brown, D. E., A. H. Busch and G. Isaak, “Linear Time Recognition Algorithms and Structure Theorems for Bipartite Tolerance and Bipartite Probe Interval Graphs,” *Discrete Mathematics and Theoretical Computer Science*, Vol 12:5 (2010) 63 – 82.
4. Beasley, L.B., D. E. Brown, “Cycle Extendability in Graphs and Digraphs,” *Linear Algebra and its Applications*, 435:7 (2011) 15131519.
5. Beasley, L. B., D. E. Brown, Embedding tournaments, *Congressus Numerantium*, 198 (2009) 207210,
6. Beasley, L. B., D.E. Brown and S. Guterman, “Preserving Regular Tournaments and Term Rank-1”, *Linear Algebra and its Applications* Issues 5 -7, (2009) 926 – 936.
7. Beasley, L. B., D. E. Brown and K.B. Reid, “Extending Partial Tournaments,” *Mathematical and Computer Modeling* (2009) 50: 287–291.
8. Brown, D. E., J. R. Lundgren and L. Sheng, “A Characterization of Cycle-free Unit Probe Interval Graphs”, *Discrete Applied Math*, 157 (2009) 762- 767.
9. Brown, D. E., A. H. Busch and J. R. Lundgren, “Interval Tournaments,” *Journal of Graph theory*, Volume 56, no. 1, pp. 72 – 81, 2007.

10. Brown, D. E and J. R. Lundgren, "Bipartite Probe Interval Graphs, Interval Point Bigraphs, and Circular Arc Graphs," *Australasian Journal of Combinatorics*, Volume 35, pp. 221 – 236, 2006.
11. Beasley, L. B. and D. E. Brown "On cycle and bi-cycle extendability in chordal and chordal bipartite graphs," *Congressus Numerantium* **174** (2005) pp.41 –47.
12. Brown, D. E. and J.R. Lundgren, "Relationships Among Classes of Interval Bigraphs, (0,1)-matrices, and Circular Arc Graphs," *Congressus Numerantium* **166** (2004), pp. 97 – 123.
13. Brown, D. E., S. C. Flink and J. R. Lundgren, "Interval k -graphs," *Congressus Numerantium*, **156** (2002) pp. 5-16.
14. Brown, D. E., S. C. Flink and J. R. Lundgren, "Characterizations of Interval Bigraphs and Unit Interval Bigraphs," *Congressus Numerantium*, **157** (2002) pp. 79-93.
15. Brown, D. E., J. R. Lundgren and C. Miller, "Variations on Interval Graphs," *Congressus Numerantium* **149** (2001) pp. 77-95.

BOOK CHAPTER

- Brown, D. E., L. J. Langley, "Probe Interval Orders", S.J. Brams et al. (eds.) *The Mathematics of Preference, Choice and Order: Essays in Honor of Peter C. Fishburn*, Springer-Verlag Heidelberg Berlin 2009.

REFEREED PROCEEDINGS

1. Brown, D. E., "Assessing Proofs with Rubrics: The RVF Method," *Proceedings of the 13th conference of the SIGMAA on RUME*, 2010.
2. Brown, D. E., "Self-Assessment: Aiding Awareness of Achievement," *Proceedings of the 12th conference of the SIGMAA on RUME*, 2009.
3. Brown, D. E., B. Kohler and J. Cangelosi, "The Development and Evaluation of a Program for Improving and Assessing the Teaching of Mathematics and Statistics," *Proceedings of the 11th conference of the SIGMAA on RUME*, 2008.

PH.D. THESIS:

Variations On Interval Graphs, University of Colorado at Denver, May 2004.

Grants

1. *Math and Science Professional Development and Outreach Group* (MSPDOG), sponsored by the Institute for Advanced Study (IAS) in conjunction with the Park City Mathematics Institute (PCMI). Funding period: August 2008 – July 2009; funding amount: \$20,000. A project to integrate university faculty, local middle and high school teachers, and Math Education graduate and undergraduate students via weekend workshops, seminars, and teaching experiments.
2. *Math and Science Professional Development and Working Group* (MSPDAWG), sponsored by the IAS and PCMI. Funding period: August 2009 – July 2010; funding amount: \$20,000. A continuation of the MSPDOG above.

Honors and Awards

- 2005-2006 Project NExT Fellowship
- 2004 UC-Denver Outstanding Ph.D. Student
- 2002 Lynn Bateman Excellence in Teaching Award, UC-Denver
- 2002 Outstanding Ph.D. Student Fellowship, UC-Denver
- 2001 Lynn Bateman Excellence in Teaching Fellowship, UC-Denver

Services

- 2012 USU Mathematical Biologist Search Committee
- 2012 USU Undergraduate Curriculum Committee
- 2010 Member, USU Math and Stat Colloquium Committee
- 2010 **Organizer for MAA regional conference**, hosted by USU
- 2009 Coach for USU Putnam team, USU
- 2009 Executive for Intermountain section of the MAA
- 2009-present Secretary for Utah Association of Mathematics Teacher Educators
- 2009 - present Math and Stat Dept. Honors Director, USU
- 2007 - present Committee to improve and assess teaching performance, USU
- 2007 Developed high school Discrete Mathematics course, Utah State Office of Education
- 2006 - present Member, Math Education Committee, USU
- 2006 - 2007 Member, Graduate Committee, USU
- 2006 - 2007 Member, Undergraduate Committee, USU
- 2006 Chair for Advanced Calculus Qualifying Exam , USU
- 2006 Judge for student poster session, Joint Meetings of AMA/MAA
- 2006 Calculus Textbook Focus Group participant, Joint Meetings of AMA/MAA
- 2005 Coach for Putnam Team, USU
- 2005 - present Development of Combinatorics and Discrete Math courses, USU
- 2005 Calculus Text Committee, USU
- 2005 Chaired session at Graph Theory with Altitude Conference, Denver, CO
- 2005 - Present Organizer for Weekly Math Club Student Seminar, USU
- 2004 - 2005 Organizer (and principal speaker) for Weekly Discrete Math Seminar, USU
- 2000 - 2004 Organize weekly faculty/graduate-student research seminar, CU-Denver
- 2000 - 2002 Served on Graduate Committee, UC-Denver

Refereeing

- *Involve* (Journal for undergraduate research)
- *Journal of Indian Mathematical Society*
- *Journal of Graph Theory*
- *Discrete and Computational Geometry*
- *Discrete Applied Mathematics*
- *Australasian Journal of Combinatorics*
- *Discrete Mathematics*
- *Networks*
- *Loci*

Masters and Doctoral Student Supervision * = current

Sebrina Cropper	USU Masters Student (Mathematics), Committee Chair and Advisor, graduated 12/2011
Brent Thomas	USU Masters Student (Mathematics), Committee Chair and Advisor, graduated 12/2010
Hank Turowski	UC-Denver PhD Student (Mathematics), Committee member *
Breeann Tonsen	UC-Denver PhD Student (Mathematics), Committee member, graduated 5/2011
Ramoni Lasisi	USU PhD Student (Computer Science), Committee member *
Jonathan Franklin	USU PhD Student (Mathematics), Committee Chair and Advisor *
Lawrence Cook	USU PhD Student (Statistics), Committee member, graduated 2007
Rebecca Stokes	USU Masters Student (Mathematics), Committee Chair and Advisor, graduated 12/2009
Alan Reid Parry	USU Masters Student (Mathematics), Committee member, graduated 5/2007

Undergraduate Student Research Supervision

Scott Michael Roy: Co-author of *Boolean rank of upset tournament matrices*, winner of College of Science Undergraduate Researcher of the Year award, 2011.

Sarah Mousley: Research assistant on several projects in Graph Theory.

Shayla Michel: Co-author on a project to improve efficiency of assessment of open-ended responses in an upper-division Mathematics course. Our work has resulted in a paper that will be presented to the Research in Undergraduate Mathematics Education Conference in February 2010.

Teaching Experience

Lower level	Algebra For Business and Social Science Calculus For Business and Social Science Calculus I Calculus II Honors Calculus II Calculus III Honors Calculus III Linear Algebra
Upper Level	Applied Graph Theory Applied Combinatorics Discrete Mathematical Modeling (Graduate level) Introduction to Abstract Mathematics Abstract Algebra Discrete Math Introduction to Real Analysis Graph Theory (Graduate level) Combinatorics (Graduate level) Combinatorial Theories (Graduate level) Concrete Mathematics (Graduate topics course from <i>Concrete Mathematics: A Foundation for Computer Science</i> by Graham, Knuth, and Patashnik) Theory of Computational Complexity

Workshops Hosted or Co-Hosted

- **Is Your Brain Open:** April 2010. One-day workshop for Mathematics Educators sponsored by the MSPDAWG grant. This workshop focussed on open problems in Mathematics which are presentable to anyone with very basic to no mathematical background.
- **Combi-Notorius: So You Think You Can Count:** November 14, 2009. One-day workshop on Discrete Mathematics for Mathematics Educators sponsored by the MSPDAWG grant. Fifteen Utah high school teachers, and one undergraduate Mathematics student participated in an eight-hour lecture/collabortive workshop on Combinatorial Theories and were introduced to and engaged in a research-level topic in Combinatorial Matrix Theory.
- **Let G be a graph:** June 6, 2009. One-day workshop for Mathematics Educators on Discrete Mathematics with a focus on Graph Theory, sponsored by the MSPDOG grant. Nineteen Utah high school teachers, three pre-service teachers, one retired teacher, one USU faculty member, and one USU Civil Engineering graduate student participated in a nine-hour lecture/collaborative workshop on Graph Theory. Topics focused on modeling social phenomena and included pulse processes on directed graphs, Voting Theory and Intersection Graph Theory.
- **N is a Number and so is k :** October 11, 2008. One-day workshop for Mathematics Educators on Discrete Mathematics, sponsored by the MSPDOG grant. Twenty one high school teachers from all over Utah participated in a nine-hour collaborative workshop on Discrete Mathematics. I delivered content through a lecture style with intermittent collaborative problem solving sessions.
- **Assessing and Improving Teaching Performance:** November 6, 2008. Two-hour workshop, presented to College of Science and Teacher Education and Leadership faculty, on the assessment and improvement of teaching performance. The components of a program, under construction by Math and Stat Department faculty to provide formative and summative evaluations for university faculty, was presented. The program incorporates research-based literature and the outcomes of a string of litigations on evaluation of personnel to produce meaningful, and legal, evaluations of teaching performance.
- **USOE Miniexperiment Development:** August, 4, 5, and 6, 2008. A Utah State Office of Education-Sponsored Workshop for the development of “miniexperiments” (a.k.a. test item prompts) which correspond to the Utah Core Curriculum for Secondary Mathematics. Jim Cangelosi, Brynja Kohler, and I organized and facilitated this workshop which involved 16 in-service teachers from all over Utah. The goal of the workshop was to develop, refine, and publish on the USOE web site, prompts, grading rubrics, and a mechanism for assessing the prompts’ usability and validity.

Workshops Attended

RUME Workshop on Proof: February 24, 2010. This workshop had three components: (1) to orient the participants to current research on proof, (2) to discuss methods for new approaches to research on proof, (3) to produce focussed questions and/or research problems and projets to implement.

Mathematicians in Mathematics Education: April 25 – 27, 2010. Hosted by the University of Arizona’s Institute for Mathematics & Education. This workshop’s goal was to orient mathematicians on the core mathematics of K12, the mathematical knowledge of teachers, the nature of the educational system, the profusion of standards documents, the variety of curricula, and mathematics education research.

Presentations and Invited Talks

- 2011 “Boolean Rank, Intersection Number, Dot-Product Dimension”
Discrete Math Seminar, University of Colorado Denver
- 2011 “Intersection Graph Theory Applied”
MAA Regional Conference, Southern Utah U, Cedar City
- 2011 “Cycle Extendability in Graphs Bigraphs and Digraphs”
42nd SECGTCC, Boca Raton, FL
- 2010 “Cycle Extendability”
MAA regional conference, USU
- 2010 “Interval, Probe Interval, and Interval k -Orders”
41st SECGTCC, Boca Raton, FL
- 2010 “Assessing Proofs with Rubrics: The RVF Method”
13th RUME Conference, Raleigh, NC
- 2009 “Assessing and Improving Teaching Performance”
Presentation for TEAL and COS faculty
- 2008 “Lexicographic Breadth-First Search and Recognition Algorithms for Unit Interval Graphs”
Discrete Math Seminar, University of Colorado Denver
- 2008 “Assessing and Improving Teaching Performance”
Regional Mathematics Association of America (MAA) Meeting, Provo UT (March)
- 2008 “Interval Intersection Graphs: A Self-Indulgent Story of my Graduate Research”
Regional MAA Meeting, Provo UT (March)
- 2008 “Linear Time Recognition Algorithms and Structural Characterizations for Bipartite Tolerance and Probe Interval Graphs”
Southeastern Conference on Graph Theory Combinatorics and Computing (SECGTCC), Boca Raton, FL (March)
- 2008 “Development of a Program for the Assessment and Improvement of Teaching”
11th Conference on Research in Undergraduate Mathematics Education
San Diego, CA (March)
- 2008 “Assessing and Improving Teaching”
Invited talk for University of Colorado Denver’s (UCD) Colloquium on Mathematics Education
Denver, CO (February)
- 2008 “A Journey Through Interval Intersection Graph Country”
Invited talk for UCD’s Discrete Math Seminar, Denver CO (February)
- 2007 “New Recognition Algorithms for Bipartite Probe Interval Graphs and Bipartite Tolerance Graphs”
SECGTCC, Boca Raton, FL
- 2006 “Developing Mathematical Maturity via Combinatorial Proofs”
Rocky Mountain Section of the MAA, Grand Junction CO.
- 2006 “Interval Tournaments”
Contributed paper session at the AMA/MAA Joint Meetings, San Antonio, TX
- 2005 “The Hierarchy of Probe Interval, Tolerance, and Interval k -Graphs”
SECGTCC, Boca Raton, FL
- 2004 “Probe Interval Graphs, Circular Arc Graphs and Interval Point Bigraphs”
Rocky Mountain Discrete Math Days, Colorado College, CO
- 2004 “Interval Tournaments”, SECGTCC, Boca Raton, FL
- 2003 “Several Characterizations for Unit Interval Bigraphs”, Rocky Mountain Discrete Math Days, University of Colorado at Denver, CO
- 2003 “Varieties of Interval Graphs, Probe Interval Graphs, and $(0, 1)$ -Matrices”, SECGTCC
Boca Raton, FL
- 2002 “Interval Bigraphs, Unit Interval Bigraphs, Probe Interval Graphs and Interval k -graphs”, Rocky Mountain Discrete Math Days, University of Wyoming, WY
- 2002 “Characterizations of Interval Bigraphs and Unit Interval Bigraphs”,
SECGTCC, Boca Raton, FL
- 2000 “Variations on Interval Graphs”, DIMACS, Rutgers, NJ