

# Michael S. Jacobson

## Professor & Chair

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## EDUCATION

1980	Ph.D. Mathematics	Emory University
1977	M.S. Mathematics	Emory University
1975	B.S. Mathematics	State University of New York at Stony Brook

## ACADEMIC EXPERIENCE

July 2003 – present	<b>Chairman</b> , Department of Mathematical & Statistical Sciences – University of Colorado Denver (The Department, one of three doctoral departments in CLAS has 23 faculty, 30 GTA/RAs, 40-50 additional graduate students and 20-25 part-time instructors.)
Nov. 1997 – June. 2003	<b>Associate Dean for Research &amp; Graduate Studies</b> , College of Arts & Sciences – UofL (Oversaw funded and unfunded research for faculty as well as GTA distribution for the college. I ran a small internal grant program and maintained the research ethics and oversaw the related research compliance policies of the college faculty.)
July 1995 – June 2000	<b>Chairman</b> , Department of Mathematics – UofL (The Mathematics Department had 26 faculty, 23 GTAs and 20-25 part-time instructors.)
July 1988 – June 2003	<b>Professor</b> , Department of Mathematics - UofL
June 1986 - June 1988	<b>Acting Chairman</b> , Department of Mathematics - UofL
July 1984 - June 1986	<b>Associate Professor &amp; Vice Chair</b> , Department of Mathematics - UofL
July 1980 - June 1984	<b>Assistant Professor</b> , Department of Mathematics – UofL

## AREAS OF RESEARCH INTEREST

Combinatorics and Graph Theory

Mathematics, Science and Computer Science taught in grades K-12

Teacher Content Knowledge – Science & Mathematics

## PROFESSIONAL MEMBERSHIPS

Mathematical Association of America

American Mathematical Society

Society for Industrial and Applied Mathematicians

National Council of Teachers of Mathematics

Founding Fellow of the Institute for Combinatorics and Applications (elected 1991)

## DOCTORAL STUDENTS

- Arthur Busch 2005  
*Arc Traceable Digraphs*
- John Wiegand, 2006  
*On Size Bounds for  $K_t$ -free graphs*
- Jesse Gilbert, 2008  
*Irregular Strength of Digraphs*
- Angela Harris, 2009  
*On H-Avoiding Graphs*
- Craig Tennenhouse, 2010  
*Some Extensions of Saturation to Oriented Graphs.*
- Hank Turowski, 2012-13 (expected)  
*On Interval H- Graphs*
- Samantha Graffeo, 2013 (expected)  
*Some Extensions of Sum Number to Quasigroups.*
- Deborah Arangno, 2014 (expected)  
*Bipartite H-Avoiding Graphs.*

**EXTRAMURAL FUNDING**

- *Generalized Chromatic Number (PI)*,  
Office of Naval Research, \$49,200, 1983 - 1986.
- *Generalized Chromatic Number (PI)* [competitive renewal],  
Office of Naval Research, \$98,800, 1986 - 1989.
- *Fourth Cumberland Conference on Combinatorics (PI)*,  
Office of Naval Research, \$18,000, 1988 - 1989.
- *Generalized Chromatic Number (PI)* [competitive renewal],  
Office of Naval Research, \$145,000, 1989 - 1992.
- *Intersection Graph Representations (PI)* AASERT,  
Department of Defense, \$142,000, 1990 - 1994.
- *CBMS Conference – Hamiltonian Properties in Graphs (PI)*,  
National Science Foundation, \$45,000, 1991 - 1992.
- *Intersection Graph Representations (PI)*,  
Office of Naval Research, \$239,900, 1992 - 1996.
- *11th Cumberland Conference (co-PI)*,  
Office of Naval Research, co-PI, awarded \$12,000, 1999.
- *Rocky Mountain Middle School Math/Science Partnership, (co-PI)*  
National Science Foundation, \$13,600,000, 2004 - 2012.
- *16th Cumberland Conferenc'e (co-PI)*,  
Office of Naval Research, co-PI, awarded \$15,000, 2004.
- *Graph Theory with Altitude, (co-PI)*,  
National Security Agency \$15,000, 2005
- *CDE-Math/Science Partnership: PLASMID (co-PI)*,  
Colorado Department of Education, \$597,627, 2007 - 2010.
- *Transforming Experiences: Interdisciplinary Teams of GK-12 Fellows, (PI)*  
National Science Foundation, PI, awarded \$2,820,000, 2008 - 2013.
- *Reasoning Multiplicatively with Teachers and Students: Bridge to Algebra for ELL, (co-PI)*  
National Science Foundation – DRK12, pending \$2,000,000 2012 – 2016.
- *Research Experience For Teachers (RETs), (co-PI)*  
National Science Foundation, , in preparation \$3,000,000; 2013 - 2018.

**RECENT INVITED ADDRESSES**

- Hikoe Enomoto 60<sup>th</sup> Birthday Conference, Tokyo, Japan - 2005  
*Two factors in Hamiltonian Graphs.*
- Wuhan Workshop on Paths and Cycles, Wuhan, China – 2005  
*Forbidden Subgraphs and the cycle structure of a graph.*
- Invited Lecture – SIAM, Victoria, Canada – 2006  
*Extremal Number of Edges in Two-Factor Hamiltonian Graphs.*
- ExcIII – Invited Speaker, University of Illinois – 2006  
*On a conjecture of Quintas and arc-traceability in upset tournaments.*
- ACCOTA – Invited Speaker, Puerto Vallarta, Mexico – 2006  
*On H-Avoiding Hamiltonian Graphs.*
- 20<sup>th</sup> Cumberland Conference – Invited Speaker, Atlanta, GA – 2007  
*The Game of F-Saturator.*
- Special Session – AMS – Invited Speaker & Organizer, San Diego, CA – 2008  
*Extremal Number of Edges in Uniquely Two-Factor Graphs.*
- SIAM Discrete Math Conference – Invited Speaker, Burlington, VT. - 2008  
*Tournament Score Sequences are pan-partition transitive.*
- Colloquium, “Games on Graphs”, East China University – 11/2008  
*Games on Graphs.*
- ACCOTA – Invited Speaker, Oaxaca, Mexico – 2008  
*Saturation Games on Graphs.*
- Invited Panel Member & Organizer – NSF – MSP, Washington, D.C. – 2010  
*Impact on Graduate Student Communication through the NSF GK12 program.*
- Invited Lecture Special Session - AMS, Las Vegas, Nevada – 2011  
*Forbidden Generalized Stars and Two Factors.*
- Workshop Co-Organizer/Speaker – Hubei University, Wuhan, China, 2011  
*Forbidden Subgraph Problems in Hamiltonian Graphs.*  
*My Three Favorite Open Problems in Graph Theory*
- Invited Lecture Atlanta Lecture Series VI – Georgia State University – 2011  
*Saturation Number and its Generalizations.*

## RECENT SERVICE ACTIVITIES

### University of Colorado - Service :

#### Department:

Department Chair (2003 – present)  
Statistics Search Committee – chair (2005 – 2006)  
Computational Math Search Committee (2005 – 2006)  
Executive Committee - chair (2006 – present)

#### College:

Academic Standards Committee (2005 – 2008)  
Budget & Planning Committee (2008 – present)  
Search Committee – Research Coordinator (2008 - 2009)  
Search Committee – Associate Dean for Research (2008)  
Executive Committee – Council of Chairs (2010- 2012)  
Executive Committee – Planning & Budget Committee (2010- present)

#### University:

GK-12 Management Team, Chair – (2007 – present)  
Search Committee – Graduate Dean of Consolidated UCD (2009-2010)  
Continuing & Professional Education Advisory Committee  
RM-MSMSP Management, Leadership, and Instructional Team (2006 – present)  
Academic Board of Directors for Center for Applied Science and  
Mathematics, Innovation and Competitiveness (member) (2006 – 2011)  
Graduate Council – UCD – (2006 – 2009)  
Associate Vice Chancellor for Research – Search Committee, UCD (2005-2006)  
Academic Leadership Council - UCD (2006-2009)  
Academic Master Planning Committee – UCD (2003-2005)

### Community Service :

Mathematics Articulation Committee – CDE – (2008 – 2010)  
American Mathematical Society Committee on Science Policy – participant  
(2011)  
K-16 Articulation Group – Cherry Creek (2007 – 2009)  
Colorado Science Fair – Judge (2007 – 2009)  
American Mathematical Society Committee on Education – participant  
(2009-2012)  
Boulder Area STEM Education Coalition (2010 – present)

## RECENT SERVICE ACTIVITIES (cont.)

### Professional Service :

#### *Referee for:*

Discrete Mathematics (1981- present)  
Networks (1985- present)  
Utilitas Mathematica (1985 - present)  
Ars Combinatoria (1986- present)  
Graphs and Combinatorics (1989- present)  
Journal of Graph Theory (1990- present)  
SIAM Journal of Applied Discrete Mathematics (2000 - present)  
SIAM Proceedings of Conference on Discrete Mathematics (2001)

#### *Research Review for:*

Department of Defense (1989-200)  
Natural Science and Engineering Research Council of Canada (1998 – present)  
National Science Foundation (2004, 2007, 2009, 2010)  
National Security Agency (AMS 2004- present)

#### *Editorial Duties:*

Discussiones Mathematicae: Graph Theory (Editorial Board 1986 – present)

#### *Review for:*

Math Reviews (1981 – present)

#### *National/Regional Professional Committees:*

MAA Programs Committee & Traveling Lecturer Program (1984 – 1996)  
RM - MAA Nominating Committee (Chair) & Executive Committee (2007 – 2011)

#### *Organizing Committee for:*

Cumberland Combinatorics Conference (1988 – 2004)  
Ramanujan Society - Combinatorics and Number Theory Conference (1995 - 1996)

**Awards and Distinctions:**

GLCTM – Educator of the Year (1988)  
Founding Fellow of the Institute for Combinatorics and Applications (elected 1991)  
University of Louisville A&S Outstanding Service Award (1994 & 95)  
University of Louisville A&S Outstanding Research & Creative Activity  
Award (1993, 1994 & 95)  
University of Louisville Exceptional Performance Award (1998 - 99)  
U of L Business & Professional Women Award – Boss of the Year (1999-2000)  
CLAS Outstanding Faculty Award – Finalist (2011, 2012)

**RECENT COURSES TAUGHT AT UCD:**

**MATH:**

MATH 4408 Applied Graph Theory – 2004, 2010, 2011  
MATH 4409 Applied Combinatorics – 2004, 2011, 2012  
MATH 5405 Graduate Applied Graph Theory – 2005, 2007  
MATH 6409 Graduate Applied Combinatorics – 2006, 2008  
MATH 7023 Topics in Discrete Math – Degree Sequences - 2006  
MATH 7405 Advanced Graph Theory - 2008  
MATH 7410 Combinatorial Structures - 2009  
MATH 7923 Readings in Combinatorics – 2005, 2006, 2008, 2009, 2010, 2011

**MCKE (Mathematics Content Knowledge for Educators):**

MCKE 5001 Algebraic Patterns and Functions I (co-taught) – 2004, 2005  
MCKE 5002 Algebraic Patterns and Functions II (co-taught) – 2005, 2006  
MCKE 5006 Mathematics of Change (co-taught) – 2006, 2007  
MCKE 5007 Discrete Mathematics – Counting the Possibilities – 2006, 2007, 2008,  
2009, 2010

Lead the Development Team to create the nine new courses: MCKE 5000, 5002, 5003, 5004, 5005, 5006, 5007, 5008, 5011.