

# GERALD W. KRUSE

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## POSITIONS HELD

Assistant Provost, Juniata College, 2013-2019.  
Acting Registrar, Juniata College, Summer 2019.  
Professor of Mathematics, Computer Science, and Information Technology, Juniata College,  
August 2011-present.  
Associate Professor of Mathematics and Computer Science, Juniata College,  
August 2005-August 2011.  
Assistant Professor of Mathematics and Computer Science, Juniata College,  
August 1999-August 2005.  
Senior Software Engineer, Compaq Computer Corporation (formerly DEC), 1997 - 1999.  
Research Assistant, Applied Mathematics, Brown University, 1992-1997.  
Teaching Assistant, Applied Mathematics, Brown University, 1992-1996.  
Supervisor, Memphis, TN Data Center, Dupont Company, 1990-1991.  
Systems Analyst, Wilmington DE, Dupont Company, 1985-1990.

## EDUCATION

Ph.D. Applied Mathematics, Brown University, Providence, RI. May 1997.  
*Parallel Nonconforming Spectral Element Solution of the Incompressible Navier-Stokes  
Equations in Three Dimensions – Advisor: Dr. Paul Fischer,*  
Sc.M. Applied Mathematics, Brown University, Providence, RI. May 1993.  
B.S. Computer Science, University of Illinois, Champaign-Urbana, IL. May 1985.  
With Honors.

## AWARDS

Omicron Delta Kappa, Juniata College, April 2019.  
Beachley Award for Distinguished Academic Service, April 2017.  
John '54 and Irene '58 Dale Endowed Professorship in Mathematics, Computer Science,  
and Information Technology, April 2011.  
MAA Allegheny Mountain Section Teaching Award, April 2011.  
Teagle Teaching and Learning Scholar, October 2010.  
Juniata College SoTL Summer funding, 2009 and 2010.  
Sigma Iota Rho, Juniata College, 2009.  
Argonne National Laboratory Summer Faculty Participation Program, 2000.  
NASA Space Grant Fellowship, Brown University, 1996-1997.  
Sigma Xi, Full Membership, Brown University, 1997.  
Tau Beta Pi, University of Illinois, 1983.  
Golden Key, University of Illinois, 1984.  
Phi Eta Sigma, University of Illinois, 1982.

## COURSES TAUGHT

Quantitative Methods	Introduction to Computer Science
Linear Algebra	Computer Science I (Java and C++)
Discrete Computational Structures	Computer Science II
Calculus I	Algorithms and Analysis
Discrete Structures	Computer Graphics

Numerical Analysis  
CS/IT Seminar Convener  
Mathematical Modeling  
Faculty Exchange at Münster (Germany) University of Applied Sciences (MUAS),  
Fall 2006 Semester. Taught *Graphical Programming* and *Algorithmen und  
Datastrukturen*  
Short-courses at Münster (Germany) University of Applied Sciences (MUAS),  
June 2005 and June 2009: Graphical Programming;  
June 2011, June 2014, June 2016, June 2018, June 2020: Mathematical  
Modeling

### **RESEARCH INTERESTS**

Improving Higher-Order Skills	Assessing Quantitative Reasoning
Scientific Computing	Numerical Linear Algebra
Computational Fluid Dynamics	Massively Parallel Computing

### **TALKS, PANELS, SESSION ORGANIZER**

“Using a Mathematical Software Package in a Class Exercise to Demonstrate Google's Simple PageRank Algorithm,” Joint Mathematics Meetings, Denver, CO, January 2020.

“Interpolation Techniques to Generate Closed Formulas for Series,” Allegheny Mountain Section of the MAA, April 2017.

“Math, Math, Everywhere... aka, Hacking the Math in Surveillance,” Luncheon Seminar at Juniata College for American Mathematics Contest Participants, February 2016.

“Institutional Learning Outcomes: Identifying (1) an Organizing Framework and (2) What is Missing,” Juniata College SoTL Brown Bag Lunch, October 2015.

“Hacking the Tech in Little Brother,” Juniata College Bookend Seminar, Oct 2015.

“Cheating Lessons,” Juniata College SoTL Brown Bag Lunch, Aug 2015.

“Mathematics, Algorithms, and Privacy,” Juniata College Peace and Conflict Studies (PACS) Integrative Seminar, February 2014.

“Mapping and Assessing Global Learning: Challenges and Strategies,” Association of International Education Administrators (AIEA), Washington, DC, February 2014.

“Old Wine in New Bottles: Today's Means of Cheating,” Juniata College SoTL Brown Bag Lunch, Nov 2013, with Amber Helsel-Ickes, Sarah May Clarkson and Justine Kobeski.

“Assessment: A micro view, with Student Learning Outcomes (SLOs), and a macro view with the Psychology Department’s Assessment Plan,” Juniata College SoTL Brown Bag Lunch, Oct 2013, with Phil Dunwoody.

“National Assessment Instruments,” MathFest 2013, Hartford, CT, August 2013.

“Identifying and assessing Student Learning Outcomes (SLO’s), with a Best-Practice demonstration from the History Department,” Juniata College SoTL Brown Bag Lunch, Aug 2012, with Phil Dunwoody.

“Stakeholder Pairs Panel - Faculty Partnership,” NAFSA 2012 Symposium on Leadership, Houston, TX, May 2012.

“Mathematics is Everywhere,” Luncheon Seminar at Juniata College for American Mathematics Contest Participants, February 2012.

“Assessing and Improving Quantitative Reasoning Skills with CLA Performance Tasks,” Joint Mathematics Meetings, Boston, MA, January 2012.

“CLA Performance Task Academy 101,” convener, Dover, DE, March 2011.

“Assessing Quantitative Reasoning in MA 103,” CLA Performance Task Conference, Jersey City, NJ, July 2010.

“Performance Task Web Conference,” Online web-conference sponsored by the CLA, March 2010.

“Using CLA in the Classroom Performance Tasks for Assessment in a Quantitative Reasoning Course,” Joint Mathematics Meetings, San Francisco, CA, January 2010.

“Assessing Critical Thinking and Quantitative Reasoning in MA 103,” Juniata College SoTL Brown Bag Lunches, March 2009, April 2009, March 2010, with Dave Drews.

“CLA Performance Tasks,” CIC-CLA Summer Meeting, Jersey City, NJ, August 2009.

“Adapting to Different Expectations When Teaching Outside the U. S.,” 2009 Forum on Education Abroad, Portland, OR, February 2009.

“The Amazing Year,” Juniata College Bookend Seminar, March 2008.

“The Mathematics in Google,” Luncheon Seminar at Juniata College for American Mathematics Contest Participants, February 2008.

Panelist on “Weaving Internationalization into the Fabric of a Liberal Arts College: The Juniata Story,” with D. Sowell, J. Cushman, and H. Hayer at The American Council on Education – Internationalization Collaborative Annual Meeting, Washington, DC, February 2008.

“2006-07 Sabbatical Report,” Presentation to Juniata College Board of Trustees, October 2007.

Facilitator for Special Session “Status Report of the SIGCSE Committee on Models of Evaluating Faculty Scholarship,” Special Interest Group of Computer Science Educators (SIGCSE) 2007, Northern Kentucky, March 2007.

“Google’s Billion Dollar Eigenvector,” Elektrotechnik und Informatik Kolloquium, Fachhochschule Münster, October 2006.

Facilitator for “Birds of a Feather” session introducing the SIGCSE Committee on Models of Evaluating Faculty Scholarship, Special Interest Group of Computer Science Educators (SIGCSE) 2006, Houston, TX, March 2006.

Panelist on “Models of a One Semester Course in Discrete Mathematics,” Joint Mathematics Meetings, San Antonio, TX, January 2006.

“How ‘Google’ Uses Discrete Mathematics,” Joint Mathematics Meetings, Atlanta, GA, January 2005.

Panelist on “Introducing Writing in the CS Curriculum,” Special Interest Group of Computer Science Educators (SIGCSE) 2004, Hampton, VA, March 2004.

“ ‘Magic Numbers’ Approach to Introducing Binary Number Representation in Introductory Computer Science Classes,” Joint Mathematics Meetings, Phoenix, AZ, January 2004.

“An Introduction to the Conjugate-Gradient Method,” Juniata College Mathematics Colloquium, April 2003.

“Teaching Discrete Structures to First Semester Computer Science and Information Technology Majors,” Allegheny Mountain Section of the MAA, April 2003.

“Quantitative Literacy at Juniata College” with John Bukowski, Allegheny Mountain Section of the MAA, April 2001.

“Using Massively Parallel Computers for Fluid Flow Simulation,” Juniata College Bookend Seminar, November 2000.

“Using Massively Parallel Computers for Fluid Flow Simulation,” Juniata College Mathematics Colloquium, February 2000.

“What Is So Hard About Writing a Fast Matrix-Matrix Multiplication Routine?” Juniata College Mathematics Colloquium, October 1998.

## **POSTERS**

“Using Performance Tasks in a Full-Cycle Assessment to Improve Quantitative Reasoning,” International Institute for SoTL Scholars and Mentors (iiSSAM), Los Angeles, May 2013.

“A Capstone Course Sequence in Information Technology,” with W. Thomas, Capstone Design Conference, Boulder, CO, June 2010.

“Assessing Critical Thinking in MA 103,” Juniata SoTL Showcase, October 2009.

Faculty Sponsor for “A Bad Day for Windows Vista,” by Patrick Donley and Brian Frey, third-place in student competition, CCSC-E 2008, Frederick, MD.

“How to Incorporate a Popular Holiday Song and a Favorite Browser into an Algorithms and Analysis Course,” Consortium for Computing in Small Colleges (CCSC), Eastern Section, October 2007.

“A Comparison of Heapsort and Quicksort, Do They Both Demonstrate  $O(n \lg n)$  Behavior?” Allegheny Mountain Section of the MAA, April 2007.

“A Useful Case-Study in Algorithmic Analysis: Unexpected Timing Results for Heapsort,” Special Interest Group of Computer Science Educators (SIGCSE) 2007, Northern Kentucky, March 2007.

“Assessing tutor and tutee outcomes in a college tutoring program,” with P. Dunwoody, L. Cockett, and K. Westcott, K. Poster presented by P. Dunwoody at the 2006 CASTL Colloquium on the Scholarship of Teaching and Learning: Evidence, Impact and Momentum, Madison, WI, April 2006.

“How I Taught a Semester of Computer Graphics in Two Weeks, in Germany, and Lived to Tell About It,” Special Interest Group of Computer Science Educators (SIGCSE) 2006, Houston, TX, March 2006.

### **CONFERENCES and WORKSHOPS**

Pennsylvania Consortium of Liberal Arts (PCLA) Assistant Dean/Provost Meeting, Collegeville, PA, July 2016.

American Association of Colleges and Universities (AAC&U) Annual Meeting, Washington, DC, January 2016.

American Association of Colleges and Universities (AAC&U) Assessment Workshop, Kansas City, MO, February 2015.

American Association of Colleges and Universities (AAC&U) Annual Meeting, Washington, DC, January 2015.

The Policy Institute on Sexual and Cyber Misconduct, Radnor, PA, August 2014.

Critical Thinking Assessment (CAT) Train-the-Trainer Workshop, Boulder, CO, March 2012.

Special Interest Group of Computer Science Educators (SIGCSE) 2010, Milwaukee, WI, March 2010.

Special Interest Group of Computer Science Educators (SIGCSE) 2009, Chattanooga, TN, March 2009.

Consortium for Computer Science in Colleges – Eastern Region (CCSC-E) 2009, Villanova, PA, October 2009.

“CLA Performance Task Workshop,” Charleston, WV, December 2008.

Special Interest Group of Computer Science Educators (SIGCSE) 2008, Portland, OR, March 2008.

Quantitative Reasoning: Activity Based Teaching Using Real Data, MAA PREP Workshop, Bethlehem, PA, June 2007.

Discrete Mathematics: An Early Foundation for the Study of Computer Science, MAA PREP Workshop, Valparaiso, IN, June 2003.

Special Interest Group of Computer Science Educators (SIGCSE) 2001, Northern Kentucky, February 2002.

Advising and Mentoring Workshop, Elizabethtown, PA, June 2001.

Special Interest Group of Computer Science Educators (SIGCSE) 2001, Charlotte, NC, February 2001.

Local Section NExT Workshop, Pittsburgh, PA, September 2000.

Supercomputing '98 , Orlando, FL, November 1998.

## **PUBLICATIONS**

“Using Performance Tasks to Improve Quantitative Reasoning in an Introductory Mathematics Course,” Kruse, G. and Drews, D., International Journal for the Scholarship of Teaching and Learning, Vol. 7, No. 2, 2013.

“A Capstone Course Sequence in Information Technology,” G. Kruse and W. Thomas, Proceedings of the Capstone Design Conference, Boulder, CO, June 2010.

“Spectral Element Methods for Transitional Flows in Complex Geometries,” P.F. Fischer, G. W. Kruse, and F. Loth, Journal of Scientific Computing, December 2002.

## **PROFESSIONAL MEMBERSHIPS**

Mathematical Association of America

Society for Industrial and Applied Mathematics

Association for Computing Machinery, Special Interest Group of Computer Science Educators

Sigma Xi Research Society

American Association of University Administrators

## **OTHER ACTIVITIES**

Title IX Hearing Panel Member, 2020 – present.

Personnel Evaluation Committee, Juniata College, 2020 – present.

Audit, Compliance, and Risk Management Committee, Juniata College, 2018 – present.

Faculty Advisor for Rotaract Club, Juniata College, 2018 – present.

Department Planning Committee, Juniata College, 2018 - 2019.

Interim Chair, International Studies Program, Juniata College, 2017 – 2018.

Organizer of Liberal Arts Symposium, Juniata College, 2013 – 2017.

Academic Planning and Assessment Committee, Juniata College, 2013 – 2014, 2017-2018.

Student Academic Development Committee, Juniata College, 2013 - 2017.

Juniata College Center for Entrepreneurial Leadership (JCEL) Board of Directors, 2013 – present.

James J. Lakso Center for the Scholarship of Teaching and Learning Board Member, 2011 – 2014 (Director 2012-13).

Huntingdon, PA Area School District Education Foundation Board Member, 2012 – present.

Huntingdon, PA Area School District Education Foundation Financial Secretary, 2013 – present.

Discernment Committee, St. Johns' Episcopal Church, 2014.

Huntingdon, PA Soccer Club Board Member, 2009 – 2018.

Huntingdon, PA Rotary Club, 2012 – present.

Juniata College Presidential Search Committee, 2011 – 2012.

Interim Chair, Mathematics Department, Juniata College, Spring 2012 semester.

Juniata College Wellness Committee, 2011 – present.

Institutional Research Board (IRB), Juniata College, 2010 – 2012.

Co-organizer of CCSC-E 2010, Juniata College.

Speaker's Chair, CCSC-E 2008, Hood College, October 2008.

Chair of the Q-Subcommittee of the Curriculum Committee, Juniata College. 2007 - 2013.

Room Monitor for Summer 2008 Student Internship presentations, October 2008.

Interim Chair, Information Technology / Computer Science Department, Juniata College, 2007-08 academic year.

Promoter for IT/CS Exchange program with Fachhochschule Münster, "German Night" host February 2007, 2008, 2009, and 2010.

International Education Committee (IEC), Juniata College, 2007-present.

American Council on Education (ACE) Internationalization Initiative, Juniata College Leadership Team, 2007-present.

Web-Minister, St. John's Episcopal Church, Huntingdon, PA 2005 – 2019.

Judge for Juniata College Community Service Award, October 2005.

Co- Facilitator for "SIGCSE Committee on Models for Evaluating Faculty Scholarship," May 2005 – Spring 2008.

Faculty exchange with Fachhochschule Münster, Germany, Fall 2006 Semester.

Member of search committee for positions in Mathematics and Computer Science, 2001, 2002, 2005, 2006, and 2007.

Judge for Juniata College Liberal Arts Symposium, Spring 2007 and 2008.

Judge for Student Poster at Joint Mathematics Meetings, 2005.

Juniata College representative on joint working group for Teagle Grant, "Value-Added Assessment of Student Learning in the Liberal Arts: Assessing the Impact of Engaged Learning," 2005-2006

Replacement Faculty Representative on Juniata College Judicial Board for April 2005 Hearing.

Member of Quantitative Literacy Special Interest Group of the Mathematical Association of America, 2005 – present.

Academic Planning and Assessment Committee, Juniata College, 2004 - 2006.

Curriculum Committee, Juniata College, 2001-2004.

Faculty Representative to Trustee Committee on Investments, Juniata College, 2003 - 2005.

Executive Committee, Juniata College, Fall 2001 semester.

Editor, Mathematics/Computer Science Dept. Newsletter, Juniata College, 2000 - 2004.

Class of 2004 Advisor, Juniata College.

Co-Host of Campus Ministry's "Coffeehouse," 2002, 2005, 2008.

Luminaria Chair for Huntingdon County "Relay for Life," February 2007 – September 2008.

Co-captain of St. John's Episcopal "Relay for Life" Team, 2000 - 2001.

HCC Tee-Ball Coach, 2002 – 2008.

Outdoor Soccer Coach (Huntingdon, PA Community Center and PA-West), Fall 2005, Spring 2009, Fall 2009, Spring 2010, Fall 2010, Spring 2011, Fall 2011, Spring 2012, Fall 2012, and Spring 2013.

Indoor Soccer Coach (Huntingdon, PA Community Center and Altoona, PA "Summit Athletic Center"), 2006-2013.