

Curriculum Vitae

HENRY MACKAY WALKER

September, 2022

<u>Business Address</u>	<u>Grinnell Mailing Address</u>	<u>Retirement Mailing Address</u>
Dept. of Computer Science Grinnell College Grinnell, Iowa 50112-0806 E-mail: walker@cs.grinnell.edu	Noyce Science Center 1116 Eighth Avenue Grinnell, Iowa 50112 Home Page: https://walker.cs.grinnell.edu	1800 Atrium Pkwy, Apt. G244 Napa, CA 94559 Cell: (515) 490-4131

Current Position Samuel R. and Marie-Louise Rosenthal Professor of Natural Science and Mathematics, *2001-present*
Professor of Computer Science, *2006-present*
Chair, Department of Computer Science, *2006-2010, 2012-2014*
Professor of Mathematics and Computer Science, *1990-2006*
Chair, Department of Mathematics and Computer Science, *1990-1991*
Professor of Mathematics, *1987-1990*
Associate Professor of Mathematics *1980-1987*
Chair, Department of Mathematics, *1981-1983*
Assistant Professor of Mathematics, *1974-1980*
Grinnell College, Grinnell, Iowa

Senior Faculty Status (SFS) Positions Visiting Professor of Computer Science
University of the South, "Easter" Semester, 2017
Williams College, Fall Semester, 2017
University of Puget Sound, Spring Semester, 2020
Class of 1959 Distinguished Scholar Chair in the Computer Science Department,
Willamette University, Spring Semester, 2019

Sabbatical Positions Visiting Professor, School of Computing and Information Technology
UNITEC Institute of Technology, Auckland, New Zealand, *April-May, 2003*
Senior Lecturer, Department of Computer Sciences, *1988-1989, Fall 1995;*
Summers 1990, 1991, 1992, 1993, 1996 University of Texas at Austin
Member of Technical Staff (MTS), *1980-1981*
Bell Telephone Laboratories, Piscataway, New Jersey

Other Job Background Lecturer, Department of Mathematics, *1973-74*
Massachusetts Institute of Technology, Cambridge, Mass.
Computer Systems Analyst, Mobil Oil Corp., *Summer, 1969*
Undergraduate Teaching Assistant for the Computer Laboratory,
Williams College, *1968-69*
Independent Study in Mathematics under N.S.F., Wesleyan U., *Summer, 1968*

Education UNIVERSITY OF IOWA, Iowa City, Iowa
M.S. in Computer Science, *June, 1979*
M.I.T., Cambridge, Mass., Ph.D. in Mathematics, *June, 1973*
Thesis title: Equivariant CW Complexes and Cohomology
Thesis advisor: Professor Franklin P. Peterson
Fellowships: N.S.F. Graduate Fellowship, Woodrow Wilson Fellowship,
N.S.F. Graduate Traineeship
WILLIAMS COLLEGE, Williamstown, Mass., A.B., Magna cum Laude with
Highest Honors in Mathematics, *June, 1969*

- Honors Received** 2013 Award for Lifetime Service to the Computer Science Education Community by the Special Interest Group on Computer Science Education of the Association for Computing Machinery (ACM)
 Named ACM “Distinguished Educator”, July 31, 2009
 Named ACM “Senior Member”, February 28, 2009.
 Sigma Xi, elected Associate Member, 1972; elected Full Member, 1973
 Phi Beta Kappa, elected 1967-1968
 “Distinguished Graduate Award,” Concord-Carlisle (MA) High School, March, 1990
 Erastus C. Benedict First Prize in Mathematics, 1967
- Publications: Books** Teaching Computing: A Practitioners Perspective, CRC Press/Taylor and Francis Group, 2018
The Tao of Computing, Second Edition, Chapman and Hall/CRC Press Publishers, 2013.
The Tao of Computing: A Down-to-earth Approach to Computer Literacy, Jones and Bartlett Publishers, 2005.
The Limits of Computing, Jones and Bartlett Publishers, Inc., 1994 with Nell Dale, Abstract Data Types: Specification, Implementation, and Application, Jones and Bartlett, February 1996.
Computer Science 2: Principles of Software Engineering, Data Types, and Algorithms, Little, Brown/Scott, Foresman, 1989
Pascal: Problem Solving and Structured Program Design with Instructor’s Manual and Transparency Masters, Little, Brown & Co., 1987
Introduction to Computing and Computer Science with Pascal and accompanying Instructor’s Manual, Little, Brown and Co., 1986
Problems for Computer Solutions Using BASIC (Winthrop Publishers, Inc., Cambridge, Mass.), February, 1980.
Problems for Computer Solutions Using FORTRAN (Winthrop Publishers, Inc., Cambridge, Mass.), March, 1980.
- Publications: ACM Inroads Columns** Author of regular columns on “Classroom Vignettes” and “Curricular Syncopations” for *ACM Inroads*:
- What is the payoff?, Volume 13, Issue 1, February 2022, pp. 10-14
 - Protecting student privacy through the pandemic (and beyond), Volume 12, Issue 2, May 2021, pp. 6-10
 - Faculty advising of undergraduate students, Volume 12, Issue 3, August 2021, pp. 9-13
 - Graduation with “Honors”, Volume 12, Issue 2, June 2021, pages 6-10
 - An Online, database-driven course schedule and pages Volume 12, Issue 1, March 2021, pages 17-10.
 - Scaling an Oxford-style tutorial on technical/social issues: an experience report, Volume 11, Issue 3, August 2020, pp. 17-22.
 - Bias in algorithms and the misuse of Big Data sets Volume 11, Issue 2, May 2020, pages 12-17
 - Mentoring undergraduate students for research/development posters and papers, Volume 11, Issue 1, February 2020, pages 6-11
 - Clarity and efficiency of code in introductory computing courses (part 1) Volume 10, Issue 4, November 2019, pages 17-22.
 - What kind of computing program(s) should my school offer? Volume 10, issue 4, November 2019, pages 10-14.
 - Program Breadth versus focus Volume 10, Issue 1, March 2019, pages 37-40.

Publications:
ACM
Inroads,
Columns,
Continued

- Democracy/student choice and the computing classroom
Volume 9, Issue 3, September 2018, pages 26-30.
- Getting started with a program review
Volume 9, Issue 2, June 2018, pages 26-28.
- Software correctness and usefulness in the classroom,
Volume 8, Issue 1, March 2018, pages 28-32.
- Lab-based courses with the 3 C's: content, collaboration, and communication
Volume 8, Issue 4, December 2017, pages 26-29.
- Lab layouts, Volume 8, Issue 3, September 2017, pages 29-32.
- Connecting computing with other disciplines and the wider community,
Volume 8, Issue 2, June 2017, pages 29-32.
- Basic do's and don'ts in the classroom: combating bias, presentations, and slides, Volume 8, Issue 1, March 2017, pages 12-15.
- Planning and organizing a course for the first time, Volume 7, Issue 4, December 2016, pages 12-17.
- Basic do's and don'ts in the classroom: general environmental and course suggestions, Volume 7, Issue 3, September 2016, pages 20-24.
- Using the hill-climbing algorithm with curricula and courses, Volume 7, Issue 2, June 2016, pages 36-38.
- Teacher as Coach, Mentor, Listener (Part 1?), Vol. 7, Issue 1, March 2016, pp. 18-21.
- Beyond the cliché, mathematical fluency, in the computing curriculum
Vol. 6, Issue 4, December 2015, pp 24-26.
- Recovering from Disappointing Student Test Results, Vol. 6, Issue 3, September 2015, pp. 38-39.
- Why a required course on theory? Vol. 6, Issue 2, June 2015, pp. 24-26.
- Sorting algorithms: when the internet gives you lemons, organize a course festival, Vol. 6, Issue 1, March 2015, pp. 28-29.
- Structuring student work, Vol. 5, Issue 4, December 2014, pp. 30-33.
- Some strategies when teaching theory courses, Vol. 5, Issue 3, September 2014, pp. 32-34.
- College Courses of Varying Credit, Vol. 5, Issue 2, June 2014, pp. 26-28.
- Encouraging student preparation for class, Vol. 5, Issue 1, March 2014, pp. 24-25.
- Homework assignments and internet sources, Vol. 4, Issue 4, December 2014, pp. 16-17.
- 1000(binary) Thoughts for Developing and Using Examples, Vol. 4, Issue 3, September 2013, pp. 40-41.
- An Opportunity for Computing-Mathematics Dialog, Vol. 4, Issue 2, June 2013
- Exercise solutions: motivations, messages sent, and possible distribution,
Vol. 4, Issue 1, March 2013, pp. 14-16.
- Developing a useful curricular Map, Vol. 3, Issue 4, December 2012, pp. 14-16.
- Course planning: the day-to-day schedule, Vol. 3, Issue 3, September 2012, pp. 22-24.
- How to prepare students for lifelong learning, Vol. 3, Issue 2, June 2012, pp. 10-11.
- Mid-course corrections, Vol. 3, Issue 1, March 2012, pp.20-21.
- Resolved: ban 'programming' from introductory computing courses,
Vol. 2, Issue 4, December 2011, pp. 16-17.
- How to Challenge Students, Vol. 2, Issue 3, September 2011, .

- Publications:**
- When is a Computing Curriculum Bloated?, Vol. 2, Issue 2, June 2011, pp. 18-20.
- ACM**
- The role of textbooks, Vol. 2, Issue 1, March 2011, pp. 14-16.
- Inroads**
- Prerequisites: shaping the computing curriculum, Vol. 1, Issue 4, December 2010, pp. 14-16.
- Columns,**
- Computing teaching labs can communicate negative messages, Vol. 1, Issue 3, August 2010, pp. 13-14.
- Continued**
- The Role of Programming in Introductory Computing Courses, Vol. 1, No. 2, June 2010, pp. 12-15.
 - Eight Principles of an Undergraduate Curriculum, Vol. 1, No. 1, March 2010, pp. 18-20.
 - Wellness and the Classroom, Vol. 1, No. 1, March 2010, pp. 27-30.
- Publications:** Author of regular column on “Classroom Issues” for the *SIGCSE Bulletin*:
- SIGCSE**
- Grading and the Allocation of Points, Vol. 41, No. 4, January 2010, pp. 14-16.
- Bulletin**
- Course Descriptions and Public Relations for Computer Science, Vol. 41, No. 2, June 2009, pp. 74-75.
- Columns**
- Classroom issues: staying connected with the big picture, Vol. 40, No. 4, December 2008, pp. 18-20.
 - Advertising and Recruiting, Vol. 40, No. 2, June 2008, pp. 16-17.
 - What image do CS1/CS2 present to our students?, Vol. 39, No. 4, December 2007, pp. 18-19.
 - Reading and class work, Vol. 39, No. 2, June 2007, pp. 13-14.
 - Thoughts on Student Feedback to Help Teaching, Vol. 38, No. 4, December 2006, pp. 13-14.
 - Thoughts about Lecturing, Vol. 38, No. 2, June 2006, pp. 19-21.
 - What Should Be in a Syllabus?, Vol. 37, No. 4, December 2005, 19-21.
 - Mathematics and CS Topics in the CS Classroom, Vol. 37, No. 2, June 2005, 15-17.
 - Academic Honesty in the Classroom, Vol. 36, No. 4, December 2004, 18-19.
 - What Teachers Should, Can, and Cannot Do, Vol. 36, No. 2, June 2004, 20-21.
 - Do Computer Games Have a Role in the Computing Classroom, Vol. 35, No. 4, December 2003, 18-19.
 - Lessons from the CUPM, Vol. 35, No. 2, June 2003, 19-20.
 - Teaching and a Sense of the Dramatic, Act II, Vol. 34, No. 4, Dec. 2002, 18-19.
 - Teaching and a Sense of the Dramatic, Vol. 33, No. 4, Dec. 2001, 16-17.
 - Balancing the Forest and the Trees in Courses, Vol. 32, No. 4, Dec. 2000, 17-18.
 - Notes on Grading, Vol. 32, No. 2, June 2000, pp. 18-19.
 - Guided Reading and Seminar Issues, Vol. 31, No. 4, Dec. 1999, pp. 27-28.
 - Finding Interesting Examples and Assignments for CS1.2 Assignments, Vol. 31, No. 2, June 1999, pp. 24-25.
 - The Balance Between Programming and Other Assignments, Vol. 30, No. 4, Dec. 1998, pp. 23a-25a.
 - Writing Within the Computer Science Curriculum, Vol. 30, No. 2, June 1998, pp. 24-25.
 - Finding Interesting Examples and Assignments for CS 1/2 Assignments, Vol 31, No. 2, June 1997, pp. 24-25.
 - A Racquetball or Volleyball Simulation, Vol. 29, No. 4, Dec. 1997, pp. 22-23.

- Publications:** 1000 binary ways to help new, visiting, and adjunct faculty, *Journal of Computing Sciences in Colleges*, Volume 35, Issue 5, October 2019, pp. 101-108
- Articles:** Getting started with a program review, *MAA Focus*, January 2020, pp. 20-22
- Other** with John F. Dooley, The History of the SIGCSE Submission and Review Software: from Paper to Cloud, *50th ACM SIGCSE Technical symposium on computer science education*, February 27-March 2, 2019, Minneapolis, MN, February-March 2019, pp. 1074-1080.
- with Robert E. Beck, The SIGCSE symposium: a brief history, *ACM Inroads*, Volume 9, Issue 4, December 2018, pp. 31-39.
- Retention of students in introductory computing courses: curricular issues and approaches, *ACM Inroads*, Volume 8, Issue 4, December 2017, pp. 14-16.
- with the ACM Retention Committee, Retention of students in introductory computing courses: preliminary plans—ACM retention committee, Volume 8, Issue 4, December 2017, p. 12.
- Co-Editor *Special Section on the Role of Programming in a Non-Major, CS Course* in *ACM Inroads*, Vol. 6, Issue 1, March 2015
- Co-Editor, *SIGCSE Bulletin*, 2010-2012, including author of 12 articles
- with Marji Ivica, Sara Marku, Thu Nguyen, and Ruth Wu, Student-faculty collaboration in developing and testing infrastructure for a C-based course using robots, *Journal of Computing Sciences in Colleges*, Volume 32, Issue 1, October 2016, pages 57-64
- with Vasilisa Bashlovkina, Anita DeWitt, Anqing Liu, Nicolas Knoebber, A refined C-based infrastructure and curriculum to support robots in introductory CS, *Journal of Computing Sciences in Colleges*, CCSC Central Plains, Vol. 30, Issue 5, May 2015, pp. 136-143.
- Priorities for the non-majors, CS course: programming may not make the cut, *ACM Inroads*, Vol. 6, Issue 1, March 2015, pp. 46-49.
- Computational thinking in a non-majors CS course requires a programming component, *ACM Inroads*, Vol. 6, Issue 1, March 2015, pp. 58-61.
- with Dilan Ustek, Erik Opavsky, and David Cowden, Course development through student-faculty collaboration: a case study, *19th ACM SIGCSE Conference on Innovation and Technology in Computer Science Education*, June 23-25, 2014, Uppsala, Sweden
- with Samuel Rebelsky, Using CS2013 for a department's curriculum review: a case study, *Journal of Computing Sciences in Colleges*, CCSC Midwest, with David Reed, Andrea Danyluk, Elizabeth K. Hawthorne, Mehran Sahami, Experiences mapping and revising curricula with CS2013, *45th ACM SIGCSE Technical symposium on computer science education*, March 5-8, 2014, Atlanta, GA
- Vol. 29, Issue 5, May 2014, pp. 138-144.
- CS 2013 and the concept of course exemplars: Grinnell's introductory sequence, Keynote Address: CCSC: Southwest 2013, *Journal of Computing Sciences in Colleges*, Vol. 28, Issue 4, April 2013, pp. 90-91
- with Douglas Baldwin (Chair) and Peter Henderson, The Roles of Mathematics in Computer Science, *An invited report to the ACM/IEEE-CS Task Force for Computer Science Curricula 2013*, submitted May 1, 2013.
- Principles, Priorities and Pressures: Personal and Organizational, Keynote Address, *44th ACM Technical Symposium on Computer Science*, Denver, Colorado, March 6-9, 2013
- with Renee L. Ciezki, Lien Diaz, and Robert Glen Martin, AP CS A exploration, of a change from GridWorld to labs, *Proceeding of the 44th ACM Technical Symposium on Computer Science*, Denver, Colorado, March 6-9, 2013

- Publications:** with Renee L. Ciezki, Lien Diaz, and Frances E. Hunt, How AP CS A matches college courses, *Proceeding of the 44th ACM Technical Symposium, on Computer Science*, Denver, Colorado, March 6-9, 2013
- Other Articles, Continued** with Andrea Danyluk et al., ACM/IEEE computer science 2013 exemplar-fest 44th ACM Technical Symposium on Computer Science, Denver, Colorado, March 6-9, 2013
- MAA Program Study Group on Computing and Computational Science, Henry M. Walker (Chair) with Douglas Baldwin and Daniel Kaplan, Summary Report and Supplemental Report, submitted to the MAA Committee on the Undergraduate Curriculum (CUPM), December 1, 2012
- ITiCSE 2012 Working Group (Charles P. Riedesel, Chair), Academic integrity policies in a computing education context, *Proceedings of the final reports on Innovation and technology in computer science education 2012 working groups*, July 3-5, 2012, Haifa, Israel, pp. 1-15.
- Conducting department reviews and serving as a reviewer, *Journal of Computing Sciences in Colleges*, CCSC: Central Plains, Vol. 27, Issue 5, May 2012, pp. 167-169.
- Proven strategies that increase participation of high school students in computing, *Journal of Computing Sciences in Colleges*
- CCSC: Central Plains, Vol. 27, Issue 4, May 2012, pp. 231-233.
 - CCSC: Midwest, Vol. 26, Issue 1, October 2010, pp.103-105.
- with David Cowden, April O'Neill, Erik Opavsky, and Dilan Ustek, A C-based Introductory Course using Robots, *Proceedings of the 43rd ACM Technical Symposium on Computer Science*, February 29-March 3, 2012, Raleigh, NC, pp. 27-32.
- with Andrew Hirakawa and Russel Steinbach, A System to Place Incoming Students in Computer Science, Mathematics, and Statistics, paper *Proceedings of the CCSC: Midwest 2011 Conference*, Vol. 27, Issue 1, September 23-24, 2011, Huntington, IN., pp. 24-31.
- with Mark Guzdial and Barbara Boucher Owens, Computer Science Education 2009, Two 20th Anniversary Essays for Project Kaleidoscope (PKAL) (invited articles to appear on PKAL Web site on behalf of the Computer Science Education community). Submitted 2009; revised by Henry M. Walker in 2011 for immediate publication.
- A Lab-based Approach for Introductory Computing that Emphasizes Collaboration, *CSERC '11 Proceedings*, the Computer Science Education Research Conference, Heerlen, the Netherlands, April 7-8, 2011, pages 9-20.
- with ITiCSE 2010 Working Group 8, Enhancing the Social Issues Components in our Computing Curricula: Computing for the Social Good, *ACM Inroads*, Vol. 2, Issue 2, June 2011.
- with Janet Davis and Henry M. Walker, Incorporating Social Issues of Computing in a Small, Liberal Arts College, *Proceedings of the 42nd ACM Technical Symposium on Computer Science Education*, Dallas, Texas, March 9-12, 2011.
- Configurations for teaching labs, *ACM Inroads*, Vol. 1, Issue 3, August 2010, pp. 26-30.
- with John F. Dooley, The SIGCSE Submission and Review Software: 10 (hexadecimal) Lessons, *Journal of Computing Sciences in Colleges*, Volume 25, Issue 4, May 2010, pp. 196-206.
- with Charles Kelemen, On the Philosophy of Computer Science within the Liberal Arts, *ACM Transactions on Computing Education*, Volume 10, Issue 1, March 2010, Article 2.
- Editor, Vol. 42, No. 1 of the *SIGCSE Bulletin*, including author of all 8 articles

- Publications:** Advisor and mentor on student posters presented at ITiCSE 2007, Dundee, Scotland 25-27 June 2007
- Other Articles, Continued**
- Christine Wang, Eric Omwega, Jonathan Tsu, Monica Ugwi, Automation of PE Recruiting Process, Vol. 39, No. 3 *SIGCSE Bulletin*, Sept. 2007, p. 350
 - ITiCSE 2007 Award: Outstanding Student Poster – Software Development
 - Christine Wang, Eric Omwega, Monica Ugwi, Jonathan Tsu, Development of an Online Campus Map, Vol. 39, No. 3 *SIGCSE Bulletin*, Sept. 2007, p. 351
 - ITiCSE 2007 Award: Outstanding Student Poster – Inclusive Technology
- with the Liberal Arts Computer Science Consortium, A 2007 Model Curriculum for a Liberal Arts Degree in Computer Science, *Journal on Education Resources in Computing (JERIC)*, Vol. 7, Issue 2, Article 2.
- with Kevin Engel, Research Exercises: immersion experiences to promote information literacy, *Journal of Computing Sciences in Colleges*, Vol 21, Issue 4, April 2006, pp. 61-68
- with David Levine, XP practices applied to grading *SIGCSE Bulletin*, Vol 38, Issue 1, March 2006, pp. 173-177
- with Kevin Engel, Research Exercises: A sequenced approach to just-in-time information literacy instruction, *Research Strategies*, Vol 19, Issue 2, July 2004, pp. 135-147
- with Weichao Ma and Dorene Mboya, Variability of Referees' Ratings of Conference Papers, *SIGCSE Bulletin*, Vol 34, No. 3, June 2002. 178-182.
- Notes on the Academic Job Market and Hiring Strategies, *SIGCSE Bulletin*, Vol. 30, No. 4, Dec. 2001
- with Weichao Ma and Dorene Mboya, Abstract of "On-line Paper Submission, Paper Reviewing, and Rating Variability", Joint Mathematics Meetings, January, 2001.
- with Paul Myers, The State of Academic Hiring in Computer Science: An Interim Review, *SIGCSE Bulletin*, Vol. 30, No. 4, Dec. 1998, pp. 32a-36a.
- Modules to Introduce Assertions and Loop Invariants Informally Within CS1: Exp. and Observations *SIGCSE Bulletin*, Vol. 30, No. 2, June 1998, pp. 31-35.
- with G. Michael Schneider, A Revised Model Curriculum for a Liberal Arts Degree in Computer Science, *Comm. of the ACM*, Vol. 39, No. 12, Dec. 1996, pp. 85-95.
- Collaborative Learning: A Case Study for CS1 at Grinnell College and UT-Austin, *SIGCSE Bulletin*, Vol. 29, No. 1, March 1997, pp. 209-213
- with Vikram Subramaniam & Ivan Sykes, An Expert System to Place Incoming Students in Math and CS Classes, *J. of CS Ed.*, Vol. 5, pp. 137-148 (1995).
- with Nell Dale, A Classification of Data Types, *Journal of Computer Science Education*, Vol. 3, No. 3., 1992, pp. 223-232.
- with Nell Dale, A Classification of Data Types, University of Texas at Austin Technical Report, *TR-90-17, June, 1990*
- Developing and Teaching an Advanced Placement Computer Science Course
Invited address: 1985 World Conf. on Comp. in Ed., Norfolk, VA, July, 1985
- Facilitating the Transition from High School Programming to College Computer Science. Presented at the 1985 Computer Science Conference (CSC)
- CS Curricula for Diverse Groups of Students. 1984 CSC
- with David Reiner, Staffing a Computers in Society Course 1983 CSC
- with David Reiner, Computers in Society vs. Social Issues in Computing. 1983 CSC
- Administering a Distributed Data Base Management System, *SIGMOD Record*, Vol. 12, No. 3, April 1982, pp. 86-99.
- An Interdisciplinary Approach to Introductory Programming Courses, *SIGCSE Bulletin*, Vol. 13, No. 3, September 1981, pp. 40-44.

- Publications:** An Equivariant Serre Spectral Sequence, *A.M.S. Notices*, Vol. 21, No. 3, April, 1974, pp. A-405.
- Other Articles, Continued** An Equivariant Serre Spectral Sequence (Preprint)
Equivariant Classifying Spaces and Obstruction Theory, *A.M.S. Notices*, Vol. 20, No. 6, October, 1973, page A-609.
Equivariant Cellular Homology and Cohomology and Classifying Spaces (Preprint)
Equivariant CW Complexes and Cohomology. (Thesis) M.I.T., 1973.
- Visiting Lecturer Activities**
- Invited talk: “Bias in Algorithms and the Misuse of Bg Data,” Computer Science/Mathematics Seminar Series, the University of Puget Sound, February 3, 2020.
- Invited talk:, ”Bias in Algorithms and the Misuse of Big Data”, Iowa Undergraduate Computer Science Consortium, November 16, 2019
- Invited talk: ”Lab-based Pedagogy with Collaboration: An Example of a Flipped Classroom” Faculty Colloquium, Willamette University, April 5, 2019
- invited talk: ”A System to Place Incoming Students in Classes,” CS Tea, Willamette University, March 7, 2019
- Invited talk: “Approaches for Introductory Computer Science: Content and Pedagogy,” Mt. Holyoke College, October 26, 2017/
- Invited talk: “Lab-based Pedagogy with Collaboration: An Example of a Flipped Classroom”, Williams College, November 7, 2017.
- Invited talk: “Approaches for Introductory Computer Science: Content and Pedagogy,” Mt. Holyoke College, October 26, 2017/
- Invited talk: “Can AI Support Placement of Incoming Students in CS/Math/Statistics,” Bennington College, October 6, 2017.
- Invited visitor, University of Nebraska at Lincoln, Lincoln, NE, October 30, 2014
- Talk: A Lab-based Approach for Introductory Computing that Emphasizes Collaboration
 - Talk: Using CS2013 for a Department’s Curriculum Review: A Case Study
- Invited visitor, Lincoln University, Jefferson City, MO, April 3, 2014
- Talk: Grinnell’s Experience Using CS2013 as Part of a Review of its CS Curriculum and Major
 - Talk: Academic Implications for Google Glasses: Some Initial thoughts
 - Talk: SIGCSE/CCSC CP Paper Submission and Review System
- Pew Midstates Mathematics and Science Consortium, Speaker Series
 Visit to Carthage College (3 talks and consultation), *February 15-16, 2007*.
- Visiting Professor, School of Computing and Information Technology
 UNITEC Institute of Technology, Auckland, New Zealand, *April-May, 2003*
- Invited Lecturer and Guest at various secondary schools, speaking with teachers and to various mathematics and computer science classes:
 Glenbrook (IL) School High Schools 1985, New Hampton (IA) High School 1988, Lamar Junior High (Austin, TX) 1988, 1989, Turkey Valley (IA) Community Schools 1990–1992, Concord-Carlisle (MA) High School 1990, Montezuma Schools 1991, 1994, Grinnell Schools 1993, 1997, Trinity School (Minneapolis, MN), 2003
- Invited Lecturer on “Can Computers Think?”, Linda-Hall Library, Kansas City, December 1999.
- Participant, Grinnell-Nanjing Faculty Exchange Program, May-June, 1995
- Lecturer for the Iowa Section of the M.A.A., 1975-1980
- Lecturer for the Visiting Mathematicians Program of the Associated Colleges of the Midwest, 1976, 1977, 1978-1980

Teaching Experience

Taught Tutorials on Computers; Intro. to BASIC Programming; Problem Solving and Computing (with LOGO); An Algorithmic and Social Overview of Computer Science, Intro. to Pascal Programming; Intro. to Computer Science (with Pascal); Fundamentals of Computer Science I and II; Computers in Society; Programming Language Concepts; Imperative Problem Solving and Data Structures; Representation, Storage Management, and C Programming; Software Design; Algorithms and Object-Oriented Design, Algorithms and Data Structures; Computer Architecture and Operating Systems; Parallel Algorithms; X Windows and C Programming; Theory of Computation; Operating Systems and Parallel Algorithms; Data Representation, Storage Management, and Formal Methods; Databases and Web Application Design; Algebra and Trigonometry; Calculus I/II; Calculus and Probability I/II; Linear Algebra; Differential Equations; Abstract Algebra I and II; Complex Analysis; Topology; Real Analysis; Problem-Solving;

Independent projects in Numerical Analysis, Compilers, Software Engineering, Data Bases, the Theory of Computation, Artificial Intelligence, Expert Systems, Neural Networks, Process Communication Using Sockets, Personal Desk Assistants (PDAs), Computer Networks, Neural Computation, User-centered Software Design, Drupal-based Web Development, Placement of Students in Computer Science, Mathematics, and Statistics, Using Robots in CSC 161, Bluetooth Communication in C at Grinnell College, *1974-1980, 1981-1988, 1989-2002, 2004-present*

Taught Computer Science II, Programming Language Paradigms, and Algorithms and Applications: Opportunities and Risks at the University of Puget Sound, Spring 2020

Taught Introduction to PHP Programming, MySQL Databases, and Web Development and Operating Systems and Currency at Willamette University, Spring 2019.

Taught Introduction to Computer Science, Tutorial on Algorithms and Applications: Opportunities and Risks at Williams College, Fall 2017.

Taught Introduction to Computer Science, Introduction to Modeling and Programming, at The University of the South, Spring 2017.

Lectured on Extreme Programming, Expert Systems, Neural Networks, Pedagogy for Teaching Research Methods, and Computer Literacy at UNITEC Institute of Technology, Auckland, New Zealand, *April-May, 2003*

Taught Data Structures (1988-89, Summer 1993, Fall 1995), Analysis of Programs (1988-1989 and Summer, 1990), Prog. Lang. (Summers, 1991, 1992, 1996), and Abstract Data Types (Fall, 1995) at the Univ. of Texas at Austin

General Reviewer/external evaluator for faculty hiring, review, promotion, tenure

Consulting Annual requests yield 6-12 reports per year since 2005

Activities co-organizer and co-leader, with Douglas Baldwin, Amanda Holland-Minkley, and Grant Braught, SIGCSE Committee on Computing Education in Liberal Arts, Colleges: Phase 2–implementation, 2019-

co-organizer and co-leader, with Douglas Baldwin, Andrea Lawrence, and Alyce Brady, SIGCSE Committee on Computing Education in Liberal Arts Colleges: Phase 1–foundations, 2016-2019

Reviewer of introductory courses and overall curriculum, University of Central Asia
March, June, July, October, 2019

Member, MAA Committee on Departmental Reviews, 2017-2020

Member, ACM Committee on Retention in the First Two Years, 2016-2018

Chair, MAA Program Study Group on Computing and Computational Science, 2012
Facilitator/co-author of Summary Report and Supplemental Report

Contributor to MAA Committee on Consultants
Writer of LaTeX template for reports of external reviewers, for MAA Report, *Guidelines for Serving as a Consultant in the Mathematical Sciences*, Spring, 2009.

Consultant to Kenyon College regarding possible directions for a computer science program, *May, 2016*

Member of the MAA Committee on the Profession, 2003-2009

Member of the Ad-Hoc Committee to Draft an MAA Ethics Statement, 2005-2007

Member of the NSF-funded Faculty Recruitment and Retention Study Group, organized by the Computing Research Association, 2001-2002

Contributor to *Computing Curriculum 2001* by ACM/IEEE-CS
Member of the Task Force on Mathematics and Science, 1999-2000
Chair of Pedagogy Focus Group 2, Supporting Courses, 1999-2001

Consultant to Kalamazoo College regarding computer science program and personnel, with support from the Pew Midstates Consortium, *November, 1997*

Reviewer of new computer science curriculum for Pepperdine University, *Fall, 1997*

Consultant to the Chancellor of the University of Maine System regarding a new computer science major, proposed by the University of Maine at Farmington.

Panelist for Review of N. S. F. Proposals:
CCD Proposals: July 1994; CCD/UFE Proposals: July 1995;
ILI Proposals: January 1996
CCLI Proposals: January 1999, August 1999, July 2000, July 2004, July 2005
CSEMS Proposals: May 2001
TUES Proposals: July 2011
ATE CS/IT Proposals: December 2013

Interviews on *The Limits of Computing*:
Drive Time Des Moines, WHO Radio, October 12, 1994
Talk of Iowa, WOI Radio, October 29, 1994;
Christian Science Monitor: for February 16, 1994 article

Outside Math/CS Dept., SUNY Purchase, Harrison, NY, *Spring 2023*
Reviewer/ CS Program, Linfield University, McMinnville, OR, *April 2022*
External CIS Dept., Valparaiso University, Valparaiso, IN, *February 2020*
Evaluator CIS Dept., Park University, Kansas City, MO, *November 2019*
 CS Dept., Ball State University, Muncie, IN, *Fall 2019*
 Math/CS Dept., Augustana College, Rock Island, IL, *Spring 2019*
 CS Dept., Hope College, Holland, MI, *Spring 2018*
 CS Dept., Wabash College, Crawfordsville, IN, *Fall 2017*
 CS Dept., Vassar College, Poughkeepsie, NY, *Fall 2016*
 CS/Mathematics Program, Pepperdine University, Malibu, CA, *February 2016*
 CS Dept, University of San Francisco, San Francisco, CA, *November 2015*
 Mathematics Program, SUNY Geneseo, Geneseo, NY, *April 2015*
 Math/CS Program, Santa Clara University, Santa Clara, CA, *April 2014*
 CS Program, Rollins College, Winter Park, FL, *February 2013*
 Math/CS Dept., St.Mary's College of Maryland, St. Mary's City, MD, *April 2012*
 CS Dept., Southwestern Minnesota State University, Marshall, MN, *February 2012*
 CS Dept., Allegheny College, Meadville, PA, *November 2011*
 CS Program, College of Wooster, Wooster, OH, *February 2011*
 Math/CS Dept., Hendrix College, Conway, AR *January, 2010*
 CS Dept., Hamilton College, Clinton, NY *Spring, 2009*
 CS Program, Nebraska Wesleyan University, Lincoln, NE *Spring, 2009*
 Math/CS Dept., University of the South, Sewanee, TN *Fall, 2008*
 CS Dept., Colby College, Waterville, ME *Spring, 2008*
 CS Dept., Willamette University, Salem, OR *Fall, 2007*
 CS Dept., Washington and Lee University, Lexington, VA *Spring, 2007*
 Math/CS Dept., Moravian College, Bethlehem, PA *Fall, 2006*
 Math/CS Dept., Wheaton College, Norton, MA *Fall, 2005*
 Math/CS Dept., Stetson University, DeLand, FL, *Spring, 2005*
 Math/CS Dept., Southwestern University, Georgetown, TX, *Spring, 2005*
 CS Program., Franklin and Marshall College, Lancaster, PA, *Fall, 2004*
 Math/CS Dept., Creighton University, Omaha, NE, *Spring, 2004*
 Math/CS Dept., Concordia College, Moorhead, MN, *Spring, 2004*
 CS Dept., College of St. Benedict & St. John's Univ., Collegeville, MN, *Spring, 2003*
 CS Dept., Univ. of Hawaii at Hilo, HI, *Fall, 2002*
 Math/CS Dept., St. Olaf College, Northfield, MN, *Spring, 2002*
 Math/CS Dept., Loras College, Davenport, IA, *Spring, 2002*
 Math/CS Dept., Dickinson College, Carlisle, PA, *November, 2001*
 Math/CS Dept., Kalamazoo College, Kalamazoo, MI, *April, 2001*
 Math/CS Dept., Bates College, Lewiston, ME, *March, 2001*
 Math/CS Dept., Hendrix College, Conway, AR, *October, 2000*
 Math/CS Dept., University of San Diego, CA, *February, 2000*
 CS Dept., University of Northern Iowa, Cedar Falls, IA, *February, 2000*
 Math/CS Dept., Juniata College, Huntingdon, PA, *Fall, 1997*
 Math/CS Dept., Wheaton College, Wheaton, IL, *Fall, 1996*
 Math/CS Dept., Gustavus Adolphus College, St. Peter, MN, *Fall, 1994*
 Math/CS Dept., Ursinus College, Collegeville, PA, *Winter-Spring, 1993*
 CS Dept. Anderson University, Anderson, IN, *Winter-Spring, 1991*

Professional Meetings

- Regularly attend ACM/SIGCSE Technical Symposia on CS Education
 Chair for Workshops and Tutorials, 1991 and 1994; for Panels, 1995
 Program Chair for SIGCSE 2000
 Symposium Chair for SIGCSE 2001
 Database Administrator and Software Consultant for SIGCSE 2002-2014
- Regularly attend ACM/SIGCSE Conference on Innovation and Technology in
 Computer Science Education (ITiCSE)
 Chair for Tips and Techniques for ITiCSE 2003
 Chair for First-timer Activities for ITiCSE 2004
 Chair for Tutorials for ITiCSE 2005
 Chair for Student Posters for ITiCSE 2006, ITiCSE 2007, ITiCSE 2008
 Database Administrator and Software Consultant for ITiCSE 2005-2012
- Invited talk: Bias in algorithms and the misuse of Big Data sets
- Iowa Undergraduate Computer Science Consortium, November 16, 2020.
 - The University of Puget Sound, February 3, 2020
- Co-coordinator/panelist: Special session on supporting co-curricular experiences,
 51st ACM Technical Symposium on Computer Science Education,
 March 2020, moved from in-person format to archived/virtual slides
- Invited talk: Lab-based Pedagogy w/Collaboration:
 An Example of a Flipped Classroom
- Computer Science Department, Univ. of Oregon, April 19, 2019
 - Faculty Colloquium, Willamette University, April 5, 2019
- co-Leader, with Kathleen Freeman Hennessy and Jennifer Parham-Mocello,
 BoF Session on Co-curricular Activities in Computer Science Departments,
 50th ACM Technical Symposium on Computer Science Education,
 Minneapolis, MN, February 27-March 2, 2019, p. 1248.
- Panelist, with Melinda McDaniel, John Cigas, and Briana B. Morrison,
 CS Education Then and Now: Recollections and Reflections,
 50th ACM Technical Symposium on Computer Science Education,
 Minneapolis, MN, February 27-March 2, 2019, pp. 181-182.
- co-Leader, MAA Minicourse on Leading a Successful Program Review,
 MathFest 2018, Denver, CO, August 3-4, 2018.
- Speaker, Iowa Undergraduate Computer Science Consortium, April 24, 2018:
- Approaches for Introductory Computer Science: Content and Pedagogy
 - Lab-based Pedagogy with Collaboration: An Example of a Flipped Classroom
 - Grinnell / U.Iowa 4+1 Program
- Organizer, Iowa Undergraduate Computer Science Consortium, March 28, 2015
- Co-leader, Special Session on “Curricular Assessment: Tips and Techniques”,
 SIGCSE 2015, *Proceedings of the 46th ACM Technical Symposium on Computer
 Science Education*, March 2015, pp. 265-266.
- Co-leader, Tutorial on “Conducting Departmental Reviews and Serving
 as a Reviewer”, CCSC Midwest, September 19, 2014.
- Iowa Undergraduate Computer Science Consortium, March 29, 2014
- Talk: Grinnell’s Experience Using CS2013 as Part of a
 Review of its CS Curriculum and Major
 - Talk: Academic Implications for Google Glasses: Some Initial thoughts
- Williams College Computer Science: 25th Anniversary Celebration:
 Panel on CS Education

Professional Meetings, Continued

- Iowa Undergraduate Computer Science Consortium, October 27, 2012
- Organizer/convener for meeting at Grinnell College
 - Talk: The Course Exemplar Concept
 - Talk: MAA Program Study Group on Comp. Sci. & Computational Sci.
 - Panel: Using undergraduates as mentors, lab assistants, graders, & peer tutors
- Panelist, “Successful K-12 Outreach Strategies”, SIGCSE 2011, Dallas, TX
- Special Session Co-Leader, “Role and Value of Quantitative Instruments in Gauging Student Perspectives in Comp. Curr.”, SIGCSE 2011, Dallas, TX
- Presenter, “Lab-based Pedagogy with Collaboration: Some Possibilities for a Collaborative LACS Paper”, Liberal Arts LACS Paper”, Liberal Arts Computer Science Consortium, Kalamazoo College, July 22, 2011
- Presenter, “A Lab-based Approach for Introductory Computing that Emphasizes Collaboration”, Computer Science Education Research Conference (CSERC ’11), Heerlen, the Netherlands, April 7, 2011
- Panelist, “What Everyone Needs to Know about Computation”, SIGCSE 2010, March 2010, Milwaukee, WI.
- Invited Speaker, ‘“Perspectives” for General Education and Computing’, Rochester Institute of Technology, March 22, 2011
- Participant, Compact for Faculty Diversity Institute, Tampa, FL, Oct. 28-31, 2010.
- Session Leader, “Proven Strategies for Increasing Participation of High School Students in Computing”, CCSC: Midwest, September 24, 2010.
- Participant, Rebooting Computing Summit, Mountain View, CA, January 2009
- Panelist, “Advanced Placement Computer Science: The Future of Tracking the First Year of Instruction”, SIGCSE 2009, the SIGCSE Bulletin, Vol. 41, No. 1, March 2009.
- CS2 Workshop for Computer Science Faculty, Denison University, June 16-17, 2008, funded by the Andrew Mellon Foundation.
- Keynote Speaker, “CS2: Why, What, and How?”
 - Panelist, “Why Computer Games should be BANNED in the Undergraduate CS Curriculum”
 - Panelist, “A Lab-based Introduction to Computer Science that Emphasizes Collaboration”
- Panelist, “Games: Good/Evil”, a debate on the role of computer games in the undergrad. curr., SIGCSE 2008, the SIGCSE Bulletin, Vol. 40, No. 1, March 2008.
- Invited Participant, Education Summit of the Computing Research Association, January 4-5, 2007, Atlanta, GA
- Attendee, ACM/SIGCSE International Computing Education Research Workshop
- ICER 2005: Oct. 1-2, 2005, University of Washington, Seattle, WA
 - ICER 2006: Sept. 2-10, 2006, University of Kent, Canterbury, UK
- Invited Participant, Department Chairs Conference, Macalaster College, Oct. 20-22, 2006.
- Invited Participant, NSF Integrative Computing Education and Research Workshop - Midwest Region, December 2-3, 2005 Chicago, IL
- Panelist, “A 2003 Model Curriculum for a Liberal Arts Degree in Computer Science”, CCSC-Midwest 2003 and SIGCSE 2004
- Invited speaker, “Getting Published in CS Education Conferences”, CCSC-Midwest 2003, October 3, 2003, and Iowa Undergraduate Computer Science Consortium meeting, October 25, 2003.
- Invited speaker (talks on three different topics), Macalaster College, Nov. 18-19, 2003.
- Panelist, “Serving as a Department Head”, SIGCSE 2003
- Panelist on invited panels on “Math Educators, CS Educators: Working Together”, at Joint Mathematics Meetings, January 2003 and SIGCSE 2003.

Professional Meetings, Continued

Conference on Computer Science in the Next Decade at Hope College, November 15-17, 2002, sponsored by the Pew Midstates Consortium
 Keynote, *Faculty Development Workshop on Computer Science in the Next Decade*,
 Invited Speaker *Challenges for Faculty Recruitment in Computer Science*
 Panelist, “Writing a Textbook”, ITiCSE 2002.
 Invited Panelist, “Faculty Isolated by Discipline”, Joint Math. Meeting, Jan. 2001
 Panel Organizer, “The State of Academic Hiring in Computer Science”, SIGCSE '99.
 Regularly attend meetings of the Iowa Undergraduate Computer Science Consortium
 Consortium Organizer, 1994; Program Facilitator, 1994, 1999, 2002, 2012
 Invited Panel Organizer, “Issues Faced by Departments with an Undergraduate Focus”,
 CRA-Snowbird Conference for Computer Science Department Heads, July, 1998.
 Panel Organizer, “Approachers for Encouraging High School/College Faculty
 on Interaction,” SIGCSE '98.
 Invited Participant, Working Group on “Computer Mediated Communication
 in Collaborative Educational Settings” at SIGCSE Conference on Integrating
 Technology into Computer Science Education, Uppsala Sweden, June 1997
 Keynote Speaker on “Formal Methods in the CS Curriculum” at CCNY Conf.
 on “Formal Methods in the Early CS Curriculum at CCNY”, Sept. 1995.
 Invited Speaker on the CS major within a liberal arts setting at Midwest Small College
 Computing Conference, Sept. 1995 and at three universities in 1995-1996.
 Co-organizer, Curricular Development Workshop on “Formal Methods in CS”
 Hamilton College, Summer 1994 and Summer 1996, as part of NSF Grant.
 Panel Organizer, “CS Education in the People’s Republic of China,” SIGCSE '95
 Panel Organizer, “The CS Major within a Liberal Arts Environment,” SIGCSE '94.
 Panel Organizer, “The Role of Rigorous Methods and Mathematics
 in the Undergraduate CS Curriculum,” SIGCSE '94.
 Organizer, Iowa Undergraduate CS Consortium, *Winter-Spring, 1994*
 Organizer and Leader of Tutorial and Workshop on “Program Verification,”
 ACM Technical Symposium on CS Education, *February, 1990, March, 1991*
 Invited Participant, Workshop on Computer Science in the Liberal Arts, Williams
 College, *July, 1987 and August 2001*; Washington & Lee College, *July, 1988*
 and *June, 1993*; Hamilton College *June, 1989*; Calvin College *July, 1990*;
 Swarthmore College *June, 1994*; Dartmouth College *July, 1996*; Dickinson
 College *June 1998*; Oberlin College *June 1999*, Bowdoin College, *June 2000*;
 RIT *August 2005*; Creighton University *August 2006*;
 SUNY Geneseo, *July 2007*, Pomona College, *July 2008*, Gustavus Adolphus
 College, *July 2009*, George Washington University, *July 2010*, Hope and
 Kalamazoo College, *July 2011*, Bryn Mawr College, *June 2012*,
 University of Puget Sound, *June 2015*
 Organizer for Grinnell College Meetings, *June, 1991; August, 2002; June 2013*;
 Program Chair for meetings at SUNY-Geneseo, *June, 1992*,
 Calvin College *August 2003*, Wellesley College, *August 2014*
 Organizer and Leader on Workshop on “Program Verification,” SIGCSE '90 and '91
 Panelist on “Faster, Fairer, and More Consistent Grading, Using Techniques
 from the Advanced Placement Reading,” SIGCSE 1990
 Participant in St. Olaf Conference on “Computers in Calculus,” Oct. 1989
 Invited Speaker for Four Talks, Illinois Council of Teachers of
 Mathematics, Champaign-Urbana, *October, 1987*
 Organizer and Chair, Session on “Joint Majors in Computer Science”, SIGCSE 1987
 Invited Participant and Speaker, Sloan Workshop on Computer Science
 in the Liberal Arts, Allegheny College, *July, 1986*

- Professional Meetings, Continued** Invited Participant, Sloan Workshop on a CS Major Curriculum for Liberal Arts Colleges, Colgate University, *June, 1985*
- Invited Participant, Panel on “A Model Curriculum for a Liberal Arts Degree in CS,” Joint Math. Meetings, New Orleans, *January, 1986*
- Invited address on “Developing and Teaching an Advanced Placement Computer Science Course”, World Conf. on Comp. in Ed. Norfolk, VA, *July, 1985*
- ACM Special Interest Group Conferences on Databases: *1982 and 1983*;
Programming Languages: *1980*; Compiler Construction: *1979*
- Regularly attend the Midwest Topology Conference, 1974-1978
- Regularly attend Iowa Section, M.A.A. Meetings
- Organizer of Session on Professional Ethics, *April 2007*
- Paper on Teaching Introductory Programming, *April, 1980*
- Attended Carleton Conference on Artificial Intelligence, *1984*
- Attended Fifth Berkeley Workshop on Distributed Data Management and Computer Networks, *February, 1981*
- Attended A.M.S.-M.A.A. National Mathematics Meetings, *January, 1977; January, 1980; January, 1986; January, 1987; January, 2001 - 2008*
- Attended conference on Undergraduate Computer Science Curricula at the University of Iowa, *October, 1976*
- Organized Topology Seminar at M.I.T., *Fall, 1972 and 1973*
- Professional Societies and Affiliations**
- Association for Computing Machinery (ACM)
- Member, ACM Committee on Retention, 2017-2019
- Special Interest Groups in:
- Computer Science Education (SIGCSE)
 - Chair, 2001-2007; Immediate Past Chair, 2007-2010
 - Secretary/Treasurer, 1993-2001
 - Computers and Society (SIGCAS)
 - Software Engineering (SIGSOFT)
- Iowa Software Association, 1997-2007
- Iowa Undergraduate Computer Science Consortium, Founder/member: 1995-present
- Mathematical Association of America (MAA)
- Member, MAA Committee on Program Review (formerly MAA Committee on Program Review), 2017-2019.
 - Member, MAA Committee on the Profession, 2000-2002.
 - Member, MAA/ACM/IEEE Task Force on the Teaching of Computer Science within Mathematics Departments, *1986-1988*
- Computer Professionals for Social Responsibility (CPSR)
- Member, Liberal Arts Computer Science Consortium, *1985-present*
- Hosted Consortium meeting, Summer 1991, Summer 2002, Summer 2013
- Program Chair and Convener, 1991-1992, 2002-2003
- Reviewer, Report of the ACM/IEEE Joint Curriculum Task Force, *1988-1991*

Grants

Furbush Faculty Scholar, Grinnell College, 2002-2003.
 Author and co-PI for Preparing Future Faculty (PFF) Program grant to a consortium of 5 Iowa Colleges and Universities for the improved training of computer science graduate students for academic careers, 1999-2001.
 Author and Program Director for \$19,394 grant from the Roy J. Carver Charitable Trust to develop and lead a summer workshop for high-school, computer-science teachers, June 1997
 Author and Program Director for \$90,000 Noyce Foundation Grant to develop workshops for high-school, computer-science teachers to improve CS education in secondary schools; 252 registrants in 8 workshops, 1995-1997
 Co-Author & Senior Investigator for NSF Grant CDA 9214874, *Integrating Object-Oriented Programming and Formal Methods into the Computer Science Curriculum*.
 Co-Director, NSF Grant CSI-8750715 and Grants from the Culpeper and Keck Foundations to Grinnell College for *Using Powerful Computer Software in a Laboratory Environment to Develop Mathematical Insight.*, 1987-1988.
 Annual grants from the Grinnell College Grant Board for publishing expenses
 Grants from Little, Brown and Company for release time for writing textbooks, 1984-1986, 1987-1988
 Support from Grinnell College's Exxon Educational Foundation grant for secretarial expenses for textbook preparation 1985-1986

Experience in Industry

Bell Laboratories, Facility Assignment and Control Systems (FACS)
 Worked on the development of a large, commercial, distributed data base management system, concentrating in the areas of system and data base administration. Responsibilities included: definition of the tasks needed to administer the system, review of software to perform the tasks, design of the documentation to support these tasks, writing major parts of manuals, monitoring component systems for consistency and usability from standpoint of system and data base administration.
 Mobil Oil Corporation
 Investigated the feasibility of incorporating Computer-Assisted Instruction (CAI) into the corporate training programming.

Reviewing Activities

Reviewer of textbooks for several publishers
 Addison Wesley Longman (computer science), 1997-2000
 Little, Brown and Company (computer science), 1982-1988
 HarperCollins/Harper and Row (computer science), 1983-1996
 D.C. Heath and Company: (comp. sci.) 1985-1995; (math), 1986-1995
 Jones and Bartlett Publishers (computer science), 1989-2011
 McGraw-Hill Publishers (computer science), 1996-2000
 Reston Publishing Inc. (computer science), 1981-1985
 Winthrop Publishers Inc. (computer science), 1980-1983
 W.W. Norton & Co., (mathematics), 1975, 1976
 Referee of computer science papers
 SIGCSE Technical Symposium in CS Education, 1986-present
 SIGCSE Conference on Innovation & Technology in CS Education, 2000-present
 ACM Inroads, 2008-present
 National Educational Computing Conference, 1985-1990
 Referee of mathematics papers
The American Mathematical Monthly, 1985-1986
Advances in Topology, 1976

- Activities to Support Secondary School Education**
- Member, Development Committee for Advanced Placement Computer Science A Examination, 2009-2013
 - Reader in Computer Science for the Advanced Placement (AP) Tests of the Education Testing Service (ETS), 1984-1995, 1999-present; Question Leader, 1986, 1992, 1995, 2009, 2013, 2016, 2020; Table Leader, 1985, 1987, 1988, 2005, 2006, 2007, 2008, 2010, 2014, 2015, 2017, 2018, 2019
 - Reader in Mathematics for the AP Tests of ETS, 1975-1977, 1979-1980, 1982
 - Member, AP Computer Science Development Committee, 2009-2012
 - Chair, AP Computer Science Course and Exam Review Commission, 2008-2009
 - College Board Consultant in Mathematics and Computer Science, 1983-present
 - Member of the Iowa Advanced Place Advisory Council, 1997-2004
 - SIGCSE Representative to the Ad Hoc Advisory Committee on Future Directions for Advanced Placement Computer Science, 1999-2000.
 - Leader of Advanced Placement Computer Science Workshop for high school teachers, organized by Ohio Society for Technology in Education, *June-July, 1998*
 - Developer and Leader of Summer Computing Workshop for High School Teachers, sponsored by the Roy J. Carver Charitable Trust, *June, 1997*
 - SIGCSE Representative to the Ad Hoc Advisory Committee for the transition of Advanced Placement Computer Science from Pascal to C++, 1995-1996.
 - Developer and Leader of Workshops on Computing for High School Teachers, sponsored by the Noyce Foundation:
 - General Workshops: Austin TX, *October 1994*; Des Moines IA, *March 1995*
 - Edinburg TX, Cedar Rapids IA, El Paso TX, *March 1996*;
 - Houston TX, *September 1996*;
 - Advanced Workshops: Ames IA, *April 1996*, Austin TX, *October 1996*
 - Developer and Leader of Workshop on Advanced Placement Computer Science for High School Teachers, sponsored by UT-Austin and Texas Instruments, Dallas, TX, *February, 1992*
- Programming Languages**
- Experience in programming in each of the following languages:
- Ada, Algol, BASIC, C, C++, FORTRAN, Java, LISP,
 - LOGO, ML, Modula-2, Pascal, Prolog, Scheme,
 - UNIX Shell Language, various assembly and machine languages,
 - JavaScript, VBScript, ASP, PHP, and related Web-based scripting languages
 - MIL and SDL (on Burroughs B1700), SNOBOL (SPITBOL on IBM 360)