

Martha L. Abell

Department of Mathematical Sciences
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EDUCATION

Ph.D. Mathematics, Georgia Institute of Technology, Atlanta, Georgia, June 1989
M.S. Applied Mathematics, Georgia Institute of Technology, Atlanta, Georgia, March 1987
B.S. Mathematics, Mercer University, Macon, Georgia, November 1983

PROFESSIONAL EXPERIENCE

1989 – present *Professor, Associate Professor, and Assistant Professor of Mathematics*
Georgia Southern University
2014 – 2018 *Dean, College of Science and Mathematics*
Georgia Southern University
2012 – 2014 *Interim Dean, College of Science and Mathematics*
Georgia Southern University
2004 – 2012 *Chair, Department of Mathematical Sciences*
Georgia Southern University
2001 – 2004 *Director (and Interim Director), Honors Programs*
Georgia Southern University
1997 – 1998 *Faculty Assistant to the Vice President for Academic Affairs*
Georgia Southern University
1985 – 1989 *Graduate Assistant*
Georgia Institute of Technology
1984 *Tutor, Learning Skills Center and Special Services Program*
Columbus College (now Columbus State University)
1983 *Tutor, Learning Center*
Mercer University

ADMINISTRATIVE HIGHLIGHTS

Dean, College of Science and Mathematics (COSM)

Worked with Associate Deans, Department Chairs, Directors, Major Gifts Officer, faculty, staff, students, alumni, and offices around campus to make progress in the following areas.

- Worked with Major Gifts Officer to identify key alumni and corporate leaders to serve on the college Advisory Board; worked with the Major Gifts Officer to greatly increase the number of endowments and gifts to the college.
- Worked with our college team to secure the University's first scientific field station, a 1440-acre land gift from Southeastern Trust for Parks and Land.
- Developed strategies for the Capital Campaign, including a college Case Statement.
- Worked with the Alumni Office to improve communication with COSM Alumni; improved format and distribution of COSM newsletters.
- Supported a Summer New Faculty Workshop for new faculty in the college to learn best practices for teaching and other aspects of professional life from faculty mentors.
- Launched the Master of Science in Applied Physical Sciences program; assisted with supplemental funding needed for graduate assistantships.

- Guided the new Master of Science in Applied Geography through the Board of Regents approval process.
- Worked with the Office for Institutional Effectiveness to build a model to assess our college's effectiveness in meeting college objectives.
- Supported assessment efforts as part of SACSCOC reaffirmation and for continued implementation; worked with departments to establish program and general education assessment plans; COSM won several awards for our efforts on campus
- Revised Faculty Annual Reports to streamline the collection of data for departmental and college annual reports.
- Worked with the Department Chairs to identify research equipment needs; worked with other colleges on campus to determine if equipment could be shared between colleges.
- Worked to address issues of hardware/software associated with research equipment; helped to start the campus Research Computing Advisory Council.
- Supported interdisciplinary research groups in Cancer Research, Computational Science, Coastal Plain Science, and Materials Science.
- Hired the inaugural director of the Institute for Coastal Plain Science.
- Met with SGA Senators and other student leaders in the college; helped them address questions/concerns they had about programs and advisement as well as desires they had for new majors and minors within the college.
- Worked with Marketing and Communications to increase visibility of the College of Science and Mathematics; developed a more visible presence on social media.
- Supported the Summer Research Experiences for Undergraduates (REU) in Chemistry by meeting with students and providing recruitment funding.

Chair, Department of Mathematical Sciences

Worked with faculty, staff, and offices around campus to make progress in the following areas.

- Approved a faculty handbook, including guidelines for annual evaluations (with a scoring rubric) and evaluations for promotion, tenure, post-tenure, and pre-tenure.
- Coordinated efforts to improve student success in core courses; these focused on the development of a Math Placement Model to predict student success in the first mathematics course, implementation of Hybrid (Lab & Lecture) College Algebra, increased offerings of Math Modeling, the development and use of the Math Lab with tutoring available from peer leaders, graduate assistants and faculty members.
- Grew the Master of Science Program in Mathematics from 15 students to over 40; undergraduate majors grew from 35 to 120.
- Successfully garnered Student Tech Fee funds to update most classrooms to "Smart Classrooms" and secure software for students and faculty.

- Rearranged office and storage areas to provide office space to all faculty and graduate assistants.
- Expanded the department's colloquia and seminar series to provide funding for growing numbers of external speakers.
- Supported the establishment of the department's Distinguished Lecture Series.
- Moved the faculty hiring process to *MathJobs* to attract a more diverse pool of applicants and streamline the screening process.
- Increased funding for graduate assistantships through the Hybrid College Algebra Project.
- Supported revisions to the undergraduate and graduate degree programs and course offerings.
- Supported an increase in student activities, including awards for top graduate students and graduate teaching assistants, travel for the Math Jeopardy Team and students to attend conferences, and funds to support the Mathematical Competition in Modeling and Putnam Teams.
- Developed a Graduate Student Computer Lab to support the scientific computational needs of our graduate students.
- Helped in organizing and hosting the following conferences on our campus: 2011 Southeastern Atlanta Regional Conference on Differential Equations, 2011 q-Series Conference, 2011 Regional Meeting of the American Mathematical Society, 2007 Southeastern Section Meeting of the Mathematical Association of America, 2006 Summer Conference on Topology and Its Applications.
- Supported the establishment of the Eagle Undergraduate Mathematics Conference on campus to promote mathematics across the Southeastern U.S.

Director, University Honors Program

Worked with faculty, staff and students from across campus to make progress in the following areas.

- Led a task force to establish the 1906 Scholars Program; recruited and interviewed the first class of scholars in 2004.
- Encouraged and supported student participation annually in the Southern Regional Honors Conference and the National Collegiate Honors Conference.
- Worked with Registrar's Office to include University Honors Program completion on transcripts.
- Established criteria for a service component in the program. Encouraged students to complete a service transcript to earn a Service Certificate.
- Established and implemented graduation requirements, including the completion of an honors project/thesis.
- Worked with departments to establish guidelines for honors courses; expanded honors course offerings.
- Worked with students to plan co-curricular and community-building activities such as visits to the High Museum (Atlanta, GA) and the Hunley Submarine, Lasch Conservation Center (Charleston, SC); revived the United Student Honors Association (USHA).
- Organized the first honors graduate awards ceremony to honor seniors and students transitioning from Core to College Honors.
- Led Honors Program recruitment efforts.

Faculty Assistant to the Vice President for Academic Affairs

Worked with faculty and staff from across campus to make progress in the following areas.

- Assisted in developing the Semester System Core Curriculum on campus.
- Reviewed degree program requirements for each major at Georgia Southern.
- Assisted departments in the completion of paperwork necessary for degree and course proposals.
- Developed documentation to assist students involved in the transition to the semester system.
- Reviewed all grant proposals submitted by Georgia Southern University faculty members to external funding agencies. Completed a Grant Proposal Review and Sign-off form for each proposal. Attended numerous sign-off meetings.
- Assisted departments in the submission of new degree program proposals to the Board of Regents.

SERVICE AND PROFESSIONAL ACTIVITIES

Georgia Southern University

- Campus Representative for the Marshall, Cooke, and Udall Scholarships (2001 – 2004)
- Associate Provost Screening Committee (2001 – 2002)
- Academic Program Review Committee (2001)
- Strategic Planning Committee (2000 – 2004)
- Honors Program Council (1998 – 1999)
- Honors Program Website Committee (1998 – 1999)
- General Honors Program Committee (1997)
- Committee on Program Admission Requirements (1997)
- Undergraduate Council (1996 – 1997)
- Committee on Degrees (1996)
- Core Curriculum Committee, Area D Subcommittee Chair (1996)
- Faculty Senate (1992 – 1994; 1995 – 1997; 1998 – 1999, 2000 – 2003)
 - Senate Librarian (1992 – 1993)
 - Senate Representative to the Student Government Association (1995 – 1996)
- Vice President for Academic Affairs Advisory Council (1992 – 1993)
- Honors Day Committee (Chair, 1995 – 1997, 1999 – 2000, 2004 – 2006; Member, 2000 – 2004)
- University Committee to Revise the Statutes and Bylaws (1995 – 1996)
- Athletics Committee (1993 – 1994)
- Faculty Service Committee (1993 – 1994)
- Ad Hoc Committee, Gender and Minority Equity (1994 – 1995)
- Search Committee for Dean of Allen E. Paulson College of Science and Technology (1994 – 1995)
- Disciplinary Review Panel (1994 – 1995)
- Steering Committee for Athletic Recertification, Subcommittee on Equity (Recorder) (1993 – 1995)

Allen E. Paulson College of Science and Technology

- Promotion and Tenure Committee, Chair (2001)
- Curriculum Committee (1998 – 2000)
- Dean's Advisory Committee (1999 – 2000)

Departmental

- Industry Committee (1989 – 1990)
- Math Committee (1989 – 1990)

- Computer Calculus Committee (1991 – 1994)
- Calculus Committee (1994 – 1997)
- Graduate Committee (1992 – 1996)
- Planning Committee (1989 – 1991)
- Teaching Using Technology Committee (Chair) (1995 – 1997)
- Alumni Committee (1994 – 1996)
- Faculty Mentor Program (1990 – 1991, 1996 – 1997, 2000 – 2001)
- Tenure and Promotion Review Committee (1996 – 1997)
- Tenure Committee (Chair) (1998 – 1999; 2003)
- Promotion Committee (1998 – 1999; 2000 – 2001; 2001 – 2002; 2003)
- Post-Tenure Review Committee (1998 – 2000; 2001 – 2002)
- Common Core Courses Committee (2000 – 2001; 2001 – 2002)
- Learning Support/Math Review Committee (Chair) (2000 – 2001)
- Math Positions Search Committee (2001 – 2002)
- Math Tournament – Various Assignments (1989 – present)

Discipline/Administrative Related

- Southeastern Atlantic Section of the Society of Industrial and Applied Mathematics
President (1997 – 1998)
Secretary-Treasurer/President-Elect (1996 – 1997)
- Mathematical Association of America
Council on Meetings and Professional Development (Chair, 2018 – present)
Committee on Committees and Councils (2018 – present)
Committee on the Teaching of Undergraduate Mathematics (Chair, 2012 – 2018)
Council on Students and Programs in the Mathematical Sciences (2012 – 2018)
Service Award Committee, Southeastern Section (2016-2017, Chair, 2017-2018)
Board of Governors (2013 – 2015)
Trevor Evans Award Committee (2007 – 2009, Chair, 2009)
Basic Library List Committee (2006 – 2009)
Minicourses Committee (2006 – 2012, Chair, 2009 – 2012)
Governor, Southeastern Section (2013 – 2015)
Past Chair, Southeastern Section (2009-2010)
Chair, Southeastern Section (2007 – 2009)
Chair-Elect, Southeastern Section (2006 – 2007)
Secretary/Treasurer, Southeastern Section (2000 – 2006)
State Director for Georgia (1998 – 2001)
Georgia Southern Departmental Representative/Liaison (1992 – 1998)
- American Association of University Professors
Georgia Southern Chapter President (1995 – 1997)
Georgia Southern Chapter Secretary (1993 – 1995)
- Academic Advisory Committee on Mathematical Subjects (USG)
Member (2004 – 2012)
Executive Committee (2006 – 2011, Chair, 2007 – 2008)
- Mathematics and Computers in Simulation Editorial Board (2008 – 2011)
- External Reviewer, Department of Mathematics, Columbus State University (2008, 2016)
- External Reviewer, DeKalb College Calculus Semester Conversion Project (1996)

- National Science Foundation Review Panel, Curriculum and Course Development (CCD) Grants, Washington, DC, July 17 – 20, 1995.
- National Science Foundation Review Panel, Instrumentation and Laboratory Improvement (ILI) Grants, Washington, DC, January 19 – 22, 1994.

Professional Conferences/Sessions

- Organizer, Invited Paper Session, MAA Instructional Practices Guide in Action, MathFest 2018, Denver, CO, August 2, 2018.
- Panelist, Advocating for Your Career and Yourself, Denver, CO, August 2, 2018.
- Organizer, Invited Paper Session, MAA Instructional Practices Guide, Joint Mathematics Meetings, San Diego, CA, January 11, 2018.
- Panelist, Career Trajectories Involving Administrative Roles: What You May Want to Consider, San Diego, CA, January 12, 2018.
- Organizing Committee, International Conference on Approximation Theory, Savannah, GA, May 8 – 11, 2017.
- Organizer, Panel Discussion, Developing the MAA Instructional Practices Guide, Joint Mathematics Meetings, Atlanta, GA, January 6, 2017.
- Organizer, Panel Discussion, Developing the MAA Pedagogy Guide, Joint Mathematics Meetings, Seattle, WA, January 6, 2016.
- Organizer, Invited Paper Session, Making the Case for Faculty Relevance: Case studies in best practices for classroom teaching, Joint Mathematics Meetings, San Antonio, TX, January 12, 2015.
- Organizer, Panel Discussion, Maximizing your impact in the classroom: Case studies in best practices for classroom teaching, Baltimore, MD, January 17, 2014.
- Organizing Committee, Southeastern Atlantic Regional Conference on Differential Equations, Statesboro, GA, September 30 – October 1, 2011.
- Organizing Committee, q-Series Conference, Statesboro, GA, March 14 – 16, 2011.
- Organizing Committee, Regional Meeting of the American Mathematical Society, Statesboro, GA, March 12 – 13, 2011.
- Organizing Committee, Regional Meeting of the Mathematical Association of America, Statesboro, GA, March 13 – 14, 2007.
- Organizing Committee, Summer Conference on Topology and Its Applications, Statesboro, GA, July 6 – 9, 2006.
- Organizer, Special Session on Distance Learning and Technology at the Southeastern Section of the Mathematical Association of America Meeting, Atlanta, GA, March 8 – 9, 2002.
- Organizer, Georgia Southern University Inaugural Conference on Differential Equations and Computational Mathematics, April 1, 2000.
- Statewide mathematics seminar, "Innovations in Undergraduate Mathematics in Georgia", through the Georgia State Academic and Medical System (GSAMS); 1995 – 1998.
- Organizer, Mathematical Association of America (MAA) State Dinner, Georgia Southern University, Statesboro, GA, October 20, 1996.
- Organizer, Southeastern Atlantic Society of Industrial and Applied Mathematics (SEAS-SIAM) Meeting, Georgia Southern University, March 26 – 27, 1993.

Student Related

- Phi Kappa Phi Study Abroad Scholarship Committee, Chair (2016 – 2017)
- Phi Kappa Phi Scholarship Committee, Chair (2004 – 2008)

- Phi Kappa Phi Research Symposium Committee (2009 – 2016)
- Faculty Advisor, Student Chapter of the Mathematical Association of America (1992 – 2003)
- Faculty Advisor (2004 – 2006, 2012 – 2016), Scholarship Advisor (1992), Financial Advisor (1992 – 1994), Epsilon Pi Chapter, Alpha Delta Pi Sorority, Georgia Southern University.
- Georgia Southern University Greek Organizations Awards Selection Committee (2002)

HONORS AND AWARDS

- Mathematical Association of America Southeastern Section Distinguished Service Award (2016)
- Georgia Southern University Award for Excellence in Research and/or Creative Scholarly Activity (1995 – 1996)
- Phi Kappa Phi Honor Society (Faculty Inductee – 2002)
- Omicron Delta Kappa Leadership Honor Society (Faculty Inductee – 2001)
- Georgia Southern University nominee for the Conference of Southern Graduate Schools' New Scholar (1996)
- Ames Award (Outstanding female graduate student in the School of Mathematics), Georgia Institute of Technology (1989)

SPECIAL PROGRAMS (ADMINISTRATION/TEACHING/RESEARCH)

- University System of Georgia Accelerated Leadership Academy, 2017
- University System of Georgia Executive Leadership Institute, 2013 – 2014.
- Eagle Leadership Program, Georgia Southern University, 2010
- Chairing the Academic Department, A Workshop for Division and Department Chairs and Deans, Sponsored by the American Council on Education (ACE), Washington, DC, June 15 – 18, 2005.
- Georgia Institute of Technology Faculty Development Program; selected as one of four faculty members from the state of Georgia to teach and do research in School of Mathematics (Mathematical Biology Group) at Georgia Tech, 1997 – 1998.

PROFESSIONAL ORGANIZATIONS

- Mathematical Association of America (MAA)
- American Mathematical Society (AMS)
- Society for Industrial and Applied Mathematics (SIAM)
- Association for Women in Mathematics (AWM)
- Sigma Xi Scientific Research Society (Past Member)
- American Association of University Women (Past Member)
- American Association of University Professors (Past Member)

SCHOLARSHIP

Editor

- *Mathematical Association of America Instructional Practices Guide*, 2018.

Papers and Books Published

- Martha L. Abell and James P. Braselton, *Introductory Differential Equations*, Fifth Edition, Academic Press, 2018, *in press*.

- Martha L. Abell and James P. Braselton, *Mathematica By Example*, Fifth Edition, Academic Press, 2017
- Martha L. Abell and James P. Braselton, *Differential Equations with Mathematica*, Fourth Edition, Academic Press, 2016.
- Martha L. Abell and James P. Braselton, *Introductory Differential Equations*, Fourth Edition, Academic Press, 2014.
- Martha L. Abell and James P. Braselton, "Comparing the Effects of Interactive and Noninteractive Complementary Nutrients on Growth in a Chemostat", *Open Journal of Applied Sciences* **3**: 232-331, 2013.
- Martha L. Abell and James P. Braselton, *Introductory Differential Equations with Boundary Value Problems*, Third Edition, Academic Press, 2010.
- Martha L. Abell and James P. Braselton, *Mathematica By Example*, Fourth Edition, Academic Press, 2009.
- Martha L. Abell, James P. Braselton, and Lorraine M. Braselton, "Effects of genetic immunity and resistance on endemics," *Applied Mathematics and Computations* **197** (2008), 733-744.
- Martha L. Abell, James P. Braselton and Lorraine Braselton, "The effects of immunity and resistance on the development of AIDS", *Journal of Mathematical Analysis and Applications*, Volume 333, Issue 1, pp 8-23, 2007
- Martha L. Abell, James P. Braselton and Lorraine Braselton, "Competition in the chemostat: A comparison of inhibitory and lethal offensive strategies," *Mathematics and Computers in Simulation* **72** (2006), 10-25.
- Martha L. Abell, James P. Braselton and Lorraine Braselton, "A Host-Microparasite Model with a Resistant Host", *Journal of Ecological Complexity*, Volume 2, Issue 3, pp 300-311, 2005.
- Martha L. Abell and James P. Braselton, *Differential Equations with Mathematica*, Third Edition, Academic Press, 2004.
- Martha L. Abell and James P. Braselton, *Mathematica By Example*, Third Edition, Academic Press, 2004.
- Martha L. Abell, James P. Braselton, and John Rafter, *Statistics with Mathematica*, Second Edition, Academic Press, 2005.
- Jack Yu, James Braselton, Martha Abell, Ronald Wright and Matthew Williamson, "A fractal analysis of human cranial sutures," *The Cleft Palate-Craniofacial Journal*, Vol. 40, No. 1, pp. 409-415, 2003.
- James P. Braselton, Martha L. Abell, and Lorraine Braselton, "When is a surface not orientable?", *International Journal of Mathematical Education in Science and Technology*, Vol. 33, No. 4, pp. 529-541, 2002.
- Martha L. Abell, James P. Braselton, and John Rafter, *Statistics with Maple V*, Academic Press, 2002.
- Jack Yu, James P. Braselton, Martha L. Abell, and James Borke, "The Identification of Calcium Oscillators in Immature Rat Cranial Sutures", Proceedings of the 9th Conference of the International Society of Craniofacial Surgeons, 2001.
- John Rafter, Martha L. Abell, and James P. Braselton, "Multiple Comparison Tests for Means", *SIAM Review*, Volume 44, Number 2, pp. 259-278, 2002.
- Martha L. Abell and James P. Braselton, *Modern Differential Equations*, Second Edition, Harcourt College Publishing, August, 2000.
- Braselton, Lorraine, Abell, Martha L. and Braselton, James P., *Modern Differential Equations: Instructor's Resource Manual*, Second Edition, Harcourt College Publishers, Philadelphia, 2000.

- Braselton, Lorraine, Abell, Martha L. and Braselton, James P., Modern Differential Equations: Student's Resource Manual, Second Edition, Harcourt College Publishers, Philadelphia, 2000.
- James P. Braselton and Martha L. Abell, "Schryer-Walker Quasi-Exact Solutions to the Landau-Lifshitz-Gilbert Equations", *Applied Mathematics and Computation*, Volume 124, Issue 2, 2001, pp. 151-167.
- James P. Braselton, Martha L. Abell, and Lorraine Braselton, "Generalized Walker solutions to the Landau-Lifshitz-Gilbert equations", *International Journal of Non-Linear Mechanics*, Volume 36, 2001.
- Martha L. Abell and James P. Braselton, *Differential Equations with Maple V*, Second Edition, Academic Press, October, 1999.
- Martha L. Abell, James P. Braselton, John Rafter, and Pat Humphrey, "Randomly Walking Through Wall Street", *Mathematics and Computers in Simulation* (49) 4-5 (1999) pp. 297-316.
- Martha L. Abell and James P. Braselton *Maple V By Example*, Second Edition, Academic Press, October 1998.
- Martha L. Abell, James P. Braselton, and John Rafter *Statistics with Mathematica*, Academic Press, October 1998.
- Martha L. Abell and James P. Braselton, *Mathematica By Example*, Second edition, Academic Press, February 1997.
- Martha L. Abell and James P. Braselton, *Differential Equations with Mathematica*, Second edition, Academic Press, February 1997.
- Abell, Martha L. and Braselton, James P., "Advancing the Study of Differential Equations with Technology", *Mathematics and Computers in Simulation*, 1996, Volume 42, pp. 493-508.
- Martha L. Abell and James P. Braselton, *Modern Differential Equations: Theory, Applications, Technology*; Saunders Publishing, September 1995.
- Martha L. Abell and James P. Braselton, *Modern Differential Equations: Theory, Applications, Technology; Instructor Resource Manual*, Saunders Publishing, September 1995.
- Martha L. Abell and James P. Braselton, *Modern Differential Equations: Theory, Applications, Technology; Student Resource Manual*, Saunders Publishing, September 1995.
- Martha L. Abell and James P. Braselton, "Modern Differential Equations", *In General Terms-A Newsletter for Innovation and Excellence in College Mathematics Education*, Issue No. 4, Saunders Publishing, Fall, 1995.
- Martha L. Abell and James P. Braselton, *Differential Equations with Maple V*, Academic Press Professional, August 1994.
- Martha L. Abell and James P. Braselton, *The Maple V Handbook*, Academic Press Professional, July 1994.
- Martha L. Abell and James P. Braselton, *Maple V By Example*, Academic Press Professional, May 1994.
- Martha L. Abell and James P. Braselton, *Mathematica By Example*, Revised edition, Academic Press Professional, January 1994.
- Martha L. Abell, James P. Braselton, and John W. Davenport, "Topics in Applied Mathematics with Mathematica", *Proceedings of the Fifth Annual International Conference on Technology in Collegiate Mathematics*, November 1993.

- Martha L. Abell and James P. Braselton, "Advancing the Study of Differential Equations with Technology", in *Proceedings of the International IMACS Symposium on Symbolic Computation: New Trends and Developments*, June 1993.
- Martha L. Abell and James P. Braselton, *Differential Equations with Mathematica*, Academic Press, January 1993.
- Martha L. Abell and James P. Braselton, *The Mathematica Handbook*, Academic Press, May 1992.
- Martha L. Abell and W. F. Ames, "Symmetry Reduction of Reynolds Equation and Applications to Film Lubrication", *Jl. of Applied Mechanics*, Vol. 59, No. 1, March 1992.
- Martha L. Abell and James P. Braselton, *Mathematica By Example*, Academic Press, January 1992.
- Martha L. Abell and James P. Braselton, "Giving Meaning to the Circular Membrane Problem with *Mathematica*", *Mathematica in Education Journal*, Volume 1, Number 3.
- Martha L. Abell and W. F. Ames, "Semi-Symmetry Reduction of Partial Differential Equations", in *Proceedings of the International IMACS Conference*, July 1991.
- Martha L. Abell and James P. Braselton, "Mathematica: Beyond Calculus", *Proceedings of the University System Computer Network Conference*, October 1991.
- Martha L. Abell and W. F. Ames, "Symmetry Reduction of Reynolds Equation", *SECTAM XV Conference Proceedings*, March 1990.
- Martha L. Abell, J. E. Peters and W. F. Ames, "Symmetry and Semi-Symmetry Reduction in Wave Propagation and Lubrication ", *Proceedings of the Annual Seminar of the Canadian Math. Society on Lie Theory, Differential Equations and Representation Theory*, August 1989.
- Martha L. Abell, *Symmetry Reduction of Reynolds Equation and Applications to Film Lubrication*, Ph. D. Thesis, Georgia Institute of Technology, June 1989.

Papers and Mini-Courses Presented

International

- Jack Yu, James P. Braselton, Martha L. Abell, and James Borke, "The Identification of Calcium Oscillators in Immature Rat Cranial Sutures", 9th International Society of Craniofacial Surgeons Annual Conference, Visby, Sweden, June 20, 2001.
- Martha L. Abell, James P. Braselton, and John Rafter, "Multiple Comparison Methods for Means", Fourth International Congress on Industrial and Applied Mathematics (ICIAM), Edinburgh, Scotland, July 7, 1999.
- Martha L. Abell and James P. Braselton, "Advancing the Study of Differential Equations with Technology", *International IMACS Symposium on Symbolic Computation: New Trends and Developments*, Lille, France, June 17, 1993.
- Martha L. Abell and James P. Braselton, "Differential Equations with *Mathematica*", *Georgia Tech-UAB International Conference on Differential Equations and Mathematical Physics*, Atlanta, GA, March 27, 1992.
- Martha L. Abell, "Semi-Symmetry Reduction of Partial Differential Equations", *13th IMACS World Congress on Computation and Applied Mathematics*, Dublin, Ireland, July 23, 1991.
- Martha L. Abell, "Semi-Invariant Solutions to Partial Differential Equations", *International Conference on Industrial and Applied Mathematics*, Washington, D. C., July 10, 1991.
- Martha L. Abell and W. F. Ames, "Symmetry and Semi-Symmetry Reduction of Reynolds Equation and Applications to Film Lubrication", *Georgia Tech-UAB*

International Conference on Differential Equations and Mathematical Physics,
University of Alabama-Birmingham, Birmingham, AL, March 20, 1990.

National

- Martha L. Abell, "Career Challenges for the Female Mathematician in Academia", Annual Meeting of the Society of Industrial and Applied Mathematics, Portland, OR, July 13, 2004. (invited)
- Martha L. Abell and Ron Wright, "Developing a College Honors Program", 37th Annual Conference of The National Collegiate Honors Council, Salt Lake City, Utah, October 31, 2002.
- Jack Yu, James P. Braselton, Martha L. Abell, and James Borke, "The Identification of Calcium Oscillators in Immature Rat Cranial Sutures", 45th Annual Conference of The Plastic Surgery Research Council, Milwaukee, Wisconsin, June 12, 2001.
- Jack Yu, Ronald Wright, Matthew Williamson, James P. Braselton, and Martha L. Abell, "A Fractal Analysis of Human Cranial Sutures, American Cleft Palate-Craniofacial Association, 58th Annual Meeting, Minneapolis, Minnesota, April 25, 2001.
- Martha L. Abell, John A. Rafter, James P. Braselton, "An Investigation of Stochastic Population Models", at *AMS-MAA Joint Meetings*, New Orleans, LA, January 21, 2001.
- Martha L. Abell and James P. Braselton, "The Use of Biological Applications in Differential Equations", *AMS-MAA Joint Meetings*, Washington, DC, January 22, 2000.
- Martha L. Abell, James P. Braselton, and John A. Rafter, "Introductory Statistics: Computer Laboratories with Mathematica", *The Eleventh Annual International Conference on Technology in Collegiate Mathematics*, New Orleans, LA, November 21, 1998.
- Martha L. Abell, Lisa Norton, and Stuart Davidson, "A Mathematical Approach to the Long Jump", *AMS-MAA Joint Meetings*, Baltimore, Maryland, January 10, 1998.
- Martha L. Abell, James P. Braselton, and John A. Rafter, "Bridging the Gap with Real World Data", *AMS-MAA Joint Meetings*, Baltimore, Maryland, January 9, 1998.
- Martha L. Abell and James P. Braselton, "O.D.E.'s - In the Lab and on the Web", (invited presentation) *The Ninth Annual International Conference on Technology in Collegiate Mathematics*, Reno, Nevada, November 9, 1996.
- Martha L. Abell and James P. Braselton, "Differential Equations: Concepts and Technology", *The Eighth Annual International Conference on Technology in Collegiate Mathematics*, Reno, Nevada, November 8, 1996.
- Martha L. Abell and James P. Braselton, "An Advanced Mathematics Computer Laboratory", *AMS-MAA Joint Meetings*, Orlando, Florida, January 10, 1996.
- Martha L. Abell and James P. Braselton, "A Modern Approach to Differential Equations", *The Eighth Annual International Conference on Technology in Collegiate Mathematics*, Houston, Texas, November 18, 1995.
- Martha L. Abell, "Technology in Multivariable Calculus: Chalk for the 21st Century", *Project NExT Summer Workshop*, Burlington, Vermont, August 5, 1995. (invited)
- Martha L. Abell and James P. Braselton, "Computer Laboratory Experiences in Mathematical Modeling in Differential Equations", *AMS-MAA Joint Meetings*, San Francisco, California, January 7, 1995.
- Martha L. Abell and James P. Braselton, "Incorporating Science and Engineering Design into the Mathematics Curriculum" (panel discussion), *The Seventh Annual International Conference on Technology in Collegiate Mathematics*, Orlando, Florida, November 19, 1994.

- Martha L. Abell and James P. Braselton, "Changes in Teaching Differential Equations", *The Seventh Annual International Conference on Technology in Collegiate Mathematics*, Orlando, Florida, November 18, 1994.
- Martha L. Abell and James P. Braselton, "Differential Equations: A Technological Approach", *AMS-MAA Joint Meetings*, Cincinnati, Ohio, January 17, 1994.
- Martha L. Abell and James P. Braselton, "Laboratory Approaches in Differential Equations" (poster session), *AMS-MAA Joint Meetings*, Cincinnati, Ohio, January 17, 1994.
- Martha L. Abell and James P. Braselton, "Pendulums, Drums, and Things", *The Sixth Annual International Conference on Technology in Collegiate Mathematics*, Parsippany, New Jersey, November 5, 1993.
- Martha L. Abell and James P. Braselton, "Exploring Undergraduate Mathematical Topics with Maple" (a mini-course), *The Sixth Annual International Conference on Technology in Collegiate Mathematics*, Parsippany, New Jersey, November 6, 1993.
- Martha L. Abell, "Using a Computer Algebra System to Convert Calculus (and Related Courses) Into Formal Laboratory Courses", *AMS-MAA Joint Meetings*, San Antonio, TX, January 14, 1993.
- Martha L. Abell and James P. Braselton, "Using *Mathematica* to Solve Differential Equations", *AMS-MAA Joint Meetings*, San Antonio, TX, January 14, 1993.
- Martha L. Abell and James P. Braselton, "Topics in Applied Mathematics with *Mathematica*" (a mini-course), *Fifth Annual International Conference on Technology in Collegiate Mathematics*, Chicago, ILL, November 15, 1992.
- Martha L. Abell, "Symmetry and Semi-Symmetry Reduction: An Overview", *Association for Women in Mathematics Workshop*, Washington, D. C., July 7, 1991.
- Martha L. Abell, "Symmetry and Semi-Symmetry Reduction of Nonlinear Reynolds Equation", at the *National Society of Applied and Industrial Mathematics Meeting*, Chicago, IL, July 20, 1990.

Regional

- Martha L. Abell, Sharon Barrs, Jim Braselton, Lori Braselton, Patricia Humphrey and Bridgett Lee, "Steps to Improving Student Retention and Progression", *Annual Southeastern MAA Section Meeting*, Elon University, Elon, NC, March 26, 2010.
- Martha L. Abell and Jim Braselton, "Selective Mating in a Continuous Model of Epistasis", *Annual Southeastern MAA Section Meeting*, Austin Peay University, Clarksville, TN, March 27, 2004.
- Martha L. Abell and Jim Braselton, "The Predator-Prey Model of Kolmogorov Type", *Annual Southeastern Atlantic SIAM Section Meeting*, Western Carolina University, Cullowhee, NC, April 19, 2002.
- Martha L. Abell and Jim Braselton, "The Chemostat", *Annual Southeastern Atlantic SIAM Section Meeting*, Coastal Carolina University, Conway, SC, March 16, 2001.
- Martha L. Abell, Jim Braselton, and John Rafter, "The Use of Modeling in the Classroom" (invited), *Annual Southeastern MAA Section Meeting* Huntingdon College, Montgomery, AL, March 9, 2001.
- John Rafter and Martha L. Abell, "Examples From Three Different Platforms of Simulation to Illustrate the Central Limit Theorem", *Annual Southeastern Atlantic SIAM Section Meeting*, University of Georgia, Athens, GA, March 25, 2000.
- John Rafter, Martha L. Abell and Jim Braselton, "The Use of Simulations in the Statistics Classroom", *Annual Southeastern MAA Section Meeting*, University of North Carolina, Charlotte, NC, March 10, 2000.

- Martha L. Abell and Stuart Davidson, "Introducing Numerical Methods in Lower Level Mathematics Courses", *Annual Southeastern Atlantic SIAM Section Meeting*, University of Tennessee, Knoxville, TN, March 20, 1999.
- Martha L. Abell and John Rafter, "Using Simulation to Illustrate the Central Limit Theorem - Parts I and II", *Annual Southeastern MAA Section Meeting*, Rhodes College, Memphis, TN, March 12, 1999.
- Martha L. Abell, James P. Braselton, and John Rafter, "Calculating an Exact P-value for the Q Statistic", *Annual Southeastern Atlantic SIAM Section Meeting*, Florida State University, Tallahassee, FL, March 20, 1998.
- Martha L. Abell, "Effective Use of Technology", *Annual Southeastern MAA Section Meeting*, College of Charleston, Charleston, SC, March 12, 1998. (invited)
- Martha L. Abell, James P. Braselton, John Rafter, and Pat Humphrey, "Randomly Walking Through Wall Street: Comparing Lump-Sum Versus Dollar-Cost Average Investment Strategies - Part I", *Annual Southeastern MAA Section Meeting*, College of Charleston, Charleston, SC, March 13, 1998.
- Martha L. Abell, "Randomly Walking Through Wall Street: Comparing Lump-Sum Versus Dollar-Cost Average Investment Strategies - Part II", *Annual Southeastern MAA Section Meeting*, College of Charleston, Charleston, SC, March 13, 1998.
- Martha L. Abell, Lisa Norton, and Stuart Davidson, "Projects in Undergraduate Mathematics Courses", *Annual Southeastern Atlantic SIAM Section Meeting*, North Carolina State University, Raleigh, NC, April 5, 1997.
- Martha L. Abell and James P. Braselton, "Technology and Applications", *Annual Southeastern MAA Section Meeting*, Spelman College, Atlanta, GA, March 14, 1997.
- Martha L. Abell, Lisa Norton, and Stuart Davidson, "Optimization of the Long Jump", *Annual Southeastern MAA Section Meeting*, Spelman College, Atlanta, GA, March 14, 1997.
- Martha L. Abell and James P. Braselton, "Differential Equations: Concepts, Technology, Applications", *Annual Southeastern MAA Section Meeting*, University of Alabama at Huntsville, Huntsville, AL, April 12, 1996.
- Martha L. Abell and James P. Braselton, "Mathematics at Work", *Annual Southeastern MAA Section Meeting*, University of North Carolina at Asheville, Asheville, NC, March 31, 1995.
- Martha L. Abell and James P. Braselton, "Projects in the Undergraduate Mathematics Curriculum", Teachers Teaching with Technology Regional Conference, Jacksonville, Florida, March 4, 1995.
- Martha L. Abell and James P. Braselton, "Technology: The Choice is Yours", *Annual Southeastern MAA Section Meeting*, Carson-Newman College, Jefferson City, TN, April 8, 1994.
- Martha L. Abell and James P. Braselton, "Graphing Quadric Surfaces", *Annual Southeastern MAA Section Meeting*, University of South Carolina-Coastal Carolina, Conway, South Carolina, April 3, 1993.
- Martha L. Abell and James P. Braselton, "Using *Mathematica* to Solve Problems Encountered in Ordinary and Partial Differential Equations" (a mini-course), *Southeastern Atlantic Section SIAM Meeting*, Georgia Southern University, Statesboro, GA, March 27, 1993.
- Martha L. Abell and James P. Braselton, "Problems in Applied Mathematics with *Mathematica*", *Annual Southeastern MAA Section Meeting*, Kennesaw State College, Atlanta, GA, April 10, 1992.

- Martha L. Abell, James P. Braselton, Arthur Sparks and John Davenport, “Computer-Assisted Calculus Labs with *Mathematica*” (a mini-course), *Annual Southeastern MAA Section Meeting*, Kennesaw State College, Atlanta, GA, April 10, 1992.
- Martha L. Abell and James P. Braselton, “Solving Problems in Applied Mathematics with *Mathematica*”, *Southeastern Atlantic Section SIAM Meeting*, University of Alabama-Huntsville, Huntsville, AL, April 3, 1992.
- Martha L. Abell, “Applications of Semi-Symmetry Reduction“, *Southeastern Atlantic Section SIAM Meeting*, Western Carolina University, Cullowhee, NC, April 13, 1991.
- Martha L. Abell, “Teaching Calculus I With *Mathematica*”, *Annual Southeastern MAA Section Meeting*, University of South Alabama, Mobile, AL, April 6, 1991.
- Martha L. Abell, “Developing a Computer-Assisted Ordinary Differential Equations Course“, *Annual Southeastern MAA Section Meeting*, Davidson College, Davidson, NC, April 7, 1990.
- Martha L. Abell, “Symmetry and Semi-Symmetry Reductions“, *Southeastern Atlantic Section SIAM Meeting*, University of South Carolina-Aiken, Aiken, SC, March 24, 1990.

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- Martha L. Abell, James P. Braselton and John Rafter, “Technology: Are We There Yet?”, *Valdosta State University Math Tech Conference*, Valdosta State University, February 22, 2002. (Keynote Address – invited)
- Martha L. Abell, John Rafter, and James P. Braselton, “Stochastic Modeling”, *Valdosta State University Math Tech Conference*, Valdosta State University, February 24, 2001.
- Martha L. Abell, John Rafter, James P. Braselton, and Lorraine Braselton, "Population Modeling with a Computer Algebra System", *T³ Conference*, Armstrong Atlantic State University, May 12, 2000 (invited).
- Martha L. Abell, John Rafter, and James P. Braselton, "Mathematical Modeling Beyond College Algebra", *Valdosta State University Math Tech Conference*, Valdosta State University, February 25, 2000.
- Martha L. Abell and James P. Braselton, "Variations on Newton’s Law of Cooling”, *Valdosta State University Math Tech Conference*, Valdosta State University, February 26, 1999.
- Martha L. Abell, James P. Braselton, and Lori M. Braselton, "A Random Walk Through Wall Street", *Georgia College and State University Colloquium Series*, Georgia College and State University, April 9, 1998. (invited)
- Martha L. Abell, James P. Braselton, John Rafter, and Pat Humphrey, "Technology: Where Have We Been, Where Are We Going?", *Valdosta State University Math Tech Conference*, Valdosta State University, February 27, 1998.
- Martha L. Abell and James P. Braselton, "Technology in Advanced Mathematics Courses", (invited presentation/panel discussion), *Georgia Southern University Faculty/Staff Instructional Technology Showcase*, Georgia Southern University, December 12, 1996.
- Martha L. Abell and James P. Braselton, "What Will They Think of Next?", *Georgia Southern University Faculty/Staff Instructional Technology Showcase*, Georgia Southern University, May 21, 1996.
- Martha L. Abell and James P. Braselton, "A Picture Tells a Thousand Words", *Georgia Southern University Faculty/Staff Instructional Technology Showcase Kickoff*, Georgia Southern University, May 20, 1996.
- Martha L. Abell and James P. Braselton, "Changing the Landscape of Calculus and Differential Equations", State-Wide Seminar *Innovations in Undergraduate Mathematics*

- in Georgia* via the Georgia State-wide Academic and Medical System (GSAMS), November 7, 1995.
- Martha L. Abell, "When Will I Ever Use This Stuff Anyway?", *Focus on Excellence Series*, Georgia Southern University, October 17, 1995.
 - Martha L. Abell and James P. Braselton, "Some Differences between Polynomial and Trigonometric Functions", *MAA Student Chapter*, Georgia Southern University, Statesboro, Georgia, October 31, 1994.
 - Martha L. Abell and James P. Braselton, "Some Differences between Polynomial and Trigonometric Functions", *Summer Enrichment Program* (for talented high-school students), Georgia Southern University, Statesboro, Georgia, July 12, 1994.
 - Martha L. Abell and James P. Braselton, "Projects in Differential Equations using Maple/Mathematica, part I", *Georgia Institute of Technology Workshop on using Technology in the Teaching of Mathematics and Science*, Atlanta, Georgia, May 28, 1994.
 - Martha L. Abell and James P. Braselton, "Projects in Differential Equations using Maple/Mathematica, part II", *Georgia Institute of Technology Workshop on using Technology in the Teaching of Mathematics and Science*, Atlanta, Georgia, May 28, 1994.
 - Martha L. Abell and James P. Braselton, "Computer Algebra Systems and Geometry", *The Georgia Tech Conference on Geometry and Technology*, Atlanta, GA, November 12, 1994.
 - Martha L. Abell and James P. Braselton, "Solving Real-Life Problems with Computer Technology", *A Saturday Conference at Georgia Tech*, Atlanta, GA, November 7, 1992.
 - Martha L. Abell and James P. Braselton, "Exploring the Powers of *Mathematica*", *Student Chapter of the MAA Meeting*, Georgia Southern University, November 4, 1991.
 - Martha L. Abell and James P. Braselton, "*Mathematica* in the Instruction of Upper-Level Mathematics Courses", *A Saturday Conference at Georgia Tech*, Atlanta, GA, November 2, 1991.
 - Martha L. Abell and James P. Braselton, "*Mathematica*-Beyond Calculus", *University System Annual Computing Conference*, Rock Eagle, GA, October 9, 1991.
 - Martha L. Abell, "Using the Computer in the Teaching of Differential Equations", *Third Annual DeKalb Mathematics Conference*, Atlanta, GA, May 18, 1990.
 - Martha L. Abell, "Applications of Symmetry Reduction", *Georgia Tech Applied Mathematics Seminar*, Atlanta, GA, November 10, 1989.

GRANTS

- Co-Principal Investigator, NSF-DUE 1544324: Guide to Evidenced-Based Instructional Practices in Undergraduate Mathematics, \$359,940. PI: Doug Ensley (MAA), Co-PI's: Lew Ludwig – Dennison University, Linda Braddy – Tarrant County College Northeast Campus, Hortensia Soto-Johnson, Univ. of Northern Colorado, November 2015.
- Co-Principal Investigator, NSF-DUE 1541508: MATH Conference: Translating Education Research into Classroom Practice, \$49,999. PI/Co-PI's: Diana White – University of Colorado Denver, Lew Ludwig – Dennison University, Linda Braddy – Mathematical Association of America, June 2015.
- Principal Investigator, National Science Foundation Instrumentation and Laboratory Improvement Grant (NSF DUE-9551814), (\$63,200), February 1995. (Used to establish the Advanced Mathematics Computer Laboratory.)
- Society for Industrial and Applied Mathematics/National Science Foundation Travel Grant to attend the Fourth International Congress on Industrial and Applied Mathematics, July 5-9, 1999, Edinburgh, Scotland.

- University System of Georgia 1998 Academic Advisory Committee Grant (with Tim Howard, Columbus State University, and Judy O'Neal, North Georgia College and State University), *A Statewide Mathematics Seminar*.
- Association for Women in Mathematics Grant to attend the Association for Women in Mathematics Workshop, Washington, D.C., July 7, 1991, and the Second International Conference on Industrial and Applied Mathematics, Washington, DC, July 8-12, 1991.
- Society for Industrial and Applied Mathematics Grant for Young Researchers to attend the Second International Conference on Industrial and Applied Mathematics, Washington, D.C., July 8-12, 1991.
- National Science Foundation Grant to attend the American Federation of Information Processing Societies Workshop on Computational Science, Univ. of North Carolina, Asheville, NC, August 6 – 10, 1990.
- Numerous grants from the Georgia Southern University Faculty Development and Welfare Committee, Faculty Service Committee, and Campus Life Enrichment Committee (CLEC)

ADDITIONAL MEETINGS AND WORKSHOPS ATTENDED

- MAA Short Course: *Mathematical Biology*, Atlanta, GA, March 8, 2002.
- MAA Short Course: *NSF Grant Writing*, Montgomery, AL, March 9, 2001.
- MAA Short Course: *Optimal Control*, Charlotte, NC, March 10, 2000.
- MAA Short Course: *Wavelets*, Memphis, TN, March 12, 1999.
- MAA Short Course: *Laboratory Experiments in Statistics*, Charleston, SC, March 13, 1998.
- Hewlett-Packard (HP48) Workshop, Georgia Institute of Technology, Atlanta, GA, November 7, 1992.
- Association for Women in Mathematics Workshop, Washington, D. C., July 7, 1991; Selected as one of ten female postdoctoral students from across the country to attend.
- National Science Foundation Calculus and Computer Algebra Systems Workshop, University of North Florida, Jacksonville, FL, November 16 – 17, 1990.
- American Federation of Information Processing Societies Workshop on Computational Science, Univ. of North Carolina, Asheville, NC, August 6 – 10, 1990.

TEACHING

- Courses Taught: Undergraduate Seminar, Mathematical Models in Population Ecology, Mathematical Models, Advanced Engineering Mathematics: Operational Mathematics (Georgia Tech), Advanced Engineering Mathematics: Boundary Value Problems (Georgia Tech), Graph Theory, Operations Research, Advanced Partial Differential Equations, Systems of Differential Equations with Mathematica, Applied Math with Mathematica, Solving Problems with Technology (Directed Study), Sets and Set Operations, Linear Algebra with Applications, Differential Equations (with Mathematica), Calculus (with Mathematica), Survey of Calculus (with TI-83 Graphing Calculator), Trigonometry, Mathematics for Elementary School Teachers, Calculus I, II, III and IV, Honors Calculus I and II.
- New Courses Developed: Graph Theory (Spring 1990), Operations Research (Spring 1992), Advanced Partial Differential Equations (Winter 1993), Systems of Differential Equations with Mathematica (Summer 1991), Applied Math with Mathematica (Spring 1990), Solving Problems with Technology (Winter 1994), Advanced Topics in Partial Differential Equations (Winter 1996); Honors Calculus I (Fall 1998); Honors Calculus II (Spring 1999)

- Developed computer laboratory assignments for Applied Math, Ordinary Differential Equations, Advanced Partial Differential Equations, and Calculus.
- Thesis Advisor, M.S. Mathematics, Lisa Norton (1995-1996)
- Member of numerous Thesis Committees, M.S. Mathematics Program
- Member, Dissertation Committee, Jacob Warren, University of Miami, Ph.D. in Epidemiology, May 2006.
- Mentor, Richard Kilburn, McNair Scholars Program, June 2000 – May 2002.
- Member, Teaching/Learning Team, 1996 – 1999.