

CURRICULUM VITAE
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Adjunct Professor of Biomedical Engineering
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EDUCATION:

- **Bachelor of Science in Biomedical and Electrical Engineering**, Duke University, Durham, NC. 1988-1991.
- **Master of Science in Biomedical Engineering**, Drexel University, Philadelphia, PA. 1991-1993.
- **Doctor of Philosophy in Biomedical Engineering**, Vanderbilt University, Nashville, TN. 1993-1996.

PROFESSIONAL EXPERIENCE:

- **Adjunct Professor of Biomedical Engineering**, Vanderbilt University, Department of Biomedical Engineering, Nashville, TN. 04/2019 – present
 - External Evaluator for the Engineering For Us All (E4USA) Advanced Course in Engineering NSF-funded grant
- **Adjunct Associate Professor of Biomedical Engineering**, Vanderbilt University, Department of Biomedical Engineering, Nashville, TN. 10/2018 – 03/2019.
 - External Evaluator for the Engineering For Us All (E4USA) Advanced Course in Engineering NSF-funded grant
- **Senior Professional Development Manager**, Museum of Science Engineering is Elementary, Boston, MA. 01/2018 – 07/2019
 - Director of the Extended Network of Partners
 - Developed new individual and university partners
 - Manage assignment of workshop requests to endorsed members
 - Shepherd individuals through the PD endorsement process
 - Publish semi-annual newsletter
 - Provide Professional Development for teachers and teacher educators

- Co-developed online and hands-on professional development teacher educator institutes for Wee Engineer and EiE for Kindergarten
- **Director of the Center for STEM Education for Girls**, Harpeth Hall School, Nashville, TN. 05/2011 – 12/2017
 - Created the STEM Camp for rising 7th and 8th grade girls at Harpeth Hall – June 2016, 2017
 - 19 girls participated from HH, MNPS and WCS schools in 2016; 23 girls in 2017
 - Partnered with Lwala Community Alliance to give girls authentic engineering design task of improving the design of the Tippy Tap handwashing stations at the all girls' schools in Lwala, Kenya – 2016
 - Partnered with Lwala Community Alliance to give girls authentic engineering design task of improving the design of the approach to a bridge which floods in Lwala, Kenya – 2017
 - Partnered with classroom teachers to design curriculum
 - Established leadership board – STEM Consortium – consisting of leading K-12 girls' and coed schools, university members, corporate members, and female-serving community organizations
 - Hold annual meetings each November
 - Utilize strategic feedback to improve
 - Expanded and ran the STEM Think Tank and Conference – July 2012, 2013, 2014, 2015, 2016, 2017
 - Average 230 attendees from ~28 states, Canada, Australia, Philippines, and South Korea
 - 70+ hour long sessions and ~12 post-conference workshops
 - 13-20 vendors each year
 - Created and ran the STEM Camp for rising 9th through 12th grade girls at Harpeth Hall – June 2012, 2013, 2014, 2015, 2016, 2017
 - 16 girls participated from HH, MNPS and WCS schools in 2012; 28 girls in 2013; 25 girls in 2014; 34 girls in 2015, 29 girls in 2016, 21 girls in 2017
 - Partnered with Lwala Community Alliance to give girls authentic engineering design task of improving the design of the Tippy Tap handwashing stations at the all girls' schools in Lwala, Kenya – 2012
 - Partnered with Lwala Community Alliance to give girls authentic engineering design task of designing a fish pond and designing an oven in Lwala, Kenya – 2013
 - Partnered with Lwala Community Alliance to give girls authentic engineering design task of improving a bridge design and improving the biosand water filters in Lwala, Kenya – 2014
 - Partnered with Lwala Community Alliance to give girls authentic engineering design task of improving the design of the oxen's yoke and plow in Lwala, Kenya – 2015

- Partnered with Duke University Pratt School of Engineering and the WISER School for Girls to give girls authentic engineering design task of creating light sources in Muhuru Bay, Kenya– 2015
 - Partnered with Lwala Community Alliance to give girls authentic engineering design task of improving the design of the rainwater catchment and storage system and bring it to scale in Lwala, Kenya – 2016
 - Partnered with Lwala Community Alliance to give girls authentic engineering design task of designing a bridge for the Andingo Primary School in Lwala, Kenya – 2017
- Designed and maintain Center’s website <http://stemefg.org>
- Serve as site host for the Girls Advancing IN STEM (GAINS) Network (<http://gainsnetwork.org>)
- Hosted Engineering is Elementary workshops – October 30, 2012, May 2013, November 2013, March 2014, December 2014, December 2015, January 2017
- Partner with Dr. Sheryl Sorby to provide 3D Spatial Skills Workshops for Teachers
 - Hosted 3D Spatial Skills with Sheryl Sorby workshop – November 4-5, 2014
 - Hosted 3D Spatial Skills with Sheryl Sorby workshop – December 2-3, 2015
 - Hosted 3D Spatial Skills with Sheryl Sorby workshop at the Atlanta Girls’ School (GA)– March 17-18, 2016
 - Hosted 3D Spatial Skills with Sheryl Sorby workshop at Garrison Forest School (MD) – March 30-31, 2016
 - Hosted 3D Spatial Skills with Sheryl Sorby workshop at Western Washington University – April, 2016
 - Hosted 3D Spatial Skills with Sheryl Sorby workshop at Hockaday School (TX) – September 30-October 1, 2016
 - Hosted 3D Spatial Skills with Sheryl Sorby workshop at Marymount School (NY) – November 14-15, 2016
 - Hosted 3D Spatial Skills with Sheryl Sorby workshop at McGehee School (LA) – June 1-2, 2017
- Provide professional development to Harpeth Hall School teachers
- Teach Harpeth Hall STEM Research Course – 2013-present
 - Place and supervise 2-13 juniors or seniors in Vanderbilt University and Fisk University engineering, science or medical center laboratories
- Communicate with Center fund providers, the E.E. Ford Foundation, Memorial Foundation and others
- Provide research placements for Harpeth Hall students during Winterim and summers in STEM

- **Adjoint Associate Professor of the Practice of Biomedical Engineering,** Vanderbilt University, Department of Biomedical Engineering, Nashville, TN. 07/2011 – 12/2018.
 - Principal Investigator for the Vanderbilt Bioengineering Research Experiences for Teachers Site (01/2004-01/2013)
 - Co-Principal Investigator for the Bioengineering Education Research REU Site Project (NSF) (9/2009-8/2013)
 - Vanderbilt site PI for the Engineering Design Process Portfolio Scoring Rubric Project (NSF) (04/2011-03/2017)
 - Standards for the Professional Development of Teachers of Engineering and Matrix – Co-Author and Co-Project Director (ASEE) (03/2013-08/2013)
 - Supervise BME independent study for 12th grade student, Liliana Martinez, at the Giff Hill School, St John, US Virgin Islands (09/2018-05/2019)

- **Adjoint Associate Professor of Radiology and Radiological Sciences,** Vanderbilt University Medical Center, Department of Radiology, Nashville, TN. 07/2011–06/2015.

- **Adjoint Associate Professor of the Practice of Teaching & Learning,** Vanderbilt University, Department of Teaching & Learning, Nashville, TN. 7/2012 – 06/30/2014

- **Director of STEM Outreach,** Peabody College, Vanderbilt University, Nashville, TN. 7/2010 – 06/2011
 - Director of the Metro Nashville Public Schools' Academy for Science & Engineering program – Engineering Pathway
 - Funded by Race to the Top (\$1M) & STEM Magnet Grant (\$3M)
 - Develop all engineering curricula for K-12
 - Develop and run all teacher professional development
 - Oversee design of all classroom space, equipment, and supplies
 - Participate in classroom instruction for Engineering I, Stratford High School, 9th grade class (24 students)
 - Coordinate Peabody programs – Urban Masters & STEM Academy

- **Director of Peabody Professional Institutes,** Peabody College, Vanderbilt University, Nashville, TN. 7/2010 – 6/2011
 - Organized seven 3-5 day institutes for June-July 2011
 - Added 3 new institutes in the new Classroom Teacher Track
 - Personally offered 2 Engineering is Elementary Workshops for 1st and 2nd grade teachers
 - Offered 2 institutes in the School Leaders track, including 2 new institutes
 - Offered 2 institutes in the higher education administration track

- **Director of the Vanderbilt University School of Engineering's K-12 Outreach**, Vanderbilt University. 7/2007 – 6/2011
 - Run the JETS TEAMS Competition – February 18, 2011
 - Coordinate the Robotics Outreach Program – November 13, 2010
 - Recruit nationally for participants
 - 64 students, grades 7 through 10, and their families attended representing 15 states

- **Associate Professor of the Practice of Teaching & Learning**, Vanderbilt University, Department of Teaching & Learning, Nashville, TN. 7/2010 – 06/2012.

- **Associate Professor of the Practice of Biomedical Engineering**, Vanderbilt University, Department of Biomedical Engineering, Nashville, TN. 12/2007-6/2011.
 - Co-Principal Investigator for the Design and Development of Educational Modules for Bioprocess Engineering (NSF CCLI) with East Carolina University (1/20/2008-1/31/2011)
 - Assess all student impacts of curriculum effectiveness
 - Review curriculum developed by ECU professors for educational effectiveness and alignment with How People Learn (HPL) principles
 - Co-Principal Investigator for the Bioengineering Education Research REU Site Project (NSF) (9/2009-present)
 - Taught Preparation for Teaching graduate level course (Fall 2009, Fall 2010)

- **Associate Professor of Radiology and Radiological Sciences**, Vanderbilt University Medical Center, Department of Radiology, Nashville, TN. 12/2007–06/2011.

- **Associate Dean for Outreach**, Vanderbilt University School of Engineering (VUSE), Nashville, TN. 7/2007-6/2010.
 - Oversee K-12 Outreach for VUSE
 - Principal Investigator for NSF Research Experience for Teachers (RET) Program: Vanderbilt University Bioengineering Research Experiences for Teachers Program
 - 75 teachers trained in at least one six-week summer program
 - \$1,100,000+ in funding for these programs
 - On-going K-12 engineering submissions to teachengineering.org, a national clearinghouse for K-12 curricula
 - RET Participant Terry Carter was one of three finalists for the 2009 Premier Curriculum Award for K-12 Engineering in the teachengineering.org annual competition

- Four peer-reviewed scientific publications from RET participants
 - Two teachers with international research experiences in Summer 2010
- Run annual Vanderbilt Instruction in Biomedical Engineering for Secondary Science (VIBES) summer one-week workshops Summer 2003-present
- Host National Coalition for Girls' Schools STEM Think Tank Day at Vanderbilt, November 2009
- Host JETS Annual Competition Feb 2009 – present
- Speak about engineering careers to K-12 schools nationally
- Organize local K-12 outreach – field trips, guest speakers, etc.
- Work with Vanderbilt Program for Talented Youth (PTY) to supply instructors and coursework in engineering for each of their three summer residential programs
- Serve as resource to faculty needing to add K-12 outreach components to grant programs
- Coordinate industrial relations, including the Committee of Visitors (COV), for VUSE
 - Leverage industry contacts into additional campus recruiting, internship opportunities, and senior design sponsorships
 - Organize agenda for twice yearly COV meetings
 - Established COV committee structure and appointments
 - Created and implemented COV by-laws
 - Responsible for recruiting new members to the COV, including adding members from the finance, consulting and entrepreneurship industries in addition to traditional engineering industry representation
 - Maintain all COV membership records, appoint members as necessary to second terms, celebrate departures from group
 - Established COV committees with active leadership from its membership and defined roles and responsibilities
- Liaison to the Career Center for VUSE
 - Work with the Career Center to increase employer participation in the Career Fair
 - Work with the Career Center and the BME department to create a new BME Internship Pilot Program for Summer 2009
 - Work with the Career Center to expand internship programs for Summer 2010 to include bioengineering and sustainability/alternative energy/environmental engineering tracks
 - Maintain day-to-day and executive level coordination
- Oversee VUSE International Programs
 - Chair VUSE's International Committee: led committee to develop the school's international vision, strategy, and metrics
 - Promote International Office grants and programming to faculty

- Serve on the VU Global Certificate Development Committee, 2007 – 2010
- Piloting VU Global Certificate in VUSE
- Chairing VUSE committee to determine and assess engineering global competencies of our undergraduates
- Serve on the International Policies and Procedures Committee, 2008 – 2010
- Serve on the Vanderbilt International Office Academic Affairs Committee, 2008 – 2010
- Host international speakers
 - Dr. Moses Musaaizi, Makerere University, Uganda, Nov 2009
- Manage VUSE Study Abroad Programs
 - Increased VUSE study abroad participation during the academic year by 400% to 6% which is 3 times the national average for schools of engineering
 - Set up study abroad contract with Georgia Tech Lorraine (France) program and the Boston University programs (Dresden, Germany & Guadalajara, Mexico)
 - Negotiated MOU and exchange programs with City University of Hong Kong, National University of Singapore, and Budapest University of Technology and Economics
 - Run student information sessions for engineers twice a year and meet with individual students to develop four year plan of study
 - Created specimen curriculum for each major at ‘preferred’ study abroad locations, establishing full curricular integration
 - Host representatives from partner programs to recruit student participation
 - Hosted the school’s first incoming semester-long exchange student from the City University of Hong Kong
 - Established her academic advising and course selections
 - Recruited host partner VUSE students
- Oversee VUSE publications
 - Responsible for all external and internal communications of the School of Engineering
 - Annual Research Report / Vanderbilt Engineering
 - Work with Development and Alumni Relations Communications Office to produce twice yearly newspaper
 - Postcard mailer program
 - VUSE Website
 - Advertising for special events, including Hall Lecture
 - Hired Information Officer and Editorial Assistant
 - Supervised Information Officer, Editorial Assistant, and Website Manager
 - Worked with Information Officer to complete redesign of VUSE website and manage training of new content contributors
 - Managed \$60,000 annual budget

- Added digital signage to all engineering buildings
 - Chair Hall Lecture
 - Recruit speaker
 - Dr. Lawrence Kazmerski, Director, National Center for Photovoltaics , National Renewable Energy Laboratory, December 2007
 - Dr. Michelle Buchanan, Director, Center for Molecular and Cellular Systems, Oak Ridge National Laboratory, April 2008
 - Dr. George Hornberger, Director, Vanderbilt Institute for Energy and the Environment, April 2009
 - Dr. Michael Griffin, former NASA Administrator, September 2009
 - Dr. Thomas Zacharia, Deputy Director for Science and Technology, Oak Ridge National Laboratory, January 2010
 - Dr. Charles Vest, President of the National Academy of Engineering, February 2010
 - Coordinate publicity, host speaker on campus, handle logistics
- **Instructor**, Vanderbilt University Program for Talented Youth, Vanderbilt University, Nashville, TN.
 - Taught WAVU course on Electrocardiograms to gifted 7th-11th graders, March 2007
 - Taught VSA course on Biomedical Engineering to gifted 7th-8th graders, June 2007
- **Research Assistant Professor of Education**, Peabody College, Department of Teaching & Learning, Vanderbilt University, Nashville, TN. 7/2005–6/2010.
- **Research Assistant Professor of Radiological Sciences**, Vanderbilt University Medical Center, Department of Radiology, Nashville, TN. 7/2004–11/2007.
- **Research Assistant Professor of Biomedical Engineering**, Vanderbilt University, Department of Biomedical Engineering, Nashville, TN. 7/2003-12/2007.
 - Taught Biomechanics (2005-2008)
 - Taught Introduction to Engineering (2003-2004,2007)
 - Taught Freshmen Seminar in Electrocardiograms (2004-2006)
 - Taught Freshmen Seminar in Medical Imaging (2005)
 - Advised 25 BME students
 - Principal Investigator for the Vanderbilt University Biomedical Engineering Research Experiences for Teachers (RET) Site
 - Coordinated publicity and applications, selected participants, recruited VU BME faculty to serve as mentors, matched high school teachers with faculty mentors

- Ran the educational portion of the workshop; helped teachers write curriculum based on their research experiences for use in their high school science classrooms
 - Supervised teachers' progress on research projects
 - Created and implemented research portion of the grant which evaluated effectiveness of the program on teachers' attitudes about interdisciplinary science and research
- Vanderbilt-Northwestern-Texas-Harvard/MIT (VaNTH) Engineering Research Center in Bioengineering Educational Technologies
 - “How People Learn” Engineering Workshop Designer and Facilitator for university faculty
 - Recruited and selected participants
 - Created workshop handbook and other materials
 - Ran workshops (May 2006; Jan, Feb, Apr, May 2007)
 - Developed Curriculum for Secondary Schools for the Vanderbilt Instruction in Biomedical Engineering for Secondary Science (VIBES) program
 - Wrote modules about optics and LASIK, hemodynamics, skin elasticity, kinematics of the long jump, toothpaste composition, volleyball and collisions
 - Oversaw module field tested at public and private schools located throughout the USA, 2003-2009
 - Recruited control and experimental teachers to participate
 - Coordinated implementation, collection and grading all pre- and post-tests
 - Conducted data analysis, authored papers, presented at national conferences
 - Developed program web site
 - Ran teacher training workshops: Vanderbilt University, Summers 2004-2009; The Severn School 2006-2007
- Co-Principal Investigator for Biomedical Imaging Education: Safe, Inexpensive, and Hands-On Learning Project
 - Recruited, selected, and supervised three or four undergraduate students for three summers and one student throughout the school year
 - Created and implemented exercises and challenge-based problems for teaching biomedical imaging (MRI, x-ray/CT, nuclear medicine, and ultrasound)
 - Oversaw module field testing at University School of Nashville, 2 Rutherford County, TN, comprehensive public high schools, 6 other public schools located through the USA, 2004-2007
 - Created and implemented research portion of the grant which evaluated the effectiveness of the exercises on student understanding of imaging and future desires to enter the field of BME

- Instructor, Workshop designer, and Workshop content evaluator for the Math Science Partnership between Metro Nashville Public Schools and Vanderbilt University funded by the Department of Education in the State of Tennessee. Program served 6th and 7th grade science teachers.
- **Adjunct Assistant Professor of Biomedical Engineering**, Vanderbilt University, Nashville, TN. 8/1999- 6/2003.
 - Taught Freshmen Seminar in Electrocardiograms (2002-2003)
 - Taught Introduction to Engineering (1999-2000)
 - Vanderbilt-Northwestern-Texas-Harvard/MIT (VaNTH) Engineering Research Center in Bioengineering Educational Technologies Curriculum Developer for Secondary Schools
 - Wrote modules about electrocardiograms, medical imaging with a focus on ultrasound, biomechanics of gymnastics' iron cross, energy systems of swimming, and balance
 - Field tested modules at University School of Nashville, 2 Davidson County, TN, magnet schools, and 2 Davidson County, TN, comprehensive public high schools, 2001-2004
 - Recruited control and experimental teachers to participate
 - Coordinated implementation, collection and grading of all pre- and post-tests and assisted in data analysis
 - Ran teacher training workshops: Johns Hopkins University, Baltimore, MD, Summer 2003; Austin, TX, Summer 2003; Vanderbilt University, Nashville, TN, Summer 2003; San Antonio, TX, Summer 2002; Nashville, TN, Summer 2002; Johns Hopkins University, Baltimore, MD, Summer 2002
- **High School Teacher**, University School of Nashville, Nashville, TN. 8/1998-6/2006.
 - Taught AP Physics C, Biomedical Physics, Accelerated Physics, and Functions, Statistics, & Trigonometry (FST)
 - Year-long Independent Study sponsor in Curriculum Design (2003-2005), Neonatology (2003-2004), Web page design (2002-2003), functional MRI (2001-2002), Electronics (2000)
- **Upper School Teacher**, The Harpeth Hall School, Nashville, TN. 8/1996 – 6/1998.
 - Taught Algebra II and Biology
 - Served on Scheduling Committee
 - Worked to research, critique, develop and implement a new daily schedule
 - Developed training opportunities for teachers to use new schedule
 - Developed and taught Winterim classes on Cardiovascular Physiology, Engineering, and Chemistry of Nutrition
 - Served as school's representative to Tennessee Association of Independent Schools

- **Cardiac MRI Analyst**, Vanderbilt University Medical Center, Nashville, TN. - 3/1994 - 12/1996.
 - Supervised image acquisition and calculated ventricular parameters including volume and mass. Provided radiologist with report which included patient data and their comparison to normal ranges.
 - Assisted with development and study of cardiac segmentation program created by Siemens. Tested program's accuracy on cardiac MRI studies of normal volunteers and patients with pulmonary hypertension by comparing results with previously validated manual segmentation method.

OTHER EXPERIENCE:

- **Vanderbilt Center for the Integration of Research, Teaching, and Learning (CIRTL) Advisory Board**, Vanderbilt University, Nashville, TN. Fall 2007-Spring 2011

AWARDS:

- **Duke University Charles A. Dukes Award for Outstanding Volunteer Service.** October 2019.
- **American Society for Engineering Education's Pre-College Engineering Education Division's Meritorious Service Award.** June 2019.
- **American Society for Engineering Education Fellow.** June 2018.
- **NCWIT Aspirations in Computing Educator Award Central and East Tennessee Affiliate Winner.** March 2018.
- **Tennessee STEM Innovation Network's STEM Advocate Award.** "For your leadership in integrating STEM strategies at Harpeth Hall, successfully providing a national platform to advance STEM through the STEM Think Tank & Conference, and for your willingness to serve on many advisory councils that promote STEM for All students throughout the state." May 2017.
- **American Society for Engineering Education's Pre-College Engineering Education Division's Meritorious Service Award.** June 2016.
- **Duke University Pratt School of Engineering Distinguished Service Alumni Award.** April 2012.

- **VaNTH ERC K-12 Award.** "For outstanding leadership of the pre-college teachers program, and research contributions to the development of curricula and teaching bioengineering in secondary schools." June 2007.
- **Engineering Professor of the Semester** as chosen by the Vanderbilt Panhellenic Association, Fall 2005, Spring 2007
- **Duke University Talent Identification Program Distinguished Alumni Award.** 2005.
- **American Society of Mechanical Engineers (ASME) Best Practices for High School Engineering** for "The Iron Cross." 2003
- **American Society of Mechanical Engineers (ASME) Best Practices for High School Engineering Honorable mention** for "Using the Electrocardiogram to teach Biomedical Engineering at the High School Level." 2002
- **NIH Training Grant Recipient,** Vanderbilt University, Nashville, TN. 1993-1996
- **IBM Fellowship,** Vanderbilt University, Nashville, TN. 1993-1996
- **Calhoun Fellowship,** Drexel University, Philadelphia, PA. 1991-1993
- **Graduation with Special Distinction,** Duke University, Durham, NC. 1991

MEMBERSHIPS:

- American Society for Engineering Education. 2003-present
- National Science Teachers Association. 2002-present
- Society for Women Engineers. 2011-present
- Tennessee Science Teachers Association. 2011-present
- Women in Engineering ProActive Network. 2011-present
- Computer Science Teachers Association. 2014-present

SERVICE WORK:

VANDERBILT SERVICE WORK:

- **DEPARTMENT:**
 - Member of Undergraduate Education Committee for Strategic Planning Committee 2007
 - Member of Resources Committee for Strategic Planning Committee 2007
 - Chair the BME Internship Program Committee 2008-2009

- **SCHOOL OF ENGINEERING:**
 - Freshman Engineering Curriculum Revision Committee 2002
 - Chair the Careers Committee 2007-2010
 - Chair the Website Committee 2008-2010
 - Chair the International Committee 2008-2010
 - Chair of Engineering Internship Programs Committee 2009-2010

- **PEABODY COLLEGE:**
 - Teaching and Learning in Urban Schools Evaluation Committee 2010-2011

- **VANDERBILT UNIVERSITY:**
 - Mayfield House Faculty Sponsor 1999-2000
 - Participated in trial faculty meal plan; received two meals on campus per week and dined with students through the semester 2004
 - Spoke at Center For Teaching workshop on Labs, February 2006
 - Spoke at CIRTL workshop, May 2007
 - Vanderbilt Career Center Advisory Board, July 2007 – June 2010
 - Vanderbilt Programs for Talented Youth Advisory Board, 2007 – 2010
 - Serve on the VU Global Certificate Development Committee, 2007 – 2010
 - Serve on the International Policies and Procedures Committee, 2008 – 2010
 - Serve on the VIO Academic Affairs Committee, 2008 – 2010

SCIENTIFIC COMMUNITY SERVICE WORK:

- **ASSOCIATE EDITOR:**
 - Journal of Pre-College Engineering Education Research. 2017-present

- **EDITORIAL BOARD:**
 - Science Educator. 2010 – 2016
 - Journal of Pre-College Engineering Education Research. 2012-present

- **MANUSCRIPT REVIEW:**
 - Reviewer for Journal of Research in Science Teaching. 2007 – present
 - Reviewer for Journal of Engineering Education. 2009 – present
 - Reviewer for International Journal of Engineering Education. 2010 – present
 - Reviewer for Journal of Pre-College Engineering Education Research. 2012 – present

- Reviewer for Journal of STEM Education. 2013 – present
- **CURRICULUM REVIEW:**
 - Reviewer for teachengineering.org. 2009 – present
- **EDUCATIONAL ADVISORY BOARD MEMBER:**
 - Upper Cumberland Rural STEM Initiative Hub, 2012-2014
 - Tennessee STEM Education Council, 2012-2018
 - ASEE Board of Directors' Committee on P12 Engineering Education, 2014-2017
 - Chair, 2017-present
 - Tennessee Department of Education's STEM Advisory Board, 2016-2018
 - Metropolitan Nashville Public School's STEAM Advisory Council, 2016-2018
 - Chair, Partner Development and Innovation Committee
 - Williamson County Schools STEM Advisory Board, 2018-present
- **EDUCATIONAL ADVISORY BOARD MEMBER AND CHAIR:**
 - Center for Compact and Efficient Fluid Power (CCEFP) Engineering Research Center, 2007-2011
- **OFFICES HELD IN PROFESSIONAL ORGANIZATIONS:**
 - American Society for Engineering Education K-12 Division At-large Member: June 2004 - May 2005.
 - American Society for Engineering Education K-12 Division Nominating Committee: 2004-2005.
 - American Society for Engineering Education K-12 Division K12 Representative: June 2005 – May 2006.
 - American Society for Engineering Education K-12 Division Program Chair-Elect: June 2006 – May 2007.
 - American Society for Engineering Education K-12 Division Program Chair: June 2007-May 2008.
 - American Society for Engineering Education K-12 Division Best Practices Panel Chair: June 2008 - May 2010.
 - American Society for Engineering Education K-12 Division At-large Member: June 2008 - May 2011.
 - American Society for Engineering Education K-12 Division Chair-Elect. June 2011 – May 2013.
 - American Society for Engineering Education K-12 Division Chair. June 2013 – June 2015
 - American Society of Engineering Education K-12 Division Immediate Past Chair. July 2015 – June 2017
 - American Society of Engineering Education Board of Directors' Committee on Precollege Engineering Education Member. July 2015 – present
 - American Society of Engineering Education Board of Directors' Committee on Precollege Engineering Education Chair. July 2017 – present

- **CONFERENCE ACTIVITIES:**

- Organize the ASEE Engineering Day program for the three sites each year of the NSTA Regional Conferences – 2012-2017
- American Society for Engineering Education K-12 Division – Abstract and Paper Reviewer, 2004-present
- American Society for Engineering Education K-12 Division – Program Committee, 2004-2007.
- Session Chair for American Society for Engineering Education K-12 Division Annual Meeting, 2005, 2007, 2012.
- American Society for Engineering Education K-12 Division – Program Chair, 2007-2008

- **STUDY PANEL ACTIVITIES:**

- ITEST, National Science Foundation, Fall 2017
- ITEST, National Science Foundation, September 2016
- EHR Core Research program, National Science Foundation, November 2015
- Transforming Undergraduate Education, National Science Foundation, 7/29-30/2010
- Committee of Visitors, Engineering Education Programs, National Science Foundation, 3/26-28/2007

MENTOR SERVICE WORK:

- **UNDERGRADUATE TEACHING AND ADVISING:**

- Taught *BME 101: Introduction to Biomechanics* in Fall 2005, 2006, 2007, 2008 with enrollments of 56, 42, 38, 48 students, respectively.
- Taught *ES101: Freshmen Seminar in Electrocardiograms* in Fall 2002, 2003, 2004, 2005, 2006 with enrollments of 15, 15, 19, 15, and 15 students, respectively.
- Taught *ES101: Freshmen Seminar in Medical Imaging* in Fall 2005 with 15 students.
- Taught *ES140 (formerly 130): Introduction to Engineering* in Fall 1999, 2000, 2003, 2004, 2007 with 33, 34, 33, 33, and 33 students.
- Biomedical Engineering Program Advisor.
- ENGAGE Scholar Advisor.
- Biomedical Imaging Education Summer Research Advisor 2004: Stephen Schleicher, Aubrey Hunt, Christopher Garay
- BME 241 undergraduate mentor for Aubrey A. Hunt, 'VIBES Kinematics Curriculum Development', Spring 2005.
- Biomedical Imaging Education Summer Research Advisor 2005: Aubrey Hunt, Christopher Garay, Patrick Gonzales, Alex Nguyen.
- Research Experiences for Undergraduates Advisor, 2005: Molly Tanner, Mackenzie Thomas.

- BME 241 undergraduate mentor for Patrick Gonzales, 'Magnetic Resonance Imaging High School Curriculum Development', Fall 2005.
- BME 241 undergraduate mentor for Lorielle Alter, 'VIBES Toothpaste Chemistry Curriculum Development', Spring 2006.
- BME 241 undergraduate mentor for Samar Shah, 'VIBES Biomedical Physics Momentum and Energy Curriculum Development', Spring 2006.
- BME 241 undergraduate mentor for Rod Aliabadi, 'High School Design Curriculum Development', Spring 2006.
- Research Experiences for Undergraduates Advisor, 2006: Shaun Rice, Amanda Fuller.
- BME 241 undergraduate mentor for Andrew Cramer, 'VIBES Conservation of Momentum and Energy Volleyball Curriculum Development', Spring 2007
- Biomedical Imaging Education Summer Research Advisor 2007: Shawn Price, Shawn Krisman, Kristen Jevsevar, Melanie Aston.
- Research Experiences for Undergraduates Advisor, 2007: Elizabeth Krebs, Harrison Lamons.
- BME 241 undergraduate mentor for April Boldt, 'VIBES Program Assessment', Fall 2007.
- BME 241 undergraduate mentor for Kristen Jevsevar, 'High School MRI Curriculum Development', Fall 2007.
- BME 241 undergraduate mentor for Melanie Aston, 'Medical Imaging Curriculum Data Analysis', Spring 2008.
- BME 241 undergraduate mentor for Graham Gipson, 'Developing a High School Level Biomedical Engineering Based High School Chemistry Curriculum Unit on Reduction-Oxidation Reactions', Spring 2008.
- BME 241 undergraduate mentor for Jordan Landreth, 'Pacemaker Module for High School AP Physics Module Creation', Spring 2008.
- BME 241 undergraduate mentor for Nicole Westin, 'Sufficient Blood Oxygen and Equilibrium Module for High School Chemistry – LeChatelier's Principle', Spring 2008.
- BME 241 undergraduate mentor for Shawn Price, 'VIBES SCUBA Curriculum Development', Spring 2008.
- Research Experiences for Undergraduates Advisor, 2008: David Weinberg, Alison Douglas, Meghan Murphy.
- BME 241 undergraduate mentor for Jeanine Mansour, 'Developing a Children's Diabetes Camp Curriculum', Fall 2008.
- Research Experiences for Undergraduates Advisor, 2009: Anna Goncharova, Megan Johnson.
- Research Experiences for Undergraduates Advisor, 2010: Amber Spolarich, Bukola Jaji, Rachelle Klinger, Alanna Walker.
- Research Experiences for Undergraduates Advisor, 2011: Nicole Black.
- Research Experiences for Undergraduates Advisor, 2012: Crystal Chukwurah.
- BME 241 undergraduate mentor for Sloan Sypher, 'Developing a Boot and Booster Camp for STEM Women, Spring 2013.

- **GRADUATE TEACHING AND ADVISING:**

- Served on Mark Gonyea's Ed.D. Committee, Carson-Newman University, 2015-2017
- Served on Jenna Gorlewicz's Ph.D. Committee, School of Engineering, 2012 – 2013
- Served on Nancy Morabito's Ph.D. Committee, Peabody College, 2009 – 2013
- Oversee Andrew Wingfield's work on the MNPS Project Evaluation – 2010-2011.
- Taught *BME395C: Preparation for Teaching* in Fall 2010 with 15 Vanderbilt students and 6 on-line students (U. Wisconsin, Texas A&M, Howard University) using the Elluminate platform
- Taught *BME395D: Preparation for Teaching* in Fall 2009 with 16 students.
- Post-Doctoral Trainee Mentor
 - Melissa J. Geist, PhD, Vanderbilt University, Spring 2005

UNIVERSITY WORKSHOPS HELD AND INVITED TALKS:

- 'Developing HPL-Based Legacy Cycle Curriculum', Tennessee Technological University Nursing School, March 30, 2007
- Clemson Research Experiences for Teachers Workshop Trainer, June 19-20, 2007
- 'Reforming Engineering Education and Outreach' Tennessee Tech University. Invited Speaker. Chemical Engineering Department. February 28, 2008.
- Clemson Research Experiences for Teachers Workshop Trainer, June 19-20, 2008
- University of Houston Research Experiences for Teachers Workshop Trainer, July 9-10, 2008
- Clemson Research Experiences for Teachers Workshop Trainer, June 22-23, 2009
- University of Texas Education Department, May 7, 2010.
- American Society of Engineering Education Southeastern Region Conference, Keynote address, March 11, 2013.

COMMUNITY SERVICE WORK:

- **DREXEL UNIVERSITY SCHOOL OF BIOMEDICAL ENGINEERING:**

- Executive Advisory Council Member, 2018-present

- **DUKE UNIVERSITY:**

- Women's Leadership and Philanthropy Board, 2013-2015
- Women's Impact Network Leadership Council, 2015-present

- **DUKE UNIVERSITY PRATT SCHOOL OF ENGINEERING:**
 - Engineering Alumni Council Member, 2007-2009
 - Board of Visitors Member, 2008-present
 - Board of Visitors, Chair, Education and Student Affairs Committee, 2014-present

- **THE COLLEGE BOARD:**
 - Elected to the Academic Assembly of the Southern Regional Council, 2015- 2018
 - Member of the Southern Regional Nominating Committee, 2017-2018

- **DUKE TALENT IDENTIFICATION PROGRAM (TIP):**
 - Founder, Duke TIP Alumni Association 2001
 - Hosted Duke TIP State Recognition Ceremony, May 2003-2008
 - National Advisory Board Member, 1998-2006
 - Duke TIP Task Force, 2018

GRANT ACTIVITY:

- **FUNDED:**
 - Palm: Palm Educator Pioneers Grant (PI: Stacy S. Klein), 'The Palm Computer in the Physics Classroom', 08/01/2001 – 07/31/2002
 - Frist Foundation: Pencil Foundation Educators Grant (PI: Stacy S. Klein), 'Gifted Education at the University School of Nashville', 07/01/2002 – 06/30/2003
 - American Association of Physics Teachers: Innovative Teachers Grant. (PI: Stacy S. Klein), 'Understanding Electric Fields – A Visual Approach', 2003
 - Whitaker Foundation: Workshop Grant (PI: Stacy S. Klein), 'VaNTH ERC High School Physics and Biology Teacher Workshop', 04/01/2003 – 07/31/2003.
 - NSF: VaNTH ERC Supplement (ERC PI: Thomas R. Harris; Project PI: Stacy S. Klein), 'VaNTH ERC High School Physics and Biology Teacher Workshop', 05/01/2003 – 07/31/2003.
 - NSF: Engineering Education Program Grant (co-PI: Stacy S. Klein), 'Biomedical Imaging Education: Safe, Inexpensive, Hands-On Learning', 12/01/2003 – 11/30/2007
 - NSF: Research Experiences for Teachers Site Grant (PI: Stacy S. Klein), 'Vanderbilt University Biomedical Engineering Research Experiences for Teachers (RET) Site Program', 01/01/2004 – 12/31/2007.
 - Micronova: Workshop Grant (PI: Stacy S. Klein), 'VaNTH ERC High School Physics and Biology Teacher Workshop', 01/01/2004 – 07/31/2004
 - Tennessee Department of Education: Math Science Partnership (PI: Virginia Shepherd), 'Summer Science Academy', 03/01/2004 - 03/31/2006

- Whitaker Foundation: Workshop Grant (PI: Stacy S. Klein), 'VaNTH ERC High School Physics and Biology Teacher Workshop', 04/01/2004 – 07/31/2004.
- Whitaker Foundation: Workshop Grant (PI: Stacy S. Klein), 'VaNTH ERC High School Physics and Biology Teacher Workshop', 04/01/2005 – 07/31/2005.
- NSF: Vanderbilt University RET Supplement (PI: Stacy S. Klein), 'Vanderbilt University Bioengineering Research Experiences for Teachers Program', 04/01/2007 – 08/31/2007.
- NSF: VaNTH ERC Research Experiences for Teachers Supplement (ERC PI: Thomas R. Harris; Project PI: Stacy S. Klein), 'Vanderbilt University Biomedical Engineering Research Experiences for Teachers (RET) Site Program', 04/01/2007 – 08/31/2007.
- Department of Labor: WIRED Grant (PI: Stacy S. Klein), 'WIRED High School Teachers Training: VIBES Summer Workshop', 10/01/2008 – 09/30/2009.
- NSF: Research Experiences for Teachers Grant (PI: Stacy S. Klein), 'Vanderbilt University Bioengineering Research Experiences for Teachers Program', 01/01/08 – 12/31/2011.
- NSF: Course, Curriculum, and Laboratory Instruction Grant (PI: Richard Williams), 'Design and Development of Educational Models for Bioprocess Engineering', 02/01/2008 – 01/31/2011.
- NSF: Research Experiences for Undergraduates Site Grant (PI: Robert Linsenmeier), 'REU Site: Bioengineering Education Research', 09/01/2009 – 8/31/2012.
- Metropolitan Nashville Public Schools (PI: Stacy Klein-Gardner), 'Academy for Science and Engineering', 10/01/2010 – 06/30/2011.
- NSF: Engineering Design Process Portfolio Scoring Rubric PRIMES (PI: Leigh Abts), 9/1/11 – 08/31/2017.
- NSF: Engineering for US All - E4USA: A National Pilot High School Engineering Course and Database (PI: Darryll Pines), 10/01/2018 – present.

JOURNAL PUBLICATIONS: (Post-doctoral authors advised or under the supervision of Dr. Klein for the published work are underlined)

1. **Stansell (Klein) SD** and Stansell, SR. How Math Makes You Rich (If You've Got Time Enough). Mathegraphics. Duke University's Talent Identification Program, Durham NC. Spring 1993.
2. **Stansell (Klein) SD**. Collision of the Planets?!?! . Mathegraphics. Duke University's Talent Identification Program, Durham, NC. Fall 1992.
3. Lorenz CH, ES Walker, VL Morgan, **SS Klein**, TP Graham. Quantification of Normal Human Right and Left Ventricular Mass, Systolic Function, and Gender Differences by Cine Magnetic Resonance Imaging. Journal of Cardiovascular Magnetic Resonance. 1(1):7-21. 1998
4. **Klein, SS**, and Roselli, RJ. The Iron Cross. American Society of Mechanical Engineers (ASME) Best Practices for High School Engineering. 2003.
<http://files.asme.org/asmeorg/Events/Contests/1169.doc>
5. **Klein, SS**. Using the Electrocardiogram to teach Biomedical Engineering at the High School Level. American Society of Mechanical Engineers (ASME) Best Practices for High School Engineering. 2002.
<http://files.asme.org/asmeorg/Events/Contests/1160.pdf>
6. **Klein, SS**, and Sherwood, RD. Biomedical Engineering and Cognitive Science as the Basis for Secondary Science Curriculum Development: A Three Year Study. School Science and Mathematics. 105(8): 384-401. 2005.
7. **Klein, SS**, and Geist, MJ. The Effect of a Bioengineering Unit Across High School Contexts: An Investigation in Urban, Suburban, and Rural Domains. New Directions in Teaching and Learning. 108: 93-106. 2006.
8. **Klein, SS**, and Harris, AH. A User's Guide for the Legacy Cycle. Journal of Education and Human Development. 1(1). 2007
<http://www.scientificjournals.org/journals2007/articles/1088.pdf>
9. **Klein, SS**, and Roselli, RJ. Finding the Center of Gravity of the Forearm. The Physics Teacher. The Physics Teacher. 46(4): 232-4. 2008.
10. Brophy, SB, **SS Klein**, M Portsmore, C Rogers. Advancing Engineering Education in P-12 Classrooms. Journal of Engineering Education. 97(3): 369-387. 2008.
11. **Klein, SS**. Effective STEM Professional Development: A Biomedical Engineering RET Site Project. International Journal of Engineering Education. 25(3):523-533. 2009.

12. Corday, DS, TR Harris, **SS Klein**. A Research Synthesis of the Effectiveness, Replicability, and Generality of the VaNTH Challenge-based Instructional Modules in Bioengineering. *Journal of Engineering Education*. 98(4):335-348. 2009.
13. **Klein, SS**, SP Brophy, MJ Aston, CB Paschal. Biomedical Imaging Education: Safe, Inexpensive Hands-On Learning. *International Journal of Engineering Education*. 26(5):1061-1071. 2010.
14. **Klein-Gardner, SS**, ME Johnston, L Benson. Impact of the RET Teacher-Developed Curriculum on their teaching strategies and student motivation. *Journal of Pre-College Engineering Education Research*. 2(2):21-35. 2012.
<http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1064&context=jpeer>
15. Williams, RR, **SS Klein-Gardner**, L Limberis, ST Sullivan. The Implementation of a Challenge-Based Curriculum into a Bioprocess Engineering Program. *International Journal of Engineering Education*. 28(5):1150-1160. 2012.
16. Faber, C., E Hardin, **SS Klein-Gardner**, L Benson. Development of Teachers as Scientists in Research Experiences for Teachers Programs. *Journal of Science Teacher Education*. 25(7):785-806. 2014.
17. Reimers, Jackson E.; Farmer, Cheryl L.; and **Klein-Gardner, Stacy S.** (2015) "An Introduction to the Standards for Preparation and Professional Development for Teachers of Engineering," *Journal of Pre-College Engineering Education Research (J-PEER)*: Vol. 5: Iss. 1, Article 5. <http://dx.doi.org/10.7771/2157-9288.1107>

PAPERS SUBMITTED FOR PEER REVIEW:

1. **Klein-Gardner, SS**. STEM Summer Institute Increases Student and Parent Engineering and Persistence in STEM. Submitted to the *Journal of Precollege Engineering Education Research*. June 2017.

BOOK CHAPTERS:

1. **Klein, SS**, and Sherwood, RD. Biomedical Engineering and Your High School Science Classroom: Challenge-based Curriculum that Meets the NSES Standards. In: Yager, RE, ed. *Exemplary Science in Grades 9-12: Standards-based Success Stories*. Arlington, VA: NSTA Press. 2005.
2. Chukwurah, C, **SS Klein-Gardner**. STEM Summer Institute: A Model Program for STEM Integration for Girls. In J. Koch, B. Polnick, and B. Irby (Eds.) *Girls and Women in STEM Fields: A Never-Ending Story*. Charlotte, NC: Information Age Publishing. 2014.

3. Parry, EA, PS Lottero-Perdue, **SS Klein-Gardner**. Engineering Professional Societies and Pre-university Engineering Education. In M. deVries, L. Gumaelius, and I.-B Skogh (Eds.) Pre-university Engineering Education. Rotterdam, Netherlands: Sense Publishers. 2016.

BOOKS:

1. **Stansell (Klein) SD**. Algebra II: Learn On Your Own Program Student's Manual, revised edition, and Solutions Manual. Duke University's Talent Identification Program, Durham, NC. Fall 1991.
2. **Klein, SS**. Functions: Learn On Your Own Program Student's Manual, revised edition, and Solutions Manual. Duke University's Talent Identification Program, Durham, NC. 1995.
3. Teachey, A, and **SS Klein**. Algebra I: Learn On Your Own Program Student's Manual, revised edition. Duke University's Talent Identification Program, Durham, NC. Fall 2000.
4. Teachey, A, and **SS Klein**. Algebra II: Learn On Your Own Program Student's Manual, revised edition. Duke University's Talent Identification Program, Durham, NC. Fall 2000.
5. **Klein, SS**, AH Harris, RD Sherwood. VIBES Electrocardiogram Mosaic. Vanderbilt University, Nashville, TN. 2006.
6. **Klein, SS**, AH Harris, RD Sherwood. VIBES Iron Cross Module. Vanderbilt University, Nashville, TN. 2006.
7. **Klein, SS**, AH Harris. VIBES Skin Elasticity Module. Vanderbilt University, Nashville, TN. 2007
8. **Klein, SS**, AH Harris, RD Sherwood. VIBES Optics Mosaic. Vanderbilt University, Nashville, TN. 2007
9. Harris, AH, S Baker, A Ketchum, **SS Klein**, V Metzgar. Managing Your Science Classroom Lab Efficiently. Vanderbilt University, Nashville, TN. 2007.

CONFERENCE PAPERS: (Undergraduate authors advised or under the supervision of Dr. Klein for the published work are underlined)

1. King, P, **SS Klein**, and SP Brophy. Orienting Students to Important Features of ECG Cycle and Measurement. American Society for Engineering Education Conference Proceedings. Session 2109. p. 1778. June 2003.
2. Sherwood, RD, and **SS Klein**. Biomedical Engineering Topics in High School Science Instruction: Initial Development and Field Studies. American Society for Engineering Education Conference Proceedings. Session 1609. p. 916. June 2003.
3. Shevin, R, RJ Zambon, **SS Klein**, and CB Paschal. Safe Alternatives for Hands-On Learning of X-Ray Imaging Principles. American Society for Engineering Education Conference Proceedings. Session 2209. p. 133. June 2003.
4. Jansen, DE, SP Brophy, **SS Klein**, PR Norris and M Wang. A Problem-Based, Introductory Course in Biomedical Optics in the Freshman Year. American Society for Engineering Education Conference Proceedings. Session 1609. p. 2507. June 2003.
5. Harris, A, and **SS Klein**. Educational Outreach Using Learning-Theory-Informed Modules. American Society for Engineering Education Conference Proceedings. Session 1793. June 2004.
6. **Klein, SS**, and Sherwood, RD. Using BME to Teach High School Fluid Dynamics. American Society for Engineering Education Conference Proceedings. Session 258. 2005.
7. **Klein, SS**, and Sherwood, RD. Gender Equitable Curricula in High School Science and Engineering. American Society for Engineering Education Conference Proceedings. Session 492. 2005.
8. Garay, CD, AA Hunt, SM Schleicher, SP Brophy, **SS Klein**, CB Paschal. Teaching X-Ray Imaging in the High School Physics Classroom: Safe, Inexpensive and Hands-On Curriculum. American Society for Engineering Education Conference Proceedings. Session 1034. 2005.
9. Rowe, CJ, **SS Klein**, and A Mahadevan-Jasnsen. Assessing a Freshmen Engineering Course. American Society for Engineering Education Conference Proceedings. Session 1774. 2005.
10. **Klein, SS**. Using a Study of Skin to Teach Stress and Strain in High School Physics, Anatomy and Physiology, and Engineering. Proceedings of the International Conference on Engineering Education. July 2006.
11. Garay, CD, P Gonzales, AH McKelvey, A Nguyen, CB Paschal, **SS Klein**. Inexpensive Active Learning of X-ray and Ultrasound Imaging in the High School Physics Classroom. American Society for Engineering Education Conference Proceedings. Session 745. 2006.

12. Rowe, CR, and **Klein, SS**. A Study of Challenge-based Learning Techniques in an Introduction to Engineering Course. American Society for Engineering Education Conference Proceedings. Session 105. 2007.
13. Jevsevar, K, M Aston, S Price, CB Paschal, **SS Klein**. Designing Magnetic Resonance Imaging Curriculum for Undergraduates: Safe, Hands-On and Inexpensive Instruction. American Society for Engineering Education Conference Proceedings. Session 1509, paper 568. 2008.
14. Linsenmeier, R, P Hirsch, M Bourgeois, J Alley, **SS Klein**. A Unique Research Experience for Undergraduates in the VaNTH REU. American Society for Engineering Education Conference Proceedings. Session 1309, paper 884. 2008.
15. **Klein, SS**, R Williams, L Limberis, S Sullivan. Bioprocess Engineering Curriculum Development and Assessment. American Society for Engineering Education Conference Proceedings. Session 2009-437. 2009.
16. Williams, R, **SS Klein**, L Limberis, S Sullivan. Design and Development of Educational Modules for Bioprocess Engineering. American Society for Engineering Education Conference Proceedings. Session 2009-1189. 2009.
17. Spolarich, AC, and **SS Klein-Gardner**. Impacts of the Vanderbilt University Research Experience for Teachers Program 2008-2010: Analysis of Student Surveys Regarding Motivational Impact. American Society for Engineering Education Conference Proceedings. 2011.
18. Walker, A, and **SS Klein-Gardner**. Defining Global Competence for Engineering Students. American Society for Engineering Education Conference Proceedings. 2011.
19. **Klein-Gardner, SS**. K-Career Directions for Women. American Society for Engineering Education Conference Proceedings. 2012.
20. Chukwurah, C, and **SS Klein-Gardner**. STEM Think Tank and Conference: Encouraging K12 Teachers to Integrate STEM into the Classroom. American Society for Engineering Education Conference Proceedings. 2013.
21. **SS Klein-Gardner**. STEM Summer Institute Increases Student and Parent Understanding of Engineering. American Society for Engineering Education Conference Proceedings. 2014.

COLUMNS:

1. Klein, SS. A Call to Action: K12 Education and the Future of Engineering. Engineering Vanderbilt. 48(2). 2007.

2. Klein-Gardner, SS, and Cheryl Farmer. Professional Development to Meet a Growing Demand. Prism. November 2016. <http://www.asee-prism.org/asee-today-nov-3/>

PRESENTATIONS: (Undergraduate authors advised or under the supervision of Dr. Klein for the published work are underlined)

1. Platform Presentation: Lorenz, CH, CB Meyerowitz, **SS Klein**, A Gupta, L Kurowski, OP Simonetti, JE Loyd. Evaluation of Left Ventricular Diastolic Function in Pulmonary Hypertension with Cine MR Imaging. Radiology. 193(P):161. 1994.
2. Poster Presentation: **Klein, SS**, CH Lorenz, JM Bundy. Motion of the Right Ventricular Free Wall in Pulmonary Hypertension. Annals of BME. 23(Supp. 1):S-67. 1995.
3. Platform Presentation: Lorenz, CH, A Gupta, **SS Klein**, JM Bundy, A Singh, OP Simonetti. Validation of an Automated Segmentation Algorithm for Calculation of Left Ventricular Function and Mass. Proceedings of the Society of Magnetic Resonance Third Annual Scientific Meetings. 1995.
4. Platform Presentation: **Klein, SS**, JM Bundy, CH Lorenz. Characterization of the Right Ventricular Contractile Motion with Tagged Cine MRI. Journal of the American College of Cardiology. 27(Supp. A):308A. 1996.
5. Platform Presentation: Lorenz, CH, JE Loyd, **SS Klein**, VL Morgan, ES Walker, WH Frist, TP Graham, Jr. Characterization of Different Time Courses of Left and Right Ventricular Recovery After Lung Transplantation. Journal of the American College of Cardiology. 29(Supp. A):23A. 1997.
6. Poster Presentation: **Klein, SS**, TP Graham, Jr., CH Lorenz. Noninvasive Delineation of Normal Right Ventricular Contractile Motion with MRI Myocardial Tagging. Annals of Biomedical Engineering. 26:756-63. 1998.
7. Invited Seminar: Grand Recognition Ceremony Keynote Speaker. Talent Identification Program. Durham, NC. May 1998.
8. Invited Seminar: "Experience is the Best Teacher." Family Conference. Talent Identification Program. Durham, NC. May 1998.
9. Platform Presentation: "Authentic Discovery in Chemistry and Biology." Making Connections. The Park School. Baltimore, MD. November 7-9, 1998.
10. Short Course: "Using Computers in Introductory Physical and Biological Sciences." Tennessee Association of Independent Schools (TAIS) State Meeting. Memphis, TN. November 13, 1998.

11. Platform Presentation: "Curve Fitting Real World Trigonometric Data" (MT)² Regional Conference. Nashville, TN. September 25, 1999.
12. Platform Presentation: "Satellite Toolkit in the Physics Classroom" with Bill Rodriguez. Satellites in Education Conference. West Chester, PA. March 9-10, 2000.
13. Platform Presentation: "Satellite Toolkit in the Physics Classroom" with Bill Rodriguez. NSTA National Conference. Orlando, FL. April 8, 2000.
14. Short Course: "Using Simple Physics Labs to Illustrate Concepts in Your Math Classroom" (MT)² Regional Conference. Nashville, TN. September 23, 2000.
15. Short Course: "Analyzing Physics Data Using Image Processing" 13th Annual International Teachers Teaching with Technology (T³) Conference. Columbus, OH. March 16-18, 2001.
16. Platform Presentation: "Using Satellite ToolKit in the Physics Classroom" 13th Annual International Teachers Teaching with Technology (T³) Conference. Columbus, OH. March 16-18, 2001.
17. Platform Presentation: "Quantify Error Measurement" 13th Annual International Teachers Teaching with Technology (T³) Conference. Columbus, OH. March 16-18, 2001.
18. Platform Presentation: "Biomedical Engineering at the High School Level." 14th Annual International Teachers Teaching with Technology (T³) Conference. Calgary, Alberta. March 14-17, 2002.
19. Short Course: "Using the Palm Computer in the Physics Classroom" with Bill Rodriguez. 14th Annual International Teachers Teaching with Technology (T³) Conference. Calgary, Alberta. March 14-17, 2002.
20. Platform Presentation: "Biomedical Engineering at the High School Level." NSTA National Conference. San Diego, CA. March 27-30, 2002.
21. Short Course: "Using the Palm Computer in the Physics Classroom" with Bill Rodriguez. NSTA National Conference. San Diego, CA. March 27-30, 2002.
22. Short Course: "Biomedical Engineering in the High School Physics and Biology Classroom." John Hopkins University CISST ERC Research Experience for Teachers Workshop. Baltimore, MD. August 1, 2002.
23. Invited Seminar: "Biomedical Engineering in the High School Physics and Biology Classrooms." Engineering Research Center Conference. Washington, D.C. November 3, 2002.

24. Invited Seminar: "Bioengineering Educational Outreach." American Institute of Medical and Biological Engineers. Washington, D.C. February 22, 2003.
25. Invited Seminar: "Biomedical Engineering in the High School Physics and Biology Classroom." Loyola Marymount University Research Experience for Teachers Workshop. Los Angeles, CA. March 1, 2003.
26. Platform Presentation: "Biomedical Engineering at the High School Level." 15th Annual International Teachers Teaching with Technology (T³) Conference. Nashville, TN. March 7-9, 2003.
27. Platform Presentation: "A Field Study of Secondary Science Materials Developed Using the HPL Framework" with Robert D. Sherwood. National Association for Research in Science Teaching Conference. Philadelphia, PA. March 23-26, 2003.
28. Platform Presentation: "Understanding Electric Fields – A Visual Approach." American Association of Physics Teachers. Madison, WI. August 4, 2003.
29. Platform Presentation: "Biomedical Engineering in the High School Physics Classroom." American Association of Physics Teachers. Madison, WI. August 5, 2003.
30. Platform Presentation: "Biomedical Engineering in the High School Science Classroom." National Science Teachers' Association. Atlanta, GA. April 1, 2004.
31. Short Course: "Using a Study of LASIK to Teach Optics in Physics." National Science Teachers' Association. Atlanta, GA. April 3, 2004.
32. Platform Presentation: "Using BME to Teach High School Fluid Dynamics." Biomedical Engineering Society. Philadelphia, PA. October 14, 2004.
33. Platform Presentation: "A Comparison of Active Lecture versus Hands On Learning of Magnification and Penumbra in X-ray Imaging." with Cynthia Paschal, Stephen Schleicher and Sean Brophy. Biomedical Engineering Society. Philadelphia, PA. October 15, 2004.
34. Platform Presentation: "Electrocardiograms in the Freshmen Year." with Sean Brophy and Paul King. Biomedical Engineering Society. Philadelphia, PA. October 15, 2004
35. Short Course: "Biomedical Engineering in the High School Physics and Biology Classrooms." Tennessee Science Teachers' Association. Nashville, TN. November 8, 2004.

36. Platform Presentation: "Biomedical Engineering in the High School Physics and Biology Classrooms." Tennessee Association of Independent Schools. Nashville, TN. November 19, 2004.
37. Short Course: "Using a Study of the Electrocardiogram to Teach Electric Fields in Physics." NSTA National Convention. Dallas, TX. March 31, 2005.
38. Short Course: "The Physics of Medical Imaging." NSTA National Convention. Dallas, TX. March 31, 2005.
39. Short Course: "Using a Study of LASIK to Teach Optics in Physics and Physiology." New Jersey Science Convention. October 6, 2005.
40. Short Course: "VIBES: Interdisciplinary, Challenge-based High School Science." New Jersey Science Convention. October 6, 2005.
41. Short Course: "VIBES: Interdisciplinary, Challenge-based High School Science." Texas Science Convention. October 27, 2005.
42. Platform Presentation: "Managing your Science Classroom Laboratory Effectively." National Science Teachers Association Regional Convention. Nashville, TN. December 1, 2005.
43. "Summer Science Academy: A Math Science Partnership." National Science Teachers Association Regional Convention. Nashville, TN. December 1, 2005.
44. Short Course: "Physics of Medical Imaging." National Science Teachers Association Regional Convention. Nashville, TN. December 2, 2005.
45. Platform Presentation: "Biomedical Engineering in High School Science." National Science Teachers Association Regional Convention. Nashville, TN. December 2, 2005.
46. Platform Presentation: "A Middle School Science Professional Development Success." NSTA National Convention. Anaheim, CA. April 6, 2006.
47. Short Course: "Using a Study of Skin to Teach Stress & Strain in Physics." NSTA National Convention. Anaheim, CA. April 8, 2006.
48. Short Course: "The Physics of Medical Imaging." NSTA National Convention. Anaheim, CA. April 8, 2006.
49. Platform Presentation: "Using a Study of Skin to Teach Stress and Strain in High School Physics, Anatomy and Physiology, and Engineering." International Conference on Engineering Education. San Juan, Puerto Rico. July 2006.

50. Short Course: "Teaching Medical Imaging in the High School Physics Classroom: Safe, Hands-On, and Inexpensive Curriculum." American Society for Engineering Education Conference. Chicago, IL. July, 2006.
51. Platform Presentation: "A Study of Challenge-based Learning Techniques in an Introduction to Engineering Course." American Society for Engineering Education Conference. Honolulu, HI. June 2007.
52. Platform Presentation: "VIBES: A Program Proven to Increase Student Achievement in Science." NSTA Southern Regional Convention. Birmingham, AL. December 2007.
53. Poster Presentation: "VIBES: Gender Equitable Physics Curriculum." AAPT National Meeting. Baltimore, MD. January 2008.
54. Poster Presentation: "Vanderbilt Research Experiences for Teachers Program: Physics Teacher In-Service Training." AAPT National Meeting. Baltimore, MD. January 2008.
55. Platform Presentation: "Designing Magnetic Resonance Imaging Curriculum for Undergraduates: Safe, Hands-On and Inexpensive Instruction." American Society for Engineering Education Conference Proceedings. Session 1509, paper 568. 2008.
56. Platform Presentation: "Exemplary Science in Grades 9-12: Standards-based Success Stories – VIBES in 2010." National Science Teachers Association Regional Conference. Nashville, TN. December 3, 2010.
57. Webinar Presentation: Class Link. September 26, 2012.
58. Platform Presentation: "Introducing Engineering to Elementary School Students" Tennessee Association for the Gifted. Nashville, TN. October 4, 2012.
59. Platform Presentation: "Authentic Assessment in your STEM Classroom: Using the Engineering Design Process Portfolio Scoring Rubric" Tennessee Association for the Gifted. Nashville, TN. October 4, 2012.
60. Platform Presentation: "Engineering the Future with TeachEngineering.org" Tennessee Association for the Gifted. Nashville, TN. October 4, 2012.
61. Platform Presentation: "ASEE Session: Introducing Engineering to Elementary School Students." NSTA Regional Conference. Louisville, KY. October 18, 2012.
62. Platform Presentation: "ASEE Session: Engineering the Future with TeachEngineering.org." NSTA Regional Conference. Louisville, KY. October 18, 2012.

63. Platform Presentation: "ASEE Session: Scientific Inquiry and the Engineering Design Process: How are They Similar and Different?" NSTA Regional Conference. Louisville, KY. October 18, 2012.
64. Platform Presentation: "Engineering the Future with TeachEngineering.org." TSTA Murfreesboro, TN. November 2, 2012.
65. Platform Presentation: "Scientific Inquiry and the Engineering Design Process: How are They Similar and Different?" TSTA Conference. Murfreesboro, TN. November 2, 2012.
66. Platform Presentation: "Authentic Assessment in your STEM Classroom: Using the Engineering Design Process Portfolio Scoring Rubric" TSTA Conference. Murfreesboro, TN. November 2, 2012.
67. Speed-Innovating Table: "Engaging University Partners in STEM." National Association of Independent Schools Conference. Philadelphia, PA. February 28, 2013.
68. Platform Presentation: "ASEE Session: ASEE's K-12 Outreach Program, egfi: Engineering, Go For It and the Marshmallow Challenge". NSTA Regional Conference. Portland, OR. November 2013.
69. Platform Presentation: "ASEE Session: Introducing Engineering to Elementary School". NSTA Regional Conference. Portland, OR. November 2013.
70. Platform Presentation: "ASEE Session: TeachEngineering.org: Free Resources for Engineering in K-12". NSTA Regional Conference. Portland, OR. November 2013.
71. Platform Presentation: "Language and Culture Meet Science and Engineering." National Conference on Girls' Education. Philadelphia, PA. February 8, 2014.
72. Platform Presentation: "Effective STEM Curriculum for Girls." American Society for Engineering Education K12 Workshop. Indianapolis, IN. June 14, 2014.
73. Platform Presentation: "ASEE Session: Effective STEM Curriculum for Girls." NSTA Regional Conference. Orlando, FL. November 2014.
74. Platform Presentation: "ASEE Session: ASEE's K-12 Outreach Program, egfi: Engineering, Go For It and TeachEngineering.org". NSTA Regional Conference. Orlando, FL. November 2014.
75. Platform Presentation: "ASEE Session: Introducing Engineering to Elementary School". NSTA Regional Conference. Orlando, FL. November 2014.

76. Platform Presentation: "Effective STEM Curriculum for Girls." American Society for Engineering Education K12 Workshop. Seattle, WA. June 13, 2015.
77. Platform Presentation: "Effective STEM Curriculum for Girls." National Conference on Girls' Education. New York, NY. January 2016.
78. Platform Presentation: "Target the Girls." College Board's Southern Regional Forum. Orlando, FL. February 2016.
79. Platform Presentation: "Effective STEM Curriculum for Girls." MTSU STEM Education Research Conference. Murfreesboro, TN. February 2016.
80. Platform Presentation: "Effective STEM Curriculum for Girls." TN Teach Ready Conference. Murfreesboro, TN. June 2016.
81. Platform Presentation: "Effective STEM Curriculum for Girls." American Society for Engineering Education K12 Workshop. New Orleans, LA. June 2016.
82. Platform Presentation: "Increasing Underrepresented Students in STEM." College Board's Southern Regional Forum. Orlando, FL. February 2017.
83. Panel Presentation: "SAT Subject Tests in STEM: Opportunities for Minority College Applicants." College Board's Southern Regional Forum. Orlando, FL. February 2017.
84. Platform Presentation: "STEM Summer Institute – A Five Year Review." MTSU STEM Education Research Conference. Murfreesboro, TN. February 2017.
85. Panel Presentation: "SAT Subject Tests in STEM: Opportunities for Minority College Applicants." College Board's Preparate Conference. Orlando, FL. April 2017.
86. Panel Presentation: "P-12 STEM Panel." American Society for Engineering Education's Engineering Physics and Physics Division at the ASEE Annual Conference. Columbus, OH. June 2017.
87. Panel Presentation: "Present at What Education Researchers Want You To Know About Teaching and Classroom Research." American Society for Engineering Education's New Engineering Educator Division at the ASEE Annual Conference. Columbus, OH. June 2017.

TECHNOLOGY TRANSFER SUBMISSIONS:

1. **Klein, SS**, AH Harris, RD Sherwood. VU0738. VIBES Electrocardiogram Mosaic Curriculum. 2006.

2. **Klein, SS**, AH Harris, RD Sherwood. VU0742. VIBES Iron Cross Module Curriculum. 2006.
3. **Klein, SS**, AH Harris. VU0789. VIBES Skin Elasticity Module Curriculum. 2007.
4. **Klein, SS**, AH Harris, RD Sherwood. VU07109. VIBES Optics Mosaic Curriculum. 2007.