

Sabrina Casucci

Associate Professor of Teaching, Director Engineering Management Program
Department of Industrial & Systems Engineering
University at Buffalo, The State University of New York
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I. Professional Interests

Precision Health, Healthcare informatics, modeling, and impact evaluation; predictive modeling; aging and dementia; engineering management; continuing engineering education

II. Education

- 2015 Ph.D., Industrial & Systems Engineering
University at Buffalo, The State University of New York, Buffalo, NY
Dissertation: Evaluating the impact of chronic diseases and healthcare interventions on post-discharge patient outcomes
Advisors: Li Lin and Alexander Nikolaev
- 2004 MBA, Business Administration
University at Buffalo, The State University of New York, Buffalo, NY
- 1998 B.S., Material Science and Engineering
Purdue University, West Lafayette, IN

III. Employment

- 2022 – Present **Assistant Professor**
- 2020 – 2022 **Associate Professor of Teaching**
- 2019 – 2022 **Director of Engineering Management Program**
- 2016 – 2020 **Assistant Professor of Teaching**
Department of Industrial & Systems Engineering
School of Engineering and Applied Sciences
University at Buffalo, The State University of New York
- 2015 – 2016 **Postdoctoral Associate**
School of Nursing and Department of Industrial & Systems Engineering
University at Buffalo, The State University of New York
- 2014 – 2015 **Research Assistant**
School of Nursing
University at Buffalo, The State University of New York

- 2009 – 2014 **Adjunct Instructor**
 Department of Business
 D'Youville College
 Buffalo, NY
- 2008 – 2015 **Graduate Research Assistant**
 Department of Industrial & Systems Engineering
 School of Engineering and Applied Sciences
 University at Buffalo, The State University of New York
- 2008 – 2010 **Graduate Student Assistant**
 Office of Undergraduate Education
 School of Engineering and Applied Sciences
 University at Buffalo
- 2007 – 2008 **Manager, Continuous Improvement (2007 – 2008)**
 2006 – 2007 **Quality Manager (2006 – 2007)**
 Chicago Faucets
 Michigan City, IN
- 2004 – 2006 **Quality Engineer**
 Curbell, Inc.
 Orchard Park, NY
- 1999 – 2004 **Quality Engineer**
 Wilson Greatbatch Ltd.
 Clarence, NY
- 1998 – 1999 **Process Engineer**
 Advanced Refractory Technologies
 Buffalo, NY

IV. Honors, Awards, and Publicity

- 2022 SUNY Chancellor's Award for Excellence in Teaching
- 2022 University at Buffalo Innovations in Teaching Award
- 2020 Open SUNY Online Teaching Ambassador
- 2019 School of Engineering and Applied Sciences Best Teaching Faculty of the Year
- 2019 Professor of the Year Award 2018-2019; Tau Beta Pi, 2019
- 2015 Top Student Poster Award, *Hitting the Accelerator: Health Research Innovation through Data Science, UNYTE Scientific Session*
- 2013 Henry Stone Scholarship Recipient, University at Buffalo
- 2013 GE Health Quest Competition, second place prize awarded for development of a mobile application that facilitates hospital discharge planning and improves continuity of care
- 2013 Society for Health Systems Student Paper Competition Winner
- 2013 "UB grad students educate Congress on their new medical app", *Buffalo News*, July 27

- 2013 “Mobile Medical Entrepreneurs: Changing the Face of Healthcare” Testimony before the Committee on Small Business Subcommittee on Health and Technology, first aired on CSPAN on June 27
- 2013 “Navigating a better hospital experience: Students win \$25,000 for app that enhances discharge process”, *The Spectrum*, April 27
- 2012 GE Health Quest Competition, Milestone One prize awarded for proposal to develop mobile application that facilitates hospital discharge planning and improves continuity of care
- 2012 Travel grant for Women in Industrial Engineering Academia Workshop, National Science Foundation
- 2011 Inducted into Alpha Pi Mu – The Industrial Engineering Honor Society
- 2010 Inducted into Tau Beta Pi – The Engineering Honor Society
- 2010 School of Management Alumni Association Education Grant, University at Buffalo
- 2008 – 2012 Arthur A. Schomburg Fellowship Recipient, University at Buffalo, 2008-2012

V. Teaching Experience

Industrial & Systems Engineering

Undergraduate Courses

EAS 104	EOP Summer Bridge Program – Engineering Track
EAS 198	Seminar: “The paces you will go”
IE 320	Engineering Economy
IE 327	Facility Design & Material Handling
IE 409	Six Sigma Quality
IE 420	Systems Engineering Practicum
IE 477	Digital Simulation

Undergraduate/Graduate (Cross listed) Courses

IE 435/535	Human Centered Design for Interactive Systems
IE 460/564	Lean Enterprise

Graduate Courses

EAS 521	Principles of Engineering Management 1
IE 505	Production Planning & Control
IE 592	Project Guidance (Engineering Management Capstone course)

Other

NGC 502	Applied Informatics to Evaluate Health Care Outcomes (Co-instructor)
NGC 600	Data Science Applications in Healthcare (Co-instructor)

VI. Scholarly Output

Peer-Reviewed Journal Articles

(^a Students with Casucci as Major Advisor, ^b indicates senior author)

1. **Casucci, S.**, Hewner, S. ^b, Cross-sector information exchange to improve transitional care coordination: A socio-technical intervention to highlight social need. *Currently under review with Frontiers in Health Services*

2. Bhandawat, R., **Casucci, S.**^b, Ramamurthy, B., & Walteros, J. L. (2022). Cooperative Blood Inventory Ledger (CoBIL): A decentralized decision-making framework for improving blood product management. *Computers & Industrial Engineering*, 172, 108571.
3. Roma, M.^a, Sullivan, S. S., & **Casucci, S.**^b (2022). TILE-12 index: an interpretable instrument for identifying older adults at risk for transitions in living environment within the next 12-months. *Home Health Care Services Quarterly*, 1-19.
4. Chang, Y-P.^b, **Casucci, S.**, Roma, N., Dermen, K., & Barrick, C. (2021). Engaging Patients in Integrated Behavioral Health and Primary Care: A Technology-Based System to Facilitate Behavioral Health Screening for Patients in Rural and Underserved Areas. *CIN: Computers, Informatics, Nursing*, 39(4), 215-220.
5. Sullivan, S.^b, **Casucci, S.**, Li, C. (2020) Eliminating the Surprise Question leaves Home Care providers with few options for identifying mortality risk. *American Journal of Hospice and Palliative Medicine*, 37(7), 542-548.
6. **Casucci, S.**, Zhou, Y., Bhattacharya, B., Sun, L., Nikolaev, A., & Lin, L.^b (2019). Causal analysis of the impact of homecare services on patient discharge disposition. *Home health care services quarterly*, 38(3): 162-181.
7. Somayaji, D., Chang, Y-P, **Casucci, S.**, Xue, Y., Hewner, S. (2018). Exploring Medicaid claims data to understand predictors of healthcare utilization and mortality for Medicaid individuals with or without a diagnosis of lung cancer: a feasibility study. *Translational Behavioral Medicine*, 8(3), 400-408.
8. **Casucci, S.**, Lin, L., Hewner, S, Nikolaev, A.^b (2017). Estimating the causal effects of chronic disease combinations on 30-day hospital readmissions based on observational Medicaid data. *Journal of the American Medical Informatics Association*, 25(6), 670-678.
doi.org/10.1093/jamia/ocx141
9. **Casucci, S.**, Lin, L.^b, & Nikolaev, A. (2018). Modeling the impact of care transition programs on patient outcomes and 30 day hospital readmissions. *Socio-Economic Planning Sciences*, 63, 70-79.
10. Sullivan, S. S., Mistretta, F., **Casucci, S.**, & Hewner, S.^b (2017). Integrating social context into comprehensive shared care plans: A scoping review. *Nursing Outlook*, 65(5), 597-606.
11. Hewner, S., **Casucci, S.**, Sullivan, S., Mistretta, F., Xue, Y., Johnson, B., ... & Fox, C.^b (2017). Integrating Social Determinants of Health into Primary Care Clinical and Informational Workflow during Care Transitions. *eGEMS (Generating Evidence & Methods to Improve Patient Outcomes)*, 5(2).
12. Hewner, S.^b, **Casucci, S.**, & Castner, J. (2016). The Roles of Chronic Disease Complexity, Health System Integration, and Care Management in Post-Discharge Healthcare Utilization in a Low-Income Population. *Research in Nursing & Health*, 39(4), 215-228.
13. McGeorge, N., Hegde, S., Berg, R. L., Guarrera-Schick, T. K., LaVergne, D. T., **Casucci, S. N.**, ... & Benda, N. C. (2015). Assessment of Innovative Emergency Department Information Displays in a Clinical Simulation Center. *Journal of Cognitive Engineering and Decision Making*, 9(4), 329-346.

Conference Proceedings and Published Abstracts

14. Chang, Y-P.^b, **Casucci S.**, Xue, Y., Hewner, S. (2017) Healthcare utilization and behavioral health in older adults with opioid abuse. In *Innovation in Aging*, 1(suppl_1), 536-536.
15. LaVergne, D., **Casucci, S.**, McGeorge, N., Guarrera-Schick, T., Clark, L., Hettinger, Z., ... & Bisantz, A.^b (2017). Development and Description of a Synthetic, High-Fidelity, Emergency Department Patient Dataset for the Evaluation of Healthcare IT Products. In *Proceedings of the International Symposium on Human Factors and Ergonomics in Health Care*, 6(1), 75-78.

16. Waller, W., Cardinal, C., **Casucci, S.**, Hewner, S. ^b (2016). Exploring barriers to care continuity during transitions. Abstract and poster in SUNY Undergraduate Research Conference, Annual Conference Proceedings, Cobleskill, NY.
17. **Casucci, S.**, Lin, L., Nikolaev, A. ^b Stochastic modeling and development of a decision support tool to facilitate transitional care decision making. (2012). Abstract in Proceedings of the 34th Annual Meeting of the Society for Medical Decision Making, Society for Medical Decision Making 2012 Annual Meeting, Phoenix, AZ.
18. **Casucci, S.**, Hoeh, J., Jensen, C. ^b (1997). Integrated metrology process for use in collaborative design and manufacturing. In CIRP 1997 International Design Seminar Proceedings: Multimedia Technologies for Collaborative Design and Manufacturing, pp. 286-291, Los Angeles, CA.

Conference Presentations

(* indicates presenting author,)

19. Chang, Y. P., **Casucci, S.***, Roma, N.* (2020). A technology-based system to facilitate behavioral health screening for patients in rural and underserved areas. 44th Annual International Nurses Society on Addictions (IntNSA) Educational Conference. October 2020.
20. **Casucci, S.** (2020) UB's Graduate Program in Engineering Management. American Society for Engineering Education (ASEE) 2020 Conference for Industry and Education Collaboration (CIEC), Orlando, FL., January 2020.
21. **Casucci, S.**, Moore A., Stephens, L. (2020) Engineering Management Online: UB's global graduate program enhances technical management skills. Women in STEM Cooperative Webinar on Adult Learning Pathways: Fully Online Programs, January 15, 2020.
22. **Casucci, S.***, Zhou, Y., Bhattacharya, B., Sun, L., Nikolaev, A., Lin, L. (2019). Causal impact analysis of the impact of Homecare services on patient discharge disposition. INFORMS 2019 Annual Meeting, Seattle, WA.
23. Chang, Y.P.* , Dermen, K., **Casucci, S.***, Barrick, C., Aloisio, N. (2018). Process of behavioral health integration in Native American primary care. International Nurses Society on Addictions 42nd Annual Education Conference, Substance Use and Recovery-Oriented Care: 21st Century Challenges and Opportunities, Denver, CO.
24. Chang, Y. P.* , **Casucci, S.**, Xue, Y., & Hewner, S. (2017). Healthcare utilization and behavioral health in older adults with opioid abuse. 21st IAGG World Congress of Gerontology and Geriatrics, San Diego, CA.
25. Somayaji, S.* , Chang, Y. P., **Casucci, S.**, Xue, Y., & Hewner, S. (2017). Exploring Medicaid claims data to understand the role of healthcare utilization patterns and mortality in low-income lung biopsy patients: A feasibility study. Annual Research Day, UB School of Nursing.
26. **Casucci, S.**, Sun, L., Zhou, Y., Nikolaev, A.* , Lin, L. (2016). Mutual information minimization for evaluating the causal impact of homecare services on patient discharge disposition. INFORMS 2016 Annual Meeting, Nashville, TN.
27. Chang, Y.* , **Casucci, S.**, Yuqing, X., Hewner, S. (2016). Medicaid utilization patterns among opioid abusers in Western New York: Using data mining and cluster analysis to customize treatment plans. Paper presented at the 2016 State of the Science Congress on Nursing Research, Washington, D.C.
28. Hewner, S.* , Sullivan, S., Mistretta, F., **Casucci, S.**, Johnson, B. (2016). Integrating Social Determinants of Health across settings during transition to improve continuity. Paper presented at the 2016 State of the Science Congress on Nursing Research, Washington, D.C.
29. Hewner, S.* , **Casucci, S.** (2016). Integrating social determinants of health into primary care clinical and informational workflow during transitions. Concordium 2016: Data and Knowledge Transforming Healthcare Conference, Washington, D.C.

30. **Casucci, S.***, Hewner, S., Lin, L., Nikolaev, A. (2015). Modeling the impact of chronic disease combinations on 30-day hospital readmissions. Paper presented at the *INFORMS 2015 Annual Meeting*, Philadelphia, PA.
31. **Casucci, S.***, Waller, W., Hewner, S. (2015). Technological and workflow barriers to effective discharge planning in acute care settings: Opportunities to improve interprofessional communication and patient outcomes. Paper presented at the 2016 School of Nursing Research Day, Buffalo, NY.
32. **Casucci, S.*** (2013). A theoretical model for a patient care transition process to reduce hospital readmissions. Paper presented at *Healthcare Systems Process Improvement Conference (SHS) 2013*, New Orleans, LA.
33. **Casucci, S.***, Lin, L., Nikolaev, A. (2012). A decision support framework for healthcare transition programs to reduce hospital readmissions. Paper presented at the *INFORMS 2012 Annual Meeting*, Phoenix, AZ.
34. **Casucci, S.***, Lin, L., Nikolaev, A. (2012). Toward a modeling framework for hospital readmission rate reduction. Paper presented at the *CORS/MOPGP 2012 Conference*, Niagara Falls, ON.

Invited Talks and Testimony

35. Casucci, S. Strengthening On-line and Hybrid Technical Courses. Binghamton University Center for Learning and Teaching seminar, Binghamton University, January 13, 2021
36. Stephens, L., **Casucci, S.**, Michalowski, J., Moore, A. Leveraging EngiNet™ Migrating to Remote & Online Learning: Lessons Learned. Watson Faculty Online Teaching Talks and Tutorial Series, Binghamton University, July 29, 2020.
37. **Casucci, S.** Redesigning IE 564 (Lean Enterprise): Creating one course for multiple platforms. Open SUNY Online Teaching Community Call, July 9, 2019.
38. **Casucci, S.** Mobile Medical App Entrepreneurs: Changing the Face of Health Care. Testimony before U.S. House Committee on Small Business Subcommittee on Health and Technology. Washington, D.C., June 27, 2013.
(<http://smallbusiness.house.gov/calendar/eventsingle.aspx?EventID=326859>).
39. **Casucci, S.** Simulation with Arena – Basic Tutorial. (2012). Technical Seminar Series jointly sponsored by INFORMS student chapter, ISE – graduate student association, and HFES student chapter, University at Buffalo, The State University of New York.
40. **Casucci, S.** Simulation with Arena – Advanced Tutorial. (2012). Technical Seminar Series jointly sponsored by INFORMS student chapter, ISE – graduate student association, and HFES student chapter, University at Buffalo, The State University of New York.

Posters

(* indicates presenting author)

41. Chang, Y.P., **Casucci, S.***, Roma, N.*, Dermen, K., Barrick, C. (2020) Engaging patients in integrated behavioral health and primary care: A technology-based system to facilitate behavioral health screening in rural and underserved areas. International Nurses Society on Addictions 44th Annual Conference & 1st Virtual Global Conference.
42. Chang, Y.P., Dermen, K., **Casucci, S.***, Barrick, C, Xu, W., Aloisio, N.* (2019). Process of Behavioral Health Integration in Native American Primary Care. International Nurses Society on Addictions 43rd Annual Conference, Substance Use Across the Lifespan, Baltimore, MD.
43. Chang, Y.P.*, Dermen, K., **Casucci, S.***, Barrick, C., Moss, M. (2018) Integrating behavioral health in Native American primary care: The process of developing a collaborative community partnership. International Nurses Society on Addictions, Denver, CO.

44. Bhattacharya, B.*, **Casucci, S.**, Zhou, Y., Lin, L., Nikolaev, A. (October, 2017). Causal Analyses for the Impact of Homecare Services on Patient Discharge Disposition. Poster presented at INFORMS 2017 Annual Meeting, Houston, TX.
45. LaVergne, D., **Casucci, S.***, McGeorge, N., Guarrera-Schick, T., Clark, L., Hettinger, Z., ... & Bisantz, A. (March 6, 2017). Development and Description of a Synthetic, High-Fidelity, Emergency Department Patient Dataset for the Evaluation of Healthcare IT Products. Poster presented at International Symposium on Human Factors and Ergonomics in Health Care, New Orleans, LA.
46. Hewner, S., **Casucci, S.***(2016). Integrating social determinants of health into primary care clinical and informational workflow during transitions. Poster presented at Concordium 2016: Data and Knowledge Transforming Healthcare Conference, Washington, D.C.
47. **Casucci, S.***, Waller, W., Hewner, S. (2016). Technological and workflow barriers to effective discharge planning in acute care settings: Opportunities to improve interprofessional communication and patient outcomes. Poster presented at Eighth annual Postdoctoral Scholars Research Symposium, Buffalo, NY.
48. Waller, W.*, Cardinal, C., **Casucci, S.**, Hewner, S. (2016). Exploring barriers to care continuity during transitions. Poster presented at SUNY Undergraduate Research Conference, Cobleskill, NY.
49. Colson, M.*, **Casucci, S.**, Hewner, S. (2016). Distraction technology for self-injuring adolescents: usability test of "My Shiny Thing" app. Poster presented at School of Nursing Research Day, Buffalo, NY.
50. **Casucci, S.***, Nikolaev, A., Lin, L, Hewner, S. (2015). Modeling the impact of chronic disease combinations on 30-day hospital readmissions. Poster presented at *Hitting the Accelerator: Health Research Innovation through Data Science, UNYTE Scientific Session*, Rochester, NY.
51. Sullivan, S., **Casucci, S.**, Sheikh, S., Mistretta, F., Hewner, S.* (2015). Translating the Patient-Centered Assessment Method (PCAM) into a clinical decision support tool to prevent unnecessary hospitalizations. Poster presented at *Hitting the Accelerator: Health Research Innovation through Data Science, UNYTE Scientific Session*, Rochester, NY.
52. **Casucci, S.***, Lin, L., Nikolaev, A. (2012). Stochastic modeling and development of a decision support tool to facilitate transitional care decision making. Poster presented at *34th Annual Meeting of the Society for Medical Decision Making*, Society for Medical Decision Making, Phoenix, AZ.
53. **Casucci, S.***, Lin, L., Nikolaev, A. (2012). A decision support framework for healthcare transition programs to reduce hospital readmissions. Poster presented at the Minority Issues Forum Poster Competition, INFORMS 2012 Annual Meeting, Phoenix, AZ.
54. **Casucci, S.*** (2012). Industrial & Systems engineering opportunities in health care: A research portfolio. Poster presented at the *Workshop on Women in Industrial Engineering Academia*, Istanbul, Turkey.

VII. Research Grant and Funding Support

Current Research Support

1. "Implementing Personalized Cross-sector Transitional Care Management to Promote Care Continuity, Reduce Low Value Utilization, and Reduce the Burden of Treatment for High-Need, High-Cost Patients", Sponsor: Association for Healthcare Research and Quality (AHRQ), PI: Sharon Hewner, University at Buffalo School of Nursing, Role: Co-I, \$1,950,923, 4/2021 – 3/2026

2. "Nurse Education, Practice, Quality, and Retention – Interprofessional Collaborative Practice", Sponsor: Health Resources and Services Administration (HRSA), PI: Yu-Ping Chang, University at Buffalo School of Nursing, Role: Co-I (20%), \$1,500,000, 7/2020-6/2023

Previous Research Support

3. "Behavioral Health Integration in a Native American Primary Care Clinic", Sponsor: Health Resources and Services Administration (HRSA), PI: Yu-Ping Chang, University at Buffalo School of Nursing, Role: Co-I (30%), \$1,500,000, 7/2017-6/2020.
4. "Informatics models for health management of home care patients with chronic diseases", Sponsor: University at Buffalo, Center for Excellence in Home Health and Well-Being through Adaptive Smart Environments, PI: Li Lin, Role: Co-I, \$35,000, 9/2015 – 5/2017.
5. "Exploring barriers to care continuity during transitions: A mixed-methods study to identify health information exchange opportunities", Sponsor: University at Buffalo, Innovative Micro-Programs Accelerating Collaboration in Themes, Role: Collaborator, \$35,000, 4/2015 – 4/2016.

Current Industry Sponsored Projects – PI Role

6. Documenting & Standardizing Production Best Practices, Sponsor: Hanson Sign Companies, PI, \$25,886, 1/2023 – 5/2023

Previous Industry Sponsored Projects- PI Role

7. Space Planning and Layout Design for Manufacturing & Warehouse Operations, Sponsor: Pfannenbergl, Inc., PI, \$29,948, 1/2019-7/2019
8. Cooler Operations and Layout Improvement Project, Sponsor: Upstate Milk Cooperative, Inc., PI, \$37,200, 1/2018-7/2019

Previous Industry Sponsored Projects – Co-I or Research Assistant Role

9. Flexible Manufacturing System Design of Hydronic Product Line, Sponsor: Armstrong Fluid Technologies, Co-I, 1/2017-7/2017
10. Space Planning and Layout Design for Office and Manufacturing Project, Sponsor: Armstrong Fluid Technologies, 1/2014-8/2015
11. Facility Layout Design, Sponsor: Taylor Devices, 1/2012-8/2012
12. Operational Improvement Project, Sponsor: School of Dental Medicine, University at Buffalo, 1/2013-8/2013
13. Physician Supply Chain Management, Sponsor: Catholic Health System, 1/ 2011 – 12/2014
14. Admission Process Improvement Project, Sponsor: Erie Community College, 5/2009 – 12/2009

VIII. Student Supervision

PhD Students (Major Advisor)

- Rishabh Bhandawat. Degree expected May 2023 (Co-advise with Jose Walteros)
- Wiam Osama Ibrahim Ababneh. Degree expected August 2024

PhD Student Committees

- Meghan Donahue. Graduated December 2022

Undergraduate Research Students

- Madison Dailey. 2022 – Present
- Laura Schultz. 2022 – Present
- Daniel Deslippe. 2021 – 2022
- Makayla Roma. 2018 – 2020

IX. Service**University Service – Current**

- Faculty Advisor for University at Buffalo Chapter of Alpha Pi Mu – Industrial Engineering Honor Society, 2022 – Present
- Faculty Advisor for University at Buffalo Chapter of Phi Sigma Rho – a social sorority for women in engineering, 2016 – Present

University Service – Past

- SUNY FACT2 Task Group: Holistic Online Student Engagement and Holistic Support Models Spring 2020 – Fall 2021
- SUNY LMS Procurement Committee, Fall 2019 – Fall 2020
- Online Instructional Technologies Solutions Committee, Spring 2020 – Fall 2021
 - Member of Best Practices and Training Workgroup Subcommittee
- Online Proctoring Committee, Spring – Summer 2020
- Industrial & Systems Engineering, Acting Director of Undergraduate Studies, Spring 2019
- 2019 ASEE Zone 1 Conference Planning Committee – 2018-2019
- Faculty Marshal at Undergraduate and Graduate Engineering Graduation Ceremony – May 2017, 2018, 2019, 2020
- Instructor for Engineering Track Course for University at Buffalo's Equal Opportunity Program Summer Bridge program, 2016-2018

Professional Organization – Current

- International Association of Continuing Engineering Education (IACEE)
 - Elected council member, term 2021-2024
 - Conference and Programming Co-Chair, IACEE 18th World Conference, June 2022, University at Buffalo, Buffalo, NY

Community Service – Current

- Consumer Representative, Catholic Health Services Home Care Professional Advisory Council, 2010-Present
- University at Buffalo Engineering Alumni Association, Scholarship Committee, 2015 – Present

Community Service – Past

- American Society for Engineering Management (ASEM)
 - Council of Engineering Management Academic Leaders (CEMAL), 2020-2022
- Volunteer, Tech Savvy Workshop, workshop for 6th – 9th grade girls interested in science, engineering, technology, and math careers, 2008 – 2016