

Stephen Secules

Address: School of Engineering Education, 1300 Armstrong Hall, 701 W. Stadium Ave., West Lafayette, IN 47907
Phone: (765) 494-3887 • E-mail: ssecules@purdue.edu

Education

Ph.D.	Curriculum and Instruction	2017	University of Maryland
Dissertation: <i>Beyond Diversity as Usual: Expanding Critical Cultural Approaches to Marginalization in Engineering Education</i> . Co-Chairs: Ayush Gupta and Andrew Elby.			
M.S.	Architectural Sciences - Acoustics	2008	Rensselaer Polytechnic Institute
Thesis: <i>Quantifying the Degradation of Automatic Speech Recognition in Reverberant Environments</i>			
B.E.	Engineering	2007	Thayer School of Engineering
Course concentration: Signal Processing			at Dartmouth College
B.A.	Engineering Sciences	2007	Dartmouth College
Phi Beta Kappa, Magna Cum Laude			

Research Interests

- Equity, inclusion, and marginalization in education
- Undergraduate engineering educational culture
- Learning sciences, sociocultural learning theories
- New paradigms for co-curricular support
- Ethnography and interaction analysis methodologies
- Critical whiteness and masculinity studies

- Professional Experience -

Faculty Appointments

- *Visiting Assistant Professor, School of Engineering Education, College of Engineering, Purdue University* 08/2018 – present
Teaching ENE-131: Transforming Ideas to Innovation I. Pursuing independent research. Leading a first-year engineering education graduate student in ethnographic interaction analysis of a lab classroom video dataset.
- *Assistant Research Scientist, Engineering Education Transformation Institute (EETI), University of Georgia* 08/2017 – 07/2018
Ethnographic focus group research for NSF-funded project (PI Jo Walther) on social construction of shame in engineering education. Supported graduate student publication on institutional change; undergraduate student publication on dominant norms in engineering. Internal/ external grant proposals.

Research Appointments

- *Graduate Research Assistant, University of Maryland* 01/2013 – 07/2017
Conducted research on NSF-funded project (PI Wes Lawson) evaluating novel programming course for electrical engineers, employing qualitative ethnographic and quantitative survey research methods.
Assisted Clark Engineering School Director of Recruitment (Dr. Bruk Berhane) in writing diversity-focused NSF proposal and publications related to Black community college transfer students.
Conducted qualitative interviews and collected classroom video data as part of a research team investigating identity and access in programming at a summer camp for high school girls.

- *Graduate Research Assistant, Rennselaer Polytechnic Institute.* 08/2007 – 06/2008
Acoustics research in automatic speech recognition and intelligibility.

Teaching Appointments

- *Instructor-of-Record, College of Engineering, Purdue University* 08/2017 – present
Instruction and curriculum development for ENGR-131: Transforming Ideas to Innovation I. Core project-based course on engineering design for all undergraduate majors.
- *Instructor-of-Record, College of Engineering, University of Georgia* 08/2017 – 12/2017
Instruction and curriculum development for MCHE-2990: Engineers, technology, and the social—exploring relationships in sociotechnical systems. Core discussion-based course for undergraduate mechanical engineers.
- *Instructor-of-Record, College of Education, University of Maryland* 06/2016 – 07/2016
Curriculum design and instruction for EDCI-688C: Introduction to Engineering for Teachers. Engineering component of STEM professional development master's degree for practicing K-8 teachers.
- *Instructor, College of Education, University of Maryland* 09/2015 – 12/2015
Co-taught EDCI-751: Theory and Research on Mathematical and Scientific Thinking and Learning. A graduate course on student learning in STEM, with Dr. Janet Walkoe.
- *Instructor-of-Record, School of Engineering, University of Maryland* 01/2015 – 05/2015
Taught ENES-100: Introduction to Engineering Design. A project-based course for undergraduate engineering majors.
- *Instructor, School of Engineering, University of Maryland* 09/2013 – 05/2014
Lab instructor, lab curriculum coordinator, trainer of teaching assistants, and instructional teaching assistant (co-teaching with Dr. Ayush Gupta) for ENES-100.
- *Teaching Assistant, Thayer School of Engineering, Dartmouth College* 09/2006 – 06/2007
Ran homework review sessions for ENGS 22: Linear Systems in Engineering and graded for Math 5: Math of Music. Received citation for exemplary teaching assistance in ENGS-22.

Professional Engineering Experience

- *Senior Consultant. Mei Wu Acoustics. Redwood City, CA.* 01/2011 – 06/2013
Acoustical consulting, project management, proposal and report writing. Laboratory, residential, corporate, R&D building design. Projects include Seagate manufacturing facility and Loyola Marymount University auditorium. Ongoing emeritus consulting on specific projects through 2017.
- *Graduate Engineering Consultant. Arup. London, UK.* 09/2008 – 12/2010
Computer modeling and design for speech recognition, planning noise measurements, and project management. Projects include London Aquatic Centre for 2012 Olympics, Mauritius Central Bank.
- *Engineering Intern. Research Systems Group. White River Junction, VT.* 06/2007 – 08/2007
Calculation and measurement for environmental and product noise. Projects include major wind farm sites and Dyson product noise.

Grant Advisory Board Positions

- External evaluation team for NSF Broadening Participation in Engineering grant: “Documenting Experiences and Resources Supporting the Community College Transfer, Persistence, and Graduation of Black Engineering Students”. 10/2018 – present
- Evaluative team for NSF CORE grant: “Unveiling white and male privilege in physics teaching and learning”. 10/2018 – present

- Recognition -

Fellowships and Grants

- Apprentice Faculty Grant. Education Research & Methods Division. ASEE. Faculty mentor Dr. Alice Pawley. \$2,000 04/2018
- Co-PI for two winning internal grant proposals to UGA Office of Institutional Diversity program: *New Approaches to Promote Diversity and Inclusion*
 - “Expanding Diversity in STEM through a Recruitment, Preparation, and Outreach Program for African American Community in Atlanta Metro Area.” \$10,000 01/2018 – 06/2019
 - “Recruitment of local underrepresented groups through local STEM clubs with undergraduate mentors from the UGA chapter of the National Society of Black Engineers (NSBE).” \$10,000 01/2018 – 06/2019
- Merit Fellowship. Department of Teaching, Learning, Policy, and Leadership, University of Maryland. \$2,600 08/2016
- Support Program for Advancing Research and Collaboration (SPARC) grant. UMD College of Education. \$1,200 04/2016
- Dissertation Seed Grant. Qualitative Research Interest Group, Consortium on Race, Gender, and Ethnicity at UMD. \$1,000 04/2016
- Flagship Fellowship. University of Maryland. \$50,000 09/2013 – 06/2017

Honors and Awards

- Outstanding Doctoral Student award. UMD College of Education. 2016
- Best Diversity Paper. Education Research and Methods Division. American Society for Engineering Education Annual Meeting. Finalist - Best Diversity Paper at conference. 2016
- Best Student Paper Award. Learning Sciences SIG American Educational Research Association Annual Meeting. 2016
- Graduate School Outstanding Graduate Assistant award. UMD Graduate School. 2016
- Honorable mention. International Student Design Competition. Acoustical Society of America. 2008
- Citation for exemplary teaching assistance in Linear Systems. Thayer School of Engineering, Dartmouth College. 2007

- Citation for exemplary coursework in Communication Systems. Thayer School of Engineering, Dartmouth College. 2007
- Tau Beta Pi. Thayer School of Engineering, Dartmouth College 2007
- Phi Beta Kappa. Magna Cum Laude. Dartmouth College 2007
- Presidential Scholars. Dartmouth College. 2005

- Publications -

Book Chapters

- **Secules, S.**, Gupta, A., & Elby, A. (2015). Piecemeal Versus Integrated Framing of Design Activities. Chapter 9 in *Analyzing Design Review Conversations*. Adams, R.S. & J. Siddiqui (eds.) West Lafayette, IN: Purdue University Press. (Peer-reviewed, competitive publication).

Peer-Reviewed Journal Publications

- **Secules, S.**, Gupta, A., & Elby, A., Turpen, C. (2018). Zooming Out from the Struggling Student: The Cultural Construction of Engineering Ability in an Undergraduate Programming Class. *Journal of Engineering Education*. 107(1): 56-86.
- **Secules, S.**, Gupta, A., & Elby, A., Tanu, E. (2018). Supporting the Narrative Agency of a Marginalized Engineering Student. *Journal of Engineering Education*. 107(2): 1-33.
- Berhane, B., **Secules, S.**, Onuma, F. (in press). Learning while Black: Identity Formation and Social Experiences for Six Undergraduate Engineering Transfer Students. *Journal of Women and Minorities in Science and Engineering*.
- **Secules, S.**, Lawson, W., (in revision). Description and Mixed Methods Evaluation of a Novel Hardware-Based Introductory Programming Course. *Advances in Engineering Education*.
- **Secules, S.** (in revision). Integrating a Critical Historical Context for Engineering Educational Culture as Competitive and Masculine. *Engineering Studies*.

Selected Peer-Reviewed Conference Publications

- Uhlar, J., **Secules, S.** (2018). Butting Heads: Competition and Posturing in Paired Programming Work. Paper in IEEE Frontiers in Education Conference, San Jose, CA.
- **Secules, S.**, Bale, J., Sochacka, N., Walther, J. (2018). Examining a Novel Theory-to-Practice Effort in Engineering Education through Multiple Theoretical Lenses of Systems and Change. Paper in American Society of Engineering Education Annual Conference: Education Research & Methods Division, Salt Lake City, UT.
- Huff, J., Shanachilubwa, K., **Secules, S.** (2018). Shame Amid Academic Success: An Interpretative Phenomenological Analysis Case Study of a Student's Experience with Emotions in Engineering. Paper in American Society of Engineering Education Annual Conference: Education Research & Methods Division, Salt Lake City, UT.

- **Secules, S.**, Sochacka, N., Walther, J. (2018). New Directions from Theory: Implications for Diversity Support from the Theories of Intersectionality and Liberatory Pedagogy. Paper in The Collaborative Network for Engineering and Computing Diversity: Undergraduate Track, Arlington, VA.
- **Secules, S.**, Turpen, C. (2017). The Construction of Competitive White Masculinity as Engineering Educational Culture. Session chair and paper presenter in The Construction of Whiteness and Dominant Normativities, Council on Anthropology of Education in American Anthropological Association Annual Meeting, Washington, D.C.
- Huff, J., Sochacka, N., Walther, J., **Secules, S.**, Sullins, J., Miller, S. (2017). Shame in Engineering Education: Unpacking a Key Socio-Psychological Mechanism of Professional Formation. National Science Foundation (NSF) Engineering Education and Centers (EEC) Grantees Conference. Arlington, VA.
- **Secules, S.** (2017). Putting Diversity in Perspective: A Critical Cultural Historical Context for Representation in Engineering. Paper and presentation at American Society of Engineering Education Annual Conference: Liberal Education / Engineering & Society Division, Columbus, Ohio.
- Lawson, W., **Secules, S.**, Bhattacharya, S., Elby, A., Hawkins, W., Dumitras, T., Ramirez, N. (2017). Traditional versus Hardware-driven Introductory Programming Courses: A Comparison of Student Identity, Efficacy and Success. Paper in American Society of Engineering Education Annual Conference: NSF Grantees Poster Session, Columbus, Ohio.
- Berhane, B., Onuma, F., **Secules, S.** (2017). Rethinking engineering pathways: An exploration of the diverse K-12 school experiences of six Black engineering undergraduates. Paper in American Society of Engineering Education Annual Conference: Minorities in Engineering Division, Columbus, Ohio.
- **Secules, S.**, Gupta, A., & Elby, A., Turpen, C. (2016). “Turning Away” from the Struggling Student: Revealing Culture in the Construction of Engineering Ability. Paper and presentation at American Educational Research Association Annual Meeting: Cultural Historical Activity Division, Washington DC. Winner - **Best Student Paper Award Learning Sciences SIG.**
- **Secules, S.**, Gupta, A., & Elby, A. (2016). “Turning Away” from the Struggling Student: The Cultural Construction of Engineering Ability in an Undergraduate Programming Class. Paper and presentation at American Society of Engineering Education Annual Conference: Education Research and Methods Division, New Orleans. Winner - **Best Diversity Paper in Educational Research and Methods Division.** Finalist - Best Diversity Paper at conference.
- Lawson, W., **Secules, S.**, Gupta, A., Elby, A. (2016). An application-based learning approach to C programming concepts and methods for engineers. Paper and presentation at American Society of Engineering Education Annual Conference: Electrical Engineering Division, New Orleans.
- **Secules, S.**, Gupta, A., & Elby, A. (2015). Theorizing can contribute to marginalized students’ agency in engineering persistence. Paper and presentation at American Society of Engineering Education Annual Conference: Women in Engineering Division, Seattle.
- **Secules, S.**, Gupta, A., & Elby, A. (2014). Piecemeal Versus Integrated Design: Framing meets Design Thinking. Paper and presentation at Design Thinking Research Symposium 10, Purdue University.
- **Secules, S.**, & Braasch, J. (2009). Testing the Limits—Quantifying the Degradation of Automatic Speech Recognition in Reverberant Environments. Paper and presentation at Acoustical Society of America annual conference, San Antonio, TX.

Invited Talks, Panels, and Posters

- Groen, C., Young, G., **Secules, S.**, Lutz, B. (2018). Panelist for *Not a Graduate Student, but Not Yet a...: Navigating Transient Positions in Engineering Education*. Student Division panel at American Society of Engineering Education Annual Meeting.
- **Secules, S.** (2017). Unknown History and Unseen Culture: Questioning What's "Normal" Regarding Diversity in Engineering Education. Invited talk in *Empowering Voices in Engineering Lecture Series*. A. James Clark School of Engineering, University of Maryland.
- **Secules, S.** (2017). Masculinity and Competition as Marginalizing Cultural Norms in Engineering. Presentation and panel participation in *Masculinity in the Public Sphere: Family, Education and Communication*. UMD Consortium on Race, Gender, & Ethnicity.
- Behrouzi, A., Boone, H., McGough, C., Miller, E., Patrick, A., **Secules, S.** Tsugawa-Nieves, M., (2017). Moderator and panelist for *Graduate Student Pathways into Engineering Education*. Student Division panel at American Society of Engineering Education Annual Meeting.
- **Secules, S.** (2017). Complexities and Challenges of Member Checking. Guest presentation in an ethnographic methods course (Carol Brandt, Temple). College of Education, Temple University.
- **Secules, S.** (2016). Discovering and Entangling Representation and Culture in the History of Engineering Education. Poster presentation at *New Scholars Poster Session*, Council on Anthropology of Education, American Anthropological Association annual meeting.
- Brantuo, N., Jackson, T., Scribner, C., **Secules, S.** (2016). Invited remarks and panel participant for *A Path Forward: The Election and New Realities in Education*. UMD College of Education.
- Quan, G., **Secules, S.** (2016). Using Student Perspectives to Understand Equity in STEM Education. Invited talk at UMD Better Astronomy for a New Generation (BANG!) seminar.
- **Secules, S.** (2016). Engineering Design of Social Systems. Presented an engineering professional development session for practicing teachers in the STEM Leadership Program. College of Education, University of Maryland.
- Geddes, K., & Habbibah, U., **Secules, S.**, (2015). Investigating Experience, Community, and Support in an Undergraduate Women's Engineering Living-Learning Program. Presentation at Anthro+ conference at the University of Maryland.

Other Publications

- **Secules, S.** (2017). Beyond the Diversity Status Quo. Blog post for Accelerating Systemic Change in STEM Higher Education Network with 2000+ reaches. <https://ascnhighered.org/ASCN/posts/191364.html>

- Service -

Committee Service and Leadership

- Member, Working Group on Equity and Inclusion, Accelerating Systematic Change Network 08/2017 – present
- Immediate Past Division Chair, American Society of Engineering Education 06/2017 – 06/2018

- Member, Steering Committee, Aphasia Recovery Connection 08/2017 – 07/2017
- Division Chair, Student Division, American Society of Engineering Education. 06/2016 – 06/2017
- Member, ASEE Interdivisional Town Hall Planning Committee. 03/2017 – 06/2017
- Graduate Student Representative, UMD College of Education Graduate Education Committee. 09/2015 – 05/2017
- Program Chair, Student Division, American Society of Engineering Education. 06/2015 – 06/2016
- Member, Ad Hoc Subcommittee on ASEE Publication Options & Policies. 06/2016 – 09/2016
- Coordinator, UMD Engineering Education Research Group. 08/2014 – 06/2017

Diversity Support Activities

- *Participant, ASEE LGBTQ Virtual Community of Practice.* 02/2018 – present
Interactive virtual community forums related to ongoing support of LGBT inclusion.
- *Participant, ASEE Safe Zone Ally Training.* 02/2018 – 05/2018
Interactive virtual webinars to run workshops on LGBT inclusion.
- *Faculty Advisor, National Society of Black Engineers.* 10/2017 – 07/2018
Assisted in winning grants supporting UGA NSBE activities. Connected students to faculty and departmental resources.
- *Faculty Advisor, Society of Hispanic Professional Engineers.* 10/2017 – 07/2018
Provided foundational support for UGA's newly forming SHPE chapter.
- *Co-Leader, UGA LGBT Safe Space Training.* 10/2017
Adapted and co-led safe space training for engineering faculty at UGA.
- *Facilitator, GRAD-MAP Spring Symposium Faculty Dialogue.* 04/2017
Faculty dialogue on mentoring practices between PWIs, HBCUs, CCs, and 4-year institutions as part of UMD Office of Diversity and Inclusion initiative.
- *Facilitator, Sindesis Diversity Retreat for Greek Life.* 11/2016
Inter-group dialogue with fraternity and sorority members as part of UMD Office of Diversity and Inclusion initiative.
- *Contributor, NSF-sponsored Workshop "Who's Not at the Table".* 10/2016
Conference/workshop to brainstorm a research agenda around groups currently underserved by diversity support in engineering education. Clemson University. Greenville, SC.
- *Participant, Inter-group Dialogue with UMD Office of Diversity and Inclusion.* 05/2016
Completed training course on inter-group dialogue techniques.

Reviewing

- Journal of Women and Minorities in Science and Engineering 2018
- Journal of Engineering Education 2016 – 2018
- The Collaborative Network for Engineering and Computing Diversity (CoNECD) 2018
- American Society of Engineering Education, LE/ES Division, Student Division, Education Research and Methods (ERM) Division, ERM Best Paper Committee 2016 – 2018
- National Science Foundation grant proposal panelist 2017
- American Educational Research Association, Cultural Historical SIG and Division C (Engineering Education subdivision) 2016
- Design Thinking Research Symposium 2014