

Amy Hermundstad Nave

Engineering Education

Virginia Tech
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Education

- May 2018 **Ph.D. Engineering Education**, *Virginia Tech*, Blacksburg, VA.
Dissertation: Engineering students' professional development in living-learning communities: Examining students definitions of professional development and the various activities in living-learning environments that help students develop professionally.
Co-Advisors: Drs. Marie Paretti and Denise Simmons
Committee Members: Drs. Walter Lee and Frank Shushok
Graduate Certificate: Cognition and Education. Covers current theories of academic learning and classroom strategies to help students learn and retain course work.
Graduate Certificate: Future Professoriate. Covers issues in higher education and concepts to improve existing practices in higher education.
- Dec 2017 **M.Eng. Mechanical Engineering**, *Virginia Tech*, Blacksburg, VA.
Project: Conceptual understanding in heat transfer: a qualitative analysis.
Advisor: Dr. Christopher Williams
Committee: Drs. Thomas Diller and Holly Matusovich
- 2005–2009 **B.S. Mechanical Engineering**, *Colorado State University*, Fort Collins, CO.
Certificate: Biomedical Engineering
Graduated with Honors, Magna Cum Laude
- Summer 2008 **Study Abroad**, *Universidad de Belgrano*, Buenos Aires, Argentina.
International Studies Abroad for Spanish Language

Relevant Work Experience

- 2017 **Universidad San Francisco de Quito (USFQ) 21st Century Faculty Professional Development Program**, *Virginia Tech*.
- Organized and coordinated a week-long professional development program for 17 USFQ faculty members who were visiting Virginia Tech from Quito, Ecuador.
 - Identified topics of interest to USFQ faculty and created a variety of sessions to cover desired topics as well as additional topics.
 - Coordinated and scheduled workshops, presentations, discussion sessions, and faculty panels on topics, such as mentoring, student engagement, student motivation, faculty development programs, and technology in the classroom.
- 2015–2016 **Center for the Enhancement of Engineering Diversity (CEED), Graduate Assistant**, *Virginia Tech*.
- Taught three sections of the required weekly seminar for women in the engineering living-learning community offered by CEED.
 - Managed the application process for C-Tech², a two-week summer camp for high school females interested in engineering.
 - Assisted with the coordination of CEED summer outreach programs for high school students.
 - Mentored and assisted first-year students involved in CEED programs who did not perform well academically during the fall semester to discuss topics such as time management, test performance, study skills, and choice of major.

Teaching Experience

- Fall 2017 **Graduate Assistant: Contemporary Pedagogy, Virginia Tech.**
- Facilitated discussions in graduate-level course focused on educational theories and teaching strategies that support active learning in various disciplines.
 - Coordinated the use of technology in the course, which consisted of maintaining course website, syndicating student blogs, and managing technology in the classroom environment.
- Fall 2015 **Instructor: Hypatia Living-Learning Community Seminar, Virginia Tech.**
- Taught three sections (approximately 100 students total) of the the Hypatia seminar, a required weekly seminar for females in the Hypatia Engineering Living-Learning Community.
 - Taught strategies and skills for academic success, professionalism, and personal development.
 - Developed course material, taught weekly classes, met with students outside of class, created assignment rubrics, and graded assignments.
- Spring 2015 **Instructor of Record: Foundations of Engineering II, Virginia Tech.**
- Taught one section (approximately 30 students) of the second semester of the Foundations of Engineering course, a required, year-long course for all engineering students.
 - Prepared lectures, graded assignments, and met with students individually and as groups.
 - Course combined group projects, lectures, activities, and individual and group assignments.
- Fall 2014 **Instructor of Record: Foundations of Engineering I, Virginia Tech.**
- Taught two sections (approximately 60 students total) of the first semester of the Foundations of Engineering course, a required, year-long course for all engineering students.
 - Prepared lectures, graded homework assignments, and met with students individually.
 - Course combined lectures, discussions, activities, and individual and group assignments.
- 2008–2009 **Mechanical Engineering Department Mentor, Colorado State University.**
- Created the mentoring program for the Mechanical Engineering Department.
 - Developed, organized, and led activities, such as social events and study groups, for first-year engineering students.
 - Mentored first-year students in the Mechanical Engineering Program.
- 2006, 2008 **Tutor, Colorado State University.**
- Tutored college students in Algebra, Trigonometry, Logarithmic and Exponential Functions, and Calculus I-III.

Research Experience

- Summer 2017 **VTECC (Virginia Tech Engineering Communication Center), Graduate Research Assistant, Virginia Tech.**
- Advisors: Drs. Marie Parette and Lisa McNair
- Examined disciplinary cultures in various engineering disciplines at a variety of institutions.
- Spring 2017 **FORGE Research Group, Graduate Research Assistant, Virginia Tech.**
- Advisor: Dr. Denise Simmons
- Created a model to be used by engineering educators when developing or modifying sustainable out-of-class activities and environments that promote student learning.
- 2016–2017 **GUIDE (Growing in our Understanding of Inclusive Diversity in Engineering) Research Group, Graduate Research Assistant, Virginia Tech.**
- Advisor: Dr. Walter Lee
- Examined issues related to diversity in engineering.
 - Investigated structural components of engineering student support programs, such as Minority in Engineering Programs and Women in Engineering Programs.
- Summer 2016 **VTECC (Virginia Tech Engineering Communication Center), Graduate Research Assistant, Virginia Tech.**
- Advisors: Drs. Marie Parette and Lisa McNair
- Identified students' conceptual and procedural approaches to problem solving.
 - Analyzed students' written responses to engineering statics homework problems.
 - Developed a rubric outlining specific criteria that could be used by instructors and researchers to differentiate conceptual and procedural aspects of written responses to homework problems.

- 2015–present **Conceptual Understanding in Heat Transfer**, *Virginia Tech*.
 Advisors: Drs. Christopher Williams, Holly Matusovich, and Thomas Diller
- Analyzed the relationship between students' learning strategies and their conceptual understanding in heat transfer.
 - Conducted observations of a heat transfer workshop that incorporated hands-on activities.
 - Conducted interviews of students who were taking the heat transfer course to examine students' conceptual understanding of heat transfer concepts.
- Spring 2015 **First-Year Engineering Program, Graduate Research Assistant**, *Virginia Tech*.
 Advisor: Dr. Ken Reid
- Assessed the First-Year Engineering Program, a requirement for all first-year engineering students.
 - Analyzed survey data obtained from the First-Year Engineering Program regarding students' intentions to remain in engineering.
 - Assessed first-year engineering students' understanding of problem formulation using representations such as student concept maps, which allow students to organize information graphically.
- 2013–2015 **Center for Injury Biomechanics, Graduate Research Assistant**, *Virginia Tech*.
 Advisors: Drs. Pamela VandeVord and Warren Hardy
- Investigation into the relative brain/skull kinematics during head impact:*
- Developed and modified test methods to examine kinematics during head impact.
 - Utilized high-speed biplane x-ray to quantify relative brain/skull kinematics in an in vivo model.
- Investigation into the effects of blast-induced neurotrauma:*
- Investigated behavioral changes following injury in a rat model using standard short term memory tests.
 - Examined the cellular response in various brain regions following injury.
- 2008–2009 **Orthopaedics Bioengineering Research Laboratory, Undergraduate Researcher**, *Colorado State University*.
 Advisor: Dr. Christian Puttlitz
- Investigated the use of micro-CT images to map cartilage thickness.
 - Designed, modified, and executed multiple testing procedures to obtain micro-CT images of sheep spine facets.
 - Compared micro-CT images to corresponding photographs to determine the accuracy of using micro-CT images to described cartilage thickness.

Other Work Experience

- 2016 **WIDER Workshop Evaluator**, Washington, DC.
- Evaluated a two-day WIDER (Widening Implementation and Demonstration of Evidence-Based Reforms) conference workshop.
 - Conducted observations, recorded participant conversations, and synthesized and summarized data.
- 2012–2013 **Engineering Consultant**, *PTC*, Dayton, OH.
- Collaborated with aerospace companies to create unique solutions to specific product development requirements, including the development of data management best practices.
 - Documented current and future processes for engineering design and change management.
 - Presented design solutions to company management.
 - Led and participated in design reviews with customers to ensure alignment between the solution and requirements.
 - Developed customer specific and PTC internal training material.
- Summer 2009 **Engineering Intern**, *Covidien*, Boulder, CO.
- Developed test procedures for Class II medical devices to ensure compliance with requirements.
 - Developed a general, comprehensive resource manual of tests to be performed when developing cuffed airways products to increase process efficiency.
 - Created a repeatable and reproducible method for analyzing flow in endotracheal tubes.
 - Conducted validation testing for tracheostomy tubes to verify products were within design tolerances.
 - Consulted with international team members to coordinate test methods and standards.

Publications and Presentations

Peer-Reviewed Articles

- Bailey, Z., E. Nilson, J. Bates, A. Oyalowo, K. Hockey, V. S.S. S. Sajja, C. Thorpe, H. Rogers, B. Dunn, A. Frey, M. Billings, C. Sholar, **A. Hermundstad**, C. Kumar, P. VandeVord, and B. A. Rzigalinski (2016). “Cerium Oxide Nanoparticles Improve Outcome After In Vitro and In Vivo Mild Traumatic Brain Injury”. In: *Journal of Neurotrauma*.
- Groen, C., **A. Hermundstad**, M. Paretti, and L. McNair. “Conceptual and Procedural Orientation in Statics”. In Preparation.
- Lee, W., A. Godwin, and **A. Hermundstad** (accepted for publication). “Development of the Engineering Student Integration Instrument: Rethinking Measures of Integration”. In: *Journal of Engineering Education*.
- Lee, W., B. Lutz, and **A. Hermundstad** (accepted for publication). “Learning from practitioners that support underrepresented students in engineering”. In: *Journal of Professional Issues in Engineering Education and Practice*.
- Lee, W., **A. Hermundstad**, and A. Ogilvie. “Beyond Student Retention: Co-curricular Practices for Supporting Undergraduate Students in Engineering”. In Preparation.
- Hermundstad, A.** and D. Simmons. “Building effective interventions: The BUILD model for the design and modification of out-of-class interventions for undergraduate engineering students”. In Preparation.
- VandeVord, P. J., V. S.S. S. Sajja, E. Ereifej, **A. Hermundstad**, S. Mao, and T. J. Hadden (2016). “Chronic hormonal imbalance and adipose redistribution is associated with hypothalamic neuropathology following blast exposure”. In: *Journal of Neurotrauma* 33.1, pp. 82–88.

Peer-Reviewed Conference Proceedings and Presentations

- Artiles, M., R. Waters, A. Taylor, K. Boyd-Sinkler, S. Williams, C. Hampton, **A. Hermundstad**, W. C. Lee, and B. Lutz (2017). “Action on Diversity: A Content Analysis of ASEE Conference Papers, 2015–2016”. In: ASEE Conference Proceedings.
- Hermundstad A.** (2015). “Global Engineering Education for First-Year Engineering Students”. In: FYEE Conference Proceedings.
- Hermundstad, A.**, T. Diller, C. Williams, and H. Matusovich (2016). “Exploring Conceptual Understanding in Heat Transfer: A Qualitative Analysis”. In: ASEE Conference Proceedings. DOI: 10.18260/p.26845.
- Nave, G. K., **A. Hermundstad**, M. Stewart, M. Waters, E. Garner, M. Seyam, C. Corkins, and K. P. DePauw (2017). “Global Perspectives: Graduate Students’ Experiences with Global Higher Education”. In: ASEE Conference Proceedings.

Conference Presentations

- Corkins, C. R., **A. Hermundstad**, M. Waters, and K. DePauw (2017). *Global Perspectives: How Women Lead Cross-Regional Interactions in Higher Education*. Presented at the Virginia Network Annual State Conference. Roanoke, VA.
- Hermundstad, A.**, E. Fievisohn, P. J. VandeVord, C. D. Untaroiu, and W. Hardy (2014). *Methods for Studying Brain Motion During Head Impact in a Göttingen Minipig Model*. Presented at the Biomedical Engineering Society 2014 Annual Meeting. San Antonio, TX.

Professional Development

- May 2017 **Enhancing Student Success through a Model Introduction to Engineering Course**, California Polytechnic State University, San Luis Obispo.
- Participated in a 3-day short course, led by Ray Landis, on enhancing student success through life-changing experiences for first-year engineering students.
- Oct 2016 **Mentoring Undergraduate Students Workshop**, Virginia Tech.
- Participated in a workshop covering best practices and issues related to mentoring.

- Jan. – Jun. 2016 **Global Perspectives Program**, *Virginia Tech*, Select locations in Switzerland, France, and Italy.
- Selected to participate in Virginia Tech's Global Perspectives Program (GPP).
 - GPP is a program to educate graduate students about global issues related to higher education.
 - Students selected to participate take two courses offered by the graduate school, Preparing the Future Professoriate and Contemporary Pedagogy, and visit selected universities in France, Switzerland, and Italy to discuss higher education with faculty, administrators, and students at the European Universities.

Service

Service to the Field of Engineering Education

- 2016–2017 **ASEE Student Division Secretary/Treasurer.**
- Secretary/Treasurer for the American Society for Engineering Education (ASEE) Student Division.
 - Coordinate meetings, take meeting minutes, and handle finances.

Service to the University & Department

- 2016–present **Graduate Student Assembly (GSA) Delegate**, *Virginia Tech*.
- GSA delegate for the Engineering Education department.
- 2017 **Commission on Student Affairs Representative**, *Virginia Tech*.
- Served as a graduate student representative on the Commission.
- 2015–2017 **Engineering Education Department Ambassador**, *Virginia Tech*.
- Coordinated the mentoring program for first-year graduate students in the Engineering Education department.
 - Organized and led new student orientation for first-year graduate students.
 - Assisted with recruitment and Open Houses for prospective students.
 - Met with and communicated with prospective students.
- 2016–2017 **Graduate Student Peer Mentoring Program, Mentor**, *Virginia Tech*.
- Assisted new graduate students, primarily underrepresented and minority students in engineering as they transition to Virginia Tech.
 - Helped students navigate the graduate program and build a network of peers.
- 2016 **Student Transition to Engineering Program (STEP), Academic Coach**, *Virginia Tech*.
- Academic coach for students participating in STEP, a five-week summer bridge program for incoming Virginia Tech engineering students.
 - Met with five students once a week and discussed study strategies, engineering careers, resumes, and any topics of concern.
 - STEP provides students an opportunity to take shortened versions of traditionally difficult courses to help students prepare for their college career.
- 2015–2016 **VT ASEE Student Chapter Information Resources Officer**, *Virginia Tech*.
- Planned and coordinated ASEE student body meetings at Virginia Tech.
 - Communicated with students about ASEE meetings, created fliers to advertise events, and assisted with running meetings.
- 2015–2016 **WINGS Graduate Liaison on the Executive Board**, *Virginia Tech*.
- Coordinated and facilitated events for WINGS (Women Inspiring the Next Generation to Soar), a program that provides female undergraduate engineering students with a support network of women leaders in industry.
- May 2015 **Rising Sophomore Abroad Program (RSAP)**, Dominican Republic.
- Graduate student leader on the week-long Virginia Tech RSAP mission trip to the Dominican Republic. RSAP is a program for rising sophomore engineering students.
 - Worked construction on a perimeter wall for a new medical facility.
 - Assisted doctors in a mobile medical clinic and entertained children while their family received medical attention.

Service to the Community

- July 2014 **NASA BLAST Demonstrations, Volunteer, Virginia Tech.**
- Led chemical engineering demonstrations for middle and high school students participating in NASA BLAST, a 3-day residential summer camp where students in grades 8 and 9 explore science, technology, engineering, and mathematics fields.
- Feb. 2014 **Kids' Tech University, Volunteer, Virginia Tech.**
- Demonstrated science concepts related to Biomedical Engineering to elementary school children.
- Apr. 2013 **Mini-Urban Challenge, Volunteer, Dayton, OH.**
- Assisted judges, directed students to competition sites, and assisted with miscellaneous tasks.
- Feb. 2013 **Dayton Regional STEM School Science Fair, Judge, Dayton, OH.**
- Judged high school science, technology, engineering and mathematics projects.
- 2012 **FIRST Robotics Competition, Volunteer, Minneapolis, MN.**
- Assisted with setup and disassembly of the FIRST Robotics competition arena.
- 2010, 2011 **East Panhandle Regional Science and Engineering Fair, Judge, Fort Walton Beach, Florida.**
- Judged middle and high school science projects in categories ranging from Physics to Engineering.

Honors & Awards

- Spring 2016 **Favorite Faculty, Virginia Tech.**
Nominated for Virginia Tech's Favorite Faculty Award by a student in the Hypatia seminar. This program is for students to recognize their favorite faculty or graduate student instructors.
- Spring 2016 **2016 Student Digital Media Showcase Participant, Virginia Tech.**
Personal ePortfolio selected for the Digital Media Showcase to demonstrate the use of ePortfolios for student learning.
- Oct. 2012 **Excellence Award, PTC.**
Awarded for work completed on the United Launch Alliance project with PTC.

Professional Memberships

American Society for Engineering Education.

Member of the following ASEE Divisions: Student Division, Engineering Ethics, Women in Engineering, and Minorities in Engineering.

The Honor Society of Phi Kappa Phi.