

Deborah Sills

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EDUCATION

B.S. (Honors), Civil Engineering, 2001, Montana State University–Bozeman
Concentration: Bio-resources

M.S., Environmental Engineering, 2005, Cornell University, Ithaca, NY
Concentration: Environmental Processes
Thesis: *Search for vinyl chloride degrading organisms at Moody Air Force Base*
Advisor: James M. Gossett

Ph.D., Environmental Engineering, 2011, Cornell University, Ithaca, NY
Concentration: Environmental Processes
Dissertation Topic: *Enzymatic hydrolysis of alkaline pretreated biomasses: Assessment of hemi-cellulase mixtures and the use of FTIR to predict saccharification*
Advisor: James M. Gossett

Postdoc, Cornell Energy Institute, 2012–2013, Cornell University, Ithaca, NY
Concentration: Life Cycle Assessment (LCA) of Algal Biofuels
Advisors: Jefferson W. Tester & Charles H. Greene

RESEARCH INTERESTS

Biomass conversion; Bioenergy and bio-based products; Waste valorization, Marine microalgae, Life Cycle Assessment (LCA); Technoeconomic Analysis (TEA)

PROFESSIONAL EXPERIENCE

Assistant Professor, Department of Civil and Environmental Engineering, Bucknell University, Lewisburg, PA [8/2013 to present]
Teacher scholar in environmental engineering.

Visiting Scientist, Department of Chemical & Biomolecular Engineering, Cornell University, Ithaca, NY [6/2015 to present]
Conducting research on integration of biological and thermochemical processing of waste biomass.

Visiting Assistant Professor, Industrial Process and Energy Systems Engineering (IPESE), Department of Mechanical Engineering, Swiss Institute of Technology (EPFL–Valais), Sion, Switzerland [9/2015 to 5/2016]
Conducted research on LCA and TEA applied to biomass conversion.

Visiting Scientist, Department of Earth and Atmospheric Sciences, Cornell University, Ithaca, NY [6/2014 to 8/2014]
Conducted research on LCA and TEA of algal fuel and feed production.

Postdoctoral Researcher and Instructor, Cornell Energy Institute and Department of Earth

and Atmospheric Sciences, Cornell University, Ithaca, NY [2011 to 2013]

Conducted research on LCA of algal biofuel production. Taught Freshman Writing Seminar on climate change and energy.

Graduate Research Assistant, Biofuels Research Laboratory, Cornell University, Ithaca, NY [2005 to 2011]

Completed Ph.D research on converting non-edible plant biomass to fermentable sugars.

Instructor, School of Civil and Environmental Engineering, Cornell University, Ithaca NY Cornell University, Ithaca, NY [2010 to 2011]

Taught two environmental engineering courses.

Graduate Research Assistant, School of Civil and Environmental Engineering, Cornell University, Ithaca NY [2002 to 2004]

Completed Master's research on bioremediation of vinyl chloride. Designed and co-taught (with high school teachers) inquiry-based curriculum for K-12 environmental science classes.

PEER REVIEWED PUBLICATIONS

*Indicates current or former Bucknell student

†Indicates corresponding author

M. N. Poulsen, J. Pollak, J., **D.L. Sills**, D. L., J. A. Casey, S. G. Rasmussen, K.E. Nachman, D. W. Stewart*, & B. S. Schwartz, "High-density poultry operations and community-acquired pneumonia in Pennsylvania", *Environmental Epidemiology*, vol.2 , pp. e013, 2018.

R. Posmanik, C. M. Martinez, B. Cantero-Tubilla, D. Cantero, **D. L. Sills**, M. J. Cocero, & J. W. Tester, "Acid and alkali catalyzed hydrothermal liquefaction of dairy manure digestate and food waste" *ACS Sustainable Chemistry & Engineering*, vol. 6 , pp. 2724-2732, 2018.

M. N. Poulsen, J. Pollak, J., **D.L. Sills**, D. L., J. A. Casey, S. G. Rasmussen, K.E. Nachman, D. W. Stewart*, & B. S. Schwartz, "Residential proximity to high-density poultry operations associated with campylobacteriosis and infectious diarrhea", *International journal of hygiene and environmental health*, vol.221, pp. 323-333, 2018.

L. G. Van Doren, R. Posmanik, F.A. Bicalho*, J.W. Tester & **D. L. Sills**†, "Prospects for energy recovery during hydrothermal and biological processing of waste biomass", *Bioresource Technology*, vol. 225, pp. 67-74, 2017.

R. Posmanik, D. A. Cantero, A. Malkani, **D. L. Sills** & J.W. Tester, "Biomass conversion to bio-oil using sub-critical water: Study of model compounds for food processing waste", *The Journal of Supercritical Fluids*, vol. 119, pp. 26-35, 2017.

C. H. Greene, M. E. Huntley, I. Archibald, L.N. Gerber, **D.L. Sills**, J. Granados, C. Beal & M. J. Walsh, "Geoengineering, marine microalgae, and climate stabilization in the 21st century", *Earth's Future*, vol. 5, pp. 278-284, 2017.

D. L. Sills†, V. L. Wade*, T. Distefano, "Comparative life-cycle and technoeconomic assessment for energy recovery from dilute wastewater", *Environmental Engineering Science*, vol. 33, pp. 861-872, 2016.

L. N. Gerber, J. W. Tester, C. Beal, M. Huntley, **D. L. Sills**†, "Target cultivation and financing parameters for sustainable production of fuel and feed from micro-algae", *Environmental Science & Technology*, vol.50 pp. 3333-3341, 2016.

M. J. Walsh, L. Gerber, **D. L. Sills**, C. Beal, M. Huntley, C. H. Greene, "Algal food and

fuel coproduction can mitigate greenhouse gas emissions while improving land and water-use efficiency”, *Environmental Research Letters*, vol.11, pp. 114006, 2016.

C. H. Greene, M. E. Huntley, I. Archibald, I., L. N. Gerber, **D. L. Sills**, J. Granados, J.W. Tester, C. M. Beal, M. J. Walsh, R. R. Bidigare, R.R. & S. L. Brown, “Marine microalgae: climate, energy, and food security from the sea”, *Oceanography*, vol. 29, pp. 10-15, 2016.

C. Beal, L. Gerber, **D. L. Sills**, S. Machesky, C. H. Greene, I. Archibald, J. W. Tester, and M. Huntley, “Algal biofuel production for fuels and feed in a 100-ha facility: A comprehensive techno-economic analysis and life cycle assessment”, *Algal Research*, vol. 10, pp. 266–271, 2015.

M. Huntley, Z. Johnson, S. Brown, C. H. Greene, **D. L. Sills**, L. Gerber, S. Machesky, I. Archibald, J. Granados, and C. Beal, “Demonstrated large-scale production of marine microalgae for fuels and feed”, *Algal Research*, vol. 10, pp. 249-265, 2015.

D. L. Sills[†], V. Paramita, M. J. Franke, M. C. Johnson, T. M. Akabas, C. H. Greene, and J. W. Tester, “Quantitative uncertainty analysis of life cycle assessment for algal biofuel production”, *Environmental Science & Technology*, vol. 47, pp. 687-694, 2013.

D. L. Sills[†] and J. M. Gossett, “Using FTIR spectroscopy to model alkaline pretreatment and enzymatic saccharification of six lignocellulosic biomasses”, *Biotechnology & Bioengineering*, vol. 109, pp. 894-903, 2012.

D. L. Sills[†] and J. M. Gossett, “Using FTIR to predict saccharification from enzymatic hydrolysis of alkali-pretreated biomasses”, *Biotechnology & Bioengineering*, vol. 109, pp. 353-362, 2012.

D. L. Sills[†] and J. M. Gossett, “Assessment of commercial hemicellulases for saccharification of alkaline pretreated perennial biomass”, *Bioresource Technology*, vol. 102, pp. 1389-1398, 2011.

PEER REVIEWED PUBLICATIONS UNDER REVIEW OR REVISION

*Indicates current or former Bucknell student

†Indicates corresponding author

D. L. Sills[†], L.G. Van-Doren, E. Raynor* & C. Beal, “The effect of functional unit and co-product handling methods on life cycle assessment of an algal biorefinery”, *Algal Research*, submitted.

N. Kassem, **D. L. Sills**, R. Posmanik, C. Blair & J.W. Tester, “Combining anaerobic digestion and hydrothermal liquefaction in the conversion of dairy waste into energy: A technoeconomic model for New York State”, *Waste Management*, submitted.

PEER REVIEWED PUBLICATIONS IN PREPARATION

*Indicates current or former Bucknell student

M. Mohammed*, **D. L. Sills**, “Coupling a rotating biological contactor with an anaerobic baffled reactor for sustainable energy recovery from domestic wastewater”, to be submitted to *Environmental Science: Processes and Impacts*, in preparation.

Mona Mohammed*, **D. L. Sills**, “Using the social hotspot database (SHDB) to compare social risk of an anaerobic baffled reactor and rotating biological contactor treating domestic wastewater”, to be submitted to *Sustainability*, in preparation.

K. Wang, Q. Ma,^{2,3} K. Burns*, H. Sudibyo¹, D. L. Sills, J. Goldfarb, J. W. Tester, “Impact of

Feed Injection and Batch Processing Methods in Hydrothermal Liquefaction”, to be submitted to *The Journal of Supercritical Fluids*, in preparation.

REPORTS

Gossett, J. M., T. E. Mattes, **D. L. Sills**, J. C. Spain, S. F. Nishino, and N. V. Coleman, *Characterization of the Aerobic Oxidation of cis-Dichloroethene and Vinyl Chloride in Support of Bioremediation of Chloroethene-Contaminated Sites, Final Technical Report, CU 1168*. Strategic Environmental Research and Development Program, Washington D.C. 143 pp. Nov. 5, 2004.

INVITED TALKS

“Biological and thermochemical conversion of waste biomass: Experimental and life cycle modeling results”, Invited talk: *Energy Seminar, Cornell Energy Institute, Cornell University, Ithaca NY*, September 27, 2018.

“Life cycle assessment for agricultural biomass”, Invited talk: *Weekly Seminar, Vulcani Institute, Agricultural Research Organization, Neve Yaar, Israel*, January 2, 2018.

“Environmental and economic assessments of algal fuel and feed”, Invited talk: *Weekly Seminar, The Zuckerberg Institute for Water Research, Ben Gurion University, Sdeh Boker, Israel*, December 27, 2017.

“Environmental and economic impacts of producing fuel and food from marine microalgae”, Invited talk: *Energy Seminar, Department of Chemical and Biomolecular Engineering, Cornell University, Ithaca NY*, May 2017.

“Can marine algae enhance climate, energy, and food security?”, Invited talk: *Civil and Environmental Engineering Seminar Series, Clarkson University, Potsdam NY*, January, 2017.

“Green Crude? Improvements needed for sustainable production of algal biofuels”, Invited talk: *Mechanical and Environmental Engineering Seminar Series, Tel Aviv University*, December, 2015.

“Introduction to Life Cycle Assessment applied to a lignocellulosic biorefinery”, Invited lecture: *Energy Systems, Ph.D. Course, Swiss Technical Institute of Technology (EPFL, Valais)*, December, 2015.

“Target Parameters for sustainable production of algal fuel and feed”, Invited talk: *Life Cycle Assessment Group, Swiss Technical Institute of Technology (ETH Zurich)*, November, 2015.

“Environomic assessment of algal biofuel”, Invited talk: *Environmental Engineering Seminar Series, The Pennsylvania State University*, February, 2014.

“Is algal biofuel sustainable?”, Invited lecture: *Bioenergy & Bioproducts Education Programs, Boyce Thompson Institute, Ithaca, NY*, July 2013 & July 2012.

“Sustainable bioenergy production”, Invited lecture: *Climate Change Senior Seminar, Cornell University, Ithaca, NY*, April 2012.

“Using FTIR to model pretreatment and enzymatic hydrolysis of lignocellulosic biomass”, Invited talk: *Environmental Engineering Seminar Series, Cornell University, Ithaca, NY*, March 2012.

“Life cycle assessment of algal biofuels,” Invited lecture: *Biofuels Module class, Cornell University, Ithaca, NY*, February 2012.

CONFERENCE PRESENTATIONS & POSTERS

*Indicates current or former Bucknell student

M. Mohammed* and **D.L. Sills**, “Coupling an anaerobic baffled reactor with a rotating biological contactor for sustainable energy recovery from wastewater”, Poster Presentation, *Association of Environmental Engineering and Science Professors*, Arizona State University, Tempe, Arizona, May 15, 2019.

K Burns* and **D.L. Sills**, “Carbon and nitrogen recoveries from hydrothermal liquefaction of manure digestate”, Poster Presentation, *Association of Environmental Engineering and Science Professors*, Arizona State University, Tempe, Arizona, May 16, 2019.

D. L. Sills and M. Mohammed*, “Social hotspots for aerobic and anaerobic wastewater treatment”, Oral Presentation, *Engineering Sustainability*, Pittsburgh, Pennsylvania, April 8, 2019.

D. L. Sills, “Integrated Assessment of Marine Microalgae”, Poster Presentation, *Gordon Research Conference—Industrial Ecology*, Les Diablerets, Switzerland, May, 2018.

D. L. Sills, “Effect of retention time on carbon and nitrogen concentrations in HTL wastewater”, Poster Presentation, *Gordon Research Conference—Water & Environmental Science*, Holderness, New Hampshire, June, 2018.

D. L. Sills and L. Gerber, “What is the correct functional unit? Life cycle assessment of algae”, Oral Presentation, *Algae Biomass Summit*, Salt Lake City, Utah, October 31, 2017.

D. L. Sills, “Can marine algae enhance climate, energy, and food security?”, Oral Presentation, *Association for Environmental Engineering & Science Professors*, Michigan State University, Ann Arbor MI, June, 2017.

D. L. Sills, R. Posmanik, L. G. Van Doren, and J. W. Tester, “Prospects for heat recovery and techno-economic analysis for energy generation using biological and hydrothermal processing of biomass”, Oral Presentation, *NYSAWWA/NYWEA Joint Energy Specialty Conference*, Albany NY, November, 2016.

D. L. Sills, R. Posmanik, J. G. Usack, M. C. Moore, T. R. Overton, L. T. Angenent, and J. W. Tester, “Process integration of anaerobic digestion and hydrothermal liquefaction for sustainable energy generation and waste recovery in dairy operations”, Oral Presentation, *NYSAWWA/NYWEA Joint Energy Specialty Conference*, Albany NY, November, 2016.

D. L. Sills, V. L. Wade, and D. Cowell, “Soluble Methane in an Anaerobic Baffled Reactor”, Poster presentation, *Gordon Research Conference—Water & Environmental Science*, Holderness NH, June, 2016.

D. L. Sills, “Climate energy and food Security from the Sea”, Oral Presentation, *Computer Assisted Process Engineering (CAPE) Forum*, Swiss Technical Institute of Technology (EPFL, Valais), Sion, Switzerland, March, 2016.

D. L. Sills, V. L. Wade, and T DiStefano, “Low-energy wastewater treatment: Life cycle comparison of an anaerobic baffled reactor and a trickling filter”, Oral Presentation, *Association for Environmental Engineering & Science Professors*, Yale University, New Haven, CT, June 2015.

D. L. Sills, L. Gerber, C. H. Greene, and J. W. Tester, “Uncertainty of foreground and background processes parameters for algal fuel and feed production—100 ha Case Study”, Poster Presentation, *Algae Biomass Organization*, San Diego, CA, September 2014.

D. L. Sills, L. Gerber, C. H. Greene, and J. W. Tester, “Uncertainty of economics and environmental impacts for algal biofuel production”, Poster Presentation, *DOE — Biomass 2013*, Washington, DC, August 2013.

D. L. Sills, V. Paramita, M. J. Franke, M. C. Johnson, T. M. Akabas, C. H. Greene, and J. W. Tester, “Uncertainty of life cycle assessment for algal biofuel”, *The Third International Conference on Biomass, Biofuel and Bioproducts*, Toronto, Canada, June 2013.

D. L. Sills and J. M. Gossett, “Assessment of commercial hemicellulases for saccharification of alkaline pretreated perennial biomass”, Poster Presentation *Northeast Sungrant Regional Conference*, Syracuse, NY, June, 2010.

D. L. Sills and J. M. Gossett, “Effect of hemicellulase addition during hydrolysis of pretreated switchgrass and mixed prairie biomass”, Invited talk: *Sungrant Renewable Energy Conference*, Washington, DC, 2009.

FUNDED RESEARCH GRANTS

Carbon utilization efficiency in marine algae biofuel production systems through loss minimization and carbonate chemistry modification

Status: Funded

Role: Principal Investigator

Sponsor: US Department of Energy, BETO DE-FOA-0001908 Topic 1

Collaborators: Zackary Johnson, Duke University; Greg Rau, University of California–Santa Cruz; Colin Beal, B&D Consulting

Period Requested: September 2019–August 2022

Amount: Bucknell: \$96,232; Total: \$1.5 million.

Targeted algal biofuels and bioproducts

Status: Funded

Role: Principal Investigator

Sponsor: US Department of Energy, BETO DE-FOA-001162

Collaborators: Marine AlGae Industrialization Consortium (MAGIC): Zackary Johnson, Duke University; Mark Huntley, University of Hawaii; Léda Van Doren, University of Hawaii; Colin Beal, University of Hawaii, and others

Period: March 2016–December 2019

Amount: Bucknell: \$47,933; Total: \$5.2 million.

High-density poultry operations and associated infectious disease risks

Status: Funded

Role: Principal Investigator

Sponsor: The Fisher Center for Environmental Infectious Disease

Collaborators: Melissa Poulsen and Brian Schwartz, Johns Hopkins Bloomberg School of Public Health

Period: June 2016–May 2017

Amount: Bucknell: \$5,000; Total: \$50,000.

RESEARCH ADVISING AT BUCKNELL

Undergraduate Research Students

Summer 2019

Kenzie Burns’20–Effect of retention time on formation of dissolved organic nitro-

gen compounds in hydrothermal liquefaction wastewater, funded by Clare Booth Luce, Bucknell University.

Elizabeth Raynor'21—LCA modeling of nutritional products produced from marine microalgae, funded by The US Department of Energy.

Leah Henk'21—Effect of inorganic carbon type on growth of marine microalgae, funded by the McKenna Foundation, Bucknell University.

Lucille Keterrer'23—Effect of landfill leachate on nitrogen removal at the Gregg Township Wastewater Treatment Plant, funded by the Stem Scholars Program, Bucknell University.

Summer 2018

Kenzie Burns'20—Aqueous and oil phase products from hydrothermal liquefaction of waste biomasses, funded by Clare Booth Luce, Bucknell University.

Elizabeth Raynor'21—Uncertain LCA parameters for algal biofuel, funded by The US Department of Energy.

Siwon Sung'21—Pretreatment and enzymatic hydrolysis of lignocellulosic biomass, funded by The STEM Scholar Program, Bucknell University.

Emma Saloky'21—Low cost air pollution sensors and thinking about citizen science, funded by The STEM Scholar Program, Bucknell University.

Summer 2017

Kenzie Burns'20—Aqueous and oil phase products from hydrothermal liquefaction of waste biomasses, funded by the McKenna Foundation, Bucknell University.

Muxi You'20—Pretreatment and enzymatic hydrolysis of lignocellulosic biomass, funded by The Program of Undergraduate Research (PUR), Bucknell University.

Alyssa Dedrickson'19—Uncertain LCA parameters for algal biofuel and coproducts, funded by the US Department of Energy.

Summer 2016

Dalton Stewart'19, Shai Gerstle '18 & Matthew Geiger '19—Concentrated poultry operations in Central PA, funded by The Fisher Center for Environmental Infectious Disease; and PUR, Bucknell University.

Summer 2015

Mona Mohammed'16 & Ray Abbiatici'17—Nutrient management for animal feeding operations in Pennsylvania, funded by the McKenna Foundation and the Chiloro Fund, Bucknell University.

Summer 2014

Sarah Emrich'16—Assessment of using manure-based biochar to reduce nutrient loads in sensitive watersheds, funded by PUR, Bucknell University.

Spring 2014

Victoria Caudullo'15—Biomethane potential of defatted marine algae, CENG 481—Undergraduate Research.

Graduate Students—Primary Advisor

Rajasri Alaparthi, *Using FTIR to predict saccharification of ball milled lignocellulosic biomass*, Fall 2018–present, Masters Thesis Advisor.

Mona Mohammed, *Environmental performance of a rotating biological contactor treating anaerobic effluent*, Fall 2016–Fall 2019, Masters Thesis Advisor.

Valerie Wade, *Life cycle environmental impacts for anaerobic treatment of domestic wastewater*, 2013–2015, Masters Thesis Advisor.

HONORS AND AWARDS

Swanson Fellowship in Science and Engineering, Bucknell University (2013 to 2016).

Second Place, Oral Presentation Competition, Cornell University, School of Civil and Environmental Engineering, 3rd Graduate Research Symposium (January 28, 2011, Ithaca, NY).

Graduate Teaching Fellowship—National Science Foundation (2003 to 2004)

GAANN Fellowship, focused on computational aspects of in-situ bioremediation for the detoxification of groundwater (2001 to 2003)

Highest Grade Point Average, Bio-resources Concentration, Civil Engineering, Montana State University (2001)

Best Student All-Around, Bio-resources Concentration, Civil Engineering, Montana State University (2001)

PROFESSIONAL SERVICES and MEMBERSHIPS

Journal reviewer: *Environmental Science & Technology*, *Environmental Science & Technology Letters*, *Bioresource Technology*, *Industrial Biotechnology*, *Algal Research*, *Journal of Chemical Technology & Biotechnology*, *Sustainable Chemistry & Engineering*, *Environmental Development & Sustainability*

Editorial Board, *Industrial Biotechnology*, 2016–present

Reviewer, National Science Foundation, INFEWS–China Award Panel, April, 2019.

Reviewer, Department of Energy (DOE), BETO-SBIR Program, March, 2019.

Reviewer, National Science Foundation, Career Award Panel, October 2016.

Reviewer of Conference Abstracts, Algae Biomass Summit, 2018 and 2019.

Session Chair, Bioprocesses, AEESP, Arizona State University, Tempe, Arizona, May 15, 2019.

Led session on water treatment for middle and high school students as part of the Bucknell's Engineering Camp, 2017 and 2019.

Member of Ph.D. Dissertation Committee for Ozgul Caliciogul, Dept. of Civil and Environmental Engineering, Pennsylvania State University, August 2015–December 2018.

Participant, Algae–Wastewater Working Group, WEFTEC, 2013.

World Congress on Industrial Biotechnology and Bioprocessing

- Advances in Bioprocessing track recorder, 2007
- Bioprocessing of Agricultural Feedstocks track recorder, 2008

Member: Association of Environmental Engineering & Science Professors, American Society of Civil Engineers, American Society of Engineering Education.

TEACHING EXPERIENCE

Department of Civil and Environmental Engineering, Bucknell University, August 2013 to present

ENGR 100—Introduction to Engineering, Three week mini-course on Environmental Engineering

This short course uses algae cultivation as a topic to introduce students to concepts and laboratory tools commonly used in environmental engineering. The course includes 9 lecture periods, 2 two-hour lab sessions, and a two-hour design session. Laboratory data is incorporated into a conceptual design of an algal bio-refinery that produces fuel, feed, and/or provides wastewater treatment.

CEEG 442—Sustainability Principles for Engineers

This course introduces students to the application of sustainability principles in the field of engineering. Topics include sustainability concepts and definitions, climate science, biogeochemical cycles, embedded resources (e.g., carbon and water footprints), material flows, indicators of social sustainability, and systems thinking.

CEEG 445L—Environmental Engineering Chemistry Laboratory

This upper-level course consists of hands-on laboratory exercises designed to reinforce material learned in lecture. Labs include gas transfer, acid-base reactions, chemical kinetics, and metal speciation. Students conduct an open-ended project that requires them to be proficient with environmental engineering laboratory analyses.

CEEG 443—Sustainable Design

This upper-level course focuses on quantitative sustainable design. Students apply economic and environmental assessment models, and link these tools to engineering design decisions under uncertainty. Students design engineered technologies individually and in teams, with special attention to bio-based chemical production. Students also complete a semester-long design project.

ENGR 222L—Fluid Mechanics Laboratory

This course is Sophomore-level and consists of hands-on laboratory exercises that reinforce material learned in lecture. Labs include visualizations of fluid mechanics phenomena and measurement methods in fluid mechanics. Students acquire skills needed for effective teamwork and practice writing engineering reports.

CEEG 340—Introduction to Environmental Engineering

This Sophomore and Junior-level course introduces fundamentals of environmental engineering, such as chemistry, microbiology, mass balance, and reactor theory. Applications include air quality, water quality, and water and wastewater treatment. This course includes hands-on laboratory exercises that reinforce materials learned in lecture and introduce students to standard laboratory methods in environmental engineering.

Department of Earth and Atmospheric Sciences, Cornell University, August 2010 to December 2012

EAS 1420—Sustainable Earth Energy and Environmental Systems

Freshman writing seminar that focuses on the intertwined challenges of energy and

the environment.

School of Civil and Environmental Engineering, Cornell University, August 2009 to May 2010

CEE 3510—Environmental Quality Engineering

Sophomore-level course that introduced students to physical and chemical principles that govern the fate and transport of pollutants in the environment.

CEE 4530—Laboratory Studies in Environmental Engineering

Senior-level course that introduced students to standard laboratory methods in environmental engineering; included capstone research and design project.

PEDAGOGICAL ACTIVITIES

- Bucknell Fabrication Workshop (BFAB), 2019 & 2017
- Assistant Mentor, American Society of Civil Engineering (ASCE) Excellence in Civil Engineering Education (ExCEED), Florida Gulf Coast University, 2018 & 2019
- Institute in Drinking Water Treatment, Northhampton MA, August 2018
- Faculty Development Workshop on Service-Learning and Community-Based Research, Bucknell University, May 2017
- Fellow, American Society of Civil Engineering (ASCE) Excellence in Civil Engineering Education (ExCEED), United States Military Academy, West Point, NY, 2014
- National Effective Teaching Institute (NETI) workshop, Washington, DC, 2014
- Sustainability Studio Workshop, Bucknell University, led by Peter Wilshusen, 2014
- KEEN Interdisciplinary Senior Design Workshop, Bucknell University, led by Charles Kim, 2014
- Teaching of Writing Workshop, Bucknell University, led by the Writing Center, 2013
- Engineering an Education, Bucknell University, led by Michael Prince, 2013
- Teaching Writing, Cornell University Writing Center, 2010

LANGUAGE & PROGRAMMING SKILLS

Language Skills: English (native speaker) and Hebrew (native speaker)

Programming Skills: R, Matlab, L^AT_EX