

## **SHORT CURRICULUM VITA**

### **David Brandes, Professor of Civil & Environmental Engineering**

Walter A Scott Chair of Integrative Engineering

Seifi Ghasemi Chair in Engineering for Interdisciplinary Teaching

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### **Education:**

Ph.D. Civil Engineering (Water Resources), The Pennsylvania State University, 1998

M.S. Environmental Systems Engineering, Clemson University, 1992

B.S. Civil Engineering (Environmental), with Honors, University of Maryland, 1988

### **Professional Experience:**

Professor, Civil & Environmental Engineering, Lafayette College, 2014-

Joint Appointment, National Renewable Energy Lab, 2021-22

Associate Professor, Civil & Environmental Engineering, Lafayette College, 2006-2014

Visiting Professor, Division of Natural Sci and Eng, St. Louis University-Madrid, spring 2011

Visiting Scientist, Acopian Center for Conservation, Hawk Mountain Sanctuary, 2007-08

Assistant Professor, Civil & Environmental Engineering, Lafayette College, 1999-2005

Graduate Research Assistant, Enviro Sci Group, Los Alamos National Laboratory, 1994-97

Consulting Engineer, ENVIRON Corp., 1989-90, 1992-94

### **Awards:**

2019 Van Ardsdalen Award for scholarly achievement

2014 Lindback Foundation Award for excellence in teaching and outstanding contributions to campus life

2009 B. Vincent Viscomi Engineering Prize for excellence in mentoring and teaching

2013 U.S. Forest Service, Research Management and Partnership Award, Eastern Golden Eagle Working Group

2011 PA Society for Ornithology Conservation Award (with T. Katzner, M. Lanzone, T. Miller)

### **Courses Taught (\* indicates most frequent courses):**

CE 201 Civil Engineering Computing

CE 203 Envisioning a Sustainable World

\*CE 251 Fluid Mechanics

\*CE 321 Introduction to Environmental Engineering & Science

\*CE 351 Water Resources Engineering

\*CE 421 Hydrology

CE 423 Water Quality

\*CE 475 Capstone Design

CM 261 Numerical Methods in Engineering

EVSC 211 Rivers and Watersheds: Form and Function (co-taught)

EVST 254 Cultures of Nature (co-taught)

EVST 400 Engineering Studies Capstone

ES 101 Introduction to Engineering

\*ES 303 Environment and Energy Systems

FYS 032 What is a River?  
INDS 211 Life Sciences Seminar (co-taught)  
INDS 321-22 Tech Clinic (co-taught)

### **Current College Service:**

Walter A Scott Program Chair, Integrative Engineering Program, 2019-  
Member of Appeal and Grievance Committee  
Member of Advisory Committee, Lafayette Office of Sustainability  
Founder and Member of Advisory Board, LaFarm (<https://garden.lafayette.edu/>)  
Co-advisor Engineers Without Borders Lafayette Chapter

### Former Service

Co-Chair, Programs in Environmental Science and Studies - prepared the program's first Self-Study Report in 2016 in preparation for an external review  
Member of Advisory Committee, Programs in Environmental Science and Studies  
Acting Head, Civil & Environmental Engineering, Lafayette College, 2006-07, 2011  
Co-Convener, Environment & Sustainability Focus Group and co-author of report *Environment and Sustainability at Lafayette College: a Blueprint for 2025*.  
Co-Leader, Engineering Division Interdisciplinary Themes Task Group  
Member, College Budget Planning Committee  
Faculty representative to Board of Trustees Financial Planning Committee  
Chair, Student Conduct Committee and Information Technology & Library Committee  
Member of Promotion, Tenure, and Review Committee, the Academic Progress Committee, the Computing Services Advisory Committee, the Governance Committee, the Library Advisory Committee, fac representative to the Board of Trustees Committee on Grounds and Buildings  
Member of Advisory Committee, Center for Community Engagement  
Member of Presidential Task Force on Curriculum Innovation, 2013-2014  
Member of the Steering Committee, Mellon Environmental Initiative, 2008-2012  
Advisor of Lafayette Chapter of Engineers Without Borders

### **Professional Activities and Service:**

Member, American Society of Civil Engineers (ASCE) Environmental & Water Resource Institute  
Member, ASCE Blue Ribbon Review Panel responsible for *Design of Urban Stormwater Controls, ASCE Manual of Practice 87*, published 2012 by WEF Press  
Member, American Geophysical Union (Hydrology Section)  
Member, American Water Resources Association  
Member, Geological Society of America  
Member, Raptor Research Foundation  
Eastern Golden Eagle Working Group ([egewg.org](http://egewg.org)) Steering Committee  
Raptor Population Index ([www.rpi-project.org](http://www.rpi-project.org)) Steering Committee – former Chair  
Reviewer for *ASCE J. of Hydrologic Eng*, *ASCE J. of Water Resources Planning and Management*, *Water Resources Research*, *Hydrological Processes*, *Environmental Science & Techn.*, *Journal of the Am. Water Res. Assoc.*, *Journal of Environmental Management*, *Journal of Raptor Research*  
Member, Riegelsville Borough Planning Commission  
Member, Bucks County Watershed Plan Advisory Committee

## Research Expertise (Full publications list available upon request):

1. *Hydrology & Hydraulics*: impacts of urbanization on streamflow regimes; watershed assessment; detention basin hydraulics; drivers and buffers of flash flooding; stream channel dynamics in response to dam removal
2. *Environmental Fluid Mechanics - Movement Ecology of Raptors*: mathematical modeling of orographic lift around complex terrain, modeling of raptor flight patterns based on interaction of terrain and weather, especially in relation to wind energy development

### Sample Publications in Hydrology and Hydraulics

- Hurley, R. **D. Brandes**, and C. Kelleher, 2024. Drivers and buffers of stream flashiness in the mid-Atlantic United States. *Hydrological Processes*, 38: e15302. <https://doi.org/10.1002/hyp.15302>
- Barlow, W.T., and **D. Brandes**, 2015. Stage-discharge models for concrete orifices: impact on estimating detention basin drawdown time. *ASCE J of Irrig and Drainage Eng* 141(12)
- **Brandes, D.** and W.T. Barlow, 2012. New method for modeling thin-walled orifice flow under partially submerged conditions. *ASCE J of Irrigation and Drainage Engineering* 138(10): 924-928.
- Thompson, M.Y., **D. Brandes**, and A.D. Kney, 2012. Using electronic conductivity and hardness data for rapid assessment of stream water quality. *J. Environ. Management*. 104:152-157.
- Kney, A.D., and **D. Brandes**, 2007. A graphical screening method for assessing stream water quality using specific conductivity and alkalinity data. *J. Environ. Management*, 82(4):519-528.
- **Brandes, D.**, Cavallo, G.J., and M.L. Nilson, 2005. Baseflow trends in urbanizing watersheds of the Delaware River basin. *J. Am. Water Res. Assoc.* 41(6):1377-1391.
- **Brandes, D.**, Hoffmann, J.G., and J.T. Mangarillo, 2005. Correlation of baseflow recession rates, low flows, and hydrologic features of small watersheds in Pennsylvania. *J. Am. Water Res. Assoc.* 41(5):1177-1186.

### Sample Publications in Environmental Fluid Mechanics: Movement Ecology of Raptors

- Thedin R, **Brandes D**, Quon E, Sandhu R, Tripp C., 2024. A three-dimensional model of terrain-induced updrafts for movement ecology studies. *Movement Ecology* 12(5)
- R. Sandhu, C. Tripp, E. Quon, R. Thedin, M. Lawson, **D. Brandes**, et al, 2022. Stochastic agent-based model for predicting turbine-scale raptor movements during updraft-subsidized directional flights. *Ecological Modelling*, 466:109876
- Dennhardt, A, A Duerr, **D Brandes**, T. Katzner, 2015. Modeling autumn migration of a rare soaring raptor identifies new movement corridors in central Appalachia. *Ecological Modelling*, V303, p19-29
- Dodge, S., G. Bohrer, R. Weinzierl, S.C. Davidson, R. Kays, D. Douglas, S. Cruz, J. Han, **D. Brandes**, M. Wikelski, 2013. The Environmental-Data Automated Track Annotation (Env-DATA) System: Linking Animal Tracks with Environmental Data. *Movement Ecology* 1:3
- Katzner, T.E., **D. Brandes**, T. Miller, M. Lanzone, C. Maisonneuve, J.A. Tremblay, R. Mulvihill, and G.T. Merovich. 2012. Topography drives migratory flight altitude of golden eagles: implications for on-shore wind energy development. *Journal of Applied Ecology* 49: 1178-118.
- Bohrer, G., **D. Brandes**, et al. 2012. Estimating updraft velocity components over large spatial scales: contrasting migration strategies of golden eagles and turkey vultures. *Ecology Letters*, 15(2):96-103.
- Lanzone, M., T. Miller, P. Turk, **D. Brandes**, C. Halverson, C. Maisonneuve, J. Tremblay, J. Cooper, K O'Malley, R. P. Brooks, and T.E. Katzner. 2012. Flight responses by a migratory soaring raptor to changing meteorological conditions. *Biology Letters* 8: 710-713.
- **Brandes, D.** and D.W. Ombalski, 2004. Modeling raptor migration pathways using a fluid flow analogy. *J. Raptor Research* 38(3): 195-207.