CURRICULUM VITAE
ANDRÉ J. BUTLER, Ph.D.

Current Address, Telephone Number and E-mail:

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Educational Background:

Ph.D. in Environmental Engineering, 2000
Georgia Institute of Technology, Atlanta, GA
Dissertation: *"Temporal and spatial analysis of $PM_{2.5}$ mass and composition in Atlanta."*

M.E. in Mechanical Engineering, 1995
Carnegie Mellon University, Pittsburgh, PA
Project: *"Automobile battery recycling."*

B.S. in Mechanical Engineering, Campus Honors, 1993
University of Illinois, Urbana, IL

Employment History:

2013 – Present
Chair, Environmental Engineering, Mercer University, Macon, GA

2007 – Present
Associate Professor, Environmental and Mechanical Engineering, Mercer University, Macon, GA

2000 – 2007
Assistant Professor, Environmental and Mechanical Engineering, Mercer University, Macon, GA

1998 – 2000
Environmental Engineer, Air, Pesticides and Toxics Mgmt. Div., U.S. EPA, Atlanta, GA

1995 – 2000
Graduate Research Assistant, School of Civil & Environmental Engineering, Georgia Institute of Technology, Atlanta, GA

1993 – 1995
Graduate Research Assistant, Mechanical Engineering Department, Carnegie Mellon University, Pittsburgh, PA

1992, 1993, 1994, 1995
Summer Intern, Ford Motor Company, Dearborn, MI

1991
Summer Intern, Aluminum Company of America, Pittsburgh, PA

1990
Research Scholar, University of Illinois Summer Research Opportunities Program, Urbana, IL

1988, 1989
Summer Intern, International Business Machines, Rochester, MN

Teaching Experience:

Teaching awards

Who's Who Among America's Teachers, 2004-2005
Mercer University School of Engineering Teacher of the Year, 2002-2003, 2016-2017

Courses taught at Mercer University

EGR 107 *Introduction to Engineering Design*
Systematic procedures for engineering design. Student teams pursue a design project that incorporates problem identification, information gathering, development of alternative solutions, merit analysis, decision presentation, implementation, testing, and redesign. Students practice skills in preparing and presenting a variety of engineering-related written and oral reports.

EGR 126 *Introduction to Problem Solving*
Computer programming and the use of computers to solve engineering problems. Special attention is given to development of an organized thought process in which analysis, modeling, and construction of algorithms lead to structured procedures for solving non-trivial problems.

EGR 252 *Applications of Engineering Mathematics*
Techniques and applications of probability and statistics. Variability and representation of data. Laws of probability, random variables and distributions. Confidence intervals and statistical hypothesis testing. Quality control and statistical inference. Design of experiments. Regression analysis. Use of spreadsheets and statistical software packages.

EVE 290 *Introduction to Environmental Engineering*
An overview of the major topics in environmental engineering, including water quality and treatment, solid and hazardous waste management, and air pollution; mass and energy balance principles; pollutant fate and transport characteristics; ethical implications of global practices.

EVE 290L *Introduction to Environmental Engineering Laboratory*
An introduction to environmental engineering experimentation with emphasis on traditional water and wastewater analyses. Parameters to be measured include: pH, alkalinity, hardness, total solids, suspended solids, dissolved solids, chemical oxygen demand, biochemical oxygen demand, dissolved oxygen, making standard solutions, and microbiological techniques.

EVE 402/502 *Air Pollution Generation and Control*
A study of air pollution, including measurements, causes, and effects on the environment. Comparison of chemical and particulate pollution from various sources. Energy and meteorological characteristics of the atmosphere in relation to the distribution of pollutants. Evaluation and design of low emission systems and components. Discussion of practical solutions and governmental regulations for the present and future. Plant trips and design projects.

EVE 403/503 *Atmospheric Chemistry*
An introduction to atmospheric chemical transformations; atomic structure and chemical bonding; thermodynamics, gas-phase kinetics, and photochemistry; tropospheric and stratospheric processes.

EVE 445L *Senior Environmental Engineering Laboratory*
Laboratory investigation of unit operations and processes in environmental engineering. Emphasis is placed on experimental design and analysis of results using modern techniques, skills, and tools. Various bench-scale experiments are conducted and assessed using standard microbiological, wet chemistry, and analytical techniques.

EVE 486/586 *Public Health*
Public health engineering principles for protection against biological and chemical hazards. Emphasis on major communicable diseases that plague mankind, organisms that cause them, routes of transmission, and engineering methods of control. Appropriate control methods for rural areas and developing countries.

EVE 489/589 *Environmental Toxicology*
An investigation of toxicology principles, systemic toxicity, and toxicology practice in view of the public health and environmental engineering frameworks.

EVE 491 *Applications of Engineering Hydraulics*
An investigation of the challenges associated with the supply of clean drinking water in developing world countries. Major topics will include public health, water supplies, water treatment, and basic hydraulics (pipe flow). Our classroom efforts will culminate with the successful installation of a solar-powered water pump at the Chuluchosema Orphanage and Infirmary in Zomba, Malawi, Africa.

EVE 652 *Environmental Engineering Statistics II*
A study of the practices and techniques used to analyze environmental data. Practical statistical methods are applied to real-world problems encountered by environmental engineers.

MAE 302L *Mechanical Engineering Laboratory I*
Application of basic measurement techniques and instrumentation to the experimental investigation of mechanical engineering systems – refrigeration systems, flow and heat transfer devices, and mechanical systems. Identification of experimental objectives, planning of experimental processes and procedures, collection and evaluation of experimental data, and analysis of experimental results. Reports of experimental investigation, including descriptions of study objectives, procedures and methods, analysis methods, results, and conclusions.

MAE 402L *Mechanical Engineering Laboratory II*
Design of experiments. Multiple experimental projects focused on analysis of materials and materials processing, thermal systems, and/or mechanical systems.

MAE 491 *Solar Energy Utilization*
An introduction to the fundamental concepts involved in solar energy conversion. The implementation and design of solar energy systems will be explored. This class will help pull together and expand concepts introduced in EGR 235 (Thermodynamics) and MAE 430 Heat Transfer.

Course taught at Georgia Institute of Technology
CE 4100 *Introduction to Environmental Engineering*

Course taught at University of Illinois - Urbana
ENG 199 *Introduction to Engineering*

Graduate research supervision
M.S. thesis committee member for Mitzi E. Brett, 2015
Environmental Engineering, Mercer University
Thesis Title: *"Field Study Representing the Potential of Water Quality Testing to Predict Corrosion in Boreholes in Northern Uganda"*

M.S. thesis committee member for Katherine Safford, 2014
Environmental Engineering, Mercer University
Thesis Title: *"The Development of a Dual-Media Biological Sand Filter with Added Component of Activated Carbon for Use in Vietnam"*

M.S. thesis committee member for Kristen Wyckoff, 2013
Environmental Engineering, Mercer University
Thesis Title: *"The Development of a Point-of-Use Biological Sand Filter with an Added Activated Carbon Layer for Applications in the Mekong Delta"*

M.S. thesis committee member for Jason Ryans, 2012
Biomedical Engineering, Mercer University
Thesis Title: *"The Experimental and Computational Investigation of Particle Deposition in a Realistic Human Lung Airway Model"*

M.S. project advisor for Hunter King, 2011
Environmental Engineering, Mercer University
Project Title: *"Malawi Solar Water Pump System"*

M.S. thesis committee member for Melissa K. Antoine, 2002
Environmental Engineering, Georgia Institute of Technology
Thesis Title: *"Transport Characteristics and Regional Source Assessment of $PM_{2.5}$ in Atlanta: Cluster Analysis and Potential Source Contribution Function Analysis"*

Undergraduate research supervision
Rebecca Etter and Timothy Hood, Summer 2017 – Summer 2018
Project Title: *"Development of a Low-cost Indoor Air Quality Measurement Device for International Applications"*

Aaron Odom, Fall 2015 – Spring 2016
Project Title: "*An Investigation and Statistical Analysis of the Relationships between Raw Feed Materials and Total Hydrocarbon Emissions in Cement Factories*"

Gabriel Ramirez and Andrew Kelley, Fall 2015 – Spring 2016
Project Title: *"Air Quality and Asthma Trends in Macon, GA, 2009-2013"*

Kerry Hicks, Fall 2011
Project Title: *"Ambient Ozone in Georgia: Implications of a Stricter 8-hr Standard, 2008-2011"*

Bradley Handziuk, Fall 2009
Project Title: *"Temporal and Spatial Trends in $PM_{2.5}$ Mass Measurements in Atlanta and Macon, Georgia, 2003 - 2010"*

Bradley Handziuk, Fall 2008
Project Title: *"Ozone Concentrations in Metropolitan Atlanta and Central Georgia, 2002-2008"*

Vivyan O. Frank and Jennifer L. Sheppard, Fall 2005
Project Title: *"Passive Ozone Sampling Beyond the Peak Photochemically-Active Months: Relationships and Comparisons to Continuous Methods"*

Sherri Radney and Ayana Pusha, Spring 2004
Project Title: *"A Data Acquisition Program for the Collection and Statistical Analysis of Ozone Data"*

Charley Johnson, Subash Patel, Oskar Modin, and Devin Adkins, Spring 2003
Project Title: *"Design of an Instrument to Collect $PM_{2.5}$ Organic Carbon Samples"*

Cheryl Rae Horn, Fall 2002
Project Title: *"$PM_{2.5}$ Organic Carbon in Atlanta: Measurements and Statistical Relationships to EPA PAMS Data*" (Poster awarded 3rd Place Prize in Student Poster Competition at the 2003 A&WMA National Convention in San Diego, CA)

Shamekia McGriff, Summer 2001
Project Title: *"Statistical Modeling of $PM_{2.5}$ Mass in Atlanta: Results from the First Two Years of the ASACA Study*"

Technical Competence and Currency:

Honors and awards
Office of Minority Education PhD Tower Award, Georgia Institute of Technology, 2000
Sloan Scholar, Georgia Institute of Technology, 1995-2000
GEM Fellow, Carnegie Mellon University, 1993-1995
SROP Research Scholar, University of Illinois – Urbana, 1990
Chancellor's Scholar (Campus Honors Program), University of Illinois – Urbana, 1988-1992

Academic consulting
Armistead G. Russell, Helena Park, Herman Holm, and Melissa Antoine
Georgia Institute of Technology (2000-2004)
$PM_{2.5}$ air monitoring equipment and sample analyses

Government consulting
Douglas Jager and Richard Guillot (2000-2008)
U.S. Environmental Protection Agency, Region 4
$PM_{2.5}$ speciation analyses and temporal and spatial ozone distribution

Professional licensure
Engineer in Training, Georgia, License No. EIT022229, 2005

Scholarship:

Funded research

"Development of a low-cost indoor air quality measurement device for international applications," AJ Butler (PI), Anthony Choi and Michael MacCarthy (Co-Principal Investigators), Mercer University Quality Enhancement Plan, Spring 2017, $12,750.

"Implementation of Inductively Coupled Plasma Optical Emission Spectroscopy into Chemistry, Environmental Engineering and Environmental Science Curricula," Arthur Salido (PI), André Butler, and Ajaz Karim (Co-Principal Investigators), National Science Foundation Award No. 0410461, August 2004, $37,495.

Book chapter

Chapter 1, *"Introduction to Environmental Engineering and Problem Solving,"* in Environmental Engineering: Principles and Practice, Richard O. Mines, Jr., Wiley-Blackwell, ISBN 978-1-118-80145-1, April 2014.

Publications in refereed technical journals

Mines, R.O., Callier, M.C., Drabek, B.J., and Butler, A.J. "Comparison of oxygen transfer parameters and oxygen demands in bioreactors operated at low and high dissolved oxygen levels." *Journal of Environmental Science and Health*, Part A, 52:4,341-349, DOI: 10.1080/10934529.2016.1258871, 2017.

Butler, A.J., Andrew, M.S., and Russell, A.G. "Daily sampling of $PM_{2.5}$ in Atlanta: Results from the first year of the ASACA study." *Journal of Geophysical Research*, 108(D7), 8415, doi: 10.1029/2002JD002234, 2003.

Solomon, P.A., W. Chameides, R.W. Weber, A. Middlebrook, C.S. Kiang, A.G. Russell, A. Butler, B. Turpin, D. Mikel, R. Scheffe, E. Cowling, E. Edgerton, J. St. John, J. Jansen, P. McMurry, S. Hering, and T. Bahadori. "Overview of the 1999 Atlanta Supersites Project." *Journal of Geophysical Research*, 108(D7), 8413, doi:10.1029/2001JD001458, 2003.

Tolbert, P., Mulholland, J., MacIntosh, D., Xu, F., Daniels, D., Devine, O., Carlin, B., Klein, M., Dorley, J., Butler A., Nordenberg, D., Frumkin, H., Ryan, P.B., and White, M. "Air pollution and pediatric emergency room visits for asthma in Atlanta." *Am. Journal of Epi*, 151, 798-810, 2000.

Mulholland, J.A., Butler, A.J., Wilkinson, J.G., Russell, A.G., and Tolbert, P.E. "Temporal and Spatial Distributions of Ozone in Atlanta: Regulatory and Epidemiologic Implications." *Journal of the Air and Waste Management Association*, 5, 418-426, 1998.

Publications in refereed conference proceedings

Butler, A.J., Moses, W., and Hill, S., "Revising Mechanical Engineering Laboratories for Improved Student Outcomes." Proceedings of the American Society for Engineering Education, National Convention and Exposition, Seattle, WA, 2015.

King, H. and Butler, A.J., "Malawi Solar Powered Water Pump System." Proceedings of the American Society for Engineering Education Southeast Section Conference, Blacksburg, VA, 2010.

Butler, A.J. and Handziuk, B., “Temporal and Spatial Trends in Continuous $PM_{2.5}$ Mass Measurements in Atlanta and Macon, GA, 2003-2010.” Proceedings of the Air and Waste Management Association National Convention, Calgary, AB, Canada, 2010.

Butler, A.J. and Handziuk, B., “Ozone Concentrations in Central Georgia and Metro Atlanta, 2002-2008.” Proceedings of the Air and Waste Management Association National Convention, Detroit, MI, 2009.

Butler, A.J. and Moses, W.M., “Methods of Assessment to Examine Experimental Design in Mechanical Engineering Laboratories.” Proceedings of the American Society for Engineering Education, National Convention and Exposition, Austin, TX, 2009.

Butler, A.J., Schultz, S.R., and Sumner, L.B.S., “Revising Faculty Performance Evaluations: Not for the Faint of Heart.” Proceedings of the 2009 ASEE Southeast Section Conference, Atlanta, GA, 2009.

Butler, A.J., Frank, V.O., and Sheppard, J.L., "Passive Ozone Sampling Beyond the Peak Photochemically-Active Months: Statistical Relationships and Comparisons to Continuous Methods." Proceedings of the Air and Waste Management Association National Convention, New Orleans, LA, 2006.

Butler, A.J. and Hicks, P., "Student Diversity at the Mercer University School of Engineering." Proceedings of the American Society for Engineering Education, National Convention and Exposition, Chicago, IL, 2006.

Mines, R.O., Lackey, L.W., and Butler, A.J., "Bench-Scale Digestion Studies." Proceedings of the American Society of Civil Engineers, World Environmental and Water Resources Congress, Omaha, NE, 2006.

Butler, A.J. and Moses, W.M., "Introducing Experimental Design in Mechanical Engineering Laboratories." Proceedings of the American Society for Engineering Education, National Convention and Exposition, Portland, OR, 2005.

Butler, A.J., "Engineering Research with Undergraduate Students: Success stories and pitfalls." Proceedings of the ASEE SE Section Conference, Auburn, AL, 2004.

Horn, C.R. and Butler, A.J**.,** "$PM_{2.5}$ Organic Carbon in Atlanta: Measurements and Statistical Relationships to EPA PAMS Data." Proceedings of the Air and Waste Management Association National Convention, San Diego, CA, 2003.

Butler, A.J., Andrew, M.S., and Russell, A.G., "Principal Components Analysis to Determine $PM_{2.5}$ Source Contributions in Atlanta: Results from the First Year of the ASACA Study." Proceedings of the Air and Waste Management Association National Convention, Baltimore, MD, 2002.

Butler, A.J., McGriff, S., Andrew, M.S., and Russell, A.G., "Statistical Modeling of $PM_{2.5}$ Mass in Atlanta: Results from the First Two Years of the ASACA Study." Proceedings of the Air and Waste Management Association National Convention, Baltimore, MD, 2002.

Lackey, L.W., Mines, R.O., McCreanor, P.T., and Butler, A.J., "Retooling the Environmental Engineering Laboratory Capstone Experience for ABET 2000." Proceedings of the American Society for Engineering Education Annual Conference & Exposition, 2002.

Butler, A.J., Andrew, M.S., Holm, H., Parkmond, W., Russell, A.G., Hartsell, B., and Edgerton, E., "Temporal and Spatial Assessment of $PM_{2.5}$ Mass and Composition in Atlanta During the 1999 Supersite Study." Proceedings of the Air and Waste Management Association National Convention, Salt Lake City, UT, 2000.

Butler, A.J., Mulholland, J.A., and Russell, A.G., "Spatial Analysis of Ozone in Atlanta." Proceedings of the Air and Waste Management Association National Convention, San Diego, CA, 1998.

Presentations at conferences and symposia

Butler, A.J., "Outdoor Air Quality in Georgia, Indoor Air Quality in the Developing World." Science Café Symposium, Barnesville, GA, June 2017.

Butler, A.J. and Handziuk, B., "Temporal and Spatial Trends in Continuous $PM_{2.5}$ Mass Measurements in Atlanta and Macon, GA, 2003-2010." Air and Waste Management Assoc. National Convention, Calgary, AB, Canada, 2010.

Butler, A.J. and Handziuk, B., "Ozone Concentrations in Central Georgia and Metro Atlanta, 2002-2008." Air and Waste Management Assoc. National Convention, Detroit, MI, 2009.

Butler, A.J. and Moses, W.M., "Methods of Assessment to Examine Experimental Design in Mechanical Engineering Laboratories." American Society for Engineering Education, National Convention and Exposition, Austin, TX, 2009.

Butler, A.J., Frank, V.O., and Sheppard, J.L., "Passive Ozone Sampling Beyond the Peak Photochemically-Active Months: Statistical Relationships and Comparisons to Continuous Methods." Air and Waste Management Assoc. National Convention, New Orleans, LA, 2006.

Butler, A.J. and Hicks, P., "Student Diversity at the Mercer University School of Engineering." American Society for Engineering Ed., National Convention and Exposition, Chicago, IL, 2006.

Butler, A.J. and Moses, W.M., "Introducing Experimental Design in Mechanical Engineering Laboratories." American Society for Engineering Ed., National Convention and Exposition, Portland, OR, 2005.

Butler, A.J., "Engineering Research with Undergraduate Students: Success stories and pitfalls." American Society for Engineering Ed. SE Section Conference, Auburn, AL, 2004.

Horn, C.R. and Butler, A.J**.,** "$PM_{2.5}$ Organic Carbon in Atlanta: Measurements and Statistical Relationships to EPA PAMS Data." Air and Waste Management Assoc. National Convention, San Diego, CA, 2003.

Butler, A.J., Andrew, M.S., and Russell, A.G., "Principal Components Analysis to Determine $PM_{2.5}$ Source Contributions in Atlanta: Results from the First Year of the ASACA Study." Air and Waste Management Assoc. National Convention, Baltimore, MD, 2002.

Butler, A.J., McGriff, S., Andrew, M.S., and Russell, A.G., "Statistical Modeling of $PM_{2.5}$ Mass in Atlanta: Results from the First Two Years of the ASACA Study." Air and Waste Management Association National Convention, Baltimore, MD, 2002.

Butler, A.J., Andrew, M.S., Holm, H., Parkmond, W., Russell, A.G., Hartsell, B., and Edgerton, E., "Temporal and Spatial Assessment of $PM_{2.5}$ Mass and Composition in Atlanta During the 1999 Supersite Study." Air and Waste Mgmt Assoc. National Convention, Salt Lake City, UT, 2000.

Butler, A.J. "$PM_{2.5}$ Speciation: Preliminary Results in Atlanta." USEPA Region 4 Air Monitoring Workshop, Athens, GA, May, 2000.

Butler, A.J., Mulholland, J.A., and Russell, A.G., "Spatial Analysis of Ozone in Atlanta." Air and Waste Management Association National Convention, San Diego, CA, 1998.

Butler, A.J., Mulholland, J.A., Wilkinson, J.G., "An Application of Kriging in Ambient Ozone Analysis." The Quadrangle Conference, Clemson, SC, February, 1997.

Service:

Service to Professional Societies

- Secretary, ASEE Southeast Section Bioengineering Division, 2004-2005
- Reviewed applications for ASEE Southeast Section Outstanding Teacher Award, 2002

Service to Mercer University

- Member, Mercer University Civil Engineering Advisory Group, 2017
- Member, Mercer University Upward Bound Advisory Board, 2001-present
- Member, Mercer University Minority Student Success Committee, 2006-present
- Instructor (paid), Student Support Services, Opportunity Scholars Program, 2002, 2005-2016
- Member, Search Committee for the Director of Rec. Sports and Wellness, 2004, 2014
- Faculty co-lead, Mercer on Mission Malawi, 2011
- Participant, Focus group investigating students' perceptions of diversity on campus, 2006-2007
- Mathematics instructor (paid), Mercer University Upward Bound Program, 2002 and 2003
- Member, Mercer University Commitment to Equity Subcommittee for the NCAA certification of Mercer's Athletics Program, 2002-2003
- Mentor, University Commons Undergraduate Mentoring Program, 2002
- Participant, Minority Professionals Student Connection Program, 2002
- Participant, "Mercer Madness" Faculty/Staff Basketball Game, 2000-2002

Service to the Mercer University School of Engineering (MUSE)

- School of Engineering representative to the Mercer University Undergraduate Curriculum Committee, 2016-2017
- School of Engineering representative to the Mercer University Graduate Curriculum Committee, 2016-2017
- Chair, Civil Engineering Faculty Search Committee, 2016-2017
- Chair, Environmental Engineering Faculty Search Committee, 2013-2014
- Advisor, Mercer Univ. Chapter of the National Society of Black Engineers (NSBE), 2001-2013
- Member, Mercer Univ. School of Engineering Faculty Performance Review Committee, 2009
- Member, Search Committee for the Dean of the School of Engineering, 2008
- Member, Mercer University School of Engineering Ten Year Goals Task Force, 2007
- Mercer University School of Engineering Representative to the Mercer House of Delegates, 2004-2005