

## **Mark W. Fitch, Ph.D., E.I.T.**

Associate Professor of Civil, Architectural and Environmental Engineering  
Missouri University of Science and Technology, Rolla, MO 65409  
[mfitch@mst.edu](mailto:mfitch@mst.edu); Office: 573-341-4431 Fax: 573-341-4729

### **Education:**

Doctor of Philosophy in Chemical Engineering (3/96), The University of Texas at Austin.  
B.S. with Honors in Chemical Engineering (12/89), The University of Texas at Austin.

### **Academic Experience:**

Associate Professor, Missouri University of Science and Technology (formerly University of Missouri-Rolla) (9/02 – present)  
Research focus on bioremediation. Pursuits include: metals and radionuclide transport and immobilization in mine-impacted water, soils and sediments; degradation of volatile organic compounds from air streams using membrane bioreactors; and biochemical reactors/constructed wetlands for metals removal.  
Assistant Chair for Environmental Engineering, Missouri S & T (8/08 – present)  
Acting Chair, Department of Civil, Architectural and Environmental Engin., Missouri S&T (6/14 – 9/14)  
Visiting Scholar, University of Colorado Boulder (9/11 – 12/11)  
Visiting Associate Professor, University of Illinois Urbana Champaign (9/03 – 5/04)  
Assistant Professor, University of Missouri-Rolla (3/96 – 8/02)

### **Professional Experience:**

Environmental Scientist (RPM), USEPA, Kansas City, MO (1/12 – 6/12)  
Expert assistance for engineers and remedial project managers on the design and operation of biochemical reactors for the treatment of mine drainage and assessment of remedial options for mine-impacted sites  
Visiting Faculty, Engineers Without Borders-USA (9/11-12/11)  
Authored a faculty advisors guide for EWB.  
Occasional consulting, various firms, topics such as:  
Source of nutrients affecting a water body; design of constructed wetland to reduce toxicity of metal smelter wastewater; and analysis of radionuclide source and magnitude.  
Senior Environmental Engineer T.I., Burns & McDonnell, St. Louis, MO (5/98 – 8/98)  
Design and review of industrial wastewater treatment facilities, municipal wastewater facilities, and lift stations.

### **Student Research Supervision:**

Current: 0 Ph.D., 4 M.S.  
Past: 5 Ph.D., 9 M.S. (Thesis), 1 M.S. (ABT), 13 M.S. (Non-thesis), 38 Undergraduate

### **Honors:**

*Awards:* Missouri S&T Faculty Service Award, 2015; Outstanding Student Advocate Award (awarded by Student Council), 2015; Joseph H. Senne, Jr. – Academy of Civil Engineers Faculty Achievement Award, 2014; Honorary Knight of St. Patrick, 2013; Air & Waste Management Association, Best Reviewer Award, 2013; Engineers Without Borders – Missouri S&T, Award of Appreciation, 2010; Association of Environmental Engineering and Science Professors Distinguished Service Award, 2007; Order of Omega Advisor of the Year, 2005  
*Societies:* Tau Beta Pi, 1988; Omega Chi Epsilon, 1989; Chi Epsilon, 2006

### **Grants:**

P.I. or co-P.I. on \$1,040,000 in total research grants (Fitch only, total \$3,920,000 for all PI's & co-P.I.s).  
Grants to Engineers Without Borders chapter total \$20,000.

## **Publications (2 book chapters, 28 peer-reviewed articles):**

- Fitch, M. (2015) "Biochemical reactors for the removal of metals from mine-impacted water", Chapter 13 in Food, Energy, and Water, 1st Edition, The Chemistry Connection, Satinder Ahuja (Ed.), Elsevier, Burlington, MA, USA, ISBN: 978-0-12-800211-7
- Fitch, M. (2013) "Constructed Wetlands", Chapter 53 in Comprehensive Water Quality and Purification, Satinder Ahuja (Ed.), Elsevier, Burlington, MA, USA, ISBN: 978-0-12-382182-9
- Dotro, G., Fitch, M., Larsen, D., and P. Palazolo (2012) "Treatment of Chromium-Bearing Wastewaters from Tannery Operations with Constructed Wetlands" *J. Hazardous Materials*, 239-240: 142-51.
- Liu, G., Canter, T., Wang, D., Wang, J., Fitch, M. and J. Burken (2012) "Baffled Bioreactor for Municipal Wastewater Treatment" *J. Environ. Engin.* 138(3) 239-247.
- Hosoglu, F., and M. Fitch (2012) "Abatement of Synthetic Landfill Gas Including Limonene by Biotrickling Filter and Membrane Biofiltration" *Journal of Environmental Science and Health, Part A*, 47(7), 1065-72.
- Canter, T., Burken, J.G., Wang, J., Fitch, M.W., Kinnevan, K., Wedge, K., and R. Tucker, (2011) "The Environment of Warfare", *J. Environ. Engin.* 137(7), 525-531.
- Kumar, A., Ergas, S.J., Yuan, X., Fitch, M., Min, K.-N., Dewulf, J., and H. Van Langenhove (2010). "Modeling of a hollow fiber membrane biofilm reactor for nitric oxide removal: Model development and experimental validation" *J. Chem. Technol. Biotechnol.*, 85 (3) 423-428.
- Paca, J., Halecký, M., and M. Fitch, (2009) "Steady-State Performance of an Activated Carbon Biofilter Degrading Styrene: Effects of Residence Time and Inlet Concentration" *J. Air Waste Management Assoc.*, 59, 45-51.
- Fitch, M., Liu, Y., Regmi S, Morrison, G., and R. Surampalli, (2007) "Hog Farm Odor Control: Hog Farm Odor Control: Effectiveness of Three Low-Cost Technologies for Barns" *J. Air Waste Management Assoc.*, 57, 761-768.
- Padmasiri, S. I., Zhang, J., Fitch, M., Norddahl, B., Morgenroth, E., and L. Raskin, (2007) "Methanogenic population dynamics in an anaerobic membrane bioreactor (AnMBR) treating swine manure", *Water Research*, 41(1), 134-144.
- Klapková, E., Halecký, M., Fitch, M., Riccardo Soccol, C., and J. Paca, (2006) "Impact of Biocatalyst and Moisture Content on Toluene/Xylene Mixture Biofiltration" *Brazilian Archives of Biology and Technology*, 49(2), 347-352.
- Zhang, J., Padmasiri, S. I., Fitch, M., Norddahl, B., Raskin, L., and E. Morgenroth, (2007) "Influence of cleaning frequency and membrane history on fouling in an anaerobic membrane bioreactor", *Desalination*, 207, 153-166, DOI: 10.1016/j.desal.2006.07.009.
- Gilbertson, A.W., Fitch, M.W., Burken, J.G., and T.K. Wood, (2007) "Transport and survival of GFP-tagged root-colonizing microbes: potential for enhanced rhizodegradation", accepted to *European Journal of Soil Biology* 43, 224-234.
- England, E., Roberts, M., Fitch, M.W., and M. Mormile, (2005) "Toluene Removal in Membrane Bioreactors Under Recirculating and Non-Recirculating Liquid Conditions", *Clean Technologies and Environmental Policy*, Nov 2005, Pages 1 - 11.
- Fitch, M.W. (2005) "Membrane Bioreactor Technology", Chapter 9 in Biotechnology for Odor and Air Pollution Control, Shareefdeen/Singh (Eds.) ISBN 3-540-23312-1, Springer-Verlag, Berlin, 195-211.
- Fitch, M.W., Neemann, J., and E. England, (2003) "Mass Transfer and Benzene Removal from Air Using a Latex Rubber and Hollow Fiber Membrane Module", *Appl. Biochem. Biotechnol.* 104: 199-214.
- Fitch, M.W., England, E., and B. Zhang, (2002) "n-Butanol Removal from a Contaminated Air Stream Under Continuous and Diurnal Loading Conditions", *J. Air Waste Man. Assoc.* 52: 174-183.
- Fitch, M.W., and E. England, (2002) "Biological Treatment Systems", *Water Environ. Res.*, 74, CD-ROM edition.
- Fitch, M.W., and E. England (2002) "Radionuclide Leaching from Residual Soils: A Screening Study", *ASCE Practice Periodical of Hazardous, Toxic, and Radioactive Waste Management*, 6 (3), 184-189.
- Fitch, M.W., and E. England, (2001) "Biological Treatment Systems", *Water Environ. Res.*, 73 (5) CD-ROM edition.
- Song, Y., Fitch, M., Burken, J., Nass, L., Chilukuri, S., Gale, N., and C. Ross, (2001) "Lead and Zinc Removal by Lab-Scale Constructed Wetlands", *Water Environ. Res.*, 73 (1), 37-44.
- Fitch, M.W., Lam, A.C., and R.L. Segar, (2000) "Biological Treatment Systems", *Water Environ. Res.*, 72 (5).
- Fitch, M.W., Murphy, J.B., and S.S. Sowell, (1999) "Biological Treatment Systems", *Water Environ. Res.*, 71 (5), 638-656.
- Ergas, S.J., L. Shumway, M.W. Fitch, J., and J. Neemann, (1999) "Membrane Process for Biological Treatment of Contaminated Gas Streams," *Biotechnology and Bioengineering*, 63 (4), 431-441.

- Fitch, M.W., N. Pearson, G. Richards, and J.G. Burken, (1998) "Biological Treatment Systems", *Water Environ. Res.*, 70 (4), 495-518.
- Fitch, M.W., D. Weissman, G. Georgiou, P. Phelps, and G.E. Speitel Jr., (1996) "Trichloroethylene Degradation by *Methylosinus trichosporium* OB3b Mutants in a Sequencing Biofilm Reactor," *Water Research*, 30(11): 2644-2655.
- Fitch, M.W., G.E. Speitel Jr., and G. Georgiou, (1996) "Trichloroethylene Degradation by Methanol Grown Cultures of *Methylosinus trichosporium* OB3b PP358," *Appl. Environ. Microbiol.*, 62(3): 1124-1128.
- Aziz, C.E., M.W. Fitch, L.K. Linqvist, J.G. Pressman, G. Georgiou, and G.E. Speitel Jr., (1995) "Methanotrophic Biodegradation of Trichloroethylene in a Hollow Fiber Membrane Bioreactor," *Environ. Sci. Technol.*, 29(10): 2574-2583.
- Fitch, M.W., D.W. Graham, R.G. Arnold, S.K. Agarwal, P. Phelps, G.E. Speitel Jr., and G. Georgiou, (1993) "Phenotypic Characterization of Copper-Resistant Mutants of *Methylosinus trichosporium* OB3b," *Appl. Environ. Microbiol.*, 59: 2771-2776.
- Fitch, M.W., W. Koros, R. Nolen, and J. Carnes, (1993) "Permeation of Several Gases through Elastomers, with Emphasis on the Deuterium/Hydrogen Pair," *J. Appl. Polymer Sci.*, 47: 1033-1046.

### Conference Papers & Presentations:

- Fitch, M. (2014) invited 'Distinguished International Speaker': "Biochemical reactors for the removal of metals from mine-impacted water" Second International Workshop on Sustainability and Water Quality (IWSWQ) *Remediation of Pesticides and Metals Contamination*, Hosted by Global Innovation Imperatives (Gii) Organized by The Energy and Resources Institute ([www.teriin.org/](http://www.teriin.org/)), Gautam Buddha University ([www.gbu.ac.in/](http://www.gbu.ac.in/)), and the Green Chemistry Network Centre, DU (<http://greenchem.du.ac.in/>), 15-18 January 2014.
- Selman, C., Niyogi, D.K., and M. Fitch (2010), "Dominant Processes that Affect the Nutrient Retention in Small Missouri-Ozarks Streams" Joint Meeting with the with the American Society of Limnology and Oceanography and the North American Benthological Society, Santa Fe, NM, Aquatic Sciences: Global Changes from the Center to the Edge, June 6-11, 2010.
- Fitch, M., and J. Schoenbacher (2009), "Performance of a Full-Scale Horizontal-Flow Wetland for Zinc", 2009 National Meeting of the American Society of Mining and Reclamation, Billings, MT Revitalizing the Environment: Proven Solutions and Innovative Approaches May 30 – June 5, 2009. R.I. Barnhisel (Ed.) Published by ASMR, 3134 Montavesta Rd., Lexington, KY 40502.
- Fitch, M., Burken, J., and C. Ye (2008), "Measured and Modeled Removal Mechanisms for Bench-Scale Constructed Wetlands Receiving Lead Mine Water", 2008 National Meeting of the American Society of Mining and Reclamation, Richmond VA, New Opportunities to Apply Our Science, June 14-19, 2008. R.I. Barnhisel (Ed.) Published by ASMR, 3134 Montavesta Rd., Lexington, KY 40502.
- Selman, C., Fitch, M., and D. Niyogi (2007), "Dominant Processes that Affect Nutrient Retention in Small Streams of the Missouri Ozarks", 2007 NABS Annual Meeting, Columbia, South Carolina, June 5 2007.
- Padmasiri, S., Tontcheva, P., Fitch, M., Pons, M.-N., Norddahl, B., Morgenroth, E., and L. Raskin (2006), "Influence of Shear on the Microbial Community in an Anaerobic Membrane Bioreactor (ANMBR) Treating High Strength Wastewater", International Society for Microbial Ecology (ISME-11) Conference, Vienna, Austria, August 20-25 2006.
- Padmasiri, S., Zhang, J., Fitch, M., Morgenroth, E., and L. Raskin (2005), "Microbial Community Characterization during Startup of an Anaerobic Membrane Bioreactor (AnMBR) Treating Swine Waste", 105<sup>th</sup> general meeting of the American Society for Microbiology, Atlanta, GA, 8 June 2005.
- Padmasiri, S., Zhang, J., Fitch, M., Norddhal, B., Morgenroth, E., and L. Raskin (2005), "Anaerobic Membrane Bioreactor (AnMBR) Treating Swine Manure: Microbial Community Structure and Overall Process Performance", 78th Annual conference of the Water Environment Federation (WEFTEC), Washington DC, November 1, 2005.
- Fitch, M., Morrison, G. and Y. Liu (2005), "Full-scale simultaneous evaluation of odor treatment technologies for CAFOs", A&WMA's 98th Annual Conference and Exhibition, Minneapolis, MN, June 21-24 2005.
- Mihalcik, P. and M. Fitch, "Fate of Transgenic Corn DNA in Soil", in Lyon, W.G., Hong, J.J., Reddy, R.K., eds. *Proceedings of Environmental Science and Technology*, Vol. (I), American Science Press, New Orleans, 2005.
- Ye, C., Fitch, M., and J. Burken, "Release of Lead and Zinc from Disturbed Wetlands", in Lyon, W.G., Hong, J.J., Reddy, R.K., eds. *Proceedings of Environmental Science and Technology*, Vol. (I), American Science Press, New Orleans, 2005.

- Zhang, A., Padmasiri, S., Fitch, M., Raskin, L., and E. Morgenroth (2004), "Membrane Fouling in Anaerobic Membrane Bioreactor (AnMBR) Treating Swine Manure", WEFTEC, New Orleans, LA, 4 October 2004.
- Padmasiri, S., Zhang, A., Fitch, M., Norddhal, B., Morgenroth, E., and L. Raskin (2004), "Startup of Anaerobic Membrane Bioreactor (AnMBR) Treating Swine Manure", Anaerobic Digestion 10<sup>th</sup> World Congress, Montreal, Canada, 8/29 – 9/2/2004, 148-154.
- Fitch, M., (2003), "Offering Teaching Engineering", presented to the Thirteenth Annual Teaching Renewal Conference, Columbia, MO, 1 March 2003.
- England, E., and M. Fitch, (2002), "Heat Transfer and Toluene Removal in Bench-Scale Membrane Reactors", Paper #42969 in Proceedings of the Air & Waste Management Association's 95<sup>th</sup> Annual Conference & Exhibition, June 23-27, 2002 (Baltimore, MD, 2002).
- Fitch, M.W., Burken, J., Song, Y., Ross, C., and A. Feeler, (2002), "Fate of Lead and Zinc in Constructed Wetlands", presented to University College Dublin Department of Botany, Dublin, Ireland, 15 October 2002.
- Fitch, M.W. (2002), "Teaching Engineering", presented to University College Dublin Department of Chemical Engineering, Dublin, Ireland, 16 October 2002.
- Fitch, M.W., Mihalcik, P.K., and O.V. Singh, (2002), "Fate of Transgenes: DNA Extraction from Soils", presented to the University of Missouri and Monsanto Protein Technologies Research Symposium on Plant-Made Pharmaceuticals, Columbia, MO, 22 October 2002.
- Ye, C., and M.W. Fitch, (2002), "Fate of Transgenes: IgG Extraction from Soils", presented to the University of Missouri and Monsanto Protein Technologies Research Symposium on Plant-Made Pharmaceuticals, Columbia, MO, 22 October 2002.
- Gilbertson, A.W., Burken, J.G., and M.W. Fitch, (2002), "Fluorescent, Root-Colonizing Recombinant Bacteria to Enhance the Rhizosphere Degradation of TCE", In Situ and On-Site Bioremediation: Papers from the Fourth International In Situ and On-Site Bioremediation Symposium (Monterrey, CA, 2002), Battelle Press., paper 2B-25
- Gilbertson, A.W., Burken, J.G., and M.W. Fitch, (2001), "Recombinant *gfp*-tagged Root-Colonizing Microbes: Implications on Phytoremediation", in Phytoremediation, Wetlands, and Sediments, Proceedings from the 6<sup>th</sup> International In Situ and On-Site Bioremediation Symposium, Leeson, A., Foote, A.A., Banks, M.K., and V.S. Magar, Eds., pp. 199 – 205.
- Fitch, M.W., Sauer, S., and B. Zhang, "Membrane Biofilters: Material Choices and Diurnal Loading" 2000 USC-TRG Conference on Biofiltration (Los Angeles, CA, October 19 – 20, 2000), The Reynolds Group, 83-90.
- Fitch, M.W., Gillman, A., "Environmental Management Systems", 18<sup>th</sup> Annual College and University Hazardous Waste Conference, Louisville, KY, 15 August 2000.
- Fitch, M.W., "Lead Mine Effluent Treatment by Constructed Wetlands", Environmental and Pipeline Engineering 2000: Proceedings of the Convergence 2000 Environmental Engineering and Pipeline Engineering Conference (Kansas City, MO, July 24 – 26, 2000), American Society of Civil Engineers, 1 – 8.
- Burken, J.G., Adams, C.A., and Fitch, M.W., "Military on Campus: A Joint UMR-Army Program Providing Non-Traditional Master's Degrees", presented to the 2000 ASEE Annual Conference & Exposition, St. Louis, MO, 21 June 2000.
- Fitch, M.W., Burken, J., Song, Y., Nass, L., Chilukuri, S., and N. Gale, "Lead and Zinc Removal by Lab-Scale Constructed Wetlands", presented to Conference on Hazardous Waste Research, St. Louis, MO, 25 May 1999.
- Fitch, M.W., J. Burken, Y. Song, S. Chilukuri, L. Nass, and N. Gale, "Constructed Wetland Treatment of Alkaline Mine Effluent", presented to Biotechnology Department, Idaho National Environmental and Engineering Laboratory, June 1999
- Ergas, S. J., L. Shumway, M.W. Fitch, and J. Neemann, "Membrane Process for Biological Treatment of Contaminated Airstreams", Proceedings of the 91st Annual Meeting of the Air & Waste Management Association, San Diego CA, June 1998.
- Fitch, M.W., "Student Chapter Update", presented to Joint Annual Meeting and Midwest Microbiology Educators Conference, Kansas City, MO, 27 March 1998.
- Fitch, M.W., K. Kathinokkula, and J. Kvetensky, "Site Conditions and Intrinsic Methanotrophic Cometabolism of Chlorinated Solvents", In Situ and On-Site Bioremediation: Volume 3: Papers from the Fourth International In Situ and On-Site Bioremediation Symposium (New Orleans, LA, April 28-May 1 1997), Battelle Press, 113.
- Fitch, M.W., Kathinokkula, K., and Kvetensky, J., "Use of Methanotrophs for In-Situ Bioremediation of Chlorinated Solvents", presented to Missouri Water Environment Association 68th Annual Meeting, Osage Beach, MO, March 1997.

Aziz, C.E., M.W. Fitch, J.G. Pressman, G. Georgiou, and G.E. Speitel Jr., "Hollow Fiber Membrane Bioreactor Treatment of Chlorinated Solvent-Contaminated Groundwater," Proceedings of Water Environment Federation Conference Dallas, TX, November 1996.

#### **Technical Reports and Other Non-refereed Publications/Presentations:**

- Fitch, M.W., "Shared Governance for Non-Tenure Track Faculty", Center for Educational Research and Teaching Innovation (CERTI) at Missouri University of Science & Technology, April 27, 2015.
- Fitch, M.W., and Burken, J.G., "Midwest Hazardous Substance Research Center Brief #1: Constructed Wetlands for Metals Removal", Midwest Hazardous Substance Research Center, Purdue, July 2003, 3 pp.
- Fitch, M.W., "Leaching of Radionuclides from St. Louis Airport Site Soils", United States Geological Survey and United States Environmental Protection Agency, April 15, 1999, 101pp.
- Fitch, M.W., and Wronkiewicz, D., " $K_d$  of Radionuclides and Chlorinated Solvents in Soils from the Combustion Engineering Site", Leggette, Brashears & Graham, February 19, 1999, 50 pp.
- Fitch, M.W., and Burken, J.G., "Metals Removal by Constructed Wetlands: Final Report to The Doe Run Company", The Doe Run Company, May 26, 1998, 12 pp.
- Fitch, M.W., and Neemann, J., "Phosphate Removal for Tracker Marine", Final Report, University of Missouri-Rolla, Rolla, MO, March 1997, 12 pp.

#### **Educational:**

Classes and averaged evaluation (typ. two courses per semester, 4.0 eval scale):

1. Sustainability (CE/EnvE/ArchE 365), mixed undergraduate and graduate, 3 semesters, 3.5
2. Introduction to Environmental Engineering (CE 261), undergraduate, 12 semesters, 3.1
3. Biological Fundamentals in Environ. Engineering (EnvE 262), undergraduate, 5 semesters, 3.2
4. Water and Wastewater Treatment (CE 265), undergraduate, 1 semester, 1.9
5. Environmental Analyses (CE 365), graduate, 3 semesters, 3.4
6. Water Resources Engineering (CE 380), graduate, 6 semesters, 2.8
7. Teaching Engineering (CE/EnvE/EE/CpE 382 & EMgt 372), graduate, 7 semesters, 4.0
8. Biological Principles in Environmental Engineering (CE/EnvE 461), graduate, 10 semesters 3.3
9. Biological Systems in Environmental Engineering (CE/EnvE 463), graduate, 12 semesters, 3.1

Co-coordinated successful ABET accreditation for B.S. Environmental Engineering, 2006 and 2015

Coordinated successful ABET re-accreditation for three B.S. degrees (Architectural, Civil, and Environmental Engineering), 2009 and 2015

ExCEED short course, 2005

Presented seminar series on Teaching Engineering, University of Illinois, Spring 2004

**Reviewer (current and past) for:** (Typically 1-2 grant reviews and 6-10 journal reviews each year)

USEPA (Technology Guidance)	<i>Environmental Engineering and Science</i>
National Science Foundation,	<i>Water Research,</i>
U.S. Department of State,	<i>Biodegradation,</i>
U.S. Department of Energy,	<i>Chemical Engineering Journal</i>
NASA, <i>Journal of Membrane Science,</i>	<i>Journal of Environmental Engineering,</i>
<i>Biotechnology &amp; Bioengineering,</i>	<i>Journal of Soil Contamination,</i>
<i>Environmental Science &amp; Technology,</i>	<i>Environmental Toxicology and Chemistry,</i>
University of Missouri Research Board,	<i>International Journal of Phytoremediation,</i>
International Association on Water Quality ( <i>Water Science &amp; Technology</i> ),	<i>ASCE Practice Periodical of Hazardous, Toxic, and Radioactive Waste Management,</i>
<i>Water Environment Research,</i>	<i>Chemosphere.</i>

**Significant Service:** Faculty Senate: President, 2013-2014, President-Elect, 2012-2013, Parliamentarian, 2010-2011, Past President 2014-2015 and 2016-2017, Departmental Representative, 2007 – present; Higher Learning Commission Accreditation Liaison Officer (HLC ALO), 2013- present; Intercampus Faculty Council, 2012 – 2015 and 2016-2017; Personnel Committee Chair, 2015-present; Sustainability minor committee, 2013-2015, 2016-2017; University Assessment (HLC) Committee, 2010-2011; Freshman Engineering Program Advisor, 2007-2010; PRO Advisor, 2009-2015; Tau Kappa Epsilon (Fraternity) Faculty Advisor, 2001 – present; Radiation Safety Committee, 1996-present, (Chair 1999-present); AEESP internet resources committee chair, 2000-2005; Graduate Faculty Secretary, 2009-2011, 2012-2013. Engineers Without Borders Chapter Advisor 2013-present.

**Graduate Advisors:**

Prof. George Georgiou and Prof. Gerald E. Speitel Jr.

**Affiliations:**

Association of Environmental Engineering and Science Professors, Engineers Without Borders