

Dr. Steven P. Frysinger

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Professional Interests

Environmental Decision Support and Information Systems, Environmental Systems Engineering, Industrial Ecology, EH&S Management, Interaction Design and Human/Computer Interfaces, Auditory Data Representation.

Education

- Ph.D. Environmental Sciences (Rutgers University) – *Environmental Decision Support Systems: An Interdisciplinary Approach for Risk-based Environmental Management*
- M.S. Applied Psychology/Human Factors (Stevens Institute of Technology) – *Pattern Recognition in Auditory Data Representation*
- M.S. Computer Science (Stevens Institute of Technology)
- B.A. Environmental Studies/Physics *cum laude* (William Paterson College)

Training, Certifications, and Awards

- The President's Volunteer Service Award (President Obama, 2013)
- Virginia Department of Criminal Justice Services Law Enforcement Certification (active)
- ISO 14000 Environmental Management System Lead Auditor training (ANSI RAB and EARA accredited)
- OSHA Hazardous Waste Operations and Emergency Response (HazWOpER) certification (40 hour)
- Department of Defense Top Secret Clearance (administratively deactivated)

Employment History

James Madison University: (1995-present)

Integrated Science and Technology Program. (1995-present)

Professor (2000-present, tenured 2004)

Associate Professor (1995-2000)

Teach environmental sciences, environmental management, industrial hygiene, and environmental decision support; advise students; direct student projects; supervise student theses; and develop the curriculum of the ISAT Environment sector and concentration. Member of the Graduate Faculty.

Assistant Department Head (2001-2004)

Served as advocate for faculty and staff members and supported operations of Academic Teams. Responsible for budget management, faculty development, strategic planning, academic outreach, and general departmental administration. Served as Director of the Geography Program.

Environment Group Coordinator (1995-2001)

Managed and administered the ISAT Environment Group. Responsible for budgeting, scheduling, and professional development support of six faculty members. Led the development and evolution of the ISAT Environment curriculum. Chaired the first ISAT Academic Program Review.

Environmental Information Systems Program. (2000-present)

Director

Proposed and developed an interdisciplinary minor in Environmental Information Systems, integrating courses from ISAT/Environment, Geography, and Computer Science. Administer the minor and advise participating students. Conduct study-abroad EIS courses in Europe.

Environmental Management Program (2003-present)

Director

Proposed and developed an interdisciplinary minor in Environmental Management, an applied environmental science program with concentrations in Natural Resources, Industrial Systems, and Environmental Policy. Administer the program and advise participating students.

Geographic Science Program (2001-2004)

Director

Oversaw and administered the Geographic Science program, including concentrations in Environmental Studies, Geographic Information Systems, and Global Studies. Supported the work of six full-time geographic science faculty and several part-time instructors and staff.

Computer Science Program (2001-present)

Professor

Teach undergraduate and graduate computer science courses; advise students.

Institute for Environment (2000-2010)

Chair

Coordinated activities of a university-wide association of faculty involved in environmental issues.

Hochschule für Technik und Wirtschaft Saar (Saarbrücken, Germany): (2003-present, part-time)

Faculty of Engineering Sciences.

Visiting Professor

Lecturer in Human Factors Engineering, Human-Computer Interaction, Environmental Decision Support Systems, and Industrial Ecology; Research collaborator on EU projects.

Université du Luxembourg (Luxembourg City, Luxembourg): (2010-present, part-time)

Department of Computer Science.

Visiting Professor

Lecturer in Interaction Design.

Chalmers University of Technology (Göteborg, Sweden): (2004-2006, part-time)

Departments of Computer Science and Industrial Environmental Informatics.

Visiting Professor

Supervisor of doctoral students in environmental information and decision support systems.

AT&T Environment, Health & Safety/Lucent Technology Services: (1996-2000, part-time)

Environmental Information Systems Engineering.

Principal Technical Staff Member (AT&T, 1997-2000)

Senior EH&S Specialist (LTS, 1996-1997)

Systems engineer in a group focusing on environmental management processes and information systems. Led effort to develop an Integrated Environmental Information System (IEIS) to provide high quality, cost effective data management to support AT&T-wide environment, health, and safety functions.

Bell Laboratories: (1982-1996)

Environmental Systems Engineering (1990-1996).

Member of Technical Staff

Systems engineering in support of AT&T Environment, Health and Safety's Environmental Information System efforts, including integration of environmental monitoring, tracking, and reporting with plant management systems. Architect of a family of environmental decision support systems developed for Sandia National Laboratories, integrating Geographic Information Systems, Monte Carlo simulation, linear programming optimization, and mathematical modeling of environmental processes.

Remote Sensing Systems Research and Development (1987-1990).

Member of Technical Staff

Served as lead interactive systems engineer for an advanced acoustic analysis decision support system group serving the US Navy. Specified user interfaces for remote sensing pattern recognition and image processing, designed human performance experiments to evaluate display effectiveness, and developed workstation systems for field evaluation. Chair of US Navy Task Force on Operator Commonality.

Naval Systems Engineering and Project Management (1982-1987).

Member of Technical Staff, Acting Supervisor

Specified requirements for a parallel-processing dataflow computer for ocean acoustic analysis. Worked closely with the US Navy customer to establish system requirements, and contributed extensively to technical project management. Specified Ada-based software engineering environment. Served as lead systems engineer and group manager developing the first application of this system.

Middlesex County College: (1985-1995, part-time)

Departments of Computer Science and Chemistry.

Adjunct Professor

Taught undergraduate evening courses in Computer Science and Environmental Science.

Exxon Research and Engineering Company (Corporate Research): (1979-1982)

Data Representation Research (1980-1982).

Research Technician

Conducted applied research relating to novel representations of multivariate time-series data to enhance human performance in complex data analysis and pattern recognition tasks associated with oil exploration. Developed and validated a dynamic auditory and visual data representation technique.

Battery and Solid State Physics Research (1979-1980).

Research Technician

Investigated the intercalation of ions into inter-layer spaces of layered compounds, using Faraday magnetometry and X-ray diffraction, with application to advanced batteries for electric vehicles.

U.S. Environmental Protection Agency (Industrial Environmental Research Laboratory): (1978)

Analytical Methods Research (Temporary position).

Physical Science Aide

Applied research related to oil and hazardous material spill analysis techniques, especially extraction methods and the use of fluorescence spectroscopy. Developed carbon adsorption pilot plant.

Selected Technical Activities and Affiliations

International Society for Environmental Information Sciences (ISEIS): Member (2012-present).
EM Magazine's Editorial Advisory Committee (Air and Waste Management Association): Member (2006-present).
Environmental Informatics Group: Associate (2002-present).
Environmental Informatics Institute: Member (2001-present).
International Federation for Information Processing WG5.11: Computers and Environment: Secretary (2005–2011), Vice Chair (2011-present).
International Society for Industrial Ecology (ISIE): Charter Member (2001-present).
Blue Ridge Safety Association: Liaison to the Board (2002-present).
Air and Waste Management Association (AWMA): Member & Student Chapter Advisor (1996-present).
ACM Special Interest Group for Computer-Human Interaction (SIGCHI): Member (2011-present).
International Symposium on Environmental Software Systems:
Program Committee (2014-19); Human Factors Co-chair (2007-present); Co-chair and host (2004).
Industrial Environmental Informatics Scientific Advisory Group, Chalmers University (Sweden): (2002-2007).
Virginia Department of Environmental Quality Science Advisory Committee: Member (2000-2003).
International Community for Auditory Display (ICAD): Chief Financial Officer, Director (1993-1996).
Environmental Computing and Information Technology '95: Co-Chair, Track & Session Chair (1995).

Selected Review Service

Peer Reviewer for the US EPA P3 student research grant program (2019).
Reviewer of Swiss National Science Foundation Proposal: *Development and test of a decision support system for energy portfolio choices among different stakeholders in Switzerland*, 2015-16.
Reviewer of Proposals for the 2014-2015 *Global Center for Food Systems Innovation Grants*, USAID via the U.S. Civilian Research and Development Foundation (CRDF).
Reviewer for the Air and Waste Management Association's *EM Magazine* (2006-present).
Referee for *International Symposium on Environmental Software Systems (ISESS)* (2001-present).
Reviewer for HICSS track, *Analytics, Information Systems And Decision Technologies For Sustainability* (2015).
Referee for the *International Environmental Modelling and Software Symposia (iEMSs)* 2006, 2008, and 2014.
Reviewer for the Modelling and Simulation Society of Australia and New Zealand (2011).
Referee for the *Journal of Environmental Modelling and Software* (2009, 2015).
Referee for the *Journal of Cleaner Production* (2008).
Review panelist for the *US EPA's Office of Research and Development Advanced Monitoring Initiative*. 2006.
Auditor for the *Competence Centre for Environmental Assessment of Product and Material Systems, CPM*, at Chalmers University of Technology (Göteborg, Sweden). 2000 and 2004.
Reviewer of Grant Proposals for the *U.S. State Department ISTC/STCU program* (for the states of the Former Soviet Union), via the U.S. Civilian Research and Development Foundation (CRDF).
Panelist for *NSF SBIR/STTR Phase 1 grant proposals: Information-Based Technologies Topic IT.D.2: Mathematics, Science, Engineering and Analysis Applications/Analytical Technologies*. 2001.
Reviewer of several *NSF SBIR/STTR Phase 2* grant proposals: Analytical Technologies.
Referee for the 2000 *International Council on Systems Engineering (INCOSE)* mid-Atlantic Regional Conference.
Referee for the 2000 conference on *Geographic Information Systems and Environmental Modeling*.
Referee for *International Conference on Auditory Display (ICAD)* 1996, 1997, 1998, 2000.

Other Experience

Harrisonburg Police Department (Virginia): *Auxiliary Police Officer* (2002-present); *Sergeant* (2008-present).
Volunteer law enforcement and emergency response. Operations Supervisor. Crime Scene Technician.
New Jersey Division of Fish, Game, and Wildlife: *Deputy Conservation Officer* (1991-1997).
Volunteer enforcement of fish, game, and wildlife laws.
Chester Township, Morris County, New Jersey:
Councilman, Township Council (1992-1995).
Elected to two terms. Police Commissioner. Liaison to Board of Health and County Agricultural Board.
Chair, Environmental Commission (1990-1995).
Monitored Superfund remediation, preservation of open space and water resources.
Member, Planning Board (1990-1992).
Promoted rational land use in an environmentally sensitive township.
Chair, Garbage and Recycling Committee (1989-1990).
Developed an innovative solid waste management program emulated by multiple municipalities.
Black River Watershed Association (BRWA): *Technical Advisor* (1994-1995).
Consultation on natural resource information management systems for ground and surface water management.
Association of New Jersey Environmental Commissions (ANJEC): *Trustee* (1990-1993).
Oversight of statewide non-profit organization supporting municipal Environmental Commissions.

Publications and Presentations

- Purification of Isopropanol for Fluorescence Analyses.
S. Frysinger, D. Remeta, and N. Pangaro. *EPA Newsletter - Quality Assurance, Vol. 1, No. 1*, April 1978.
- Interactions of m-Cresol with Plastic Tubing.
M. Boyer, S. Frysinger, M. Gruenfeld, and G. Fraser. *EPA Newsletter - Quality Assurance, Vol. 1, No. 2*, July 1978.
- The Direct Measurement of the Entropy of Intercalation in Li_xTiS_2 .
A. H. Thompson and S. P. Frysinger. Presented to the *American Physical Society*, March 24, 1980.
- A Versatile Data Processing and Plotting Software System for the Hewlett-Packard 9825 Desktop Computer and 9872 4-Pen Plotter.
S. P. Frysinger. Exxon Research and Engineering Company Report CR.2BL.80, July 1980.
- Static Magnetization and EPR Investigations of the Magnetic Properties of MoS_3 from 10 to 300K - An Interim Report.
D. C. Johnston, A. J. Jacobson, B. G. Silbernagel, S. P. Frysinger, S. M. Rich, L. A. Gebhard. Exxon Research and Engineering Company Report CR.15BT.80, September 1980.
- A Paradigm for the Human Processing of Multivariate Time Series Data.
J. J. Mezrich and S. Frysinger. Exxon Research and Engineering Company Report CR-9BL-81, January 12, 1982.
- Data Representation: Getting Information from the Numbers.
S. P. Frysinger. Invited presentation in T.B.A. Senior (Chair), *National Radio Science Meeting*, the conference of the International Union of Radio Science, January 1983.
- Dynamic Visual and Auditory Representation of Multivariate Time Series
S. P. Frysinger and J. J. Mezrich. In M. Lynch (Chair), *New Graphical Methods in Statistics - Special Session of the 1983 Conference of the National Computer Graphics Association*, June 1983.
- Dynamic Representation of Multivariate Time Series Data.
J. J. Mezrich, S. P. Frysinger, and R. Slivjanovski. *Journal of the American Statistical Association, Vol. 79, No. 385*, March 1984.
- Effective Interfaces for Visually Impaired Computer Users.
S. Bly, E. Foulke, S. P. Frysinger, D. Maure, and J. J. Mezrich. In D. Lunney, R. C. Morrison, and D. C. Sowell (Moderators), *Proceedings of the 1984 ACM Southeast Regional Conference*, April 1984.
- X-ray diffraction study of $\text{Na}_{1/3}(\text{H}_2\text{O})_{1.5}\text{TaS}_2$: Observation of a Hendricks-Teller disordered layer lattice.
D. C. Johnston and S. P. Frysinger. *Physical Review B, Vol. 30, No. 2*, July 1984.
- Magnetic susceptibility and electron spin resonance as probes of different magnetic species in MoS_3 .
D. C. Johnston, A. J. Jacobson, B. G. Silbernagel, S. P. Frysinger, S. M. Rich, L. A. Gebhard. *Journal of Catalysis, 89(2)*, pp. 244-249, 1984.
- Communication with Sound.
S. Bly, S. P. Frysinger, D. Lunney, D. L. Mansur, J. J. Mezrich, and R. C. Morrison. In *Proceedings of ACM CHI'85*, 1985.
- The Sound of Data.
An article in *Science News* Volume 127, Number 22, pg 348-350, June 1, 1985, with interviews by Ivars Peterson.
- Communication with Sound.
S. Bly, S. P. Frysinger, D. Lunney, D. L. Mansur, J. J. Mezrich, and R. C. Morrison. In *Readings in Human-Computer Interaction: A Multidisciplinary Approach*, edited by R. Baecker and W.A.S. Buxton (Morgan Kaufmann 1987).
- Pattern Recognition in Auditory Data Representation.
Unpublished thesis, Stevens Institute of Technology, 1988.
- Applied Research in Auditory Data Representation.
In E. J. Farrell (Chair), *Extracting Meaning From Complex Data - Proceedings of the SPIE/SPSE Symposium on Electronic Imaging*, February 1990.
- Reducing New Jersey's Waste Stream through Per-can Fees: The Chester Township Model.
In *Getting the Most from Our Materials*, a conference of the Institute for Local Self-Reliance, June 1991.

- Environmental Decision Support Systems and GRASS: A Sandia Monitor Well Case Study.
S. P. Frysinger, R. Cox, P. Davis, and A. Parsons. In G. S. Waggoner (Ed.) *Geographic Information Systems: Proceedings of the Seventh Annual GRASS User's Conference*, National Park Service NPS/NRGISD/NRTR-93/13, March 1992, pp. 117-121.
- User Interfaces for Geographic Information Systems.
Participant Position Paper in D. M. Mark and A. U. Frank (Eds.) *Research Initiative 13 Report on the Specialist Meeting: User Interfaces for Geographic Information Systems*, National Center for Geographic Information and Analysis, Technical Report 92-3, August 1992, pg. 73.
- A Decision Support System for Evaluating the Performance of a Monitor Well Network.
S. P. Frysinger and A. M. Parsons. In *Environmental Geotech Symposium* (American Society of Civil Engineers), September 1992.
- Treatment of Human-Computer Interface in a Decision Support System.
A. S. Heger, F. A. Duran, S. P. Frysinger, and R. G. Cox. In *IEEE International Conference on Systems, Man, and Cybernetics*, October 1992.
- Interactive GIS for Environmental Decision Support.
S. P. Frysinger. In *Proceedings of the 5th International Symposium on Spatial Data Handling*, Ed. P. Bresnahan, E. Corwin and D. Cowen. Charleston: IGU Commission of GIS, 1992, pp. 454-459.
- Hydrological Modeling and GIS: the Sandia Environmental Decision Support System.
S. P. Frysinger, R. P. Thomas, and A. M. Parsons. In K. Kovar and H. P. Nachtnebel (editors), *Applications of Geographic Information Systems in Hydrology and Water Resources Management - Proceedings of HydroGIS 93*, Vienna, Austria, IAHS Press, April 1993.
- Auditory Data Representation: A Review with Applications to Spatial Information Processing.
An invited presentation in J. Dorn (Chair), *Summer Workshop of the Society of Exploration Geophysicists*, August 1993.
- Environmental Decision Support Systems: An Open Architecture Integrating Modeling and GIS.
S. P. Frysinger, D. A. Copperman, and J. P. Levantino. In *Proceedings of the Second International Conference on Integrating Geographic Information Systems and Environmental Modeling*, NCGIA, September 1993.
- An Environmental Decision Support System for Local Wellhead Protection.
S. P. Frysinger and C. G. Uchirin. In J. M. Power, M. Stome, and T. C. Daniel (Eds.) *Proceedings of Decision Support 2001*, Toronto, September 1994, pp. 977-985.
- An Open Architecture for Environmental Decision Support.
S. P. Frysinger. *International Journal of Microcomputers in Civil Engineering*, Vol. 10, No. 2, 1995, pp. 123-130.
- Environmental Decision Support Systems: An Interdisciplinary Approach for Risk-based Environmental Management.*
S. P. Frysinger. Dissertation Abstracts International, 1995.
- Dynamic Finite Difference Grid Generation for Environmental Decision Support Systems.
S. P. Frysinger. *Third International Conference/Workshop on Integrating GIS and Environmental Modeling*, NCGIA, Santa Fe, January 21-25, 1996.
- Collaborative Environmental Decision-Making: An Integrative Approach.
Steven P. Frysinger. *Third International Conference/Workshop on Integrating GIS and Environmental Modeling*, NCGIA, Santa Fe, January 21-25, 1996.
- Environmental Modeling and Collaborative Spatial Decision-Making: Some Thoughts and Experiences Arising from the I-17 Meeting.
S. Carver, S. Frysinger and R. Reitsma. *Third International Conference/Workshop on Integrating GIS and Environmental Modeling*, NCGIA, Santa Fe, January 21-25, 1996.
- Homepage on the Internet: Use of the Information Highway for Industrial Hygiene.
S. P. Frysinger. Invited presentation, *American Industrial Hygiene Association conference*, Lancaster, PA, April 1996.
- Proceedings of ICAD'96: International Conference on Auditory Display.*
S. P. Frysinger (Ed.), ICAD, Palo Alto, November 4-6, 1996.
- Environmental Management Information Systems.
S. P. Frysinger. An instructional presentation in the *1997 Environmental Professionals' Forum*. January 23-24, 1997, Orlando, Florida.

New Approaches to Environmental Information and Decision Support Systems.

S. P. Frysinger. Invited presentation at the National Association for Environmental Management's *Environmental Management Forum*, October 28-31, 1997, Dallas, Texas.

Interactive Natural Resource Game: Teaching Air Quality Issues.

D. Morse, B. Nash, S. Frysinger, R. Kolvoord, S. Geiman, and M. Curtis. *Second Conference on Research and Resource Management in Southern Arizona National Park Areas*, May 5-7, 1998, Tucson, Arizona.

Industrial Ecology and Environmental Systems Engineering.

S. P. Frysinger. Invited paper at *the Fifth International Congress on Environmentally Conscious Design and Manufacturing*, June 16-17, 1998, Rochester, NY.

Gaia's Guard: An Interactive Computer Game for Teaching Natural Resource Issues.

D. W. Morse., B. L. Nash, S. P. Frysinger, P. Schmidt, R. Chavez, B. Paget, R. Reynolds, D. Tainow. In *The 10th Conference on Research and Resource Management in Parks and on Public Lands*, sponsored by the George Wright Society, March 22-26, 1999, Asheville, NC.

Walking In The Woods With Gaia: A Hands-On Demonstration Of A Natural Resource Management Game.

S. P. Frysinger, D. W. Morse, B. L. Nash, P. Schmidt, R. Chavez, B. Paget, R. Reynolds, D. Tainow. In *The 10th Conference on Research and Resource Management in Parks and on Public Lands*, sponsored by the George Wright Society, March 22-26, 1999, Asheville, NC.

Environmental Systems Engineering: An Educational Framework for Applied Industrial Ecology.

S. P. Frysinger. Presented to the *International Council On Systems Engineering (INCOSE) Mid-Atlantic Regional Conference*, April 6-8, 2000, Reston, Virginia.

An Integrated Approach to Environmental Education: James Madison University's Integrated Science and Technology Program.

J. J. Winebrake and S. P. Frysinger. *EM*, the magazine of the Air and Waste Management Association (AWMA), May 2000.

An Integrated Environmental Information System (IEIS) for Corporate Environmental Management.

S. P. Frysinger. *The International Symposium on Environmental Software Systems (ISESS) 2000 Workshop Symposium on Integration in Environmental Information Systems*, Zell am See, Austria May 30 to June 2, 2000.

Environmental Decision Support Systems: A Tool for Environmentally Conscious Management.

S. P. Frysinger. Invited chapter in C. N. Madu (Ed.), *Handbook for Environmentally Conscious Manufacturing*, Kluwer Academic Publishers, 2001.

An Integrated Environmental Information System (IEIS) for Corporate Environmental Management.

S. P. Frysinger. In *Advances in Environmental Research*, Elsevier Science Ltd. Vol. 5, No. 4, 2001, pp. 361-367.

Integrative Environmental Modeling.

S. P. Frysinger. Invited chapter in Keith C. Clarke, Brad E. Parks and Michael P. Crane (Eds), *Geographic Information Systems and Environmental Modeling*, Prentice Hall, 2002.

Information Systems for Proactive Environmental Management.

S. P. Frysinger. Invited chapter in A. Ghassemi (Ed.), *The Handbook of Pollution Control and Waste Minimization*, Marcel Dekker, 2002.

Human Factors of Environmental Decision Support Systems.

S. P. Frysinger. 2003 Conference on Integration in Environmental Information Systems, Semmering, Austria May 27 to 30, 2003.

Synthesis as a Law Enforcement Tool at Shenandoah National Park: A Synthesis Regional Support Center Case Study.

Andrew Diego, Andrew Welti, Éadaoin O'Drudy, Ken Johnson, Carollyn Oglesby, Bruce Nash, Steven Frysinger. In *The 14th Conference on Research and Resource Management in Parks and on Public Lands*, sponsored by the George Wright Society, March 2003, San Diego, California.

Hazardous Materials Decision Support System.

A. VanHorn, A. Gonzalo, S. P. Frysinger, M. Deaton, M. Kirk. In *International Symposium on Environmental Software Systems 2004: Environmental Risk and Emergency Response*, May 2004, Harrisonburg, Virginia.

Assessing Product Risk: A Study of Life-Cycle Assessment Databases.

T. Dang and S. P. Frysinger. In *International Symposium on Environmental Software Systems 2004: Environmental Risk and Emergency Response*, May 2004, Harrisonburg, Virginia.

The FALCON Decision Support System: Managing the Risks of Weapons of Opportunity.

S. P. Frysinger. Presented to the *Blue Ridge Safety Association Conference*, April 2005.

- The Poison Next Door – Preparedness, Planning and Response to Hazardous Chemical Accidents and Terrorism.
M. Deaton, M. Kirk, S. Frysinger. In the *DHS Conference on Working Together – Research and Development Partnerships in Homeland Security, Decision Support Systems for Local EMS*, Boston, MA, May 2005.
- Cognitive Considerations in Environmental Decision Support.
S. P. Frysinger. In *International Symposium on Environmental Software Systems*, May 2005, Sesimbra, Portugal.
- A Brief History of Auditory Data Representation to the 1980s.
S. P. Frysinger. In the *First International Symposium on Auditory Graphs*, July 2005, Limerick, Ireland.
- The FALCON Decision Support System: Preparing Communities for Weapons of Opportunity.
S. P. Frysinger, M. L. Deaton, A. G. Gonzalo, A. M. VanHorn, M. A. Kirk. *Journal of Environmental Modelling and Software*. Vol. 22, 2007, 431-435.
- Reference Model for the ORCHESTRA Architecture.*
Contributing editor to T. Usländer (Ed.), *Open Geospatial Consortium Best Practice OGC-07-097* (2008).
- Adding Sonification to Visualization of Intelligence Data: A Tutorial Guide for Intelligence Analysts.*
S. P. Frysinger. Institute for National Security Analysis (2009).
- Auditory Representation of Environmental Data.
S. P. Frysinger. In *International Symposium on Environmental Software Systems*, October 2009, Venice, Italy.
- Engaging Stakeholders in Environmental Decision Support System Development: Key Principles with Water Resource Management Examples.
S. P. Frysinger, N. W. T. Quinn. In *ICT for Natural Resource Management*, November 2009, Amman, Jordan.
- SANY - An Open Service Architecture For Sensor Networks.*
Bleier, T., Bozic, B., Bumerl-Lexa, R., Da Costa, A., Costes, S., Iosifescu, I., Martin, O., Frysinger, S., Havlik, D., Hilbring, D., Jacques, P., Klopfer, M., Kunz, S., Kutschera, P., Lidstone, M., Middleton, S.E., Roberts, Z., Sabeur, Z., Schabauer, J., Schlobinski, S., Shu, T., Simonis, I., Stevenot, B., Usländer, T., Watson, K., Wittamore, K.; Klopfer, M. & Simonis, I. (Eds.). The SANY Consortium (2009), ISBN: 978-3-00-028571-4.
- Environmental Information Systems.
S. P. Frysinger. Invited chapter in the *Handbook of Sustainable Management*, Christian Madu and Chu-hua Kuei (Eds.), Imperial College Press, London (2011), ISBN 978-981-4354-81-3.
- Vision and Requirements of Scenario-driven Environmental Decision Support Systems Supporting Automation for End Users.
S. Schlobinski, S. Frysinger, R. Denzer, R. Güttler, T. Hell. In *International Symposium on Environmental Software Systems*, June 2011, Brno, The Czech Republic.
- An Environmental Decision Support System for Water Issues in the Oil Industry.
R. Denzer, F. Torres-Bejarano, T. Hell, S. Frysinger, S. Schlobinski, R. Güttler, H. Ramirez. In *International Symposium on Environmental Software Systems*, June 2011, Brno, The Czech Republic.
- An Architecture for the Semantic Enhancement of Environmental Resources.
P. Dihé, S. Frysinger, R. Güttler, S. Schlobinski, L. Petronzio, R. Denzer, S. Nestic, T. Lobo, G. Schimak, J. Hrebicek, M. Donatelli. In *International Symposium on Environmental Software Systems*, June 2011, Brno, The Czech Republic.
- Development and Integration of a Numerical Water Quality Model with the Geospatial Application Suite CIDS.
F. Torres-Bejarano, R. Denzer, H. Ramirez, S. Frysinger, T. Hell, S. Schlobinski, R. Güttler. *19th International Congress on Modelling and Simulation*, 2012, At Perth, Australia, Volume: Vol. 19, pp.1271-1279, ISBN: 978-0-9872143-1-7.
- Integration of Climate Change Effects in Local Models and Urban Planning Processes.
S. Schlobinski, L. Gidhagen, J. Olsson, S. Frysinger, R. Denzer, P. Kutschera. In *6th International Congress on Environmental Modelling and Software – iEMSs 2012*, Leipzig, Germany, July 2012.
- Getting Life Cycle Analysis into Production: Information Management for Waste Minimization.
S. P. Frysinger. Invited plenary presentation for *The Baltic University Program on Making Waste Work*, Görlitz, Germany, September 2012.
- Environmental Decision Support Systems: A Human Factors Perspective.
S. P. Frysinger. Invited keynote at *Climate Change and Urban Planning* in Wuppertal, Germany, October 2012.
- Integrated Waste Management as a Climate Change Stabilisation Wedge for the Maltese Islands.
C. Falzon, S. G. Fabri, S. Frysinger. *Waste Management and Research*, Vol. 31, No. 1, January 2013.

Linking Numerical Water Quality Models in an Environmental Information System for Integrated Environmental Assessments.

Franklin Torres-Bejarano, Hermilo Ramirez, Ralf Denzer, Steven Frysinger, Thorsten Hell, Sascha Schlobinski. *Journal of Environmental Protection*, Vol. 4, No. 7, pp. 126-137, January 2013.

CRISMA ICMS Architecture V2.

P. Dihe, M. Scholl, S. Schlobinski, T. Hell, S. Frysinger, P. Kutschera, M. Warum, D. Havlik, A. DeGroof, Y. Vandeloise, O. Deri, K. Rannat, A. Kosonen, M. Sommer, W. Engelbach. Technical Report. February 28, 2014.

Decision Making and Strategic Planning for Disaster Preparedness with the Help of a Multi-Criteria-Analysis Decision Support System.

Sascha Schlobinski, Giulio Zuccaro, Martin Scholl, Daniel Meiers, Ralf Denzer, Sergio Guarino, Wolf Engelbach, Kuldar Taveter, Steven Frysinger. *The International Symposium on Environmental Software Systems (ISESS)*, Melbourne, Australia, March 25-27, 2015.

Decision Making and Strategic Planning for Disaster Preparedness with a Multi-Criteria-Analysis Decision Support System.

Ralf Denzer, Sascha Schlobinski, Giulio Zuccaro, Martin Scholl, Daniel Meiers, Sergio Guarino, Wolf Engelbach, Kuldar Taveter, Steven Frysinger. *IFIP Advances in Information and Communication Technology*, Vol. 448, pp. 178-186, March 2015.

Campus Sustainability Programs.

S. P. Frysinger and J. W. Winebrake (Guest Editors). *EM Magazine*, Air and Waste Management Association, October 2015.

Closing the Gap: Connecting Environmental Informatics to the People Who Really Need It.

Steven P. Frysinger. An invited keynote paper in *Proceedings of EnviroInfo 2016: Environmental Informatics – Stability, Continuity, Innovation*, Volker Wohlgemuth, Frank Fuchs-Kittowski, Jochen Wittmann (Eds.), Shaker Verlag, pp. 7-12, September 13-15, 2016.

Food Sustainability: Feeding the World Responsibly.

S. P. Frysinger (Guest Editor). *EM Magazine*, Air and Waste Management Association, December 2017.

Cognitive Load and Fake News: Implications for Expertise in a "Post-Truth" World.

C. J. Collins, Shannon N. Conley, S. P. Frysinger. Presented to *SEESHOP 2018*, Cardiff, Wales, July 7-9, 2018.

Advances in Environmental Decision Support: Tools for Informed Environmental Management.

S. P. Frysinger. Invited chapter in C. N. Madu (Ed.), *Handbook for Environmentally Conscious Manufacturing, 2nd Edition*, Kluwer Academic Publishers (in press).

Interviews in the *Toronto Globe and Mail*, the *New York Times*, United Press International, the *LA Times* and National Public Radio's *Sounds of Science*, in addition to various local newspapers and radio/television stations.

Senior Thesis Advising

Industrial Hygiene Monitoring of Air Quality: Personal Samples Versus Area Samples.

Lisa J. Schulman, JMU Honors Thesis, April 1997 (Primary Advisor).

Effects of Forest Fires on Nearby Surface Water Quality

Nathan Coulter, JMU ISAT Senior Thesis, April 1997 (Primary Advisor).

Development of an Educational Air Quality Game Prototype.

Andrew Aamot, JMU ISAT Senior Thesis, April 1997 (Primary Advisor).

Air Quality Game Prototype Development for the National Park Service and Fish and Wildlife Service.

Viranand Prasarnphanich, JMU ISAT Senior Thesis, April 1997 (Primary Advisor).

The Virtual Ranger Station: A Case Study in the Development of a Dynamic Internet Website for a Non-technical Client.

Jeremy Bost and Ron Yeaw, JMU ISAT Senior Thesis, April 1997 (Primary Advisor).

Penalty Policy for Water Enforcement in Virginia.

Aaron Kellerman, JMU Honors Thesis, April 1998 (Primary Advisor).

Analysis of the Virginia Oak Tannery Landfill in Luray Virginia.

Hillary Zahm. JMU Honors Thesis, April 1998 (Primary Advisor).

A Closer Look at Design for Environment and Who is Currently Taking a Dive at it.

Allison Weatherholtz. JMU ISAT Senior Thesis, April 1998 (Primary Advisor).

Industrial Hygiene Monitoring of Select Support Groups.
Casmir Harris. JMU ISAT Senior Thesis, April 1998 (Primary Advisor).

Development of a Needs Assessment for Proposed James Madison University Environmental Education Center.
Becky Schmidt. JMU ISAT Senior Thesis, April 1998 (Primary Advisor).

The Center for Environmental Information Management.
Paul Baker. JMU ISAT Senior Thesis, April 1998 (Primary Advisor).

A Look at Deer Management.
Trekker Williams. JMU ISAT Senior Thesis, April 1998 (Primary Advisor).

Gaia's Guard: Prototype Development for the National Park Service and Fish and Wildlife Service.
Matt Curtis and Colby Geiman. JMU ISAT Senior Thesis, April 1998 (Primary Advisor).

A Needs Assessment and Requirements Specification for a Green Springs Historic District Information System.
Kerrin Sciortino. JMU ISAT Senior Thesis, April 1998 (Primary Advisor).

Automated Map Design and Data Management through Custom GIS Application Development.
Kass Kastening, JMU ISAT Senior Thesis, November 1998 (Primary Advisor).

Gaia's Guard Interactive CD-ROM Game.
Brian Paget, Reginald Reynolds, and Rowena Chavez, JMU ISAT Senior Thesis, April 1999 (Primary Advisor).

Energy Efficiency and Conservation in the American Home.
Jill Stacy Walworth, JMU Honors Thesis, April 1999 (Primary Advisor).

A Validation Study of OSHA's Safety Monitoring Protocol.
Kevin Shifflett, JMU ISAT Senior Thesis, April 1999 (Primary Advisor).

A Gap Analysis and Preliminary Design of an ISO 14001 Environmental Management System for James Madison University.
Alina Diane Martin, JMU ISAT Senior Thesis, April 1999 (Primary Advisor).

Christian's Creek Watershed: Assessing the Effect of Agricultural Best Management Practices on Water Quality.
Sarah Kay Matheson, JMU Honors Thesis, May 2000 (Primary Advisor).

Conservation Efforts: The Effect of Agricultural Best Management Practices.
Andrew Ratliff, JMU ISAT Senior Thesis, May 2000 (Primary Advisor).

Assessing the Effectiveness of a Sampling Strategy as Developed by One Pharmaceutical Plant.
Daniel Hixon, JMU ISAT Senior Thesis, May 2000 (Primary Advisor).

Water Quality Analysis of Congers Creek: Lake Shenandoah Tributary.
Allan D. Pettit and Jason R. Dameron, JMU ISAT Senior Thesis, May 2000 (Primary Advisor).

Evaluation of the Effects of Best Management Practices on the Cupp Farm.
Cristina Curiel and John T. Doroshenk, JMU ISAT Senior Thesis, May 2000 (Primary Advisor).

A Life Cycle Assessment of the Lawnmower.
Tracy Buzogany, JMU ISAT Senior Thesis, May 2000 (Primary Advisor).

Current vs. Historical Pollution at Lake Shenandoah: Will Dredging be Effective?
Amanda Tyrrell, JMU ISAT Senior Thesis, May 2000 (Primary Advisor).

Gaia's Guard: Creation of an Educational Interactive Multimedia CD-ROM.
Alison Flora and Brandt Wagner, JMU ISAT Senior Thesis, May 2000 (Sponsor and Reader).

ISO 14001 Environmental Management System Plan for James Madison University.
Sarah Tuohy, Peter Guellnitz, Katherine Ahearn, and Stacey Thruston. JMU ISAT Senior Thesis, May 2001 (Primary Advisor).

A Linux-Based Geographic and Environmental Database Accessible through the GRASS GIS with a Web-Based Tutorial.
Catherine Wardell, JMU ISAT Senior Thesis, May 2001 (Primary Advisor).

Life Cycle Assessment - A Methodology for Land Use as an Impact Category.
Matthew Aberant. JMU ISAT Senior Thesis, May 2002 (Primary Advisor).

I-81 Expansion - Traffic Analysis and Cost Assessment.
Travis Lovett. JMU ISAT Senior Thesis, May 2002 (Primary Advisor).

I-81 Expansion - Traffic Analysis and Web Development.
Stefan Hellstrom. JMU ISAT Senior Thesis, May 2002 (Primary Advisor).

Life Cycle Cost Analysis of the Expansion of Interstate 81.
Jeffrey Houff. JMU ISAT Senior Thesis, May 2002 (Primary Advisor).

Spatial Database for Assateague Island National Seashore.
Shey Veditz. JMU ISAT Senior Thesis, May 2002 (Primary Advisor).

A Website to Further the Blacks Run Greenway Development.
Adam McIlwain and Chris Ostrander. JMU ISAT Senior Thesis, May 2002 (Primary Advisor).

Preparing JMU for the OSHA Voluntary Protection Program.
Pam Carter. JMU BIS Senior Project, May 2002 (Primary Advisor).

Sound Design Plug-Ins for PC Created in Native Instruments Reaktor
J. Max Trone. JMU ISAT Senior Thesis, May 2003 (Primary Advisor).

Modeling a sustainable community.
Janet Sobel. JMU ISAT Senior Thesis, May 2003 (Primary Advisor).

Development of an Electronics Recycling Program for Harrisonburg, Virginia.
Christopher Weaver. JMU ISAT Senior Thesis, May 2004 (Primary Advisor).

Industrial Hygiene and Environmental Management Involved with Recycling of End-of-Life Vehicles.
Todd Joseph Zyglou. JMU ISAT Senior Thesis, May 2004 (Primary Advisor).

Cougars in the East: A GIS for the Eastern Cougar Foundation.
Sarah Traynor and Casey Jensen. JMU ISAT Senior Thesis, May 2004 (Primary Advisor).

Automotive Recycling: a Regulatory Approach.
Sarah E. Cannon. JMU ISAT Senior Thesis, May 2004 (Primary Advisor).

Hazardous Materials Decision Support System: An Integrated System in Support of Prevention, Preparation, and Response to Weapons of Opportunity.
Adrienne G. Gonzalo and Amanda M. VanHorn. JMU ISAT Senior Thesis, May 2004 (Co-advisor).

Comprehensive Study and Prototyping of Unit-Process Specific Life-Cycle Assessment (LCA) Databases and Software.
Thanh Dang. JMU ISAT Senior Thesis, May 2004 (Primary Advisor).

The Development of a Vulnerability Assessment Tool for Chemical Facilities.
Will Donabedian, Natalie Dubanowitz, and Jim McNamara. Senior Thesis, May 2005 (Primary Advisor).

Life Cycle Assessment of Alternative Fuels for the JMU Fleet Manager.
Robert Feerst. JMU ISAT Senior Thesis, May 2005 (Primary Advisor).

An Introduction to Environmental Law in the United States, the United Kingdom, Germany and France.
Brian Weireter. JMU ISAT Senior Thesis, May 2005 (Primary Advisor).

Hazardous Materials (HAZMAT) Decision Support System: Prototype of an Integrated System in Support of Prevention, Preparation, and Response to Chemical Disasters.
Sameer Kalyani, Cory Williams, and Thomas Fox. JMU ISAT Senior Thesis, May 2005 (Co-advisor).

Process Safety Management.
Steven Knight, Lauren Pepe, and Whit Wall. JMU ISAT Senior Thesis, May 2006 (Primary Advisor).

Human Factors Engineering Task Analysis of the National Park Patrol Ranger: A Shenandoah National Park Case Study of Information Driven Protection.
Bradley William Reed. JMU ISAT Senior Thesis, May 2006 (Primary Advisor).

Material Usage Efficiency: A Study of the Phosphoric Acid Usage of an Activated Carbon Production Plant.
Wesley Matheny. JMU ISAT Senior Thesis, May 2007 (Primary Advisor).

Analysis of a Combined Cycle Electric Power Plant: A Life Cycle Assessment Approach.
Pat Wilson. JMU ISAT Senior Thesis, May 2007 (Primary Advisor).

A Metadata Standard for a Digital Drawing Library.
Stephen Hack. JMU ISAT Senior Thesis, December 2007 (Primary Advisor).

Comparative Risk Assessment of Front-End Fuel Cycle for a Fossil-Fueled Power Plant and a Nuclear Power Plant.
Matthew Takane and Rebecca Gagliostro. JMU ISAT Senior Thesis, May 2008 (Primary Advisor).

The Effects of the Iodine Fuming Application on DNA from Fingerprints.
Jim Curry, JMU ISAT Senior Thesis, May 2009 (Primary Advisor).

Fish Disease and Mortality Information System.
Christopher Brill, JMU ISAT Senior Thesis, May 2010 (Primary Advisor).

The Impacts of Virginia Legislation Regarding Smoking in Restaurants: A Study of Restaurant Employees in Harrisonburg, Virginia.
Mark Vaughan, JMU Health Sciences, Senior Thesis, May 2010 (Committee Member).

Performance Analysis of NoNO_x Water Fuel Emulsion Device.
Joseph Galen Crosbie, JMU ISAT Honors Thesis, May 2013 (Committee Member).

Cotton vs. Polyester.
Olivia McGuigan, JMU ISAT Senior Thesis, May 2014 (Co-advisor).

Assessment of a Biomass Thermal Water Heating System at New Community Project in Harrisonburg, VA.
Jordan Palamone, Christopher Mihalkovic and Hector Galvan, JMU ISAT Senior Thesis, May 2015 (Primary Advisor).

The Role Of Social Media and Networking in Social Opinion and Expression About Environmental Issues: A Mobile Application Case Study.
Katharina Fritz, HTW Saar, November 2015 (Co-supervisor).

Phase One Site Assessment: Fort Detrick.
Sara Miskowic, JMU ISAT Senior Thesis, May 2016 (Primary Advisor).

Surfer's Myelopathy: An Investigation into this Rare Injury.
David Glenn, JMU ISAT Senior Thesis, May 2016 (Primary Advisor).

On Campus Off The Grid: A Closer Look Into Sustainability in University Residence Halls with Consideration to Architecture, Energy, and Social Aspects.
Annelise Libera, Celia Ross, and Alexandra Thompson, JMU ISAT Senior Thesis, May 2016 (Co-advisor).

Sustainable Manufacturing and Prototype Development: A Snowboard Evaluation.
Cecilia Hansen and Max Decker, JMU ISAT Senior Thesis, May 2016 (Primary Advisor).

Mobility and Sustainability: The Tiny House Solution.
Ashley Keane and Emery Siegrist, JMU ISAT Senior Thesis, May 2016 (Primary Advisor).

Optimizing Refugee Crisis Shelters: Better Economic, Ecological, and Social Value.
Terry Swift. JMU ISAT Senior Thesis, May 2017 (Primary Advisor).

Food Waste Analysis on College Campuses.
Nicole Raftery. JMU ISAT Senior Thesis, May 2017 (Primary Advisor).

Floating Island Technology: Water Ecology Enhancement Techniques.
Joel Kaminsky and Brenden White. JMU ISAT Senior Thesis, May 2017 (Primary Advisor).

Tiny Sustainable Housing.
Hollyn Busby and James Rollin. JMU ISAT Senior Thesis, May 2017 (Primary Advisor).

Environmental Sustainability of Music Festivals: An Integrative Approach to Reducing the Environmental Impact of Festivals.
Hope Barnstead, Taylor Garrenton, and Jack Shea. JMU ISAT Senior Thesis, May 2017 (Co-Advisor).

Electronic Waste Dumping in Africa.
Lauren Casey Johnson. JMU ISAT Senior Thesis, May 2018 (Primary Advisor).

Comparative Life-Cycle Assessment: Internal Combustion Engine vs Electric Hybrid.
Gabrielle Massoud. JMU ISAT Senior Thesis, May 2018 (Primary Advisor).

Misinformation in the Age of the Internet: A Thesis and Pilot Study of Cognitive Load and Fake News.
Christopher J. Collins. JMU ISAT Senior Thesis, May 2018 (Co-Advisor).

Designing the user interface of a forest fire management application for the Shenandoah National Park
Austin Fairchild and Chris Jones. JMU ISAT Senior Thesis, May 2019 (Primary Advisor).

Feasibility of Tiny House Living.
Daniel Benish, Caleb Smith, Tikhon Ivanov. JMU ISAT Senior Thesis, May 2019 (Primary Advisor).

Master's Thesis Advising

- Health Effects Among Sanitation Landfill Workers in Virginia State Landfills.
Panagiota Kitsanta, JMU Health Sciences, May 1999 (Committee Member).
- A Marine Science Data Integration and Management System.
Giancarlo Cesarello, JMU ISAT, May 2003 (Primary Advisor).
- Toxic Release Dispersion Plume Model Selection in the Context of Local Community Emergency Planning.
Jay Neale, JMU ISAT, December 2004 (Primary Advisor).
- Implementation of Inference Algorithms in Belief Networks.
Andrej Kuklin, HTW des Saarlandes (Germany), March 2005 (Examiner).
- A Comparative Analysis of Public Attitudes Toward Wind Energy in Germany and the United States.
Laura Pagliarulo, JMU ISAT, May 2008 (Committee Member).
- Analysis of Perceptions Toward the Use of Modeling for Emergency Preparedness Planning.
Allison M. Smith, JMU ISAT, May 2009 (Primary Advisor).
- A Review of Offshore Wind Technology and the Development of the Virginia Coastline and Outer Continental Shelf.
Ryan D. Geary, JMU ISAT, May 2010 (Committee Member).
- Integrated Waste Management in Malta – Future Scenario Development.
Ruth Debrincat, University of Malta/JMU ISAT, November 2010 (Examiner).
- From Seed To Harvest: A Comparative Life Cycle Assessment of Conventional vs. Organic Cotton Agriculture.
Rebecca Leigh Hoehn, University of Malta/JMU ISAT, November 2010 (Primary Advisor).
- A Poultry All-Hazard Threat, Vulnerability, and Capability Assessment with Rockingham County Fire Rescue.
Daniel R. Dales, JMU ISAT, May 2011 (Committee Member).
- Integrated Waste Management as a Climate Change Stabilisation Wedge for the Maltese Islands.
Clyde Falzon, University of Malta/JMU ISAT, November 2011 (Committee Member).
- E-Government: Government, Design and Technology: A holistic overview of the e-Government initiatives in Harrisonburg, and the challenges of adopting User-Centered Design in e-Government.
Brian Perez, JMU ISAT, May 2012 (Primary Advisor).
- Dynamic Life Cycle Assessment in Energy and Efficiency Management in Water Treatment Systems.
Shriram Manogaran, University of Malta/JMU ISAT, November 2012 (Co-supervisor).
- Organizational Use Of Social Media: The Shift in Communication, Collaboration and Decision-Making.
Dhruvi Naik, JMU ISAT, May 2015 (Primary Advisor).
- Clustering of Binary Trees for Watershed Network Model Parallelization.
Stefan Walle, HTW Saar, January 2016 (Co-supervisor).
- Concept for Design and Evaluation of Real-Time Temperature-Sensing for a Bidirectional Hand Prosthesis.
Alicia Rudnicki, HTW Saar, May 2016 (Co-supervisor).
- Spatial Analysis of Rehabilitated Bald Eagles for the Virginia Wildlife Center.
Kevin Crowder, University of Malta/JMU ISAT, July 2016 (Primary Advisor).
- Review of Agricultural Connections to Shenandoah River 2004-2007 Fish Kills.
Thomas Kirby, University of Malta/JMU ISAT, July 2016 (Primary Advisor).

Doctoral Dissertation Advising

- Auditory Information Design.
Stephen Barrass, The Australian National University, August 1997 (Examiner).
- Structuring Information for Environmental Management of Industrial Systems.
Raul Carlson, Chalmers University (Sweden), 2006 (Supervisor).
- Information Quality In Industrial Environmental Management - Defining And Managing Quality Of Environmental Information.
Ann-Christin Pålsson, Chalmers University (Sweden), 2006 (Supervisor).
- Design Of Environmental Information Systems Based Upon Open Geospatial Service Platforms.
Thomas Usländer, Universität Karlsruhe (Germany), 2010 (Consulting Advisor).

Coatzacoalcos River Information System.

Franklin Torres, Instituto Mexicano del Petróleo, Mexico City, Mexico, 2010 (Consulting Advisor).

Integrating Occupational Health into Life Cycle Assessment.

Kelly Ann Scanlon, George Washington University, Washington, DC, 2012 (Committee Member).

The Snippet Platform – A Holistic Approach For Document-Centric And Context-Based Authoring.

Laurent Kirsch, University of Luxembourg, Luxembourg, 2014 (Board Member).

Courses Taught

Middlesex County College:

ENV 211: Environmental Science I (Ecology, Air, Water)

ENV 212: Environmental Science II (Industrial Hygiene, Noise, Energy, Waste)

CSC 121: Introduction to Computer Science

CSC 122: Data Structures

CSC 210: Operating Systems

James Madison University

GISAT 100: Issues in Energy and the Environment

GISAT 112: Environmental Issues in Science and Technology (ecology, environmental chemistry)

ISAT 142: Analytical Methods II (Physics and Calculus)

ISAT 320: Fundamentals of Environmental Science and Technology I (surface and groundwater hydrology)

ISAT 321: Fundamentals of Environmental Science and Technology II (risk assessment, waste, air quality)

ISAT 416: Alternative Energy Practicum (Study Abroad)

ISAT 420/580: Environmental Analysis and Modeling

ISAT 422: Environmental Management (compliance and beyond, environmental management systems)

ISAT 426: Environmental Information Systems

ISAT 427: Industrial Hygiene

ISAT 428/528: Industrial Ecology

ISAT/CS 447/547/571: Interaction Design

ISAT 480: International Energy Initiatives (Study Abroad)

ISAT 566-MALT: Air and Waste Management

ISAT 651: System Requirements Analysis

CS 240/512: Algorithms and Data Structures

ENVT 400: Environmental Capstone – Food and Fuel

GSCI 104: Scientific Perspectives

OSHA HazWOpER training (24-hour, 40-hour and 8-hour refresher)

Hochschule für Technik und Wirtschaft Saar

Human/Computer Interaction

Industrial Ecology

Human Factors Engineering

Environmental Decision Support Systems

Software Technology II (guest lecturer)

Programming Languages III (guest lecturer)

Université du Luxembourg

Interaction Design