Kimberlyn M. Gray, Ph.D., E.I.

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Education:

- Doctorate of Philosophy in Biomedical Engineering (March 2009)
  "Development of Floating Light Activated Micro-Electrical Stimulators for use in Deep Brain Stimulation"
  Louisiana Tech University, Ruston, LA
- Bachelor of Science in Biomedical Engineering (May 2001), Magna Cum Laude
  Louisiana Tech University, Ruston, LA

Experience:

- First Year Programs and Outreach Coordinator — *West Virginia University Institute of Technology* (November 2008-Present)
  - **Teaching and course development**: Taught project based freshman engineering courses focused on problem solving and engineering design. Developed projects modeling kidney dialysis, design of a robotic pet, and respiratory sensors. Taught chemical engineering modeling and analysis, unit operations, and engineering ethics. Developed and taught biomaterials. Mentored engineering technology senior design projects.
  - **First year experience**: Designed a college wide orientation course for engineering and science freshman focused on familiarizing students with faculty, group study, and campus resources. Organized an 8 week Freshman Cup competition for orientation courses designed to promote teach building and campus knowledge.
  - **Student success**: Advised incoming freshman general and pre-engineering students and promoted a constructive freshman experience by organizing student mentoring and tutoring programs. Helped design a comprehensive academic advising strategy for incoming freshman to be used in a newly established Student Success Center (opened in Spring 2013).
  - **Outreach**: Developed an outreach program with area high schools by creating classroom engineering activities and demonstrations. Performed experiments such as gel electrophoresis, stream sampling to examine the effects of acid mine drainage, and design of biodegradable coatings for pharmaceuticals. Acted as advisor and project mentor for 3 local Project Lead the Way Programs. Co-PI for NASA EPSCoR funded workshop for high school biology teachers. Taught introduction to programming to high school teachers at NASA EPSCoR funded workshop and robotics to high school teachers at Google funded workshop.
  - **Summer camp**: Managed the organization and leadership of a residential STEM summer program. Identified and secured faculty to teach week-long project based courses. Collaborated with development personnel to acquire funding. Managed resources and budget for camp. Taught classes in robotics, biomedical engineering, and environmental engineering. Supervised six staff members and mentored projects such as paper shoes, balsa wood bridges, and concrete canoes.
- Instructor Biomedical Instrumentation — *Louisiana Tech University* (December 2006-March 2007)
  - Designed classroom lectures and laboratory assignments for 30 junior level students.
  - Related theory to hands-on circuit design and guided students in design projects.
  - Prepared and graded exams, homework, and other assignments

- NSF GK-12 Fellow *Louisiana Tech University* (May 2005-April 2006)
  - Designed hands-on math and science activities for elementary and high school students to demonstrate important concepts and skills. Examples include teaching basic electrical concepts such as complete circuits, in series and parallel using light bulbs and small toys.
  - Liaised with local schools to organize events for 80 to 150 students to emphasize important math and science concepts
  - Tutored GED students
  - Designed workshops on material strength and structural building design for high school students
- Louisiana Board of Regents Fellow *Louisiana Tech University* (July 2003-April 2005)
  - Developed tissue stimulation and physiological signal acquisition programs in LabVIEW
  - Adapted deposition techniques such as platinization and electrodeposited iridium oxide for use on photodiodes
  - Acquired and implemented surgery skills for animal experimentation
  - Investigated role of photodiode geometry on stimulation and designed photodiode geometry for optimum use in neural stimulation
  - Developed algorithms to study NIR scattering through neural tissue
- Research Mentor for REU Undergraduate *Louisiana Tech University* *CyBERS* (Summer 2003 and Summer 2004)
  - Mentored and supervised two undergraduates in the planning, development, and implementation of a 10 week research project
  - Provided instruction on and evaluated literature review, experimental design, data analysis, and data presentation

Skills:
- Digital signal processing (digital filter design, power spectrum analysis)
- LabVIEW, MATLAB, and SAS
- EMG wire electrode fabrication
- Microelectrode activation and design
- Optical experimentation setup and design for tissue
- Small animal experimentation

Professional Organizations:
- Biomedical Engineering Society (BMES)
- American Society of Engineering Education (ASEE)
- LAPELS (Louisiana Professional Engineering and Land Surveying Board): Engineering Intern (2001)

Service:
- Outreach Liaison for Morris Creek Watershed Association and WVU Tech (2010-2013)
- Faculty Fellow for Maclin Residence Hall at WVU Tech (2012-2013)
- Member of WVU Tech Strategic Planning and Retention Committee (2011)
- Judge at Central and Southern WV Regional Science and Engineering and Creative Arts Fair (2011)
- Co-Director of Central and Southern WV Regional Science and Engineering and Creative Arts Fair (2010)
- Advisor for Alpha Phi Omega (service fraternity) WVU Tech (2009-2013)

- Abstract reviewer for Louisiana Tech University Biomedical Research Symposium (Spring 2005)
- Chair of fundraising committee for Louisiana Tech University Biomedical Research Symposium (Spring 2005)
- Escort of prospective biomedical graduate students for Louisiana Tech University

Selected Publications and Presentations:

- Gray, K. "Floating Light Activated Micro-Electrical Stimulators," Biomedical Research Symposium at Louisiana Tech, May 6, 2005
- Gray, K. S.A. Suvari, and M. Sahin, "Floating Light Activated Micro-Electrical Stimulators", Neural Interfaces Workshop, NIH and NINDS, November 16, 2004, **Student Fellowship Awardee**
- Gray, K. and M. Sahin, "Voltage Field Generated by a Single Photodiode in a Volume Conductor," Louisana Tech University, CyBERS SIG Meeting, Oct 4, 2004
- Innamuri, H.K., K. Gray, and M. Sahin, "Finite Element Modeling of a Floating Micro-Stimulator," BMES Annual Fall Meeting, October 3, 2003
- Gray, K., H.K. Innamuri, A. Tayebi, and M. Sahin, "Voltage Field Generated by a Single Photodiode in a Volume Conductor: Simulation and Measurements," 25th Annual International Meeting of IEEE/Engineering in Medicine and Biology Society, Cancun, Mexico, Sep 17-21, 2003.