From: Leland Weiss, PhD
To: The Louisiana Tech University Senate Members
May 14, 2015

Dear Senate Members,

It was with surprise I learned I was the 2015 COES nominee for the University Senate Chair Award. I consider this in itself to be humbling given the many great faculty and staff I work alongside on a daily basis. I have included here for your review a statement of my beliefs on the importance of teaching, research, and service to the community/university. Following this overview, I have included specific lists of teaching and evaluation scores, selected research and scholarship activities, and selected contributions of significant service.

As I consider each of these three elements, I am convinced that each is dependent on the other and represents an integrated whole in my approach to work at Tech. I have a singular vision that through dedication, collaboration, and the pursuit of excellence, the university as a whole will be a better place for the many students and employees who come to campus every day and interact with the world around us.

**Teaching**

In general, my teaching is driven by two key elements that I hope serve well the mission of the University. First, a fundamental desire to understand and appreciate the workings of the world around us and second, a passion to share that with the students I am fortunate to teach. Depending on the classroom or setting, these drivers can take different forms. One point of unity, however, is my attempt to form a strong link between a fundamental idea and a real world observation that we can share in common. Through this approach, I know students will be well served by their education and able to take strong experiences from Louisiana Tech out into the world that awaits them.

As part of this approach I believe that relevancy is critical. When I engage students in a senior-level Energy Challenges course, for example, we specifically tour the Grand Challenges that face the 21st century from an energy perspective, including recent events. These range from policy decisions to natural or man-made disasters. As with all of my teaching, the course relies on the fundamentals of science, tied to the world around us. It is my hope that students better see the complexity of interaction between people, the world, the future, and the choices that we will face moving forward. As part of the University mission, I believe this is a world that needs thoughtful, knowledgeable, and capable young adults who are well suited to address the complexities of this century. It seems these challenges increasingly include strong elements of political, social, economic, and scientific challenge.

**Research**

I believe that quality research combined with high standards of professionalism and collegiality improve the workings of Louisiana Tech and its mission. My work is based on a passion for energy research and I have been fortunate to achieve several notable grants and awards resulting from these efforts. This approach has also generated a strong network of
allies and partnerships that span from the Louisiana Tech campus to places like Kansas State, LSU-Health Sciences, foreign countries, national labs, private companies, and NASA. Each of these ties increases Louisiana Tech’s research footprint and helps enable the important translation of research from bench-top to practical, everyday use. As with teaching, I believe these efforts are needed to help address the real challenges that face the modern world. Because I view each part of my work at Louisiana Tech as an integrated whole, I take every opportunity to incorporate the specific research lessons and discoveries into teaching and outreach. Students enjoy these research ties as evidence of Tech’s place in advanced research as well as another example of important fundamentals as applied to real challenges in a complicated world.

Service to the University and Community
Like my views on teaching and research, I believe that service provides opportunity to forward the mission of the University. Service provides important learning opportunities to students, extra curricular or curricular. Service can also improve work environments and campus life. I have engaged a wide cross-section of the university and community through these efforts. This includes active advising of undergraduate students working their way through the MEEN curriculum. I have also been an active adviser for the COES faculty Mentor Program, working with untenured faculty as they initiate their own research, teaching, and service efforts. This past year I was elected to the University Senate and I have viewed this as another opportunity to forward the University mission through active service.

I am particularly pleased with how participation in Tech’s Grand Challenge Scholars Program (GCSP) assists the University mission. I have been on the steering committee since GCSP formation in 2009, and was an active participant in its original conception. Through the GCSP I am able to work with students learning about significant world challenges, direct student research, and guide exploration of these complicated and advanced issues. I have also been fortunate to work alongside Tech’s Chi Alpha student organization. I have been able to contribute in a wide variety of ways to this student-focused ministry that meets regularly on Tech’s campus. Among other highlights I have worked with students around the state in panel settings where challenges of life beyond the university campus are openly discussed.

I am also active in the American Society of Mechanical Engineers (ASME) as another means to serve and engage the community to enhance the University mission. Professionally, I am a co-lead and Session Chair for the PowerMEMS group within the ASME Micro Electro-mechanical Systems (MEMS) division. I am also the faculty adviser for Tech’s ASME student section. In addition to travel with the students to the annual conference, I work to support regular student meetings and activities here on Tech’s campus. As with the other outreach activities, through ASME I am able to see students and professionals grow, the community benefit, and Tech become a better and stronger place to call home.
List of Courses and Evaluation Scores

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Review of Publications, Grants, and other Intellectual Property

Over the past five years, I have been fortunate to present interesting research at leading conferences and in respected journals. 12 journal articles have been produced. For 10 of these I have been the lead or contact author. In addition there have been 18 papers presented at conferences and I have co-authored one book chapter. There have been 9 grants awarded to my research during this time including an NSF CAREER Award. Two provisional patents have also been pursued through these research activities. These areas of contribution are reviewed below.

Articles in Peer-Reviewed Journals


**Notable Conference Proceeding (Received ASME MEMS Devison 'Best Paper' Award):**


**Book Chapter Co-author:**


**Research Grants Awarded in Prior 5 Years:**

1. “MEMS Based Solutions for an Integrated and Miniaturized Multi-Spectrum Energy Harvesting and Conservation System” NASA-STTR Ph. 2: $325k (PI)
2. “SURE: Small-scale Thermal Energy Storage for Efficiency Increase” Louisiana-BORSF $4.5k (PI)
3. “Hydrogen Sulfide Lab on Chip Device for Medical Application” Louisiana EPSCoR: $20k (PI)
5. “MEMS Based Solutions for an Integrated and Miniaturized Multi-Spectrum Energy Harvesting and Conservation System” NASA-STTR Ph. 1: $125k (PI)
7. “Advanced Heat Exchanger and Microsystems Implementation” Radiance Technology – AMCOM: $130k (CoPI)
8. “Center for Advanced Materials and Nanotechnology in AMRI at the University of New Orleans”, AMRI $20k (CoPI)
MEMS Thermal Energy Storage for NASA Power Efficiency and Thermal Management” NASA-Louisiana Space Consortium $20k (PI)

**Provisional Patents:**
"H2S Lab on Chip" (L. Weiss, C. Kevil – LSUHS, J. Glawe – LSUHS).  *Provisional Patent Filed USPTO #61/806017*

“Thermal Energy Storage with Halloysite Tubule clay & Conductivity Enhancement" 2012  (L. Weiss, Y. Lvov)  *Provisional Patent Filed USPTO #61/898728*

**Selected List of Service**
Significant service contributions to the University and Community are summarized below. Contributions include direct interactions with the professional communities, student interactions and broader outreach activities.

**Selected Service to the Profession:**
- Contributions through American Society of Mechanical Engineering (ASME)
  - Session Co-Chair and Topic Organizer for PowerMEMS (2014-15)
  - Reviewer for ASME Conference Proceedings
- Reviewer for leading journals:
  - Journal of Micro Electromechanical Systems (JMEMS)
  - Science of Advanced Materials
  - Journal of Mechanical Design
  - Microsystems Technologies Journal
  - Sensors & Actuators A: Physical
  - International Journal of Heat Transfer
  - International Journal of Heat and Mass Transfer
  - International Journal of Energy Research
- American Chemical Society Petroleum Research Fund (PRF) Grant Reviewer 2015
- 2012 DoE Grant Fellowship Reviewer

**Selected Service to the University and Community**
- ASME Student Section Faculty Adviser, Jan 2013-15
- Grand Challenge Scholars Program Steering Committee Member and Adviser, 2009-15
- Louisiana Tech University Senate Senator (2014+)
- COES Faculty Mentor Program – Mentor, 2012-15
- Undergraduate Student Advising, ~30 Students per quarter
- Faculty Search Committees: Mechanical Engineering (2015) and Institute for Micromanufacturing (2015)
- Mechanical Engineering Curriculum Committee Member, 2014-15
- Senior Design Groups Mentor and Sponsor, 2008-15
- National Society of Black Engineers (NSBE) Research Team Adviser & Coordinator, 2011-13
- K-12 Fluid Mechanics science curriculum development for NASA-Threads
- Louisiana Tech Chi-Alpha Christian Fellowship
  - Non-funded teaching & advising
  - Workshop and professional panel discussion participation