

Clemson University STEM Communication Program

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Project Description.

A targeted program to improve science and engineering communication will produce graduate students with improved ability to collaborate across disciplines and engage with a wide variety of audiences. A focused STEM communication program will provide graduate students with the exceptional career and professional development opportunities needed to give them the edge in job talks and presentations that so often make the difference in success today. The recent affiliation of Clemson University with the Alan Alda Center for Communicating Science, along with the strength of the Pearce Center for Communication provides the framework for the establishment of a STEM communication program at Clemson.

Why do we need this? A significant opinion gap between the scientific community and the general public makes clear the lack of effective scientific communication. The 2015 PEW Center study, *Science and Society*, showed that 89% of scientists support the use of animals in research while only 47% of the public do and that 87% of scientists agree that climate change is due to human activity but only 50% of the public thinks similarly. Why the disparity? This pattern exists on these topics as well as on GMOs, energy and vaccinations. Why the differences exist is less obvious. The complexities of today's STEM topics with direct relevance to the public means scientists and engineers must improve communication. Randy Olson, in his book "Don't be Such a Scientist," made the point that science today is 50% doing the science and 50% communicating it. But, most scientists and engineers are only being trained in the doing part of science or engineering and not in how to communicate it.

The growth of the internet and the loss of topical science writers in major news industries has led to the need for scientists to speak directly to the public. Choosing not to communicate what we do, who we are, and why it's important makes it easy for the public to ignore the value of scientific thinking. From an oft-cited survey, two thirds of the American public cannot name a living scientist. Is the public not interested in science, do scientists and engineers not talk to the public or are the two things more like ships passing in the night? Regardless, there exists a mutual failure of recognition and communication between scientists and the public. The explosion of citizen science and crowd-funding suggests that the public is willing and eager to engage with the STEM disciplines, but how this happens could be significantly improved.

As a Graduate School Faculty Fellow, I propose to establish a STEM communication program at CU, beginning with a focus on science and engineering graduate student communication skills. As a scientist trained in theater and improv and having established the affiliation with the Alan Alda Center for Communicating Science, I am uniquely qualified to lead this effort. This project will contain three key projects.

1. **Installation of a Science and Engineering Communication Certificate.** A 9 credit hour certificate program based on the Alda Center coursework for a similar program is in development. After attending two workshops at the Alda Center, I returned to pilot these techniques in TA training in Biological Sciences and in several professional development workshops for faculty and staff. Surveyed graduate students from the TA course replied with high levels of enthusiasm and found significant value in the material immediately after as well as one year later. Faculty and staff surveys showed improved confidence in engaging

their audiences after a single workshop.

The proposed certificate would require two 3-credit courses in Communicating Your Science, then an additional 3 credits to be completed either with additional offerings to be developed (Writing to be Understood; Connecting with Your Community; Presenting Science Unplugged) or an approved science / engineering course already offered by CU.

The first goal for this project is to work with course instructors (already identified) and facilitate the completion and submission of curriculum materials; develop the material necessary for university certificate approval; facilitate faculty training in Improv (an essential piece of communication skills in this program) to increase qualified faculty for teaching in the program; and offer the first 3-credit course in the program – Communicating Your Science I. Improv courses will be conducted by Alchemy Comedy of Greenville.

2. **Development of a Science Communication Bootcamp for Graduate Students.** A graduate student focus group will be recruited to develop a 3-4 day summer bootcamp offering. The focus group will determine the communication skillsets most needed across the array of science and engineering fields offered at CU and the appropriate timing for the bootcamp. The bootcamp will focus on key aspects of the Alda Center training for engaging key audiences, distilling complex messages, and working with the media. Additional sessions will focus on proposal and manuscript writing. The goal will be to offer a pilot program in Summer 2017 for 20-30 graduate students.
3. **Collaborate with the Pearce Center to develop a home for the STEM Communication Program, future initiatives and expansion of projects.** Projects under consideration are the development of a STEM communication seminar series; participation in a regional Science Communication Network – tying Clemson into an existing network with UNC Chapel Hill, Duke and NC State; development of an undergraduate minor in STEM communication and further offerings for faculty and staff professional development. We are particularly interested in developing workshops focused on issues unique to minorities and women in science and engineering.

Alignment with Clemson 2020Forward.

This proposal directly supports and aligns with the Clemson 2020Forward vision for graduate education and research. The STEM communication program focuses on what the innovative leader of tomorrow needs for success. The student centered, hands on, interactive nature of the courses allow for learning while doing. The certificate courses will build on the bootcamp topics, providing students the breadth and depth of knowledge needed. The innovative nature of the course work will provide science and engineering students novel and engaging tools to connect with all audiences, allowing them access and connection to local, national and global opportunities. As the only university in the Southeast to be an affiliate of the Alda Center, Clemson has the opportunity to capitalize on this asset and drive change and innovation in the way graduate students are prepared for tomorrow's challenges.

Deliverables and Timeline.

1. Certificate program in Science and Engineering Communication Skills – FY2017
2. Course offering in Communicating Your Science I – Spring 2017
3. Qualified faculty for teaching future installments of certificate courses – Fall 2017

4. Graduate Student Focus Group / Sci-Eng Communication Bootcamp – Fall 2017/Summer 2017
5. Official home for STEM Communication Program within Pearce Center for Professional Communication to assist in future endeavors – Fall 2017