MEDIA CONTACT
Scott Jones, Communications
Oak Ridge National Laboratory
jonessg@ornl.gov, (865) 241-6491

ORNL, University of Tennessee launch new doctoral program in data science

OAK RIDGE, Tenn. May 15, 2017–The Tennessee Higher Education Commission has approved a new doctoral program in data science and engineering as part of the [Bredesen Center](#) for Interdisciplinary Research and Graduate Education.

The Bredesen Center unites resources and capabilities from the University of Tennessee-Knoxville (UTK) and the Department of Energy's Oak Ridge National Laboratory to promote advanced research and to provide innovative solutions to global challenges in energy, engineering and computation.

The new program, which is expected to begin in the fall, is the brainchild of ORNL Computational Sciences and Engineering Division Director Shaun Gleason, UT Business Analytics Associate Professor Russell Zaretzki, and Bredesen Center Director Lee Riedinger. It will bring new doctoral students from some of the world's top institutions to East Tennessee for an in-depth education in data science as it applies to specific scientific domains.

The massive amounts of data gathered via cellphones, tablets, sensors and other devices, along with the enormous datasets generated at leading scientific facilities such as the Spallation Neutron Source (SNS), the Manufacturing Demonstration Facility, and the Oak Ridge Leadership Computing Facility (home of the Titan supercomputer) at ORNL, pose a unique set of challenges and opportunities for researchers across the scientific spectrum. Creating a new generation of graduates with an enhanced understanding of how to manage and analyze this data could greatly expedite research breakthroughs and provide novel solutions to long-standing problems.

For example, electronic health records, when analyzed en masse, could reveal better and cheaper ways to treat patients, and the combination of cell phones, GPS technology and traffic sensor data will allow researchers to optimize traffic flow and assist city planners in responding to emergencies more quickly and effectively. Researchers who use scientific facilities such as ORNL's SNS, which provides the most intense pulsed neutron beams in the world for research and industrial development, will benefit from the ability to analyze data on the fly.

Home to not only UTK and ORNL but also the UT Health Sciences Center (UTHSC) and UT-Chattanooga (UTC), Tennessee, as well as much of the nation, is experiencing an increased demand for data specialists. The DSE doctoral program is necessary to close a critical skills gap.

The curriculum will seek to integrate candidates' data science education with seven scientific domains: health and biological sciences, advanced manufacturing, materials science, environmental and climate science, transportation science, national security, and urban systems science. Candidates will work alongside ORNL and UT researchers and emerge with a doctorate tied to a specific scientific specialty.

"The interdisciplinary nature of the program is what makes this new degree so unique," said Gleason, adding it will also help both UT and ORNL continue to be leaders in the areas of data science and engineering.

The program will include a curriculum heavy in data analytics, computing, policy and entrepreneurship while offering a wide array of electives. Initial plans are to admit 10 to 15 graduate students per year, growing to an enrollment goal of approximately 100 students. Mentoring and research funding support will be divided among ORNL, UTK, UTHSC, and UTC.

The Energy Science and Engineering (ESE) program that provides the basis for the newly launched DSE track has already awarded 24 doctorates in its first five years and now includes more than 125 graduate students. The program's interdisciplinary curriculum provides student experiences in entrepreneurship and policy relative to energy. One-third of the students focus on entrepreneurship, and some intend to start new energy-related companies in Tennessee once their graduate work is finished.

"The ESE program has been a big success and a new model for interdisciplinary graduate education linking the resources of a major university and a national laboratory," Riedinger said. "The new DSE program expands this model to another area of national need and is expected to continue the tradition of excellence within the Bredesen Center, ORNL and UT."

Oak Ridge National Laboratory is supported by the Department of Energy's Office of Science. The single largest supporter of basic research in the physical sciences in the United States, the Office of Science is working to address some of the most pressing challenges of our time. For more information, please visit science.energy.gov.

Bredesen Center Director Lee Riedinger, from left, University of Tennessee, Knoxville Vice Provost and Dean of the Graduate School Dixie Thompson, former Tennessee Gov. Phil Bredesen, and UT Knoxville Chancellor Beverly Davenport gather together as the school presented Gov. Bredesen with an honorary doctorate on May 11. Earlier that same day the Tennessee Higher Education Commission gave final approval to the latest degree program of the joint UT-Oak Ridge National Laboratory Bredesen Center, a doctorate in big data.