Celebrate Bioengineering

The Next Chapter of Everitt Lab

FRIDAY
SEPTEMBER 21
2018

The New Everitt Lab

Educating Future Bioengineering Health Care Innovators and Leaders

OUR NEW HOME

Welcome to historic Everitt Laboratory, the new home of the Illinois Bioengineering Department. Following a two-year, $55 million renovation, the 124,000-square-foot building provides our students and faculty with state-of-the-art facilities necessary to educate the next generation of bioengineering health care innovators and leaders, while providing additional lab space for research that will improve the human condition.

Everitt Lab's central campus location enables Bioengineering to serve as a conduit for even more multidisciplinary research collaborations that promise to transform biology, medicine, the environment, and more. In fact, we estimate that nearly 700 faculty, staff, and students from across campus will work and learn in Everitt Lab every day.

Many alumni will remember Everitt Lab as the longtime home of the Electrical & Computer Engineering Department. The groundbreaking research and instruction that occurred here during the last half of the 20th century helped lay the foundation for today's information age. Similarly, we believe that the work that occurs in this building going forward will help revolutionize human health in the 21st century.

THANK YOU

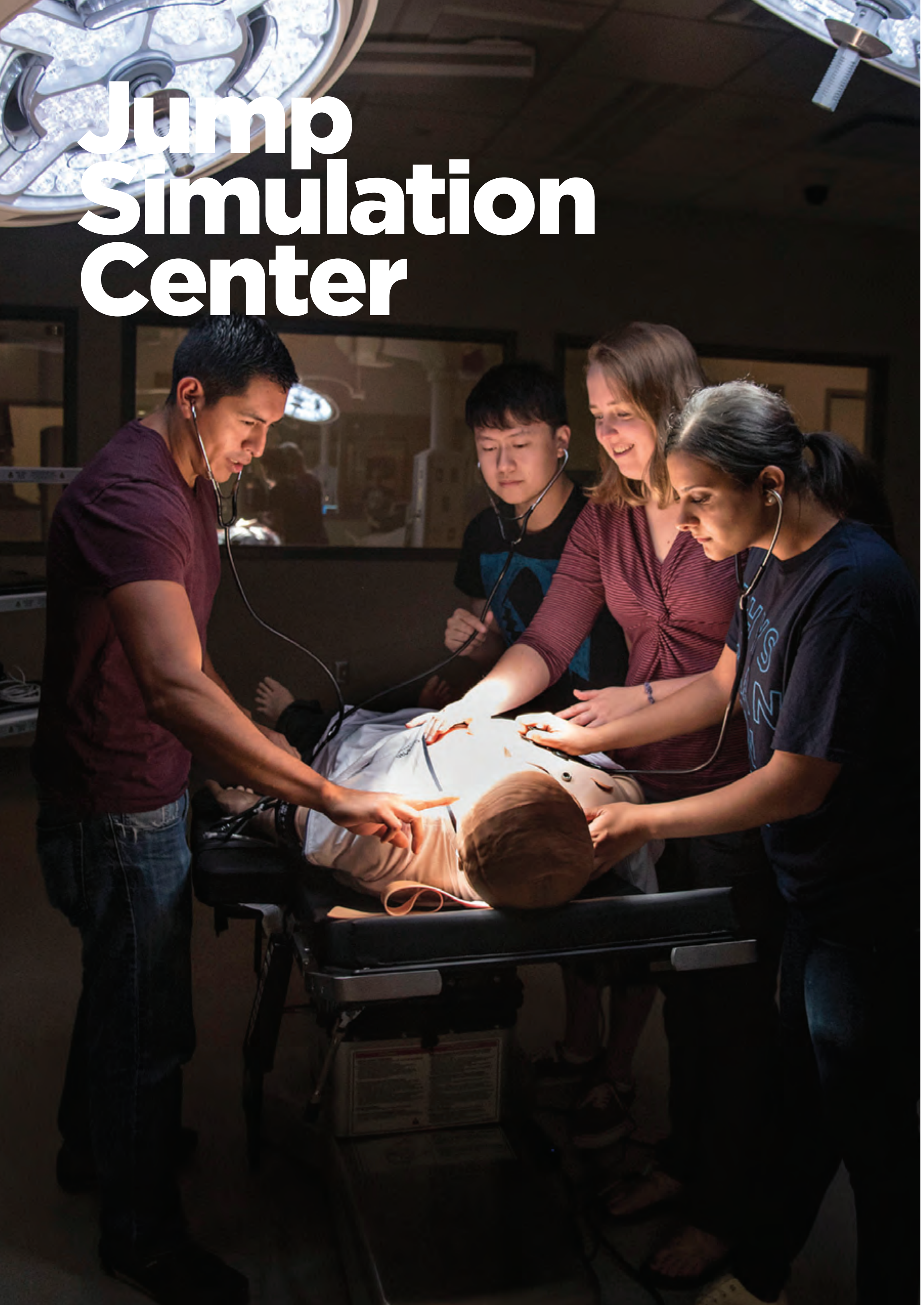
Special thanks to The Grainger Foundation, which provided a $20 million lead gift through its Grainger Engineering Breakthroughs Initiative to the College of Engineering to launch the renovation, and Jump Trading for providing a $10 million gift to establish the Jump Simulation Center, a unique, high-tech medical training facility for the Carle Illinois College of Medicine and Bioengineering students.

Jump Simulation Center

GROUND FLOOR

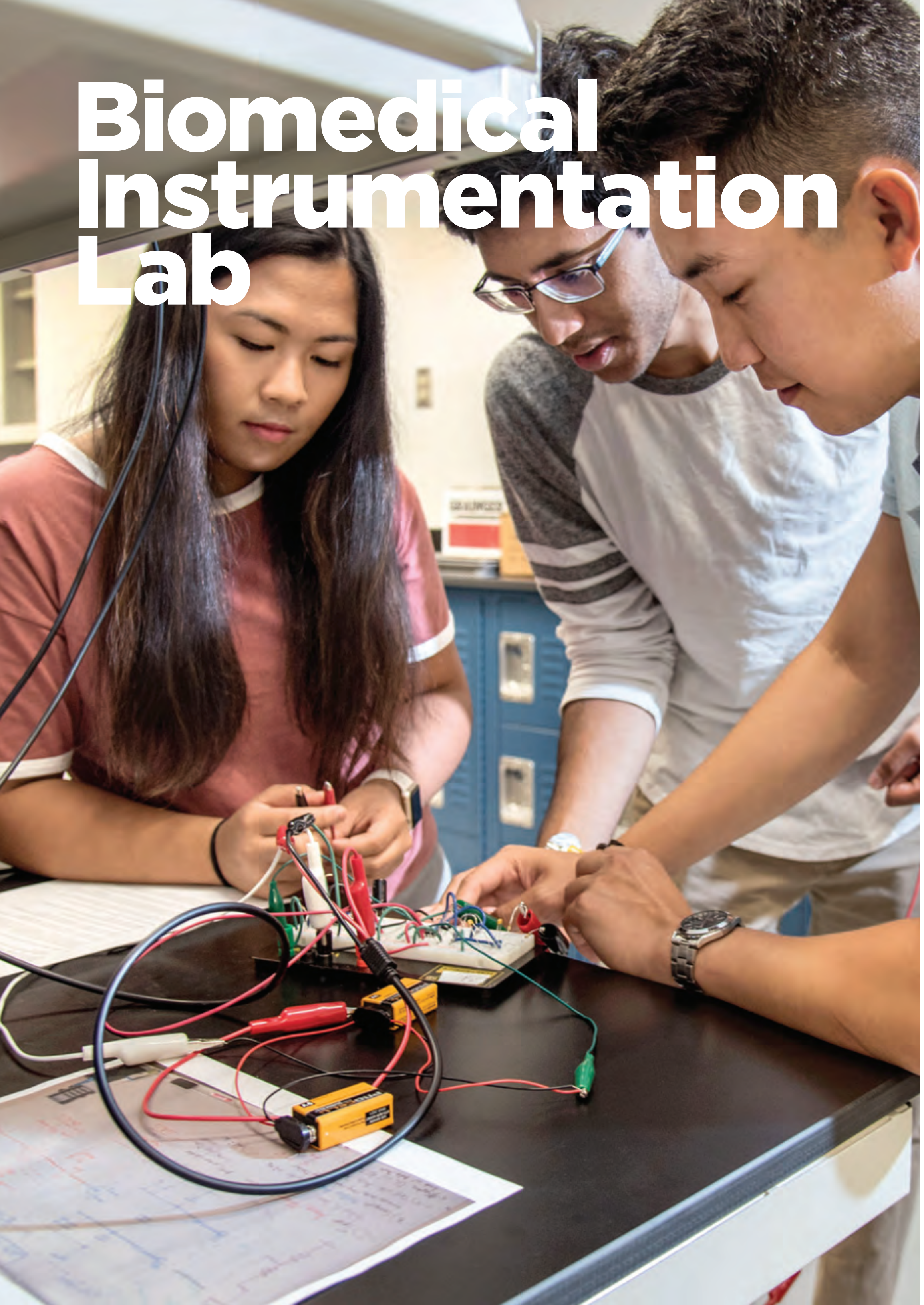
The Jump Simulation Center is the world's first medical simulation center in a bioengineering department building. It is also a part of the new Carle Illinois College of Medicine. It uses medical equipment and the latest simulation and virtual reality technology to enhance student training in various settings, including an operating room, intensive care unit, and clinic exam rooms.

The Center has high-fidelity adult and infant mannequins, as well as task trainers that students use to practice procedures like measuring blood pressure and suturing. In the clinical exam rooms, students interact with standardized patients—people hired to portray patients with certain conditions. All the training in the Center is recorded, and medical students meet with faculty in the Center's debriefing rooms to review their progress. In the Virtual Reality Skills Suite students don VR headsets to explore 3D models of the human body.



Jump Simulation Center

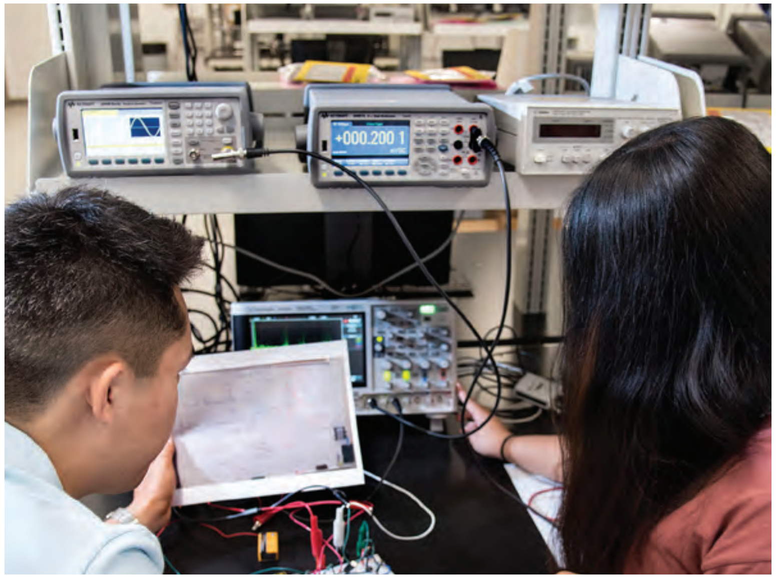
A hallmark of the Jump Simulation Center is that it allows medical students to practice and explore many times, which is great preparation for training with real patients and cadavers later in their medical education. Engineering students also have access to the Center, so they can test new devices and processes that will make health care more accessible, affordable, and efficient.



Biomedical Instrumentation Lab

GROUND FLOOR, ROOM 0201

Students enrolled in the BioE 415 Biomedical Instrumentation course use this lab to test the principles, design, and applications of medical instrumentation. Specifically, students build analog circuits to acquire physiological signals, and they digitally filter and further process those signals in LabVIEW. At the end of the semester, they apply all this knowledge to design and build a bioinstrumentation system such as a pulse oximeter, which monitors a person's oxygen saturation.



Physiology Instructional Lab

GROUND FLOOR, ROOM 0215

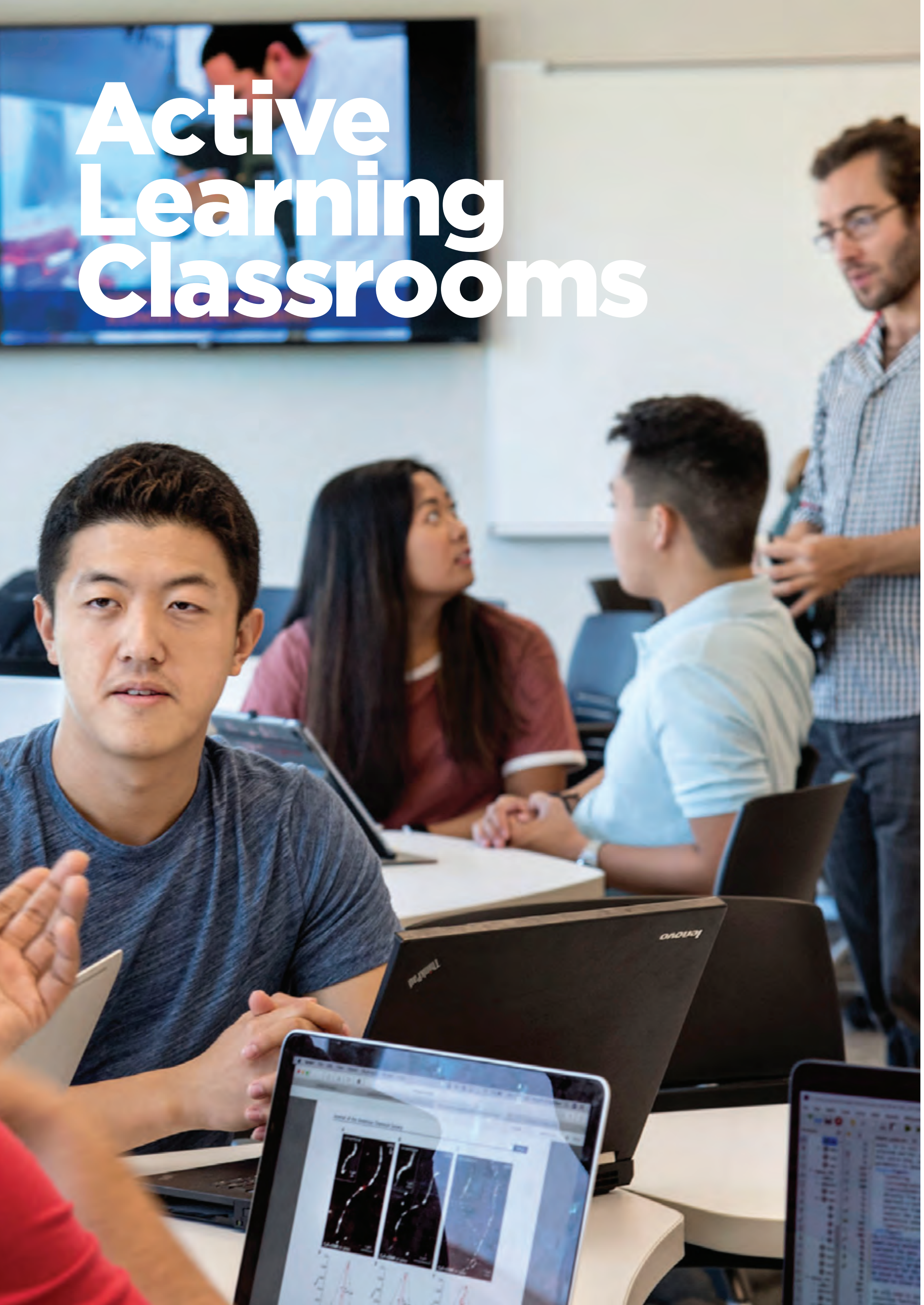
Students enrolled in the BioE 303 Quantitative Physiology Lab course perform hands-on and simulated experiments in animal and human physiology. Simulation models are based on a mathematical description of physiological behavior, and the models are calibrated and validated through hands-on experiments. Students use the developed simulation models to predict the behavior of physiological systems under different experimental conditions (for example, exercise or a health disorder).

Senior Design Lab

1ST FLOOR, ROOM 1229

During the one-year Bioengineering senior design capstone course, students apply the knowledge they've accumulated to solve real-world problems supervised by faculty, medical professionals, or industry partners. In this open-concept space, student teams design, build, and test prototype biomedical devices for their clients. In past years, students have created a device that simulates catheter placement in the radial artery, developed sensory feedback in a prosthetic hand, and redesigned a cochlear implant, just to name a few projects.

Active Learning Classrooms



ROOMS 1302, 2101, & 3117

The three active learning classrooms in Everitt Lab are designed for collaborative activities that support project-based learning. The circular tables enable students to interact with each other during class, and faculty use the latest AV and software technology to enhance their instruction. The layout of each of these classrooms is particularly conducive to instruction in bioengineering—a highly multidisciplinary field that benefits from innovative teaching approaches of diverse topics, including engineering, chemistry, biology, mechanics, physiology, and materials science. Interestingly, renowned educator and Illinois College of Engineering Dean William L. Everitt published a paper in 1962, "Engineering Education—Circa 2012 A.D," where he predicted the case- or project-based instructional methods that occur in these classrooms today.

Cell and Tissue Instructional Lab

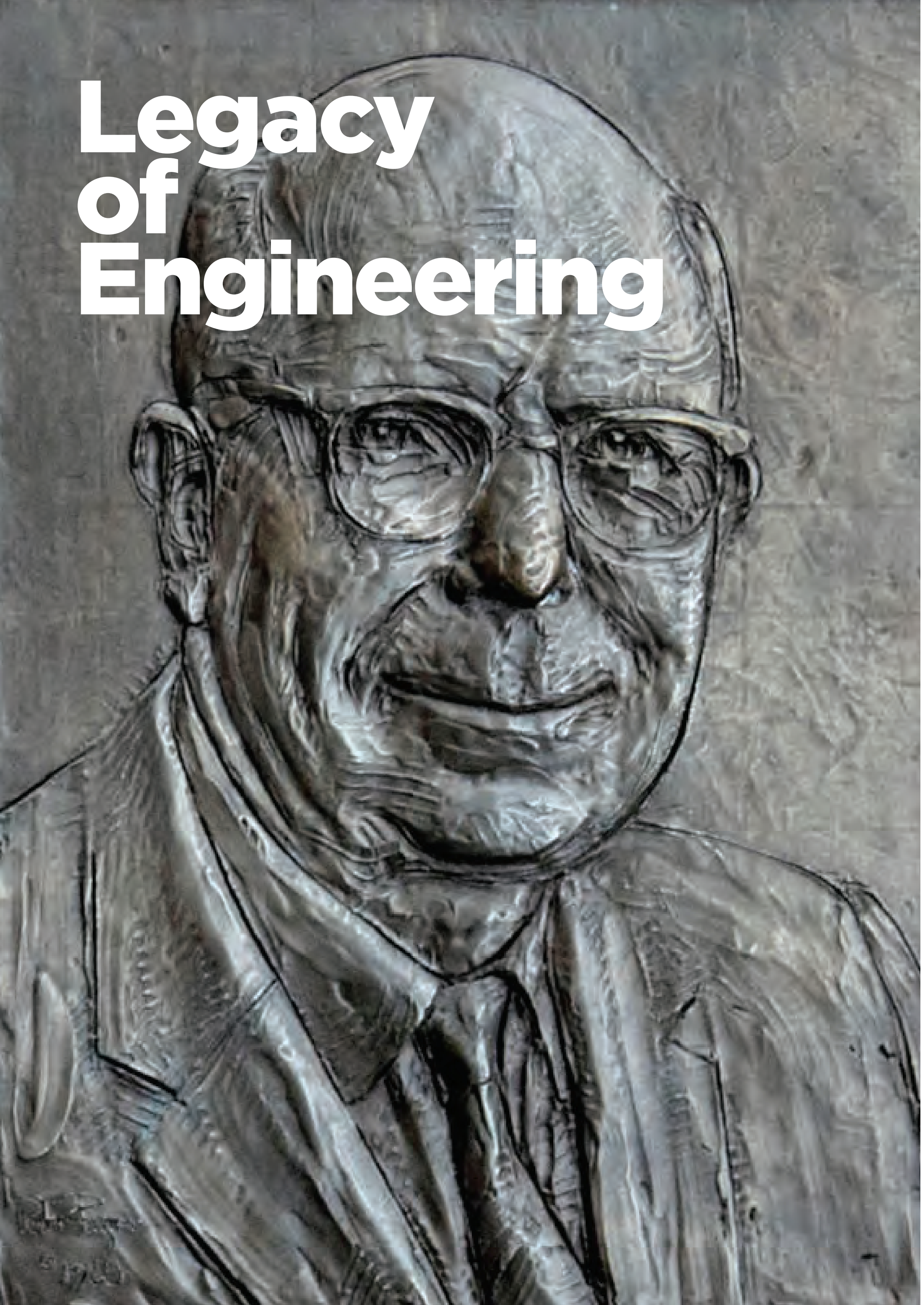
3RD FLOOR, ROOM 3109

This state-of-the-art biosafety level II instructional laboratory space gives Bioengineering students the practical skills needed to pursue careers in the burgeoning fields of tissue engineering, biofabrication, and genetic engineering. Our sophomore students first learn, in BIOE 202, the fundamental principles of the scientific method, acquire critical experience performing bacterial and mammalian cell culture, and gain extensive knowledge in quantitative biology techniques. In their junior year, BIOE 306 provides advanced training in forward and reverse engineering of biological systems across scales, from creating artificial biological robots powered by light to 3D bioprinting of prosthetic devices or even complex soft living tissues such as ears or skin. Finally, senior students enrolled in BIOE 498PPP study emerging technologies in synthetic biology for manipulating mammalian DNA in living cells, including gene editing and epigenetic regulation of gene expression, which are critical in modern gene therapy and the biotechnology industry. Overall, this first-of-its-kind facility provides our students with unique educational opportunities that are only available at the University of Illinois.

Faculty Research Labs

1ST FLOOR, ROOM 1126

Everitt Lab houses Bioengineering faculty research groups that conduct fundamental and translational research in a variety of areas—engineering gene circuits, gene editing, image-guided surgical systems, biomedical nanotechnology, biomedical imaging, tissue engineering, and regenerative medicine. Additional Bioengineering faculty maintain their research labs in the Micro + Nanotechnology Lab, Beckman Institute for Advanced Science and Technology, the Carl Woese Institute for Genomic Biology, and the Stephens Family Biomedical Research Center. Our faculty's research advances our understanding and treatment of HIV, ALS, Alzheimer's disease, diabetes, heart disease, cystic fibrosis, sickle cell anemia, and cancer.



Legacy of Engineering

WILLIAM L. EVERITT

Bioengineering is pleased to continue the legacy of engineering excellence tied to the building's namesake, William L. Everitt, whose leadership in the post-World War II years brought Illinois Engineering to national prominence. Everitt served as head of the Electrical Engineering Department (1945-1949) and dean of the College of Engineering (1949-1968).

A renowned inventor, author, educator, and engineering visionary, Everitt led a curriculum transformation that was copied nationwide, and he hired some of the brightest young faculty, who not only taught but conducted research, as well—a novel idea at the time.

Everitt retired as dean in 1968, but he went on to influence U.S. telecommunications policy through National Academy of Engineering and Department of Commerce committees and panels. During his lifetime, he received many prestigious awards and honors, including the Institute of Radio Engineers Medal of Honor, he was named one of the two top electrical engineering educators by the Institute of Electrical and Electronics Engineers, he was a founding member of the National Academy of Engineering, and he received 10 honorary doctorates.

Earlier in his career, Everitt wrote the book Communication Engineering, which was one of the first textbooks anywhere to incorporate research results—largely his own—in a form suitable for classroom instruction. This book also introduced several generations of students to the then-nascent telecommunications field. During World War II, he led the operations research staff in the Army Signal Corps, making important contributions to radar development and training, including inventing the radar altimeter which in some form is used in all aircraft to this day.

A humble, compassionate man with a great sense of humor, Everitt died on September 6, 1986, at the age of 86.

ILLINOIS
Bioengineering
COLLEGE OF ENGINEERING

University of Illinois at Urbana-Champaign
1406 W. Green Street
Urbana, IL 61801

bioengineering.illinois.edu