



**2022 TapRoot® Student Competition**  
*Participating Universities*

**NC STATE UNIVERSITY**



**EDWARD P. FITTS DEPARTMENT OF  
INDUSTRIAL AND SYSTEMS ENGINEERING**



**MARY KAY O'CONNOR  
PROCESS SAFETY CENTER**  
TEXAS A&M ENGINEERING EXPERIMENT STATION



The University of Akron  
**College of Engineering  
and Polymer Science**



University of  
**Pittsburgh**

Swanson School  
of Engineering

# NC STATE UNIVERSITY



As a research-extensive land-grant university, North Carolina State University is dedicated to excellent teaching, the creation and application of knowledge, and engagement with public and private partners. By uniting our strength in science and technology with a commitment to excellence in a comprehensive range of disciplines, NC State promotes an integrated approach to problem solving that transforms lives and provides leadership for social, economic, and technological development across North Carolina and around the world.

The mission of the Edward P. Fitts Department of Industrial and Systems Engineering is to provide a premier educational experience for our students and a world-class environment for our faculty. We want to give them the opportunity to convert ideas to reality and enhance the economic development and quality of life of the citizens of North Carolina, our nation, and humankind.



**MARY KAY O'CONNOR  
PROCESS SAFETY CENTER**  
TEXAS A&M ENGINEERING EXPERIMENT STATION

The Mary Kay O'Connor Process Safety Center (MKOPSC) is the world's foremost university-based Process Safety Center. It is located at Texas A&M University in College Station, TX. The Center serves industry, government, academia, and the public. It is a resource in education and research and provides service to all stakeholders.

The Mary Kay O'Connor Process Safety Center works closely with the university to help students over several different areas of research such as Safety Engineering. The Master of Science in safety engineering is administered in Texas A&M University's Artie McFerrin Department of Chemical Engineering. The program objective is to teach the principles and practices of safety engineering for leadership careers in the industry. The prerequisite for the Master of Science in safety engineering is a bachelor's degree in engineering. From this program, a Process Safety Practice Certificate program was developed for industry practitioners. This program, administered by MKOPSC, allows industry professionals to obtain PDH credits and a certificate to showcase and refresh their knowledge of Process Safety.

The Mary Kay O'Connor Process Safety Center also works closely with The Artie McFerrin Department of Chemical Engineering at Texas A&M University. It is one of the largest, fully accredited programs in the country. Texas A&M boasts some of the brightest Chemical Engineering students in the country. The degree programs are rather selective as the quality of the candidates keeps growing every year. Besides classroom instruction, many outlets exist for real-world experiences such as research opportunities, internships, and co-op education.

The Artie McFerrin Department of Chemical Engineering at Texas A&M University has faculty engaged in a wide breadth of studies ranging from research in the areas of biomass utilization, process safety, process systems engineering, hydrocarbon processing, nanotechnology, polymer and materials engineering, biomolecular engineering, and molecular simulation. The ultimate goals of our research activities are to positively influence society by providing new knowledge, and train students to develop into independent researchers who, in their careers, will continue to advance the forefront of science and technology.



The University of Akron  
**College of Engineering  
and Polymer Science**

The University of Akron (UA) is located in the heart of Ohio's fifth-largest city (Akron, OH). UA offers a wide range of unique, in-demand and top-ranked associate, bachelor's, master's, doctoral and professional degree programs in engineering, the arts and sciences, business, health care, law and education. The University of Akron has been engineering excellence since 1913. Our College of Engineering and Polymer Science offers world-class engineering, engineering technology, and computing degree programs and is a global leader in polymer science and polymer engineering. Our exceptional academic and career development opportunities lead to well-paying, rewarding careers in Ohio and beyond. 100% of our engineering students learn through experience through our historic co-op program, research opportunities starting with freshmen, and senior capstone projects. Plus, students participate in our award-winning design teams and compete in both national and international competitions.

Our Chemical Engineering (ChE) program, which was established in the 1960s, has been one of the strongest engineering programs within the College of Engineering and Polymer Science. Over 40% of ChE students belong to the Williams Honors College, and ~ 50% of all ChE students participate in undergraduate research. Many of our students receive full time job offers from their co-op employers before they return to campus for their senior year, and a majority (> 90%) of them work in companies such as Bridgestone, Dow, Goodyear, Lubrizol, Parker Hannifin, RoviSys, J.M. Smucker and Sherwin-Williams.

One uniqueness of our ChE program is offering a set of course sequences entitled "Project Management and TeamWork" (PMT). Students take the one credit PMT course each year beginning in their Freshman year. They are divided into teams with each team consisting of freshmen, sophomores, juniors, and seniors. Over the course of each semester, the students work with peers on a project that involves aspects of prototype design, business/marketing and stakeholder outreach. The teamwork, project management and leadership skills they acquired from PMT prepare them way ahead of their peers when working in a team or managing a project at their jobs. Our Capstone design sequence further prepares our students on applying the fundamental knowledge to practical/contemporary problems, and in recent years, on process safety analysis with a more industry focused approach. The selected team of students is excited to have the opportunity to participate in the 1<sup>st</sup> Annual TapRoot® Student Competition. They look forward to showcasing their learning and their results on investigating an accident at the 2022 Global TapRoot® Summit.



University of  
Pittsburgh

Swanson School  
of Engineering

Founded in 1787, the **University of Pittsburgh** is an internationally renowned leader in health sciences learning and research. A top 10 recipient of NIH funding since 1998, Pitt has repeatedly been ranked as the best public university in the Northeast, per The Wall Street Journal/Times Higher Education. Pitt consists of a campus in Pittsburgh—home to 16 undergraduate, graduate and professional schools — and four regional campuses located throughout Western Pennsylvania. Pitt offers nearly 500 distinct degree programs; serves more than 33,000 students; employs more than 14,000 faculty and staff, and awards 9,000 degrees systemwide.

The **Swanson School of Engineering** is one of the oldest engineering programs in the U.S. – celebrating its 175<sup>th</sup> anniversary in 2021 – and is consistently ranked among the top 25 public engineering programs by U.S. News & World Report. The Swanson School has excelled in basic and applied research during the past decade with focus areas in sustainability, energy systems, advanced manufacturing and materials, bioengineering, micro-and nano-systems, and computational modeling, and this year announced the first PhD-level circular economy program in the U.S. Almost 200 faculty members serve nearly 3,600 undergraduate, graduate and Ph.D. students across six departments: bioengineering, chemical and petroleum engineering, civil and environmental engineering, electrical and computer engineering, industrial engineering, and mechanical engineering and materials science.

The **Department of Industrial Engineering** at Pitt was one of the first established in the U.S. and this year is celebrating its 100th anniversary. The department's contributions to global IE practice include the first academic programs in safety engineering and health care systems engineering, as well as the first Pitt Engineering program to require an international experience by all undergraduates. Pitt IE features innovative undergraduate and graduate programs and world-class research in operations research, manufacturing sciences, healthcare, data sciences, advanced and nano-materials, and traditional industrial engineering. Undergraduate and graduate students have an outstanding placement record at leading companies, while doctoral students have earned faculty positions at top universities in the U.S. and abroad, as well as cutting-edge research positions in industry.