New Curricula for Undergraduates and Accelerated Engineering and Public Health Degrees

***Outcome/accomplishment*:** New courses and fast-track Bachelors-to-Masters curricula have been developed by educators from institutions participating in the NSF-funded Precise Advanced Technologies and Health Systems for Underserved Populations (PATHS-UP) Engineering Research Center (ERC), headquartered at Texas A&M University (TAMU), including TAMU and partners: the University of California at Los Angeles (UCLA), Rice University, and Florida International University (FIU). The coursework provides students with essential knowledge and tools to prepare them for careers in the development of enabling technologies and advanced engineered systems for better healthcare.

***Impact/benefits*:** Since its inception in 2017, PATHS-UP faculty and graduate students have created (1) three new courses, (2) a one-year capstone design project, (3) modules for six existing courses, (4) a PATHS-UP Overview, and (5) modules about the four main research thrusts that are used to on-board summer Research Experiences for Undergraduates (REU) participants at all partner institutions. In addition, PATHS-UP faculty at TAMU have gained approval for two new five-year combination degree options that allow students to earn a Bachelor of Science in Industrial Engineering while also earning a Master of Public Health in Occupational Safety and Health. Students who complete this program graduate with both degrees in just five years. The degree plans are available in the 2020-2021 Catalog, and the first recruitment cycle opened in Spring 2021.

Explanation/background: A primary purpose of the PATHS-UP ERC is to recruit and educate a diverse group of scientists and engineers to lead future development of technologies to improve health in underserved communities. The coursework is essential to prepare PATHS-UP scholars to work collaboratively with faculty toward the shared vision of PATHS-UP, and in that process, to build a culture of excellence in innovation, inclusion, and sustainability. The capstone design experience is important for bridging the gap between classroom and industry by requiring students to use their knowledge and skills to complete an engineering design project equivalent to the assignments they will soon receive as aspiring professional engineers.

The five-year Bachelor's-Master's degree program was developed to respond to a need for training that combines engineering and public health. The 170-hour program includes 12 semester credit hours that apply to both the Bachelor of Science in Industrial Engineering degree and the Master of Public Health degree. This program helps satisfy the need for engineers with formal education in industrial engineering and health, to improve the quality of life for the public in underserved areas. Graduates of the program will be immersed in practical health-related issues and help to design technologies that can overcome the barriers usually faced in the use of point-of-care devices.

Figure. *TAMU will offer new five-year combination degree options that allow students to earn a Bachelor of Science in Industrial Engineering while also earning a Master of Public Health in Occupational Safety and Health. (Credit: TAMU)*

Commented [JDJ1]: This excellent highlight summarizes PATHS-UP's hard work to get this curriculum in place. The resolution in the photo is poor and should be improved to allow one to be able to read the text on the diploma. If possible, I would suggest a photo with multiple graduates posing in caps and gowns (to illustrate that there are "graduates" instead of a single student graduate). The diploma could be included as a higher resolution inset.