ENGINEERING the FUTURE

Dr. Matt Jackson, P.E.

Dean of the Holland School of Sciences and Mathematics and Inaugural Director of Engineering

"HSU is uniquely positioned . . . to see strong growth and make a significant impact."
— Dr. Matt Jackson

The United States Bureau of Labor Statistics predicts that during the decade spanning 2018-2028, employment in mechanical engineering will grow nationally by more than 22,000 positions, an increase of more than 4%. The Texas Workforce Commission predicts that during the decade spanning 2016-2026, in-state demand for mechanical engineers will grow by more than 3,000 positions, an increase of more than 18%.

To meet this growing need, Hardin-Simmons will offer a mechanical engineering degree beginning in the fall of 2023. The campus community is hard at work laying the foundation for this new program, including building classroom and lab space and hiring personnel.

HSU'S HOME FOR ENGINEERING

Originally built in 1948, Abilene Hall has been the powerhouse of the campus for classroom space. At present, however, Abilene Hall is a construction site, being retrofitted to house HSU's future engineering program.

An additional 7,000 square feet will be added to the building's southern elevation, resulting in approximately 2,200 square feet per floor. The space will be unrecognizable to those who have walked the halls prior to 2021.

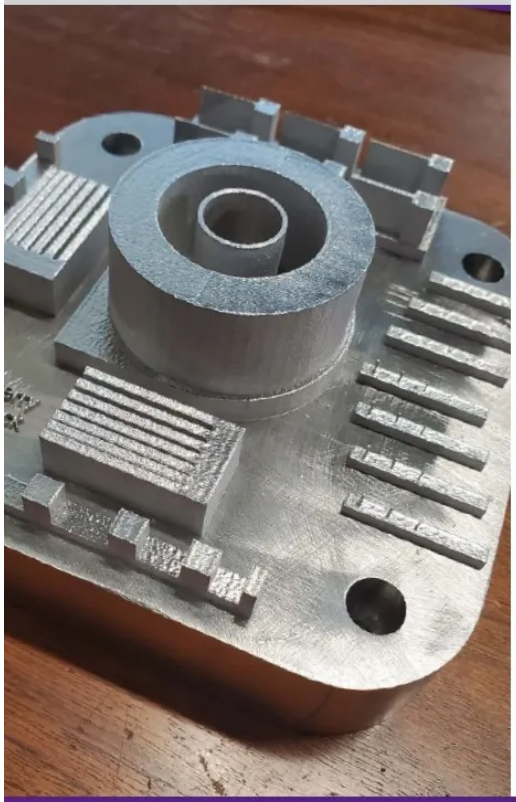
The first floor will consist of faculty offices and lab space for hands-on learning, while the second floor will house lecture halls, a computer lab, a student lounge, and a data center. The third floor will remain in reserve with the goal to grow into the space as the engineering program expands over the years.

Three distinct labs - a materials testing lab, a fabrication lab, and a fluids dynamic lab - will be available for research and experimentation by students and faculty alike.

In the **materials testing lab**, students will be able to apply their lessons to practical experience, experimenting with the physical effects of pressure, temperature, and outside forces on engineering materials, such as metals, composites, and ceramics. To summarize, in this space, *students will learn how materials work*.

Students will take the knowledge gathered in the materials testing

(Above) The future materials testing lab in Abilene Hall. (Below) Various samples from the 3D metal printer.



lab and advance into the **fabrication lab** where they will build various projects. Once they understand how materials work and how they can be manipulated, students will then know which materials to use for various builds. With access to MIG and stick welders, plasma cutter tables, a woodshop and metal shop, 3D printers, and more, students will experience best practices for working in the field. To summarize, in this space, *students will learn how materials fit together.*

The **fluid dynamics lab** will provide the space to understand fluid and energy behavior and controls. Students will have access to wave pools, wind tunnels, and various ways to experiment with temperature and environmental changes. To summarize, in this space, *students will learn how materials behave in engineering environments.*

Each lab feeds into the other with knowledge gained.

The engineering building will provide the industry standard and beyond in its machinery and spaces. The building itself has been designed as a learning tool with its industrial design showcasing exposed utilities and ceilings so students can see practical engineering encountered in everyday life. Lecture halls, classrooms, and makerspaces will be made adaptable to allow the building to evolve with technology.

PROGRAM DISTINCTIVENESS

Mechanical engineering is a very diverse, dynamic, and exciting field that is at the forefront of developing new technologies for several industries, including healthcare, energy, manufacturing, and robotics. The Mechanical Engineering Program at HSU will offer a superb engineering education within an environment that fosters creativity and innovation.

A fourth lab, at this moment referred to as the **special lab**, will be found on the first floor. Due to the "unknown" being researched and developed in this space, the lab has been designed independently of the rest of the building, with its own fire suppression and HVAC systems. Dr. Matt Jackson, P.E., the inaugural Director of Engineering, will bring his research with him to Hardin-Simmons and continue pushing the envelope with additive manufacturing and developing new technologies.

The special lab will explore the development of new manufacturing techniques of metal and alloys using additive manufacturing. Additive manufacturing uses 3D metal printing to print various metals together, creating unique alloys. The goal is to change the way the world sees and uses metal.

The Mechanical Engineering Program intends to have a biomedical specialization and partner with the school's already existing Department of Physical Therapy and health services programs. Completion of the biomedical-focused degree ensures that students meet the requirements for admission to medical or dental school, while at the same time satisfying the requirements for an accredited degree in mechanical engineering.

Like other programs on campus, a service and mission mindset will be a part of conversation and curriculum. Students will take the knowledge gained in the classroom and use it to meet real world and spiritual needs. Dr. Jackson shared, "We are transforming lives for Christ."

PROGRAM LEADERSHIP

Dr. Matt Jackson, P.E. has been hired as the Dean of the Holland School of Sciences and Mathematics at HSU.

Dr. Jackson comes to HSU from West Texas A&M University where he served as the Associate Dean of Engineering and was the Bell Helicopter Professor of Mechanical Engineering. On what drew him to HSU, Dr. Jackson said, "I am truly excited by the prospect of joining a faith-based institution that holds firmly to a Christian mission. I have always viewed my calling in higher education as a ministry."

Dr. Jackson will also serve as the inaugural Director of Engineering. Launching in the fall of 2023, this new program will focus on mechanical engineering, with the goal of expanding into medical, civic, and electrical engineering over the years. "Matt brings with him a stellar teaching record. He is already working closely with our construction team regarding the renovation of Abilene Hall and the construction of the engineering lab," noted Dr. Chris McNair '84, Provost and Chief Academic Officer.

Over the next few months, Dr. Jackson will be busy overseeing the recruitment of students and faculty for the engineering program and developing curriculum. "The mission of the program will be to provide an intimate and hands-on engineering education that is both technically proficient and socially minded. We will endeavor to go beyond making our students competent professionals, but to also make them responsible global citizens," shared Dr. Jackson.

When asked about his goals, Dr. Jackson looks forward to building relationships and getting to know the people connected with HSU and the surrounding community. "The addition and development of an engineering program is challenging, but one with which I am intimately familiar and was also strongly drawn toward," he said. "I believe that HSU is uniquely positioned both within Abilene and the surrounding region, as well as within the context of smaller faith-based institutions to see strong growth and make a significant impact."

COMMUNITY ENGAGEMENT & IMPACT

The new engineering program will meet the needs of West Texas. Student recruitment will heavily focus on our local area, so graduates remain in the region, investing in and growing the local workforce.

Dr. Jackson and the administration are building an Engineering Advisory Board, made up of local engineers, businesses, and alumni, to speak to the nuances of the regional industry. HSU intends to create elective classes that meet the specific needs of hiring managers and companies in our region, to feed into the local economy.

If you wish to participate with the Engineering Advisory Board or get connected with Dr. Jackson, please reach out! matt.jackson@hsutx.edu

Meet Dr. Jackson and hear him describe HSU's upcoming mechanical engineering degree:

(Above) Former research students of Dr. Jackson using a 3D metal printer and (below) tensile testing the materials printed to determine their strength.