Cross-Disciplinary Faculty Initiative

Texas Tech University's Five Strategic Research Fields:

1. Systems Resilience & Adaptability Semi-arid West Texas is the perfect living laboratory to study climate conditions that face communities around the world. Texas Tech researchers are developing drought-tolerant crops, water treatment and conservation technologies, and more to ensure communities continue to thrive in the face of extreme weather events.

2. Powering Our Future A sustainable energy future requires a comprehensive approach: from fossil fuels to renewables. Powering Our Future is a holistic energy approach that advances cost-effective solutions that interface with next-generation energy systems demands. Texas Tech researchers are working towards energy independence for the state of Texas.

3. Advancing One Health The health of people, animals, and the environment is intertwined. Texas Tech University and Texas Tech University Health Sciences Center are building bridges between physicians, veterinarians, environmental scientists, engineers, nutritionists and public health professionals to improve and defend the health and well-being of all species.

4. Rural & Urban Development This field focuses on strengthening communities and addressing the unique challenges facing both rural and urban environments.

5. Strengthening National Security The nation's energy grids, communications networks, healthcare systems, and other critical infrastructures are increasingly at risk of being vulnerable to attacks by our nation's adversaries. Texas Tech researchers are working to protect our national security, economic prosperity, and social stability with advancements in cyber-physical systems security through both cyber and hardware-based interventions.

Academic Projects with Cross-Disciplinary Scope

These strategic research fields offer remarkably broad subdivisions for academic projects, creating opportunities for scholars from virtually every discipline to contribute meaningfully. Each field encompasses multiple interconnected sub-areas that can be approached from diverse academic perspectives. For example, *Systems Resilience & Adaptability* can include agricultural engineering, environmental science, economics, sociology, public policy, materials science, and data analytics projects. *Powering Our Future* spans mechanical engineering, chemistry, business, environmental studies, computer science, and policy analysis. *The One Health* initiative naturally bridges medicine, veterinary science, environmental health, microbiology, nutrition, psychology, and public health. *Rural & Urban Development* incorporates architecture, urban planning, economics, sociology, education, healthcare delivery, and infrastructure engineering. *National Security* encompasses cybersecurity, engineering, computer science, psychology, international relations, and law.

This breadth ensures that researchers can find meaningful connections between their specific disciplinary expertise and these larger strategic themes, making them ideal frameworks for cross-

disciplinary collaboration and the type of integrated scholarship that the Faculty Cross-Disciplinary Initiative seeks to promote.