



Creating a career pathway for the next generation of clinical engineers

The University of Missouri collaborates with Siemens Healthineers to launch one of the first online certification programs in this high-demand field

About the University of Missouri and MU Health Care

Established in 1839, the University of Missouri (Mizzou) is a public land-grant research university based in Columbia, Missouri. As the state's largest university, Mizzou enrolls over 31,000 students and offers more than 300 degree programs in 13 major academic divisions. Part of the Mizzou system, MU Health Care comprises several hospitals and outpatient clinics across the state and employs approximately 6,000 healthcare professionals. MU Health Care serves patients from each of Missouri's 114 counties.



The challenge

Clinical engineers play a crucial role in healthcare, providing the technical expertise to manage and maintain vital technologies such as X-ray, CT and MRI equipment. Unfortunately, like many healthcare-related roles, there are not enough qualified clinical engineers in the workforce today to meet the current and growing demand for them.

The U.S. Bureau of Labor Statistics notes that the demand for clinical engineers is growing at a rate of 7% per year, while the job market overall is growing at 4% annually. That pace is expected to continue through 2033.^{1,2} The workplaces impacted by the shortage include not only hospitals and health systems but also the companies that develop and manufacture healthcare equipment, including Siemens Healthineers.

The solution

Leveraging a long-standing Value Partnership between Mizzou and Siemens Healthineers, the organizations agreed to collaborate on a solution for their shared staff shortage challenge. They envisioned a workforce development program that would be offered through the Mizzou College of Engineering, a program specifically for clinical engineering.

To develop the curriculum, the organizations began with a plan to address the skill sets that Siemens Healthineers looks for in clinical engineers. Four core courses were developed as a result:

1. Engineering in Medical Imaging Part 1 (Non-ionizing techniques)
2. Engineering in Medical Imaging Part 2 (Ionizing techniques)
3. Medical Image Processing
4. Applications in Clinical Engineering

The fourth course, Applications in Clinical Engineering, was developed specifically at the recommendation of Siemens Healthineers to teach students the requirements for succeeding as professionals in the healthcare environment—appreciating the fast pace,

staff interactions and critical importance of the work, for example. Aptly, the course is taught by an on-site Siemens Healthineers employee, a scientific engagement director and senior key expert in magnetic resonance ultrahigh-field imaging, who also serves as an adjunct research professor of Radiology in Mizzou's School of Medicine.

The program includes for-credit options at the graduate and undergraduate levels, both available online through Missouri Online as well as on campus. There is also a non-credit option available through the University of Missouri Extension. The variety of learning options makes the program accessible to both traditional and nontraditional students across the country.

Whether traditional or nontraditional, learners are prepared to step into critical service engineering roles, especially in underserved and rural areas. These roles include:

- Clinical Service Engineers
- Field Service Engineers
- Radiologists
- Biomedical Engineers
- Medical Equipment Technicians
- Imaging Specialists

The results

Since its launch in Fall 2022, the Certificate in Clinical Engineering program at Mizzou has established a strong foundation for workforce readiness. The first students completed the program in Spring 2025, with dozens more already enrolled in one or more of the program's courses. Interest continued to grow among students with engineering degrees as well as others with different backgrounds in STEM or healthcare. Enrollment is offered annually in the fall.

Graduates are pleased to find the program continues to support them, providing aid in securing positions in the healthcare industry, including at MU Health Care and with companies like Siemens Healthineers. Future students will benefit from a course of study that will continue to evolve to align with job requirements. Job placement services are also evolving, with an aim of connecting program graduates to more and more opportunities.

"This is an important program that allows us to meet the needs of employers and help develop the workforce, which is part of our role as a public university. With this program, we have created a pathway to good, high-paying jobs where there is substantial demand."

—Kevin Gillis, Chair, Department of Chemical and Biomedical Engineering, University of Missouri



Value Partnerships

Value Partnerships with Siemens Healthineers are long-term, performance-driven relationships based on a shared vision of the future of healthcare. These strategic partnerships address the industry's top challenges by jointly developing innovative, sustainable solutions that enable providers to transform the system of care, generate value and reach their full potential.

[➔ Learn more](#)

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The results described herein by customers of Siemens Healthineers were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption), there can be no guarantee that other customers will achieve the same results.

1. Colato J, Ice L, Laycock S. Industry and occupational employment projections overview and highlights, 2023–33 [Internet]. Bureau of Labor Statistics. 2024. Available from: <https://www.bls.gov/opub/mlr/2024/article/industry-and-occupational-employment-projections-overview-and-highlights-2023-33.htm>
2. U.S. Bureau of Labor Statistics. Biomedical engineers [Internet]. Bls.gov. U.S. Bureau of Labor Statistics; 2018. Available from: <https://www.bls.gov/ooh/architecture-and-engineering/biomedical-engineers.htm>