Post-Doc to Tenure Track Fellow: Supercritical CO2 Cycle Design, Mechanical and Aerospace Engineering
University of Dayton

Job Title	Post-Doc to Tenure Track Fellow: Supercritical CO2 Cycle Design, Mechanical and Aerospace Engineering
Department	School of Engineering https://udayton.edu/engineering/
Institution	University of Dayton Dayton, Ohio
Date Posted	Apr. 7, 2025
Application Deadline	May 7, 2025
Position Start Date	Available immediately
Job Categories	Post-Doc
Academic Field(s)	Mechanical Engineering
Apply Online Here	https://employment.udayton.edu/en-us/job/502558/mechanical-and-aerospace-engineering-postdoc-to-tenure-track-fellow
Apply By Email	

Job Description

The transition from graduate research assistant to tenure-track professor requires significant professional growth as both a technical researcher and educator; growth that is best nurtured within a team of supportive mentors with access to research infrastructure and committed graduate and undergraduate research assistants. The University of Dayton Department of Mechanical and Aerospace Engineering is seeking postdoctoral fellows with a desire to investigate and/or prior experience in experimentation of sCO2 cycles and/or infrastructure to join colleagues responding to the cross-disciplinary research and development challenges within the sCO2 industry and to support its

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growth within Ohio.

The Position
We invite applications for a postdoctoral research fellow with prior experience in supercritical CO2 (sCO2) cycle design and experimentation, thermomechanical design, and/or experimentation of thermal systems. These above-mentioned engineering research specialties are at the nexus of the School of Engineering's innovative research for the common good and several area collaborators with advanced research capabilities. This post-doc-to-tenure-track fellow opportunity is an up to two-year postdoctoral research position that may transition to a tenure-track faculty position at the end of the second year per relevant policies of the hiring unit and University of Dayton, upon demonstrated success in securing externally sponsored research; high-impact mentorship of undergraduate and graduate researchers; and development of effective, innovative teaching practices. This position is renewable annually and begins on August 16, 2025.

The postdoctoral research fellow will be responsible for assisting externally-funded research programs at UD related to the thermomechanical design and experimental optimization of sCO2 heat exchangers. The postdoctoral research fellow will manage a research team composed of faculty collaborators, research engineers, and graduate and undergraduate research assistants. The postdoctoral research fellow will be directly mentored by faculty collaborators in growing a successful research and teaching program at UD. This includes direct support for project and laboratory management, proposal writing, and teaching support. The postdoctoral research fellow will have the opportunity to access the research facilities of the Dayton Thermal Applications (DaTA) Laboratory [expertise in sCO2 cycle and heat exchanger optimization, concentrated solar power]

The Department
The Mechanical and Aerospace Engineering (MAE) Department offers Bachelor's, Master's, and Doctoral Degree programs in Mechanical Engineering. Within the Bachelor's degree, concentrations are available in aerospace and energy systems. Additionally, minors are available in biomechanics and robotic systems. The MAE Department currently has 800 undergraduate students, 200 graduate students, 25 full-time faculty members, and a number of adjunct faculty. Further information about the Department can be found at:
https://udayton.edu/engineering/departments/mechanical_and_aerospace/undergrad_mee/index.php

The University of Dayton
UD is one of the nation's largest Catholic universities, and one of the largest private universities in Ohio. Continuing its trajectory of growth, UD enrolls nearly 12,000 students, including over 8,000 full-time undergraduates. We are a national leader for industrial and manufacturing R&D and federally

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sponsored engineering R&D, and number one in Catholic university engineering R&D.

Dayton, Ohio
Dayton offers some of the lowest housing costs among Ohio's other largest metros: Cleveland, Cincinnati, and Columbus. With a burgeoning downtown area, 20 expansive metroparks, a bike-(and now scooter!) share program, several historic neighborhoods, and of course, the Dayton Aviation Heritage and National Historical Park, this is a great place for those who want a bit of everything with a low cost of living, great schools, and manageable traffic. See https://www.daytoncvb.com

At the University of Dayton, we value inclusive excellence because we recognize that diversity, equity and inclusion are fundamental to academic and institutional excellence. Inclusive excellence requires a comprehensive, cohesive and collaborative alignment of infrastructure, resources and actions. We strive to be active, intentional, and sustain engagement with and celebration of diversity in every dimension of institutional life. Because we seek a workforce with a wide range of perspectives and experiences, we encourage all candidates to apply.

Minimum Qualifications

- All-but-defended Doctorate in Mechanical Engineering or a related engineering field nearing completion.
- Because of the need for collaboration with U.S. government agencies, and the need to access controlled research facilities, U.S. citizenship is required.
- Record of scholarly research.
- Potential for teaching excellence, particularly employing active and experiential learning pedagogies for both undergraduate and graduate courses.
- Effective written communication skills.
- Articulated commitment to promoting diversity, equity and inclusion.

Preferred Qualifications
While not everyone may meet all preferred qualifications, the ideal candidate will bring many of the following:

- Completed Ph.D. by the start of the contract.
- Successful experience in or with one or more of the following:
- Experimentation with sCO2 cycles and/or components.
- Experimentation with thermal systems or high-pressure systems.
- Teaching undergraduate and graduate courses in mechanical design, manufacturing, and/or materials science.

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- Engaging individuals from socially and culturally diverse communities.
- Community, university, or professional service.
- Experiential and active learning strategies to foster and maintain student engagement, successful use of learning resources, including technology and/or active learning strategies.
- Mentoring undergraduate student research.
- Specialization and expertise in the area of thermomechanical analysis and/or materials.
- Potential to establish an externally-funded research program.
- Effective interpersonal communication skills.
- Effective oral communication skills.
- Effective classroom management skills.
- Commitment to breadth of education including educating the whole person in the Marianist tradition of social justice and a commitment of service to the community, university and profession

The University of Dayton is a top tier, Catholic research university with offerings from the undergraduate to the doctoral levels. Founded in 1850 by the Society of Mary, the University is a diverse community committed to advancing the common good through intellectual curiosity, academic rigor, community engagement and local, national and global partnerships. Guided by the Marianist educational philosophy, we educate the whole person and link learning and scholarship with leadership and service.

The University is also pleased to provide support for spouses of prospective and newly hired faculty through its dual career program. While we cannot guarantee placement, we serve as an effective resource and support system for your spouse. Information can be found at https://udayton.edu/hr/dual-career-resources.php.

EEO/AA Policy

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Informed by its Catholic and Marianist mission, the University is committed to the principles of diversity, equity, and inclusion. Informed by this commitment, we seek to increase diversity, achieve equitable outcomes, and model inclusion across our campus community. As an Affirmative Action and Equal Opportunity Employer, we will not discriminate against minorities, women, protected veterans, individuals with disabilities, or on the basis of age, race, color, national origin, religion, sex, sexual orientation or gender identity. The University is also pleased to provide support for spouses of prospective and newly hired faculty through its dual career program. While we cannot guarantee placement, we serve as an effective resource and support system for your spouse. Information can be found at https://udayton.edu/hr/dual-career-resources.php

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact

School of Engineering
University of Dayton
Dayton, OH