

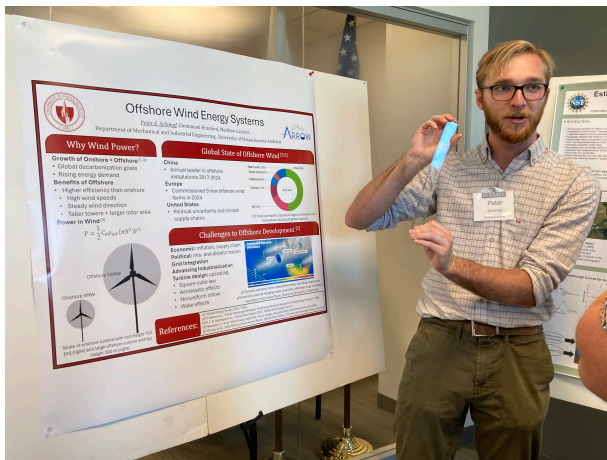


Fall 2025



ARROW Quarterly Newsletter - October 27, 2025

ARROW visits the Massachusetts Office of Environmental Justice & Equity



ARROW faculty, postdocs, and students had the opportunity to meet with Assistant Secretary Crystal Johnson and the Massachusetts Office of Environmental Justice & Equity to discuss innovations from the University of Massachusetts Amherst that are building a more sustainable and just energy transition for the Commonwealth.

ARROW Faculty Erin Baker presented information on energy storage while ARROW postdocs and students Jon Pearce, Peter Schimpf, and Arash Khojaste shared posters of their research on offshore wind and grid integration. We look forward to building on these conversations and continuing to partner with state leaders, community organizations, and industry to realize a clean energy future.

ARROW-IExP

This summer saw the successful placement of multiple ARROW students into impactful internships through **ARROW-IExP**, the Industrial Experience Program. As part of this program, ARROW students were matched with internships at Triton Anchor, Avangrid, WSP, and Pacific Northwest National Laboratory.

As part of ARROW's commitment to developing a skilled offshore wind (OSW) workforce, the Industrial Exchange Program (IExP) places graduate and undergraduate students in internships and applied research roles with industry, national labs, government agencies, and NGOs.



My favorite part of this internship is the autonomy I have in figuring out how to resolve roadblocks in a workplace setting. I've had to do a lot of research and find alternate solutions to resolve most of the challenges I've encountered in my work and while sometimes it gets frustrating, I've found the prospects of learning new things to be incredibly motivating.

- Oriane Nana, electrical engineering major from Johns Hopkins University and ARROW-FLEx intern with Triton Anchor



Exploring Wind Energy at SENGI



The 2025 Summer Engineering Institute (SENGI) brought 63 high school students to the UMass Amherst campus for two weeks to learn more about engineering. Students participated in a mix of problem solving challenges, hands-on activities, and lectures.

Every afternoon students spent two hours in one of the campus engineering labs, working on a more in-depth team based project. ARROW Director Prof. Sanjay Arwade taught students about offshore wind energy, and a wind-turbine lab challenged them to design the most powerful or most efficient turbine blades. In addition, students played “wind ball”, an activity designed by ARROW PhD student Peter Schimpf to teach them about the various components of wind turbines and how they function.



ARROW-Spotlight

Highlighting ARROW students and faculty



José L. Amell Hernández

*University of Puerto Rico at Mayagüez
PhD Candidate in Mechanical Engineering*

“What excites me about this work is uncovering how offshore wind farms could influence not just energy production but also the surrounding marine environment in ways that are still poorly understood.”

José L. Amell Hernández knows that offshore wind farms are central to the transition toward renewable energy, but their large-scale operation can alter the interaction between the atmosphere and the tropical ocean. So, his research focuses on how turbine wakes modify the surface wind stress and, in turn, drive vertical ocean motions such as upwelling and downwelling. To explore these processes, he uses the Regional Ocean Modeling System (ROMS) forced with an analytical Gaussian wake model that conserves momentum, enabling simulations of ocean circulation, Ekman transport, and mixed-layer dynamics under different deployment scenarios in tropical waters.

With a background that bridges physics, engineering, and ocean sciences, José aims to connect fundamental research with real-world challenges, contributing to both the advancement of offshore renewable energy and the understanding of its environmental impacts.



Dennice Gayme

*Johns Hopkins University
Professor of Mechanical Engineering*

Dennice F. Gayme is a professor of mechanical engineering with secondary appointments in the departments of Electrical and Computer Engineering and Applied Mathematics and Statistics at Johns Hopkins University.

Her research focuses on modeling, analysis, and control of spatially distributed and large-scale networked systems in applications such as wall-bounded turbulent and transitional flows, wind farms, and power grids. Her lab utilizes computational and theoretical methods from applied mathematics, dynamics, controls, optimization, and fluid mechanics.

She received the Turbulence and Shear Flow Phenomena (TSFP12) Nobuhide Kasagi Award in 2022, the JHU Discovery Awards in 2024, 2022, and 2019, a WSE Excellence in Teaching Award in 2020, a CAREER Award from the National Science Foundation in 2017, the Office of Naval Research's prestigious Young Investigator Program award in 2017, and a JHU Catalyst Award in 2015.

She is a member of the Ralph O'Connor Sustainable Energy Institute (ROSEI) leadership council and is also the faculty representative for the Hopkins Students Wind Energy Team (HSWET).

ARROW-FLEx launches Fall 2025

This Fall, ARROW launched the ARROW-FLEx Faculty Learning Exchange, which works to build instructional capacity across institutions through an OSW course and educational materials exchange.

The goal of ARROW FLEx is to improve the quality of offshore wind education, and these guest lectures give host faculty the opportunity to enrich their courses with content that broadens the scope and depth beyond their own specialization.

In September, ARROW Director Sanjay Arwade visited Clemson University's Civil Engineering program, hosted by Prof. Weichiang Pang. Prof. Arwade taught the basics of wind energy engineering from the perspective of a structural engineer to more than 40 Clemson undergraduates.

On the day after the talk Prof. Pang hosted Prof. Arwade in Death Valley for the Clemson-Syracuse football game. It was quite a cultural experience!

More ARROW-FLEx visits are planned this fall, including Chris Niezrecki, Distinguished Professor of Mechanical Engineering at the University of Massachusetts Lowell who will be visiting the University of Puerto Rico at Mayagüez, and ARROW Director Sanjay Arwade, Professor of Civil Engineering at University of Massachusetts Amherst and ARROW Associate Director Ben Schafer, Professor of Civil and Systems Engineering at Johns Hopkins University who will be visiting Morgan State University.



ARROW faculty receive NSF CAREER awards

ARROW is pleased to recognize two ARROW faculty who received the Faculty Early Career Development Program (CAREER) Award from the National Science Foundation. This is a prestigious award supporting early-career faculty who “have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization.”



Dr. Umberto Ciri (University of Puerto Rico Mayaguez – Mechanical Engineering) received the award for his project titled: *Coupled air-sea dynamics in offshore wind turbine flows with complex bathymetry*. This five-year, \$500,419 grant “supports the development of new computational simulations to analyze the basic physical mechanisms underlying interactions between offshore wind turbines and flows at the air-water interface.” The project addresses some of the unique challenges of optimizing energy generation in offshore installations while also helping to build a critical mass of skilled researchers and professionals in wind energy.

More details about Dr. Ciri’s award can be found [here](#).



Dr. Alessandro Sabato (UMass Lowell – Mechanical and Industrial Engineering) received the award for his project titled: *“CAREER: Enhancing Measurements of Dynamic Features in Large-Scale Structures via Three-Dimensional Aerial Stereovision.”* This five-year, \$607,855 grant supports the development of advanced techniques for monitoring the 3D structural dynamics of aging structures, such wind turbines and bridges, to reduce inspection costs and enhance the safety and resilience of these critical systems. The award also supports educational outreach focused on engaging undergraduates and career-transitioning individuals through hands-on modules in computer vision and drone technology training. The project addresses critical challenges in structural monitoring while also helping to prepare a more technologically skilled and workforce-ready generation of STEM professionals.

More details about Dr. Sabato’s award can be found [here](#).



About our newsletter

If you have questions, comments or ideas to share, contact Terri Downing, ARROW Grant Administrator at terridowning@umass.edu. To stay up to date on ARROW activities, be sure to also check out our webpage and connect with us on LinkedIn:

ARROW website  **LinkedIn**