Effective Practices for Teaching Engineering Undergraduates

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MAE Seminar Series

The purpose of the presentation is to share best practices in undergraduate engineering education that have been employed and adapted to MAE program at Princeton. The pedagogic practices that I will share examples of include: (1) developing relationships with industry to allow students access to engineers and policy makers and an appreciation of the applications of the topics in the curriculum, (2) employing Campus as Lab pedagogy to engage and demonstrate real world examples of engineering and sustainability, (3) providing international community engaged scholarship opportunities in the form of summer internships and student projects, and (4) empowering students in undergraduate research projects in areas of interest to the student. Institutional support and resources are crucial, and I will highlight the partnerships with various organizations on campus including CST, ProCES, Office of Sustainability, Office of Capital Projects, and others. Most importantly in being effective is the willingness and flexibility to change the program each year based on feedback and modifying the courses and labs to maintain relevance, increase inclusion and diversity and to eliminate aspects that are ineffective in promoting learning and advancing attainment of program outcomes. In the end, I will share my vision for projects and initiatives that I would like to develop in MAE.

Lamyaa El-Gabry is a Lecturer in Mechanical & Aerospace Engineering at Princeton University. She received her PhD in Mechanical Engineering from Rensselaer Polytechnic Institute in Troy, New York. She was appointed Assistant Professor at the American University in Cairo in 2006 and tenured and promoted to Associate Professor in 2012. Prior to her academic appointment, she held various engineering and research roles at General Electric. Her work includes gas turbine blade cooling design, combustion controls, experimental heat transfer, generator ventilation design and project engineering, and Computational Fluid Dynamics (CFD) and heat transfer methods development for energy and propulsion.

El-Gabry is the recipient of five NASA Glenn Faculty Fellowships, the Air Force Faculty Fellowship, and KTH Royal Institute of Technology fellowship where she served as Affiliated Senior Faculty for several years. She was a Visiting Research Fellow / Senior Principal Engineer at Solar Turbines in San Diego.

El-Gabry teaches courses and labs in thermodynamics, fluid mechanics, renewable energy and supervises student research in various areas of mechanical engineering.

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