

Enhancing Engineering Design Curriculum with Hands-on Wind Turbine Projects

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Abstract

The MSc Engineering Design module at the University of Nottingham has undergone a significant overhaul to focus on hands-on, project-based learning using wind turbine technology. This transformative shift embeds practical design and sustainability into the curriculum through innovative pedagogical strategies that span the complete lifecycle of wind turbine projects, from conceptualization to execution. The integration of advanced technologies such as 3D Printing and Computer Aided Design (CAD) has not only enriched the learning environment but also dramatically increased student engagement and satisfaction, with satisfaction rates rising from 60% to 96%. This approach allows students to apply theoretical concepts directly to solve practical engineering challenges, equipping them with vital skills for impactful contributions in the renewable energy sector. The revamped module enhances understanding of both the environmental and economic aspects of sustainable engineering practices. This initiative serves as a model for how academic programs can adapt to integrate cutting-edge technology and meet the demands of modern industry, maintaining the relevance and rigor necessary for advancing engineering education.

Keywords: Computer Aided Engineering, Engineering Education, Engineering Design, Projectbased Learning, Wind Turbine Design