

Editorial

The Special Issue on *Multidisciplinary Sciences and Engineering (2019–2020)* in the *Advances in Science, Technology and Engineering Systems Journal (ASTES Journal)* presents a broad and insightful collection of research that reflects the increasing reliance on multidisciplinary approaches to address complex scientific and engineering challenges. The period of 2019–2020 has been characterized by rapid technological progress alongside growing global demands that require integrated solutions spanning multiple domains. This special issue captures these developments by assembling contributions that bridge traditional disciplinary boundaries and promote the synthesis of knowledge across diverse fields.

A central theme throughout this issue is the integration of scientific inquiry with engineering innovation. The contributions demonstrate how principles from physics, chemistry, mathematics, and computational sciences can be effectively combined with engineering methodologies to develop robust and efficient solutions. This convergence has enabled the creation of more accurate models, advanced analytical techniques, and improved system designs capable of addressing multifaceted problems. By embracing multidisciplinary perspectives, researchers are better equipped to tackle challenges that extend beyond the scope of any single discipline.

The role of emerging technologies in facilitating multidisciplinary research is also prominently highlighted. Advances in data analytics, artificial intelligence, and high-performance computing have significantly enhanced the ability of researchers to collaborate and innovate across fields. These technologies support the integration of large and diverse datasets, enabling more comprehensive analysis and informed decision-making. The studies included in this issue illustrate how such tools are being applied in areas such as healthcare systems, environmental monitoring, smart infrastructure, and advanced manufacturing, demonstrating the far-reaching impact of multidisciplinary approaches.

Another important aspect addressed in this collection is the focus on sustainability and societal impact. The complexity of contemporary global challenges, including climate change, resource management, and public health, necessitates solutions that are both technically sound and socially responsible. The research presented emphasizes the development of systems that are efficient, resilient, and environmentally sustainable. By combining insights from multiple disciplines, these contributions offer innovative strategies for achieving long-term sustainability and improving quality of life.

Interdisciplinary collaboration and knowledge exchange are further emphasized as essential drivers of innovation. The works featured in this issue highlight the importance of collaborative research frameworks that encourage interaction among experts from different domains. Such collaboration fosters creativity, accelerates problem-solving, and leads to the development of integrated systems that are more adaptable and effective. This approach is particularly evident in the advancement of cyber-physical systems and intelligent environments, where seamless interaction between physical and digital components is critical.

The editorial team extends its sincere appreciation to all authors, reviewers, and contributors for their dedication and scholarly efforts in making this special issue possible. Their contributions have ensured the publication of high-quality research that advances the frontiers of multidisciplinary sciences and engineering. The collection presented in this issue reflects the ongoing evolution of research toward more integrated and collaborative paradigms, providing

valuable insights and a strong foundation for future exploration and innovation across diverse scientific and engineering domains.

Guest Editor
Prof. Yu Xiao Yan