



## SPECIAL ISSUE ON

# ADVANCED METHODS OF MODELLING AND NUMERICAL COMPUTATION IN SCIENCE AND ENGINEERING

The Special Issue aims to publish selected high-quality papers to be presented in “**International Conference on Computational Modeling and Sustainable Energy (ICCMSE-2023)**” which will be held during 15-17 December, 2023 at Pandit Deendayal Energy University, Gandhinagar, Gujarat, India.

## DETAILS OF THE SPECIAL ISSUE

Modelling and Numerical Computation arise in many research problems ranging from physical and chemical processes to biomathematics and life science. Its theoretical description is closely connected with various areas of pure and applied mathematics including nonlinear modelling, integro-differential equations, nonlinear dynamics, pattern formation, non-Markovian processes, nonlinear and anomalous transport, time-delay equations and so on.

The aim of this Special Issue is to collect original and high-quality contributions related to the mathematical theory of such processes and phenomena including the dynamical models, applied and computational algorithms, controller design and mathematical methods regarded as new and prominent for the understanding the problem arise in natural phenomena.

This Special Issue will cover new perspectives of the recent theoretical developments in mathematical modelling and/or optimal control and their illustrative applications in biology, engineering, finance, and health sciences. It goals to point out new techniques that can be applied to the real-life problems which are modelled and to gain to the literature new constructed effective models for the accurate prediction of infectious diseases, financial crisis, etc., by adopting suitable controls/control strategies. Moreover, it aims to provide new analytical and numerical methods to propose appropriate solutions to the real-life problems of both integer and fractional order differential equations and to understand their complicated behaviors in nonlinear phenomena.

The Special Issue also proposes the latest developments in nonlinear dynamical modelling, optimization and solution strategies that can be applied to prominent problems in engineering and biological systems.

The topics of the Special Issue include, but are not limited to:

- Mathematical modelling in real-world phenomena
- Optimal control strategies in biosystems
- Data Science-Artificial intelligence
- New analytical and numerical methods for fractional differential equations
- Modelling of fractional order systems with and without non-singular kernels

- Deterministic and stochastic differential equations arising in science
- Applications in bioengineering, biology, and health sciences
- Applications in finance and economic sciences
- Local fractional calculus and its applications
- Modelling in diffusion, heat, mass, and momentum transfer (fluid dynamics)
- Biomechanical and biomedical applications of fractional calculus
- Impulsive systems
- Fuzzy differential equations and their applications

**SUBMISSION:** All authors should follow the Author Guidelines stated in the journal website (<https://dergipark.org.tr/en/pub/mmnsa/writing-rules>) before submitting their manuscript to the journal and write “**Special Issue: ICCMSE-2023**” in the Section “Notes for Editors” when submitting the manuscript via Online Submission System (<https://dergipark.org.tr/en/pub/mmnsa>).

#### **TIMELINE:**

Submission deadline: 30<sup>th</sup> June 2024

Expected date of Acceptance: 31<sup>st</sup> July 2024

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