

# Advances and Developments in Applications of Mathematical Modeling Techniques

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## ABSTRACT

“Mathematics is the alphabet with which God has written the universe” said Galileo Galilei. This famous quote is never more relevant than today. In today’s time with the advent of industry 4.0, digitalization and also availability of vast amounts of data only makes it more reasonable to tap into tools available in mathematics for optimal solutions. Mathematical models can provide solutions of actual global problems in challenging areas of medicine, economics, industry, etc. The process of modelling entails creating a simplified representation of a system, which further assists in analysing the system. This can aid in making better choices which are not only cost-effective but attainable in real time. Understanding epidemics through mathematical modelling lens can aid in identifying the parameters that contribute the most in disease transmission. This will help in providing measures to control the disease. Recently world has been hit by COVID-19. Models can provide us with the strategies to control this deadly disease, thereby reducing the loss of life. The special session's purpose is to bring together the world's finest engineers, researchers, academicians and industrialists to present their research work and explore breakthrough mathematical theories, technologies, and their applications to the problems of real world.

Topics for the special session include, but are not limited to:

- Ordinary Differential Equations
- Partial Differential Equations
- Fractional Differential Equations
- Modeling and Simulation
- Chaos Modeling and Control
- Stochastic Modeling
- Dynamical systems, bifurcation theory, chaos theory
- Fuzzy set theory
- Queuing theory
- Optimization and Control
- System Reliability Models
- Robotics and control systems
- Epidemic Modeling
- Mathematical Techniques for Image Processing
- Mathematical Modelling for Cryptography

**Keywords:** Mathematical Modeling, Ordinary Differential Equations, Partial differential equations, fractional differential equations, control theory, Reliability models, Image Processing, Cryptography.