

Special Session Proposal
15th International Conference on Pure and Applied Mathematics
(ICPAM 2026)

Session Title

Mathematical Modelling, Optimization, and Computational Analytics for Business, Health, and Intelligent Systems

Organizers

Chair

Dr. Farkhanda Afzal

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Dr Farkhanda Afzal is an Associate Professor of Mathematics with a strong research and leadership profile in applied and computational mathematics, optimization, and data-driven mathematical modelling. Her work lies at the intersection of mathematical theory and real-world applications, with contributions spanning complex networks, graph-theoretic methods, financial mathematics, fluid mechanics, and AI-enabled analytical frameworks. She has published extensively in high-impact international journals. Dr Afzal has played an active role in the international mathematical community as a Technical Committee member for leading conferences and as a reviewer for top-tier journals. She has also led and managed internationally funded research and capacity-building projects, including UK- and Europe-funded initiatives, reflecting her experience in academic leadership, global collaboration, and inclusive research development.

Co-Chair

Dr Minhas Mahsud, FHEA

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Dr Minhas Mahsud is a Management Science scholar with expertise in psychological ownership, organisational citizenship behaviours, innovation, and inclusive leadership. She serves as Course Director for the MBA and MBA Advanced Practice programmes at Ulster University. In addition to her academic leadership, she is Chair of the CPPD BAME Network and Chair of the Belfast Asian Women's Academy, and serves as Advisor to the Minorities Recognition Awards Northern Ireland. Her work supports analytically grounded leadership modelling, organisational decision systems, and innovation dynamics, bringing a strong management science and organisational analytics perspective to the special session, which complements mathematical modelling, optimisation, and decision-theoretic approaches in business and intelligent systems

Brief Description of the Special Session

This special session focuses on rigorous mathematical and computational frameworks that underpin modern business analytics, management science, health modelling, and intelligent decision systems. Emphasis is placed on optimization theory, stochastic processes, network modelling, and data-driven mathematical methods used to formally analyze organizational behavior, innovation dynamics, and leadership processes in complex adaptive systems.

Concepts such as psychological ownership, organizational behavior, inclusive leadership, and innovation are treated through quantitative lenses including agent-based modelling, graph-theoretic interaction structures, optimisation under uncertainty, and computational simulation. Applications serve as motivating case studies to highlight methodological and theoretical advances in pure and applied mathematics.

Related Topics

- Computational and Applied Mathematics
- Computational Biomechanics and Dynamical Systems
- Mathematical Modelling of Innovation Diffusion and Adoption
- Graph Theory and Complex Network Modelling
- Machine Learning from a Mathematical Perspective
- Mathematical Frameworks for Inclusive Leadership and Team Dynamics
- Mathematical Epidemiology and Disease Modelling
- High-Performance Scientific Computing
- Financial Mathematics and Risk Modelling
- Supply Chain and Business Analytics Modelling
- Quantitative Models of Psychological Ownership
- Operations Research and Decision Theory
- Network and Game-Theoretic Models of Organizational Behavior
- Uncertainty Quantification and Data-Driven Modelling

Potential Participants

Researchers in pure and applied mathematics, operations research, computational mathematics, financial mathematics, data science, and management science applying

rigorous mathematical and computational methods to business, organisational, and health systems.

Publicity and Promotion Plan

1. Targeted invitations to researchers in applied mathematics, optimisation, and management analytics.
2. Promotion through international mathematical societies and interdisciplinary research networks.
3. Circulation via ResearchGate, LinkedIn, and conference mailing lists.
4. Outreach to researchers working on mathematical modelling of organisational and health systems.
5. Coordination with the ICPAM Technical Programme Committee to ensure rigorous peer review standards.