RESEARCH ROADMAP
LABORATORY OF ANALYSIS, ALGEBRA, AND MATHEMATICS FOR EDUCATION
DEPARTMENT OF MATHEMATICS - FSAD - ITS

ITS Institut Teknologi Sepuluh Nopember

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RESEARCH AREAS	<2025	2025-2026	2027-2029
Graph Theory	Monophonic, Non-Local, and Mixed Detour Metric Dimensions of Graphs, Spectrum and Energy of Graphs, Hypergraphs, and Its Applications		
Formal Verifications	Formal Verification in Finance, Cryptography, and Medical Systems		
Max-Min Omega Systems	Eigen Problems, Linear Equations, Periodic Behaviours in Max-Min Omega Systems		
Quantum Computating	Quantum Cryptography, Quantum Transforms, Quantum Differential Equations, and Its Applications		
Quantum Calculus	Quantum Calculus -Based Wavelet Transforms and Its Applications	q-Topologies, q-Differential Equations, and Stochastic q-Differential Equations	
Stochastic Diffrential Equations	• Existence and Uniqueness of Solutions to Stochastic Partial Differential Equations • Numerical Solutions to Stochastic Partial Differential Equations		
Near Sets	Near Approximations in Groups and Fuzzy Groups	Near Approximations in Rings and Fuzzy Rings	Near Approximations in Primary Ideals on Rings
Fixed Points	Fixed Point Theorems of Reich-Perov Type Mapping in Vector-Valued Mapping Spaces	Fixed Point Theorems of Perov Type Mapping and Its Applications	

TARGET

Discovery of Some Novel Theories in Different Research Areas, Such as Graph Theory, Formal Verifications, Max-Min Omega Systems, Quantum Computation, Quantum Calculus, Stochastic Differential Equations, Near Sets, and Fixed Points.

Applying the Theories in Different Fields Such as Physics, Engineering, Medicine, Biology, Finance, Business, Computer Science, and Industry.