ROAD MP PENELITIAN
LABORATORIUM PEMODELAN DAN SIMULASI
PEPARTEMENT OF MATHEMATICS - FSAD ITS

RESEARCH AREAS	2015	2020	2025	2030
Mathematical Modelling and Simulation	Mathematical modeeling of peast stabilization		Pemodelan matematika remediasi lingkungan	
Computational Fluid dynamics	Passive Control	External Flow, Internal flow, and Computational Theory	Mathematical modelling of blood flow in blood vessel, Option Problem	
Biomathematics	Analisis of optimal control in the construction of a mathematical model of the spread of the Ebola virus	1. Mathematical modeling, analysis and dynamic control of the global spread of the Ebola virus in Congo 2. Multi-path multilocation mathematical modeling in multi strains	Pemodelan penyebaran penyakit dan penanganannya	
Navigation and Control		Pemodelan Drone dan kontrolnya	Pemanfaatan drone untuk pertanian/ perkebunan Navigation, Guidance and Control of unmanned vehicles Digital twin of unmanned surface vehicles	
Optimization and Optimal Controls	1. Model analysis and optimation of microalgae growth as an alternative energy source in an effort to overcome the energy crisis 2. Improved sliding mode control using Firefly to optimize the fuzzy membership function with the implementation of solar panels	1. Control UV Movement with active ballasts using sliding mode control 2. Construction of kinematic and empirical models of active ballasts in autonomous underwater vehicle (AUV) motion	1. Navigation, Guidance and Control of unmanned vehicles 2. Digital twin of unmanned surface vehicles	
Renewable energy	Solar panel	Pemanfaatan baterai kendaraan listrik untuk storage solar panel	Proses pembuatan bio etanol dari nira Aren	
Assimilasi data	Kalman Filter Extended Kalman Filter Ensamble Kalman Filter Unscented Kalman Filter	Mathematical Model Of Ship When Shooting	Integrasi metode estimasi Kalman Filter dengan metode prediksi maching learning	