

**FACULTY BROAD AREA OF RESEARCH FOR AUTUMN 2021-22**

<b>SPECIALIZATION</b>	<b>NAME OF FACULTY</b>	<b>BROAD AREA OF RESEARCH</b>
<b>DESIGN</b>	Prof Anil Kumar	To make human life safer and more comfortable with respect to vibration
		To design vibration mitigation strategies for mechanical and structural systems
	Prof. Abinash Kumar Swain	Modelling and numerical analyses of metallic foam core sandwich composite panels subjected to blast loading
		Study of kinetic energy projectile against harden targets
		Isogeometric analysis in structural mechanics
		Knowledge representation for product family design to support assembly variant design using Artificial Intelligence(AI)
	Prof. Bhanu Mishra	Solid Mechanics (Fracture Mechanics, Damage Mechanics )
	Prof. Dhanashri M. Joglekar	Guided elastic waves, finite and spectral finite elements, nonlinear mechanics and dynamics
	Prof. Indra Vir Singh	Machine learning based computational models to predictive additive manufacturing parameters, Machine Learning and XFEM-CZM Model for Environmental Degradation in Adhesive Joints
	Prof. Manish M. Joglekar	Computational/Experimental Analysis of Soft Active Materials
	Prof. Pushparaj Mani Pathak	Robotics, Dynamics, Control, Bond graph modeling, Design
	Prof. S. P. Harsha	Machine Learning and Soft Computing Methods, Rail Dynamics & Whole Body Vibrations, Dynamics of Smart Structures (FGM)
	Prof. Shailesh Ganpule	Solid Mechanics, FEM, Injury Biomechanics, Experimental Mechanics
	Prof. Siladitya Pal	Multi-physics computational modeling of fracture in heterogeneous materials
		Design and development of elastic wave bandgap metamaterials
Multiscale computational modeling of mechanical metamaterials		
Prof. Sneha Singh	Noise Control, Acoustics, Acoustic metamaterials; Vibration and Resonance; Fault Diagnosis	
Prof. Vedit Gaur	Fatigue Fracture and Advanced Materials Engineering Laboratory	
<b>PRODUCTION</b>	Prof. Apurbba Kumar Sharma	Advanced Manufacturing Methods, Hybrid Processes
		Microwave Material Processing, in particular (Drilling, Casting, Joining, Cladding & Sintering
		Surface Engineering
	Prof. Dheerendra K. Dwivedi	Joining of Metals and Surface Engineering and Dissimilar Metal Joining
	Prof. Inderdeep Singh	The research group is currently focused on developing sustainable composite materials from natural fibers (basically natural fibers derived out of forest/agricultural waste)
	Prof. Kaushik Pal	Experimental and theoretical studies of MMC's for Biomedical implants;
		PMC's and MMC's for structural, automobile and aerospace applications.
		Synthesis and modification of advanced nanomaterials;
		High performance humidity and toxic gas sensor applications;
		Energy harvesting and storage applications;
	Biomaterials for targeted drug delivery towards cancer cells;	
Prof. Rahul S. Mulik	Advanced Machining Processes, Micro-machining and Nano-finishing Processes, Rapid prototyping, CAD/CAM, Metal matrix composites (MMC), FSP	
Prof. Sneha Singh	Design and manufacture of Nanotubes; Manufacture of natural fiber composites; Machine learning and Deep Learning Application to Automotive & Industrial Engineering; Inventory management research	

<b>THERMAL</b>	Prof. Ankit Bansal	Radiative Heat Transfer, Shock Waves, Blast, Combustion, hypersonic flow, Renewable energy and heat transfer in electronic systems
	Prof. Arup Kumar Das	Two Phase Flow Instability & Micro-Fluidics
	Prof. B.K. Gandhi	Investigation of the formation and mitigation of vortex rope using pressure sensors and volumetric PIV system
	Prof. Kirti Bhushan Mishra	Pool fires of alternative gaseous fuels:measurement and modeling;Engine combustion and emission control:measurement and modeling;Explosion and fire resistant of process plant and infrastructure
	Prof. Krishna M. Singh	Computational Mechanics/CFD
		Fluid Dynamics: Turbulent Flows
		Renewable Energy: Hydro/Tidal/Solar
		Topology and Shape Optimization of Multi-Physics Systems
	Prof. Manish Mishra	Design, Optimization and Performance of Thermal Systems
		1. Gas Turbine Blade Cooling, Finned Passages
		2. Multi-stream Packed Bed Heat Exchangers
		3. Plate Heat Exchangers
	Prof. Nikhil Kumar Singh	Direct numerical simulations of two-phase flow, Multiphase flow, Phase change, Computational fluid dynamics and heat transfer, Numerical Methods, Turbulent flows
	Prof. Sudhakar Subudhi	Effect of spatially varying magnetic field on the cooling of an electronic component by natural convection with magnetic nanofluids
		Natural convection in water/nanofluid filled closed and open cavity
		Effects of spiral tape inserts, pH and surfactant on the forced convection of Al <sub>2</sub> O <sub>3</sub> /water and TiO <sub>2</sub> /water
Novel solar assisted liquid desiccant air conditioning system using single storage system		
	Thermoregulatory mechanism of human body during different activities	
Prof. Sushanta Dutta	Active and Passive flow control	
	Flow field and its control over flexible structures	
	Bio-mimic structures for drag reduction application	
	Micro-fluidics	