Office of the Dean (Research and Consultancy) S V National Institute of Technology, Surat

Database of SVNIT Faculty Members: Research Specializations and Expertise

| Department of Mathematics and Humanities | | | | | | |
|--|-------------------------------|--|---|--|--|--|
| Sr no | Name of the faculty member | Research Specialization to be displayed on the R&C website. | Any specific interesting research problems that the faculty member is working or intends to work upon | | | |
| 1. | Dr. V. H. Pradhan | Fluid dynamics in porous media with relevance to ground water flow and petroleum recovery Numerical techniques | To develop Burger's model for viscoelastic fluids to observe the viscoelasticity effects by obtaining the travelling wave solutions To modify Boussinesq equation arising in stream aquifer interaction problems by an exponential decaying function To study the effect of sedimentation for non-conservative materials in contaminant transport equations Numerical simulation of Boundary layer flow equations for porous plates and/or for Micropolar fluids/Power law fluids/Nanofluids Application of Optimal control theory to enhanced oil recovery To develop mathematical models for reservoir simulation | | | |
| 2. | Dr. Neeru Adlakha | Mathematical and Computational Biology Bioinformatics/ Biomathematics / Biocomputing Data mining Finite element modeling | Developing computational and systems biology models to study calcium dynamics in Myoctes with special relevance to disorders of heart Developing computational and systems biology models to study calcium dynamics in hepatocytes with special relevance to disorders of liver Developing computational and systems biology models to study calcium dynamics in Beta cells with special relevance to disorders of Pancreas Developing computational and systems biology models to study calcium dynamics in T lymphocyte cells with special relevance to immunity disorders Developing computational and systems biology models to study calcium dynamics in astrocytes and neuron cells with special relevance to neuronal disorders Developing computational and systems biology models to study calcium dynamics in astrocytes and neuron cells with special relevance to neuronal disorders Developing computational and systems biology models to study human thermal systems with special relevance to cancer and physical exercise Modelling above mentioned biological problems as initial boundary value problems involving fractional differential equations Developing Finite element, finite volume, cubic splines, analytical and hybrid numerical and analytical approaches for the solution of above mentioned problems | | | |
| 3. | Dr. Hemantkumar P. Bulsara | Techno innovation to Techno entrepreneurship through Techno Business incubation Marketing Entrepreneurship Strategy Supply Chain Management(SCM) General Management | Consumer Behavior Branding, Green Branding, Political branding Developing Business Strategy Marketing Strategy Digital Marketing Commercialization of Technology innovation, Innovation and Entrepreneurship, Social Entrepreneurship, Techno- entrepreneurship, Technology Business Incubation, Women entrepreneurship Digital pedagogy | | | |

| 4. | Dr. Ramakanta Meher | Differential Equations Fractional Differential Equations Fluid Dynamics Fluid flow through Porous Media Approximation theory Numerical Analysis | Uncertainty Quantifications in porous media Modelling and simulations of Heat and Mass transfer problems in porous media Recovery rate of Hydrocarbon reservoir problems Delay Differential Equations Study of fractional calculus in differential and integral equations Functional differential equations with infinite delay |
|-----|-----------------------|--|---|
| 5. | Dr. Ranjan Kumar Jana | Special Functions and Integral Transform, Operations Research. Mathematical Physics, Fractional Calculus, Mittag-Leffler function Numerical Weather Prediction, Ramanujan's Mathematics | Study and investigate properties, inequalities and applications of Hypergeometric function in Mathematical Physics, Probability and distribution theory, theory of integral transforms and fractional Calculus Study and formulate Green Supply Chain Management models in imprecise environment Inventory Modeling of different types with deteriorating items Data Assimilation approach to develop geospatial database of model inputs and simulation of land surface fluxes |
| 6. | Dr. Twinkle R. Singh | Fluid flow through Porous media, Non-linear partial differential equations, Burger's equation, Groundwater recharge phenomenon, Analytical approximate Methods, Mathematical Modeling | Study on Problems related to environment engineering and its impact for society. Study on problem, related to current strategy of economics during COVID 19 Analysis of Reactions of pandemic during COVID Study on strategy of world for forthcoming development with mathematical point of view |
| 7. | Dr. Urvashi Kausal | Post Modern Fiction Indian English Fiction and Feminist Literature Themes in Diaspora literature | New Woman in the Writings of Shashi Deshpande and Manju Kapur Indo-Caribbean Candian Literature Place and Space in the novels of M.G. Vassanji Literature on 1971 Bangladesh War from Pakistan and Bangladesh Life lessons from Indian Mythology Study of Employability Skills of Engineers Non-Verbal Communication and Intercultural Communication Re-Orientation in Movies adapted from Indian Diaspora Fiction |
| 8. | Dr. Sushil Kumar | Mathematical modeling Bio-mechanics Fractional Differential equations Moving Boundary Problems Bio-mechanics Numerical Techniques Radial Basis Functions Chebyshev Polynomials | Mathematical modelling and simulation of partial and fractional differential equations arising in the modelling of heat transfer process in biological systems using Chebyshev polynomials and Radial basis functions. Mesh-free method for thermal therapies Mesh-free and spectral method for the solution of differential equation Semi analytical method for the solution of non-linear fractional differential equations |
| 9. | Dr. Jayesh M. Dhodiya | Advance Operation Research Optimization Technique Mathematical Modeling and Simulation Knowledge Based System,Data Mining | Development of quality timetabling algorithm for any organization Development of mathematical model based software with which we can understand mute and deaf people language. Effective solution code (Code) of multi objective optimization problem through evolutionary approach To study the Nanofluids as an effective coolant in refrigerators, cars etc. by developing its mathematical model. |
| 10. | Dr. Indira P. Debnath | Mathematical Programming Problems Non-smooth Optimization Fractional Programming problems Interval-Valued Optimization Generalized Convexity I-fuzzy/Fuzzy Optimization Variational Control Problems | Optimality conditions & amp; Duality for Interval-valued optimization problems under generalized convexity assumptions Studying on Enhanced Interval-optimization problems Minimax programming problems and their optimality conditions. |

| 11. | Dr. Shailesh Kumar Srivastava | Approximation Theory, Trigonometric Fourier Approximation, Summability Methods, Real/Functional Analysis | Analysing the approximation properties and determining the degree of approximation (error/order of approximation) of functions and their conjugates belonging to some Lipschitz classes using different summability methods on their trigonometric Fourier series and conjugate series. Studying the properties and behaviour of strong convergence of numerical sequences and Fourier series. Double Fourier series |
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| 12. | Dr. Raj Kamal Maurya | Reliability Theory and Survival Analysis Estimation under various Censoring Competing Risk Optimum Plan | Currently working on Compound Optimal Design under Censored Data for lifetime model. |
| 13. | Dr. Amit Sharma | Algebraic Coding Theory: Constructions of error-correcting codes such as linear codes over finite rings, skew codes, quantum codes. | Error correcting codes using skew polynomials. |
| 14. | Dr. Sudeep Singh Sanga | Queueing Theory | Control policies for queueing Models. |
| 15. | Dr. Saroj Yadav | Fluid Dynamics | Mathematical modeling of phenomena arising in fluid flow through porous media including dynamic capillary pressure effect. |
| 16. | Dr. Vaishali Dhingra | Time Series Analysis, Econometrics, Quantitative Analysis, Stock Market, Portfolio Management, Financial Management | Marcro-economic analysis specifically time series analysis and applied research |
| 17. | Dr. Sourav Gupta | Linear Water Wave Theory, Integral Equations, Numerical Analysis | Working on the problems of scattering of surfacewater waves by a pair of unequal thin permeablevertical barriers with non-uniform porosity. The plates are present in a fluid region may comprise of two fluids of different densities (two fluid medium). The method of solution is based on Generlized Hybrid Fourier Transform known as Havelock's expansion theorem. |