



**Program Chair - Civil
Associate Professor - SEDA**

Dr. Payal Desai

School of Engineering and Technology



Qualifications

Dr. Payal Desai completed her PhD from the Indian Institute of Technology Bombay in 2008. She attained her Masters and Bachelors from SVNIT, Surat. She also has post doctorate research experience from USA and IISc Bangalore nearly of 3 years. Her research areas include Plates, Shells, Solid mechanics, finite elements and other numerical methods, mechanics of laminated composites, refined higher - order theories, thermal stresses, computational solid mechanics, theoretical and applied mechanics.

Contact Details

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Background

She joined Navrachana University in 2012 as an Assistant Professor and has been an integral part of the academic team since.

Research

Enthusiastic about her research, she believes that Multilayered composites have found wide use in many structures, especially and mainly in aerospace applications, where high strength-to-weight and stiffness-to-weight ratios are required. Development of two-dimensional accurate numerical and analytical models, of physically three-dimensional structures and laminates, has been an area of active research since many years. Development of both continuum and discrete higher order deformation models for improving characteristics of the laminates and structures in the form of beams, plates and shells is essential.

Her aim to work in this research area is to gain theoretical understanding of how structures and solid objects react under stress. These areas have an immense application in field of both civil and aerospace engineering.

She has worked on refined higher order theory and shear-deformation plate theory due to Reissner and others, elastic - semi analytical and numerical solutions of three dimensional cylinders, shells and plates. Shear-deformation plate and shell theory which describes mathematically what happens to a flat surface when a force is applied to it. Engineers use it to analyze the external forces that act on structural surfaces like slabs, floors or the outer and inner skin of airplane wings.

In her research area, she has applied various models for analyzing finite length thick laminated and smart cylinders, laminated composite shells and circular plates under various loading conditions. A passionate researcher, she is also a wonderful guide to the students.

She has taught various courses at UG and PG level such as Matrix analysis of framed structures, Numerical methods, finite element methods, theory of structures, applied mechanics, solid mechanics and Introduction to plate theory as well as advanced solid mechanics.

Research Articles in Referred Journals

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Few Selected Papers in Referred Journals

- Desai, P. (2020). Semi analytical cum numerical analysis of two-dimensional elasticity problem of plate with eccentric hole in bipolar coordinate system. *International Journal for Computational Methods in Engineering Science and Mechanics*, 21(4), 185-204.
- Desai, P. (2019). On Construction of Golden Section Octagon. *Interwoven: An Interdisciplinary Journal of Navrachana University*, 2(1), 31 - 40.
- Desai, P. (2017). Construction of fibonacci spiral and geometry in golden hexagon using golden sections. *Interwoven: An Interdisciplinary Journal of Navrachana University*, 1(1), 16 - 27.
- Desai, P., & Kant, T. (2015). On numerical analysis of axisymmetric thick circular cylindrical shells based on higher order shell theories by segmentation method. *Journal of Sandwich Structures & Materials*, 17(2), 130-169.
- Desai, P., & Kant, T. (2013). On numerical analysis of composite and laminated cylinders of finite length subjected to partially distributed band load. *International Journal of Pressure Vessels and Piping*, 111, 321-330.

Sponsored Research Project Completed

Funding Agency : DST - SERB Young Scientist Award, Govt of India

Duration: 3 Years, (January 2016 to July 2020)

Grant No: YSS/2015/000978

Sanctioned grant: Rs. 20,82,000/-

Title: " Numerical analysis of elastostatic plate with eccentric hole in bipolar coordinate system".