

PROJECT PROPOSAL

My proposed PhD research at Kalasalingam University builds upon my M.Tech project on distortional buckling behavior of cold-formed composite steel columns under eccentric loading. The study highlighted the complex interaction between local, global, and distortional buckling modes, emphasizing the need for deeper understanding in advanced structural systems. The doctoral work will expand this scope to investigate the stability performance of composite and hybrid steel sections, incorporating nonlinear material behavior, connection effects, and varying boundary conditions. Analytical modeling using finite element analysis will be coupled with experimental validation to establish reliable design parameters. Key areas of study will include parametric evaluation of geometric imperfections, influence of eccentricity ratios, reinforcement techniques, and performance under cyclic and seismic loading. The outcomes are expected to contribute to improved code provisions and innovative structural applications, supporting the sustainable use of lightweight steel in modern construction.